

Please Note: These minutes are pending Board approval.

**Board of Education
Newtown, Connecticut**

Minutes of the Board of Education meeting on May 7, 2019 at 7:00 p.m. in the Council Chambers, 3 Primrose Street.

M. Ku, Chair	L. Rodrigue
R. Harriman-Stites, Vice Chair	J. Evans Davila (absent)
D. Cruson, Secretary (absent)	R. Bienkowski
D. Leidlein	50 Staff
J. Vouros	2 Public
A. Clure	1 Press
D. Delia	

Mrs. Ku called the meeting to order at 7:06 p.m.

MOTION: Mrs. Harriman-Stites moved that the Board of Education go into executive session to interview the candidate for the Assistant Superintendent position and invited Dr. Rodrigue and Anne Uberti. Mr. Vouros seconded. Motion passes unanimously.

Item 1 – Executive Session

Executive session ended at 7:48 p.m.

Item 2 – Pledge of Allegiance

Item 3 – Action on Assistant Superintendent Candidate

MOTION: Mrs. Harriman-Stites moved that the Board of Education appoint Anne Uberti Assistant Superintendent upon successful negotiation of her contract. Mr. Vouros seconded. Motion passes unanimously.

Mrs. Ku said there was an impressive group on the interview committee. The site visit at Reed included parents and staff. Mrs. Uberti has inspired the staff to grow as professionals and be proactive to address the needs of the district. She was pleased with the process and with the candidate.

Dr. Rodrigue thanked everyone involved in the process, especially Suzanne D'Eramo and Chris Moretti who co-facilitated the search process. There were nearly 42 applicants. The site visit gave us a list of defining adjectives regarding Mrs. Uberti's qualifications as a leader. On a personal note, she has worked with her over the last five years and she is an absolute perfect choice. Speaking on behalf of the administration and public school staff, she is thrilled to call Mrs. Uberti a colleague.

Motion passes unanimously.

Mrs. Uberti thanked everyone and the committee's intensive process as well as the Reed staff and two unsung heroes – Jill Beaudry and Betty McFadden. It has been an incredible six years there. She appreciated their support and would miss them. She also thanked the Board of Education and Dr. Rodrigue. This is an honor and she is grateful they are entrusting her with this huge responsibility.

Item 4 – Consent Agenda

MOTION: Mrs. Harriman-Stites moved that the Board of Education approve the consent agenda which includes the Newtown High School field trip, the donation to Newtown Middle School, the donation to Newtown High School, the resignation of Amy LaRusso, and the correspondence report. Mrs. Leidlein seconded. Motion passes unanimously.

Mrs. Ku asked for a moment of silence for the students and staff at the STEM School Highlands Ranch in Denver where there was another school shooting this afternoon.

Item 5 – Public Participation

Item 6 – Senior Experience Projects

Dr. Rodrigue introduced some of the pilot group of students participating in the high school Senior Experience 21 which is a capstone project. Seniors Emma Stierle, Carter Goodrich, Maya Wadhwa, Jenny Wadhwa and Brianna Lovely presented an overview of their projects. Ellie Hanna and Peg Ragaini, the advisors, were unable to attend the meeting.

Item 7 – Reports

Chair Report: Mrs. Ku spoke about the projects approved on the referendum. She shared an email from the Chair of the Legislative Council asking for input regarding Mr. Bienkowski and Mr. Spreyer working together on purchasing and reducing costs. The CIP and finance committee may want to talk about these questions. Mrs. Harriman-Stites will be on the search committee for the Director of Teaching and Learning. She also received a notice from the State regarding upcoming teacher contract negotiations. The Superintendent's evaluation will be coming up soon. The Board of Finance is discussing the CIP process again and she would forward their April 20 meeting minutes to the Board. She attended the EdAdvance meeting when they presented their proposed budget for next year. They anticipate a shortfall of about a .5 million dollars.

Superintendent's Report: Dr. Rodrigue shared a CABE newsletter and provided information on the facilities projects completed over the April break as well as projects underway. She thanked Mr. Faiella and his team for getting this work done over the break. At the Monday Teacher Forum meeting they addressed homework. A committee will be formed next year to explore what homework means with respect to the district vision, the relevancy for students and the consistency of homework across the district. With the new Director of Teaching and Learning this might be the time to explore the impact of homework and how to make it more meaningful for students.

Committee Reports:

Mrs. Harriman-Stites reported that the Policy Committee finished the 5000 series and has moved to the 9000 series which is on Board procedures.

Mr. Vouros stated that the Curriculum and Instruction Committee met with Andrew San Angelo and Brianne Vazzano regarding the second grade social studies curriculum and revisited with Dr. Longobucco the testing strategies vetted in high school coursework and offerings for SAT prep. He also attended the Hawley grade 3 and 4 chorus concert.

Mrs. Harriman-Stites attended the middle school art show and enjoyed their wonderful work as well as hearing the Chamber Orchestra and jazz group.

Mr. Delia attended a track team meet a few weeks ago where Newtown competed against Stratford and other towns. At one point, our students went out to the center of the field and began playing a game and were joined by students from the other schools. It was nice seeing these students having fun even though they didn't know each other.

Student Reports:

Mr. Morrill reported that classes are preparing for finals and taking AP tests this week and next. This Saturday there will be lacrosse games at the Blue and Gold Stadium in memory of Paul Scalfani and his dedication to youth lacrosse. All donations are going to support brain cancer research. Boys' volleyball is undefeated. Last Friday, Bethel Unified came to the high school to play the Gold Rush Unified team in whiffle ball. Best Buddies are having their prom on June 1.

Ms. Dubois reported that students from the Forestry Club and National Honor Society planted trees along the Pootatuck River last week. The National Honor Society is also working with

student government to create a mural for the class of 2019 in the senior courtyard. The school will be hosting a stress management series for students and a teen mental health night on May 16. Mr. Edwards' government class hosted State Representative Mitch Bolinsky to speak about his job and answered questions.

Item 8 – Old Business

MOTION: Mrs. Harriman-Stites moved that the Board of Education approve the grade 2 and grade 3 math curricula. Mrs. Leidlein seconded. Motion passes unanimously.

MOTION: Mrs. Harriman-Stites moved that the Board of Education approve policies 5124.1 Reporting to Parents, District/School Report Cards, 5131.5 Vandalism, 5131.7 Weapons and Dangerous Instruments, 5131.8 Off School Grounds Misconduct, and 5131.91 Hazing. Mrs. Leidlein seconded. Motion passes unanimously.

Item 9 – New Business

Math 5, 5+ and 6 Curriculum:

Dr. Rodrigue stated that both the 5th and 6th grade math curriculum were revised to include a concept-based foundation focusing on essential computational skills in math and big ideas fundamental to a deeper mathematical understanding and transfer of ideas. She introduced Anne Uberti and Jess Fonovic who provided an overview. Ellen Buckley was ill and unable to attend.

Mr. Delia asked the difference between math 5 and math 5+.

Ms. Fonovic said 5+ delves deeper. It's the same curriculum but we work on math thinking and analysis through different activities.

Mr. Delia asked how students were placed in 5th grade.

Ms. Fonovic said she meets with all math science specialists and project challenge teachers and also looks at standardized tests in 4th grade to place them in math 5 or 5+.

Mrs. Leidlein asked if there was any consideration to perseverance in classroom homework, motivation or is it just testing that determines placement.

Mrs. Uberti said it's a very challenging task to determine what a 4th grader should go into. We do see at that age that certain students have an aptitude for math but some have difficulty in applying it. They worked with the middle school in an effort to piece what is more important as they get older.

Mrs. Leidlein asked how much of the process is shared with students ahead of time or a discussion as to how they are placed when they go into 5th grade math.

Ms. Fonovic stated this is not discussed with students but is with their parents.

Mrs. Uberti said this is not communicated with students at the 4th grade level.

Mrs. Leidlein asked if they saw a trend for students placed in 5+ into the high school math and science track and do they look at this.

Mrs. Uberti said they have met with middle and high school students. Some high school students have spoken to their parents about burning out with all of the math courses they have taken. They have had conversations with the middle school about if students are adequately prepared over a multi-year process. We developed a process for students to do summer work to be considered for math the next year.

Mr. Vouros asked how the work ethic of students entering the 5th grade and leaving the 6th grade factor into the decision making of where they should be. The big issue is that students aren't doing homework in 5th grade because they aren't sure how to do it.

Mrs. Uberti said the work ethic becomes more important as they get older. If there were concerns we would reach out to the parents and explain the options.

Grade 2 Social Studies Curriculum:

Dr. Rodrigue introduced Andrew San Angelo and Brianne Vazzano who revised this curriculum. It is a very impressive curriculum with a nice blend around the concept of community and understanding geography on a broader scale.

They gave an overview of the curriculum which was broken down into three units which are "What is a Community?", "Welcome to my Newtown," and "Me on the Map."

Tuition for the 2019-2020 School Year:

MOTION: Mrs. Harriman-Stites moved that the Board of Education approve the increase in the tuition rate to \$19,600 for the 2019-2020 school year. Mrs. Leidlein seconded.

Mr. Bienkowski said we do this annually and provide a discount for the second sibling. This is based on our budget and the debt service.

Motion passes unanimously.

Minutes of April 9, 2019:

MOTION: Mrs. Harriman-Stites moved that the Board of Education approve the minutes of April 9, 2019. Mrs. Leidlein seconded. Vote: 5 ayes, 1 abstained (Mr. Vouros) Motion passes.

Assignment of All-Star Contract:

Dr. Rodrigue stated that April 29 she received a letter from John Dufour outlining their intent to sell shares of stock to Student Transportation of America which would make them full owner of the company. Per our contract with All-Star this needs the consent of the full Board. They would become a subsidiary of STA. Mr. Dufour and all employees of All-Star will remain with the company. No changes will be visible. The level of quality, care and safety will continue. STA is a larger company and has a good reputation in the United States and Canada. She was not worried about the change and other area boards are doing the same. We worked hard to arrive in a great space with our transportation system with All-Star including the shuttle system which is working well.

Mr. Vouros wanted to be sure everything will remain the same and no current employee would lose their job.

Mr. Dufour said that he will still be president of All-Star and no one will lose their job. We would never do something like that because our drivers are our greatest assets.

Mr. Clure asked what would happen if we voted no.

Mr. Dufour said that would become a legal matter.

Mr. Clure referred to the document the Board received on Student Transportation of America and asked if we could put in any guarantees that All-Star will continue to run it. Suppose this new company wants to make changes?

Dr. Rodrigue said most of the report was accolades about STA. We have to remember we still have a contract with All-Star. In talking to other superintendents, they will remain as a subsidiary. If there's an issue, we have recourse to take legal action.

Mr. Dufour stated he will still be president and it doesn't change our contract.

Mrs. Leidlein commended All-Star on their service to the district and asked if STA micromanaged.

Mr. Dufour said we will be the 43rd company they purchased and each is still a wholly owned subsidiary. They approached him. He spoke to other contractors who still run their company. They will buy my buses and insurance.

Mrs. Ku stated that All-Star has been a good partner during the transportation change.

Mrs. Leidlein said All-Star has been a wonderful partner.

Mr. Delia asked that when the contract is up for renewal, who we will deal with.

Mr. Dufour said you would deal with him.

Mr. Dufour stated that his brother and sister are also owners and we are selling to STA which is a family business. They are at other board meetings tonight.

MOTION: Mrs. Harriman-Stites moved that

Whereas, the Newtown Board of Education (the "Board") has a Contract for Transportation Services with All-Star Transportation, LLC ("All-Star"), dated January 17, 2017, to provide transportation services for students for whom the Board provides transportation services, commencing July 1, 2017 and ending June 30, 2022 (the "Contract"); and

Whereas, by correspondence dated April 29, 2019, the Board was informed by All-Star that it intends to sell its stock to Student Transportation of America ("STA"); and

Whereas, Section 21 of the Contract provides that it is mutually understood and agreed that All-Star "shall not assign, transfer, convey, sublet, or otherwise dispose of the Contract or its right, title, or interest herein, or its power to execute such Contract, or any part thereof to any person, company or corporation, without the prior written consent of the Board"; and

Whereas, Section 21 of the Contract further provides that "a sale of stock in a corporation, a change in partners in a partnership, or a change in membership in a LLC, which results in a change in the controlling interest of the Contractor shall be an action that will be considered a contract assignment under this provision".

Now, therefore, be it resolved, that based upon the representations of All-Star to the Board that there will be no change in the management, operation or service of the Contract provided by All-Star for the remainder of the contract term, the Board hereby consents to the sale of stock by All-Star to STA.

And be it further resolved, that the Superintendent or her designee is authorized to execute and deliver written notification of such consent to All-Star. Mrs. Leidlein seconded. Motion passes unanimously.

Resolution Regarding the Governor's Proposal for Assessment of TRS Expenses:

Mrs. Ku said that the legislative session ends June 5. We sent a letter to the Appropriations Committee in opposition to the Governor's bill which included the provision that 25% of teachers' retirement would be contributed by the town. The Board of Selectman took action last night and decided to send this to the Governor. It was offered to us to vote on as a joint effort.

Motion: Mrs. Harriman-Stites moved that

Whereas the Newtown Board of Education understands the serious fiscal challenges facing the State of Connecticut;

Whereas Newtown residents pay the state substantial income and sales taxes, they also shoulder a heavy property tax burden, which is in part due to persistent underfunding of municipal aid by the state;

Whereas the Newtown Board of Education rejects the proposal to shift a portion of the "normal cost" of the Teachers' Retirement System ("TRS") onto Newtown residents;

Whereas the state offers no assurances it will faithfully make its required contributions and thus the diversion Newtown property taxes to the TRS cannot guarantee its solvency;

Whereas the proposal as made, stands to divert Newtown property tax dollars to the TRS well in excess of 25% of the "normal" cost associated with teacher salaries due to a significant penalty for the amount Newtown pays above the median;

Whereas the proposal misses the important fact that teacher's salaries are largely determined by the bargaining climate in the state, salaries in surrounding towns, binding arbitration and cost of living - influences that are beyond the control of the local districts, making the penalty seem arbitrary;

Whereas Governor Lamont appeared to state that he will not seek immediate pension reforms to make the system sustainable but would do so at some point in the future;
Whereas addressing revenue without reform is problematic and adds to the concern that the proposal will place an uncontrollable expense to our local budget;

Let it be resolved that The Newtown Board of Education cannot support assuming an open-ended obligation for which the town does not have a role in negotiating the benefit structure nor managing the investment outcome. It is the position of the Newtown Board of Education that the TRS proposal as it stands will negatively impact education and other municipal services. Local budgets are subject to annual referenda and there is only so much taxpayers will support. Important local objectives would necessarily be reduced or eliminated to pay an invoice to the State of Connecticut that we have no control over.
Mrs. Leidlein seconded.

Mr. Clure asked if there was anything else we can be doing such as banding with other districts. He was glad we were doing something but doesn't think it's enough.
Mrs. Ku said other boards have also submitted statements.
Mr. Delia would have liked stronger language.
Mrs. Harriman-Stites also would prefer different language but understands the importance of having a united front.
Motion passes unanimously.

Item 10 – Public Participation

MOTION: Mrs. Harriman-Stites moved that the Board of Education go into executive session regarding security devices/surveillance and invited Dr. Rodrigue, Ron Bienkowski, Mark Pompano and Carmella Amodeo. Mrs. Leidlein seconded. Motion passes unanimously.

Item 11 – Executive Session

Executive session began at 9:37 p.m. and ended at 10:14 p.m.

Item 12 – Possible Action on Deployment of Security Devices/Surveillance

MOTION: Mrs. Harriman-Stites moved that the Board of Education approve the purchase and installation of the Verkata Cloud-based surveillance cameras in all seven Newtown schools through a five-year lease agreement with VAR Technology Finance. Mr. Delia seconded.
Motion passes unanimously.

MOTION: Mr. Vouros moved to adjourn. Mrs. Leidlein seconded. Motion passes unanimously.

Item 13 – Adjournment

The meeting adjourned at 10:16 p.m.

Respectfully submitted:

Michelle Embree Ku
Chair



31 Pecks Lane
Newtown, CT 06470
(203) 304 - 9778
Fax: (203) 304 - 9776

Principal Approval: Dana Manning

CHARTER BUS REQUEST

Person requesting: Tom Kuroski School: NHS

Class: Anatomy and Physiology Date of trip: May 24-25, 2019

Pickup time: 6:00 AM / PM Destination: Philadelphia PA

Address of destination: See itinerary

Leave time from destination: _____ AM / PM Snow/Rain date: NA

Teacher in charge of trip: Tom Kuroski

No. students: 50 No. staff: 5 No. parents (if applicable): NA

Do any students have special needs for transportation? Yes / No

If **yes**, what is required? (wheel chair, harness, etc): _____

If multiple students have special needs requirements, please list: _____

Party responsible for payment: Students

Contact person: Tom Kuroski Phone No.: 203-501-9711

If additional space required for listing, please include separate page

- A minimum of **two weeks** is needed to place a reservation. Please understand that availability of a date decreases the later you wait.
- Average capacity is 50 students per bus. Capacity decreases for older students and adult-sized passengers.
- Students with special needs requirements (wheel chair, harness) will require a Type II bus as full-size buses cannot accommodate.
- If trip is being paid through a grant, school is still **responsible for payment for service**.
- Please fax this request with all completed information. A confirmation will be faxed back to you with all costs.
- We reserve the right to have buses back in town for school dismissal schedule.
- Cancellation or postponement of a reserved trip requires a minimum of two hours' notice on a school day; one day prior if a weekend trip. Failure to notify may incur a cost for time bus ran.

NO BUS

**12th ANNUAL ANATOMY AND PHYSIOLOGY
OVERNIGHT FIELD TRIP TO PHILADELPHIA
VISITING;
THE FRANKLIN INSTITUTE OF SCIENCE
THE MUTTER MUSEUM,
& THE PHILADELPHIA ZOO**

MAY 24 & 25, 2019

To: Newtown Board of Education
From: Mr. Tom Kuroski
Date: April 1, 2019
Re: Anatomy and Physiology Overnight Field Trip to Philadelphia

I have finalized the 12th Annual Anatomy and Physiology Field Trip to visit The Franklin Institute of Science, The College of Physicians of Philadelphia Mutter Museum and the Philadelphia Zoo. I am always excited about this trip, as it will provide students with a unique opportunity to observe exhibits that are incredibly engaging and also linked directly to the curriculum they have learned during the year. This exciting learning experience will be further enhanced because it takes place in one of the most historically significant cities in the country, Philadelphia. I know that the agenda for the seniors during this time of year can be overwhelming, so I have chosen a date that does not interfere with any of their other activities or academic responsibilities. I have also worked very hard to keep the price of the trip reasonable because I know that the cost of everything is increasing. The cost this year will be \$150.00/Student.

*Please see attached Itinerary of the trip for additional information.

Thank you,



Mr. Tom Kuroski
Anatomy and Physiology
kuroskit@newtown.k12.ct.us

ITINERARY

DAY ONE

FRIDAY MAY 24, 2019

- 6:15-6:30am** **Depart Newtown High School via Deluxe Coach Bus.**
- 10:00am** **Arrive at the Mutter Museum at 19 South 22nd Street.**
- 10:15am** **Check in at the Mutter Museum**
1. 45 min. self-guided tour of museum with group
2. Tour the Medicinal Plant Garden located at the museum
3. Students can visit exhibits of individual interest
- 12:00pm** **Depart Mutter Museum and board bus**
- 12:30pm** **Arrive at The Redding Terminal Market at the corner of 12th and Arch. Eat lunch and visit local attractions, landmarks and shops.**
- 1:30pm** **Tour downtown Philadelphia and visit historical attractions and landmarks. (to be determined based on available time and locations)**
- 1:45pm** **Depart from Independence Visitors Center bus pick up area and leave for the Philadelphia Zoo**
- 2:00pm** **Arrive at the Philadelphia Zoo at 3400 W. Girard Avenue**
Depart between 4:30 – 5:00pm
- 5:15pm** **Visit Historic Philadelphia – Short walking tour of historical sites along the Delaware River. (to be determined based on available time and locations)**
- 6:30pm** **Depart Historic Philly and go to Hampton Inn. 8600 Bartram Ave.**
- 7:00pm** **Check in at the Hampton Inn.**
- 7:15pm** **Pizza Party Dinner in conference room at the Hotel.**



FIELD TRIP BUS REQUEST FORM

Teacher Making Request: Lisa Meyer Date: 4-23-19
 Other Staff Involved: not sure yet
 Date of Proposed Field Trip: 4/9 -> 4/17/20
 Class/Group Involved: U.S. History, Western Studies
 Number of Students Scheduled to Make Trip: 25±.
 Other Adults (non-teachers) Chaperoning the Trip (list names): _____

Destination: U.K. + France
 Place and Time of Departure: NHS - time to be determined
 Estimated Time of Return: to be determined
 Special Arrangements (i.e. stopping at a restaurant, picnic, etc.): 9 day tour through student travel company ACIS.

Estimated Cost of Transportation: Cost per student: _____
 Estimated Cost per Student: _____ \$3,994 includes everything on tour except for lunches
 _____ Approximately \$60 for bus transportation to and from airport
 _____ Approximately \$75 for tips for tour guide and bus driver

Other Information: But details will be provided at a later date once flight information is confirmed.

PRINCIPAL APPROVAL BY SIGNATURE: [Signature] DATE: 4/24/19
 OVERNIGHT/OUT-OF-STATE FIELD TRIP BOE APPROVAL: _____ DATE: _____

Billing Information

Bill to: _____

Pricing: _____ Hours @ _____ per hour = _____
 _____ Miles @ _____ per mile = _____
 Minimum Charge: _____
 Total Charge per Bus: _____

Confirmation

Information taken by: _____ Date Confirmed: _____
 Confirmed by: _____ Recorded in Book: _____



NEWTOWN HIGH SCHOOL

12 BERKSHIRE ROAD
SANDY HOOK, CT 06482
(203) 426-7646
FAX (203) 426-6573

April 24, 2019

Dear School Board Members,

April 9-17, 2020 I would like to bring a group of students and faculty from Newtown High School on a trip to the United Kingdom and France with ACIS (American Council for International Studies). I write asking for your approval. If approved, this will be my sixth BOE sponsored field trip to Europe since 2014, all coordinated through ACIS.

ACIS is the country's leading sponsor of educational tours. Its programs are fully insured, and its nationwide reputation is based on 35 years of experience with more than 500,000 student and adult travelers. They have a 24-hour, 365-day support network staffed by ACIS employees, both in the U.S. and overseas. They use only three- and four-star hotels in popular and safe areas and the best sources of local transportation.

Our group will have an ACIS Tour Manager who is a highly-trained, multi-lingual guide and educator. Our tour manager will not only explain what we are seeing, but how it came to be and why it matters. ACIS Tour Managers are renowned for bringing a unique perspective to their tours, combined with a love of teaching and an irresistible enthusiasm for the regions they describe. Our tour manager will serve as an accessible, authoritative source of information, helping students form a basis for exploration. His or her expertise will certainly enhance all that my colleagues and I have taught our students at home.

The nine day trip will include tours of London, Stonehenge, D-Day beaches, Caen, the Loire Valley, Chartres, Paris and Versailles. This tour will be an opportunity for our French language students to practice their skills and for all students to make connections to historically relevant concepts that were studied in Western Studies and U.S. History. This is a wonderful cross disciplinary opportunity for our students.

To date I have chaperoned students to Italy, Greece, Austria, The Czech Republic, and The U.K. and I am happy to say that all details, questions, and concerns that are to be expected with international travel have been addressed expertly by ACIS. I am confident in their integrity, financial security and commitment. The continued support of the Newtown Board of Education is what makes these types of travel trips so accessible to students and I ask you to approve this travel request for April 9-17, 2020. If you have any additional questions or concerns, please feel free to contact me at meyerl@newtown.k12.ct.us.

Sincerely,

Lisa Meyer
NHS Social Studies Department

London, Loire Valley and Paris

Apr 9 - Apr 17, 2020

Group Leader:

Lisa Meyer

Group ID:

223294

Depart From:

New York



what's included



Round-Trip Flights



Centrally Located Hotels

- ✓ London Tour with Guide
- ✓ St. Paul's Cathedral
- ✓ English Food Tasting Dinner
- ✓ Stonehenge
- ✓ Portsmouth-Caen Ferry
- ✓ Pointe du Hoc
- ✓ American Cemetery at Colleville-sur-Mer
- ✓ Arromanches 360 Degree Theater



Daily Breakfast and Dinner
(unless otherwise noted)



24-Hour Tour Manager

- ✓ Château de Chenonceau
- ✓ Château de Chambord
- ✓ Chartres Cathedral
- ✓ Paris Tour with Guide
- ✓ Louvre with Guide and Reservation
- ✓ Eiffel Tower Top Floor
- ✓ Versailles Château and Gardens
- ✓ Versailles Le Hameau and Petit Trianon
- ✓ Versailles by Bike

our promise

In educational travel, every moment matters. Pushing the experience from "good enough" to exceptional is what we do every day. Our mission is to empower educators to introduce their students to the world beyond the classroom and inspire the next generation of global citizens. *Travel changes lives.*

cultural connections



HIGHLIGHTS waiting to happen

English Food Tasting Dinner

Sample and learn the background to some of London's traditional dishes, including toad in the hole and fish and chips.

Versailles by Bike

Pedal along the Grand Canal and around Versailles' expansive grounds by bike.

"Our tour guide was phenomenal; he went above and beyond my expectations. His knowledge of the area and the history behind it was most impressive."

Matthew L. Participant



Trip Itinerary - 9 day

Apr 9, 2020: Overnight Flight

Depart from the USA.

Apr 10, 2020: London

Welcome to London! Meet your ACIS Tour Manager, relax, unpack and begin to explore the city's unique neighborhoods. Perhaps check out the street markets along Portobello Road in Notting Hill; explore the paths of Hyde Park or the mansions of nearby Belgravia; visit museums in South Kensington; or stroll along the artsy South Bank. (D)

Apr 11, 2020: London

This morning, learn about London's majestic past and fast-paced present on your guided sightseeing tour. See Trafalgar Square, the Houses of Parliament, Westminster Abbey and Buckingham Palace. Along the way, our guide will point out more landmark sites like the Gherkin, the Shard, and the Cheese Grater—all new buildings changing the London skyline. Another highlight of the day is a tour inside St. Paul's Cathedral. Sir Christopher Wren's architectural masterpiece is an enduring symbol of London, the seat of the Church of England and famed for its dome and Whispering Gallery. If you have time, your ticket includes access to climb to the top of the dome. Tonight an English food tasting dinner tells you the history of some of London's most traditional dishes, including toad in the hole and fish and chips, as you dine on them. It will also give you the fuel you need to perhaps go out for an evening stroll among the bright lights of Theatreland in the West End. (B,D)

Apr 12, 2020: Caen

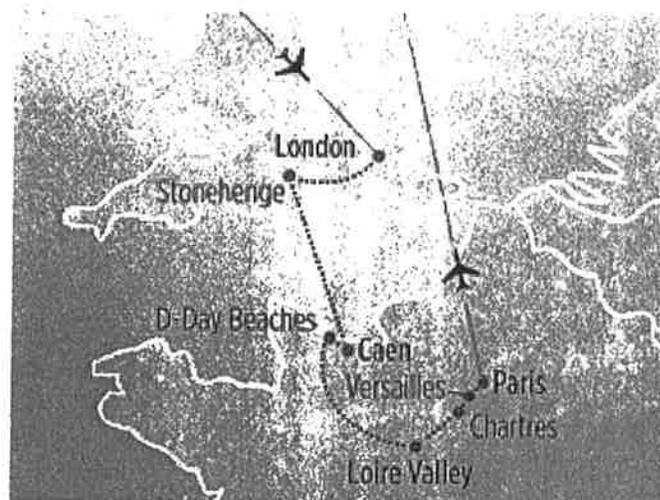
Visit mysterious, prehistoric Stonehenge before continuing to the seaside town of Portsmouth, where you board the ferry to France, portage included. After dinner aboard the ferry, drive to Caen for a night's rest. (B,D)

Apr 13, 2020: Loire Valley

Today walk in the footsteps of history as you visit many of Normandy's important World War II sites. See what remains of the temporary Mulberry harbor constructed at Arromanches to help offload cargo during the invasion. Entrance to the Arromanches 360 Cinema is included. Next you can pay tribute to the heroic fallen at the American Cemetery and Memorial at Colleville-sur-Mer before descending from the bluff to walk along Omaha Beach, where American troops suffered some of the heaviest D-Day losses. You might even be able to picture the chaos of June 6, 1944 at the bomb-scarred landscape of Pointe du Hoc. Continue to the Loire Valley for dinner. (B,D)

Apr 14, 2020: Paris

Today visit some of the most impressive châteaux in the Loire Valley. Your first stop is Chenonceau, a jewel of Renaissance architecture. It features a moat, drawbridge, towers and turrets—and great stories about resistance to the Nazi army. Next, drive to impressive Chambord, the giant hunting lodge of François I. Continue to Chartres to view the Gothic cathedral with its stained-



glass windows and veil of the Virgin Mary before arriving in Paris for dinner. (B,D)

Apr 15, 2020: Paris

Paris is known as the "City of Light" for its role as a center of education and culture during the Enlightenment and today's guided sightseeing tour shows you the majesty of the Arc de Triomphe, Les Invalides and Notre Dame. Later, explore the Louvre and discover the many famous masterpieces that call it home. See the Mona Lisa, the Winged Victory and the Venus de Milo as you wander through the galleries. From its beginnings as a royal fortress to its current status as the world's most visited art museum, the Louvre has long been at the center of Parisian culture and home to a collection of 35,000 works of art from around the world. Tonight, ascend to the top of the iconic Eiffel Tower for stunning views over the city. (B,D)

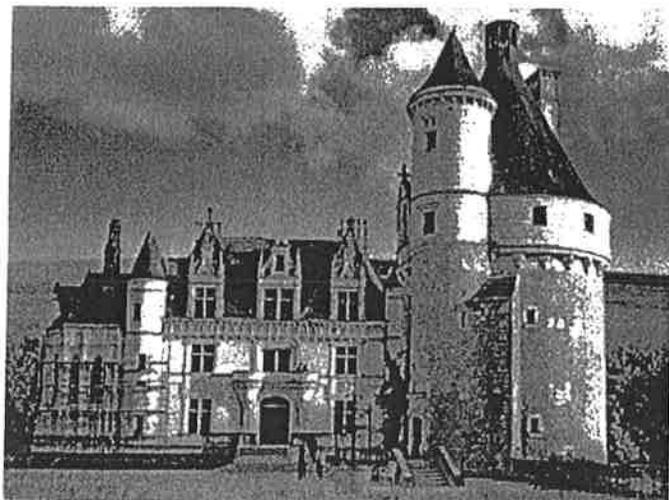
Apr 16, 2020: Paris

Enjoy a full-day excursion to Louis XIV's palace at Versailles. Your visit includes the Hall of Mirrors, where the Treaty of Versailles was signed, and Marie Antoinette's Hameau and Petit Trianon. These "small" cottages are delightful for their scale and grounds. After wandering about the exquisite and intensely manicured gardens on two feet, hop on two wheels and explore the palace's surroundings beyond the gardens on a Versailles by bike tour. Then return to Paris to enjoy your final evening abroad. Tonight you may choose to enjoy an optional dinner at Le Boeuf sur Le Toit, a famous restaurant that once served as the cultural hub of Parisian high society in the Roaring '20s and was known for its spirited intellectual gatherings of artists, musicians, writers and fashionistas. (B,D)

Apr 17, 2020: Departure

Depart for the USA. (B)

This is a preliminary itinerary for your group.



learning objectives

1. Students will reflect upon the U.S. role in World War II during their visit to the D-Day beaches.
2. Students will explore the historical links between France and England from medieval times to the present day.
3. Students will discover the similarities and differences of Gothic and English Baroque architecture through visits to Chartres Cathedral and St. Paul's Cathedral in London.

tour cost

Participant Fees

Program Fee	\$4154
Early Registration Discount	\$-100
Saver Date Incentive	\$-100
Weekend Surcharge	\$40

Total Participant Fees² \$3994

² Valid through 07/01/19 with \$200 deposit.

Additional Fees (as applicable)

Adult Surcharge	\$100
Single Room Supplement	\$665
Double Room Supplement	\$350
Ultimate Protection Plan	\$270
Comprehensive Protection Plan	\$225

notes from acis

- Save \$50 off your Total Participant Fees if you pay for your trip by E-Check or through our Automatic Payments Plan.
- All registered participants can enjoy the convenience, security and savings of having payments automatically withdrawn from a checking account by enrolling in an Automatic Payments plan. To learn more, visit www.acis.com/autopay
- Adult travelers age 21 and older should add in the Adult Surcharge and Double or Single Room Supplement to calculate their Total Participant Fees.
- This educational travel program is not school or district sponsored unless expressly stated by the Group Leader.

The **Most Recommended**
Educational Travel Company!



Don't just take our word for it! Read reviews online at
acis.com/LLP

NMS MEMORANDUM

To: Principal Tom Einhorn

Dr. Lorrie Rodrigue
Superintendent

From: Terri Greenfield

Date: April 8, 2019

Mr. Ianello would like to donate a Saxophone Case for our school, valued at \$500.00. It is in like-new condition and Mr. Ianello no longer has use for it and believes our students would benefit from using it.

We would like to accept this equipment if you would allow us to do so, and would like to thank Mr. Ianello for his generosity in contributing it to us.

Thank you,
Terri Greenfield

A handwritten signature in black ink, appearing to be 'TG' with a large loop and a long horizontal stroke extending to the right.



NEWTOWN PUBLIC SCHOOLS

Donation from
Lou Ianello

Ianello, Mr. <ianello@newtown.k12.ct.us>

Bari Sax Case Quote : Music & Arts Support Ticket #3-530924

1 message

Vito <service@info.musicarts.com>
Reply-To: Supportticket@musicarts.com
To: IANELLOL@newtown.k12.ct.us

Tue, Apr 2, 2019 at 10:55 AM

MUSIC & ARTS

Dear BAND,

See below for your requested quote.

Thanks!
Vito

Item	Quantity	Price	Subtotal
 <p>Jupiter Baritone sax case for JBS1100 Sku:1431354 Standard</p>	1	\$500.00 \$800.00	\$500.00
Total:		1	\$500.00

Add to Cart

The prices in this custom quote will expire on 5/2/2019 12:00:00 AM.
Custom quotes may not be combined with any other offer.
Due to manufacturer restrictions, a US shipping address may be required.
Quote Id: #984491

Vito Calamito
Music & Arts
201-221-9565

April 11, 2019

TO: Lorrie Rodrigue

FROM: Kimberly Longobucco

Please accept the donation of culinary utensils and supplies for an approximate value of \$272 to the Newtown Culinary Program from Lisa Lapante.

This is a thoughtful donation.

Thank you.

Lisa A. Laplante (Mrs. Birkmaier)
9 Fern Lane
Newtown, CT 06470-2620

attch

A handwritten signature in black ink, appearing to read "K Longobucco". The signature is written in a cursive style with a large initial "K" and a long, sweeping underline.



NEWTOWN PUBLIC SCHOOLS

Debrantes, Nathalie <debrantesn@newtown.k12.ct.us>

Fwd: More cooking toys

1 message

Hoagland, Lori <hoaglandl@newtown.k12.ct.us>
 To: Nathalie Debrantes <debrantesn@newtown.k12.ct.us>

Wed, Apr 10, 2019 at 4:16 PM

Here is the list of items with values for the things donated to culinary.
 Not sure who should get this to write a receipt.
 Never again.
 L

----- Forwarded message -----

From: <llaplant@tellurian.com>
 Date: Wed, Apr 10, 2019 at 3:33 PM
 Subject: RE: More cooking toys
 To: Hoagland, Lori <hoaglandl@newtown.k12.ct.us>

Finally getting around to this. Thanks for your patience. I found sale values for almost everything!

Donations to high school

Giant cupcake mold	Wilton	\$20	
Red party cups	Solo	\$5	
New pizelle press	Chef's Choice	\$50	
Bag of gourmet ginger	San Francisco Herb	\$5	
Bag of gourmet cloves	San Francisco Herb	\$12	
Electric wok - new in box	Dazey	\$90	on Ebay
Aire Oven Roaster	Galloping Gourmet	\$60	on Ebay
Steam pudding mold	Kaiser Backform	\$20	
Tons of cupcake liners		\$10	
	total	\$272	

Let me know if you need more information from me.

Amy LaRusso
19 Scodon Drive
Ridgefield, CT 06877

April 25, 2019

Dr. Lorrie Rodrigue, Superintendent
Newtown Public Schools
3 Primrose Street
Newtown, CT 06470

Dear Dr. Rodrigue,

Please accept this letter as official resignation from my position as second grade teacher at Head O'Meadow School. I will finish out the school year and my current contract. My last day as an employee of Newtown Public Schools will be June 30, 2019.

My family will be relocating to the Seattle area this summer as my husband has recently started a new job there.

I have thoroughly enjoyed my time as a teacher at Head O'Meadow and I am quite sad to be leaving such an amazing place. I've enjoyed working with the students and feel truly honored that I have had the opportunity to touch the lives of so many children. I've also enjoyed the collaboration among staff at HOM and the leadership under Tim Napolitano. HOM is truly a special school.

Please let me know if you need any additional information.

Best Regards,



Amy LaRusso

Cc: Tim Napolitano, Suzanne D'Eramo

Correspondence Report
04/09/2018 – 05/06/2019

Date	Name	Subject
4/10/19	John Prunier	Thank You

Facilities Update April 2019

Building and Site Maintenance Projects 5.7.19

April Break Activities (Fun week)

Hawley

- Gymnasium floor to be repaired, recoated and restriped. **COMPLETED**
- Air conditioning will be installed in the Multi-Purpose room, includes installation of four ductless splits. **COMPLETED**

Head O Meadow

- Fabric window treatments will be removed and replaced with roller shades, this is phase 1 of this project; approx. 1/3rd of building. **COMPLETED**

Reed

- Roller shades at Library Media Center will be replaced. **COMPLETED**

NMS

- Air conditioning will be installed in the cafeteria, includes air handler upgrade and installation of four ductless split units. **COMPLETED**

NHS

- Stairwell B-2, all walls, rails and doors to be repainted. This is the next stairwell slated to receive new stair treads, risers and landings. **COMPLETED**



ALL-STAR TRANSPORTATION

146 Huntingdon Avenue, Waterbury, CT 06708
203-573-0555 phone 203-573-9750 fax

April 29, 2019

Newtown Public Schools
Superintendent of Schools
3 Primrose Street
Newtown, CT 6470

Dear Loana,
Superintendent of Schools,

An opportunity has arisen for my family to sell our interests in All-Star Transportation to Student Transportation of America (STA). After much consideration, I felt this is best for our employees, our customers and our family. In doing so, Leslie, Richard and myself will remain in place in our current day to day operations. Little if any noticeable changes will occur.

We have prided ourselves over the years as a company that is committed to safety and maintenance which has ensured every student is transported to and from school daily using the safest means. STA is a larger company that will allow more resources for school bus safety to always be the forefront of our business. I have included an overview of their operations for you to review. I feel this is the best company to merge our company with and believe you will find them to be safety professionals.

Upon reviewing the current contract with your school district (see attached assignment language), I request that you assign our contract over to STA. Please let me know if you have any questions or if I may be of assistance in doing so. As previously stated, the Dufour family and our entire team of professionals will remain in place and look forward too many more years of service for your schools.

Sincerely,

John R. Dufour
President

Enc.

Below is page 32 of the All-Star Transportation contract. Please see Item #21.

to Section 18 of the Contract. The rights of the School Board under this paragraph shall not impede or limit the rights of the School Board pursuant to Section 18 of the Contract and shall be in addition thereto.

20. ACTS NOT IN CONTROL OF CONTRACTOR

The Contractor shall not be held responsible for any losses resulting if the fulfillment of the terms of the Contract shall be delayed or prevented by wars, acts of public enemies, fires, floods, acts of God, or for any other acts not within the control of the Contractor, and which by exercise of reasonable diligence it is unable to prevent, except for strikes or labor unrest.

21. NO ASSIGNMENT BY CONTRACTOR

It is mutually understood and agreed that the Contractor shall not assign, transfer, convey, sublet, or otherwise dispose of the Contract or its right, title, or interest herein, or its power to execute such Contract, or any part thereof to any person, company or corporation, **without the prior written consent of the Board.** A sale of stock in a corporation, a change in partners in a partnership, or a change in membership in a LLC, which results in a change in the controlling interest of the Contractor shall be an action that will be considered a contract assignment under this provision.

22. OTHER CONTRACTORS

It is the Board's desire and intention to award a contract to one Contractor. However, in order to meet the operating requirements of the Board, it is understood that the Contract in no way excludes the Board from using its own vehicles, drivers, aides, or services provided by other Boards. The Board may also use services from other contractors in the event that the Contractor cannot meet the Board's needs, or should the Board determine that another Contractor can provide an alternative vehicle that better meets the Board's needs. Additionally, the Board may utilize services provided by other contractors for special needs transportation, and for athletic and field trips.

23. NO WAIVER

No action or failure to act on the part of the Board to enforce its rights or remedies under the Contract shall constitute a waiver of any right or remedy to which the Board is entitled, nor shall such action or failure to act on the part of the Board waive any duty on the part of the Contractor to perform under the Contract nor shall such action or failure to act constitute approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

24. PROVISIONS OF LAW

Each and every provision of law and clause required by law to be inserted herein and the Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through a mistake or otherwise, any such provision is not



Collaboration

	Sep				Oct					Nov			Dec			Jan					Feb				Mar				Apr			May				Jun		
Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Understanding Place Value	[Bar]																																					
Addition	[Bar]																																					
Measurement and Data	[Bar]																																					
Subtraction	[Bar]																																					
Geometry	[Bar]																																					



Unit Planner: Understanding Place Value

Math Grade 2

District Elementary > 2018-2019 > Grade 2 > Mathematics > Math Grade 2 > Week 1
- Week 34

Last Updated: Today by Amy Hiruo

Understanding Place Value

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
System and Structure

Generalizations / Enduring Understandings

Strand 1: 2- and 3-Digit Numbers

Generalizations

Two- and Three-Digit numbers can be compared using place value.

Digits correspond to different values depending on their place in a number.

Concepts

- comparison
- number names
- base ten system

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual:

Which place in a three-digit number is the ones, tens, and hundreds?

What is the largest digit we can use when representing amounts in each place value?

Conceptual:

What is the relationship between place and value?

How does the value of a digit change when its position in a number changes?

What does zero represent in a number?

Why is it important to compare numbers?

Provocative:

Is understanding place value important? Explain.

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 2

Number & Operations in Base Ten

2.NBT.A. Understand place value.

2.NBT.A.1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

2.NBT.A.1a. 100 can be thought of as a bundle of ten tens — called a "hundred."

2.NBT.A.1b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

2.NBT.A.2. Count within 1000; skip-count by 5s, 10s, and 100s.

2.NBT.A.3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

2.NBT.A.4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$,

=, and < symbols to record the results of comparisons.

Mathematical Practice

MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

MP.1. Make sense of problems and persevere in solving them.

MP.2. Reason abstractly and quantitatively.

MP.3. Construct viable arguments and critique the reasoning of others.

MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.

MP.6. Attend to precision.

MP.7. Look for and make use of structure.

MP.8. Look for and express regularity in repeated reasoning.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will be able to:

- read and write two-digit numbers
- compare and order two-digit numbers
- identify the position of two-digit numbers on a number line
- identify the multiples of ten on a number line
- compare two-digit numbers on a number line
- read and write three-digit numbers
- represent three-digit numbers with teens and zeros
- write three-digit numbers in expanded form
- identify three-digit numbers on a number line
- compare three-digit numbers on a number line

Critical Content & Skills

*What students must **KNOW** and be able to **DO***

- **Quantities up to 999 will be represented using multiple models including grouping, pictures, words, number line locations, base ten blocks, symbols.**
- **Concrete models, drawings, and place value strategies can be used to compare numbers**

Core Learning Activities

Quantities up to 999 will be represented using multiple models including grouping, pictures, words, number line locations, base ten blocks, symbols.

- use base ten blocks to represent numbers
- use two-digit and three-digit numeral expander
- use place value cards

up to 999 in a variety of ways.

- use number lines
- use word bank cards or word wall

Concrete models, drawings, and place value strategies can be used to compare numbers up to 999 in a variety of ways.

- use base ten blocks
- use number lines
- use place value cards

Assessments

[2M1.1.pdf](#)

[2M1.2.pdf](#)

[2.M1.PT.pdf](#)

[2.M1.PT Rubric.pdf](#)

[2M2.1.pdf](#)

[2M2.2.pdf](#)

[2M2.PT.pdf](#)

[2M2.PT Rubric.pdf](#)

[2M3.1.pdf](#)

[2M3.2.pdf](#)

[2M3.PT.pdf](#)

[2M3.PT Rubric.pdf](#)

Resources

Professional & Student

Professional and Student

Student Resources:

Stepping Stones Student Journal

Stepping Stones Number Case materials: number track, number expanders, hundred chart

Stepping Stones big book [Jumping Jacks](#)

Stepping Stones pre-test, check-ups, performance tasks, observations and discussions found in the assessment tab of each module

On-line adaptive math practice: Freckle Education

Professional Resources:

Stepping Stones On-line Lesson Resources

Stepping Stones Math Ed Videos (within each module, select mathematics, then focus for available videos including some model lessons):

- Module 1 (RPV1) *Place Value: 20-99*,
- Module 3 (RTN3) *Teaching Number: Relative Position*, (CNL1) *An Introduction to Using Number Lines*,

Student Learning Expectation & 21st Century Skills

[Information Literacy](#)

[Critical Thinking](#)

[Spoken Communication](#)

[Written Performance](#)

Interdisciplinary Connections

Stepping Stones

- Word search (Language Arts module 1)
- Quipu (Social Studies game module 3)
- Three digit-pictures (Music and the Arts module 3)

Calendar (days in school)





Unit Planner: Addition Math Grade 2

District Elementary > 2018-2019 > Grade 2 > Mathematics > Math Grade 2 > Week 4
- Week 30

Last Updated: Today by Amy Hiruo

Addition

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
Patterns and Equality

Generalizations / Enduring Understandings

Strand 1: Fluency Strategies for Addition Generalizations

Strategies assist in the recall of addition facts.

Concepts

- strategies
- addition facts

Strand 2: Place Value Strategies for Addition Generalizations

Two- and three-digit numbers can be added using place value.

Concepts

- place value
- two-digit and three-digit numbers
- addition
- commutative property
- associative property

Strand 3: Multiplication Generalizations

Numbers can be multiplied using repeated addition.

Concepts

- repeated addition
- equal groups

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual

What are the different parts of an addition equation?
What is an array?

Conceptual

How does repeated addition relate to multiplication?
What strategies will help add numbers quickly and accurately?
Can we change the order of numbers when we add? Why or why not?
Why is it important to know and use multiple strategies for solving addition equations?
How can different combinations of numbers be used to represent the same quantity?

Provocative

Is there one addition strategy that is most efficient? Explain.
Does using ten as a benchmark help us add more efficiently? Why or why not?

Standard(s)

Connecticut Core Standards / Content Standards

Operations & Algebraic Thinking

2.OA.A. Represent and solve problems involving addition and subtraction.

2.OA.A.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

2.OA.B. Add and subtract within 20.

2.OA.B.2. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

2.OA.C. Work with equal groups of objects to gain foundations for multiplication.

2.OA.C.3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

2.OA.C.4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Number & Operations in Base Ten

2.NBT.B. Use place value understanding and properties of operations to add and subtract.

2.NBT.B.5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

2.NBT.B.6. Add up to four two-digit numbers using strategies based on place value and properties of operations.

2.NBT.B.7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

2.NBT.B.8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

2.NBT.B.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.

Measurement & Data

2.MD.B. Relate addition and subtraction to length.

2.MD.B.5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

2.MD.B.6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

MP.1. Make sense of problems and persevere in solving them.

MP.2. Reason abstractly and quantitatively.

MP.3. Construct viable arguments and critique the reasoning of others.

MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.

MP.6. Attend to precision.

MP.7. Look for and make use of structure.

MP.8. Look for and express regularity in repeated reasoning.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will be able to:

- fluently recall addition facts to 20
- use the commutative property of addition
- use the associative property of addition
- add using doubles strategy
- add one-digit and two-digit numbers
- add two-digit and three-digit numbers
- add two or three one-digit numbers to make ten
- add two-digit numbers using hundred chart and number line
- add two-digit numbers bridging tens and hundreds on a number line
- use base ten blocks to compose three-digit numbers
- use estimating to solve words problems
- skip count by fives and tens
- use repeated addition to add jumps of two and five
- describe equal groups and arrays
- use repeated addition to add equal groups and rows

Critical Content & Skills

*What students must **KNOW** and be able to **DO***

- **Use a variety of strategies to increase fluency when adding numbers, including counting-on, using doubles and making tens.**
- **Use properties of addition to add two and three-digit numbers including: Associative Property (adding numbers in any order yields the same total) and Commutative Property (when adding two numbers, the order can be reversed i.e. turn around facts and fact families).**
- **Compose/decompose tens and hundreds to**

Core Learning Activities

Use a variety of strategies to increase fluency when adding numbers, including counting-on, using doubles and making tens.

- use number cubes to write addition facts
- play addition war with cards
- use flashcards

Use properties of addition to add two and three-digit numbers including: Associative Property (adding numbers in any order yields the same total) and Commutative Property (when adding two numbers, the order can be reversed i.e. turn around facts and

add two and three digit numbers with a variety of models.

- Use repeated addition to solve basic multiplication equations.

fact families).

- use cubes for count-on games
- use coat hanger with clothes pins to demonstrate commutative property
- use number cards to demonstrate how order of addends produces the same total

Compose/decompose tens and hundreds to add two- and three-digit numbers using a variety of models including:

- add using hundred chart
- add using number line
- add using base ten blocks

Use repeated addition to solve basic multiplication equations.

- draw pictures (groups of, arrays)
- play grouping games (circles and stars)

Assessments

[2M1.1.pdf](#)
[2M1.2.pdf](#)
[2.M1.PT.pdf](#)
[2.M1.PT Rubric.pdf](#)
[2M2.1.pdf](#)
[2M3.1.pdf](#)
[2M5.2.pdf](#)
[2M5.PT.pdf](#)
[2M5.PT Rubric.pdf](#)
[2M6.1.pdf](#)
[2M6.2.pdf](#)
[2M6.PT.pdf](#)
[2M6.PT Rubric.pdf](#)
[2M9.1.pdf](#)
[2M9. PT.pdf](#)
[2M9. PT Rubric.pdf](#)
[2M11.1.pdf](#)
[2M11. PT.pdf](#)
[2M11. PT Rubric.pdf](#)

Resources

Professional & Student
Professional & Student
Student Resources:

- Stepping Stones Student Journal
- Stepping Stones Number Case
- materials:
 - number track
 - number lines
 - number expanders
 - hundred chart
 - Stepping Stones big books - [Bears on Buses](#) (lesson 1.9 & 1.12), [The Space Party](#) (lesson 11.2 & 11.3), [The Big Bug Band](#) (lesson 11.4 & 11.5)

Professional Resource:

- Stepping Stones pre-test, check-ups, performance tasks, observations and discussions found in the assessment tab of each module

district-approved websites and apps as appropriate including: Freckle Education on-line adaptive math practice,

Stepping Stones Math Ed Videos

- (RLSA) *Using Language Stages to Develop Addition Concepts*

- (BAMS)Using Mental Strategies to Add
- (BMSQ) Questions for Developing Mental Computation Strategies
- (BMSA)Comparing Mental Strategies: Addition
- (BAMS)Using Mental Strategies to Add
- (BMSA)Comparing Mental Strategies: Addition
- (BAMS)Using Mental Strategies to Add
- (BMSA)Comparing Mental Strategies: Addition
- (CAS1) Teaching the Count-on Strategy for Addition Number Facts,
- (CAS2) Teaching the Use Doubles Strategy for Addition Number Facts
- (CAS3)Teaching the Bridge-to-Ten Strategy for Addition Number Facts
- (SSS3) Powerful Models to Help Struggling Students: Number Lines
- (SSS2) Powerful Strategies to Help Struggling Students Bridge to Ten
- (SSS3) Powerful Models to Help Struggling Students: Number Lines
- (BPHB) Analyzing Patterns (Skip Counting) on a Hundred Board
- (BHO3) Using Hands-on Approach to Develop Mental Strategies for Addition
- (CLSM) Using Language Stages to Develop Multiplication Concepts

Math Glossary from CCSS (see

www.corestandards.org/Math/Con..._attachments

[Mathematics Glossary Common Core State Standards Initiative.pdf](#)

[Mathematics Glossary » Table 1 Common Core State Standards Initiative.pdf](#)

[Mathematics Glossary » Table 2 Common Core State Standards Initiative.pdf](#)

[Mathematics Glossary » Table 3 Common Core State Standards Initiative.pdf](#)

[Mathematics Glossary » Table 4 Common Core State Standards Initiative.pdf](#)

[Mathematics Glossary » Table 5 Common Core State Standards Initiative.pdf](#)

Student Learning Expectation & 21st Century Skills

[Information Literacy](#)

[Critical Thinking](#)

[Spoken Communication](#)

[Written Performance](#)

Interdisciplinary Connections

- Subtraction Play (Sports and Rec) (Module 5)
- Calculator Counting (Technology) (Module 5)
- Throw and Add (Sports and Rec) (Module 6)
- Composing Collage (Music and Arts) Module 11)



Atlas Version 9.3.6

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Unit Planner: Measurement and Data

Math Grade 2

District Elementary > 2018-2019 > Grade 2 > Mathematics > Math Grade 2 > Week 5
- Week 37

Last Updated: Today by Amy Hiruo

Measurement and Data

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
Process and Communication

Generalizations / Enduring Understandings

Strand 1: Time **Generalization**

Clocks measure time.

Concepts

Time
Clocks
Sequence events

Strand 2: Standard and Non-Standard Measurement **Generalization**

Comparisons are made using standard and non-standard units of measure.

Concepts

units of measure
length

Strand 3: Data **Generalization**

Charts and graphs represent data.

Concepts

Data
Charts/Graphs

Strand 4: Money **Generalization**

Money measures value.

Concepts

Currency
Value
Trade

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual:

What does the hour/minute hand on a clock tell us?
How many minutes are in an hour?
What does a.m. and p.m. mean? When does a.m. turn to p.m.?
How many inches are in a foot?
What are the parts of a graph?
What are the names of the four coins? What is the value of each?

Conceptual:

How can skip counting help you tell time?
What is the appropriate unit of measurement for this item? Explain.
How does knowing the difference between a.m. and p.m. help us?
What different ways can data be displayed?
How can a different number of coins and combinations equal the same value?

Provocative:

What would happen if we didn't have a.m. and p.m.?
Do graphs make numbers and data easier to understand? Why or why not?
Is it better to have more or fewer coins to represent the same value? Explain.

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 2

Measurement & Data

2.MD.A. Measure and estimate lengths in standard units.

2.MD.A.1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

2.MD.A.2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

2.MD.A.3. Estimate lengths using units of inches, feet, centimeters, and meters.

2.MD.A.4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

2.MD.C. Work with time and money.

2.MD.C.7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

2.MD.C.8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

2.MD.D. Represent and interpret data.

2.MD.D.9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

2.MD.D.10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems¹ using information presented in a bar graph.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

MP.1. Make sense of problems and persevere in solving them.

MP.2. Reason abstractly and quantitatively.

MP.3. Construct viable arguments and critique the reasoning of others.

MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.

MP.6. Attend to precision.

MP.7. Look for and make use of structure.

MP.8. Look for and express regularity in repeated reasoning.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will be able to:

- identify five minute intervals and quarter past the hour
- identify and record time using a.m. and p.m.
- work with customary units using inches, feet, and yards
- work with metric units using centimeters and meters
- select appropriate tools to measure a given length
- identify picture graphs, bar graphs, and line plots
- identify coins and amounts of money
- solve word problems using money

Critical Content & Skills

What students must KNOW and be able to DO

- **Tell time to the hour and half hour using analog and digital clocks.**
- **Tell and write time using five minute intervals using analog and digital clocks.**
- **Measure lengths using standard measurements (inches, feet, yards, centimeters, and meters).**
- **Create, describe, and interpret picture graphs, bar graph and line plots.**
- **Identify and count combinations of coins.**
- **Solve money word problems involving addition and subtraction of coins.**

Core Learning Activities

Tell time to the hour and half hour using analog and digital clocks.

Tell and write time using five minute intervals using analog and digital clocks.

- match analog and digital times
- identify five minute intervals on analog clocks
- write time separating hours and minutes using a colon
- identify a.m. and p.m.

Measure lengths using standard measurements (inches, feet, yards, centimeters, and meters).

- use rulers, yard, and meter sticks to measure various lengths

Create, describe, and interpret picture graphs, bar graph and line plots.

- collect data
- use data to create picture graph and bar graph
- interpret data to solve simple addition and subtraction problems

Identify and count combinations of coins. Solve money word problems involving addition and subtraction of coins.

- use coins to match different values
- identify different combination of coins for a specific value
- solve word problems using the dollar and cent symbols appropriately

Assessments

[2M2.2.pdf](#)
[2M4.1.pdf](#)
[2M4.2.pdf](#)
[2M6.2.pdf](#)
[2M8.2.pdf](#)
[2M9.2.pdf](#)
[2M11.1.pdf](#)

Resources

Professional & Student
 Professional & Student
Student Resources:

- Stepping Stones Student Journal
- Stepping Stones Number Case

2M11.2.pdf

- materials:
 - Clocks
 - coins
 - play money
 - variety of classroom objects to measure
 - metric & customary rulers
 - string
 - Stepping Stones big books - Clowning Around (lesson 6.11), The Tiny Town Train (lesson 8.9)

Professional Resources:

- Stepping Stones pre-test, check-ups, performance tasks, observations and discussions found in the assessment tab of each module

district-approved websites and apps as appropriate including: Freckle Education on-line adaptive math practice

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

- The Clock Struck One (LA) (Module 2) by Trudy Harris
- Color Clock Wheel (Art) (Module 2)
- Measure plant height (Science) (Module 4)
- Word Search (ELA) (Module 4)
- Word Search (ELA) (Module 9)
- Alexander, Who Used to be Rich Last Sunday by Judith Viorst (Module 11)
- Word Search (ELA) (Module 12)



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Unit Planner: Subtraction

Math Grade 2

District Elementary > 2018-2019 > Grade 2 > Mathematics > Math Grade 2 > Week 13 - Week 28

Last Updated: Today by Amy Hiruo

Subtraction

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
Patterns and Equality

Generalizations / Enduring Understandings

Strand 1: Fluency Strategies for Subtraction Generalizations

Subtraction relates to addition.
Strategies assist in the recall of subtraction facts.

Concepts
strategies
part-part-total
subtraction facts

Strand 2: Place Value Strategies for Subtraction Generalizations

Two- and three-digit numbers can be subtracted using place value.
A number can be represented in different ways.

Concepts
compose
decompose
addition
subtraction
comparison

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual:

What are the parts of a subtraction problem?
What is a fact family?
What does it mean to compose and decompose a number?

Conceptual:

How can addition help us know we subtracted correctly?
When would you use subtraction?
How can different strategies help you subtract?
How can you compare the value of two or more numbers?

Provocative:

How do you know if a problem is about addition or subtraction? Explain.
Are some strategies more efficient than others? Explain.

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 2

Operations & Algebraic Thinking

2.OA.A. Represent and solve problems involving addition and subtraction.

2.OA.A.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

2.OA.B. Add and subtract within 20.

2.OA.B.2. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Number & Operations in Base Ten

2.NBT.B. Use place value understanding and properties of operations to add and subtract.

2.NBT.B.5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

2.NBT.B.6. Add up to four two-digit numbers using strategies based on place value and properties of operations.

2.NBT.B.7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

2.NBT.B.8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

2.NBT.B.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.

Measurement & Data

2.MD.B. Relate addition and subtraction to length.

2.MD.B.5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

2.MD.B.6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Mathematical Practice

MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

MP.1. Make sense of problems and persevere in solving them.

MP.2. Reason abstractly and quantitatively.

MP.3. Construct viable arguments and critique the reasoning of others.

MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.

MP.6. Attend to precision.

MP.7. Look for and make use of structure.

MP.8. Look for and express regularity in repeated reasoning.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will be able to:

- write addition and subtraction fact families
- fluently recall subtraction facts to 20
- use multiple strategies to solve subtraction problems (think addition, count back, doubles, make ten, count on)
- use two-digit numbers to solve subtraction problems
- use number lines and base ten blocks to solve subtraction problems
- compose and decompose two and three-digit numbers when solving subtraction problems
- Use estimation to solve subtraction word problems

Critical Content & Skills

*What students must **KNOW**
and be able to **DO***

- **Use various strategies and models to subtract two and three-digit numbers.**
- **Compose and decompose tens and hundreds when subtracting.**
- **Relate addition and subtraction.**

Core Learning Activities

Use various strategies and models to subtract two and three-digit numbers.

- subtract using hundreds chart
- subtract using number lines
- subtract using base ten blocks

Compose and decompose tens and hundreds when subtracting.

- combine and break apart tens and ones using base ten blocks
- use benchmark numbers on number line
- count on or back by tens and ones using hundred chart

Relate addition and subtraction.

- practice facts using flash cards
- play games to reinforce facts
- use ten frames to add and subtract

Assessments

[2M4.1.pdf](#)
[2M4.2.pdf](#)
[2M4. PT.pdf](#)
[2M4. PT Rubric.pdf](#)
[2M5.2.pdf](#)
[2M5.1.pdf](#)
[2M7.1.pdf](#)
[2M7. PT.pdf](#)
[2M7. PT Rubric.pdf](#)

Resources

Professional & Student
Professional & Student

Student Resources:

- Stepping Stones Student Journal
- Stepping Stones Number Case materials
 - number track

[2M8.1.pdf](#)
[2M8. PT.pdf](#)
[2M8. PT Rubric.pdf](#)
[2M10.1.pdf](#)
[2M10.2.pdf](#)
[2M10. PT.pdf](#)
[2M10. PT Rubric.pdf](#)

- number lines
- number expanders
- hundred chart
- freckle
- Stepping Stone Big Books - [Bears on Buses](#) (lesson 4.1), [Our Sister's Surprise](#) (lesson 4.3), [Joe's Carrots](#), [The Fun Machines](#)

Professional Resource:

- Stepping Stones pre-test, check-ups and performance tasks, observations and discussions found in the assessment tab of each module

district-approved websites and apps as appropriate including

Stepping Stones Math Ed Videos:

- (CLSS) *Using Language Stages to Develop Subtraction Concepts*
- (CSFS) *Teaching the Think Addition Strategy for Subtraction Number Fact(Skip Counting) on a Hundred Board*
- (BHO3) *Using Hands-on Approach to Develop Mental Strategies for Addition*
- (BHO4) *Using a Hands-on Approach to Develop Mental Strategies for Subtraction*
- (SSS3) *Powerful Models to Help Struggling Students: Number Lines*
- (DNL3) *Using Partial and Empty Number Lines to Add and Subtract*

Math Glossary from CCSS (see www.corestandards.org/Math/Con... attachments [Mathematics Glossary Common Core State Standards Initiative.pdf](#) [Mathematics Glossary » Table 1 Common Core State Standards Initiative.pdf](#) [Mathematics Glossary » Table 2 Common Core State Standards Initiative.pdf](#) [Mathematics Glossary » Table 3 Common Core State Standards Initiative.pdf](#))

Student Learning
Expectation & 21st
Century Skills
[Information Literacy](#)
[Critical Thinking](#)
[Spoken Communication](#)
[Written Performance](#)

Interdisciplinary Connections

- Subtraction Play (Sports & Recreation) (Module 5)
- [The Doorbell Rang](#) by Pat Hutchins (LA)



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Unit Planner: Geometry

Math Grade 2

District Elementary > 2018-2019 > Grade 2 > Mathematics > Math Grade 2 > Week 20 - Week 34

Last Updated: Today by Amy Hiruo

Geometry

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
Structure and Spatial Relations

Generalizations / Enduring Understandings

Strand 1: 2D Shapes/3D Shapes

Generalizations

Attributes define 2D and 3D shapes. Combinations of shapes create composite shapes.

Concepts

Attributes

Classification

Two-dimensional

Three-dimensional

Strand 2: Fractions

Generalizations

Fractions represent equal parts.

Concepts

Equal parts

Fraction

Strand 3: Area

Generalizations

Shapes can be partitioned into equal size parts.

Concepts

Equal parts

Area

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual:

What is a polygon?

What is a polyhedron?

What is a face, vertex, and edge?

Conceptual:

Where can we find geometric shapes in the world around us?

How do we apply the use of fractions in everyday life?

How can you represent the same fraction in different ways?

How is area used in our world?

Provocative:

Is there only one way to divide a polygon into fractional pieces? Explain.

Does the area of a shape matter? Explain.

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 2

Geometry

2.G.A. Reason with shapes and their attributes.

2.G.A.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of

them.

2.G.A.3 Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Mathematical Practice

MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

MP.1. Make sense of problems and persevere in solving them.

MP.2. Reason abstractly and quantitatively.

MP.3. Construct viable arguments and critique the reasoning of others.

MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.

MP.6. Attend to precision.

MP.7. Look for and make use of structure.

MP.8. Look for and express regularity in repeated reasoning.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

- identify and draw different polygons by comparing their attributes
- identify polyhedrons by their different attributes
- identify and model one-half, one-fourth, and one-third
- identify area by counting unit squares

Critical Content & Skills

*What students must **KNOW** and be able to **DO***

- **Name attributes of polygons and be able to draw them.**
- **Identify the faces, vertices, and edges on different polyhedrons.**
- **Recognize and divide polygons into one-half, one-fourth, and one-third.**
- **Count square units to determine the area of a shape.**

Core Learning Activities

Name attributes of polygons and be able to draw them.

- use manipulatives as a concrete model (pattern blocks, shape cards, objects in classroom)
- sort and compare shapes
- build polygons using geoboards and elastic bands

Identify the faces, vertices, and edges on different polyhedrons.

- find various 3D shapes in classroom
- use geometric solids (3D shapes) to identify faces, vertices and edges
- create shapes using toothpicks and marshmallows

Recognize and divide polygons into one-half, one-fourth, and one-third.

- cut shapes into halves and fourths
- fold paper to create fractions

Count square units to determine the area of a shape.

- use grid paper to construct shapes and determine their area
- build rectangles with one inch tiles and determine their area

Assessments

- [2M7.2.pdf](#)
- [2M11.2.pdf](#)
- [2M12.1.pdf](#)
- [2M12.2.pdf](#)
- [2M12. PT.pdf](#)
- [2M12. PT Rubric.pdf](#)

Resources

Professional & Student

Professional and Student

Student Resources:

Stepping Stones Student Journal
Stepping Stones Number Case materials: 3d Shape Sets, Pattern Blocks

Stepping Stones big books: The Muddy, Muddy, Mess, Pieces and Parts

Stepping Stones pre-test, check-ups, performance tasks, observations and discussions found in the assessment tab of each module

On-line adaptive math practice: Freckle Education

Professional Resource:

Stepping Stones On-line Lesson Resources

Stepping Stones Math Ed Videos (within each module, select mathematics, then focus for available videos including some model lessons):

- Module 12:
 - (DTF1) *Naming Fractions*
 - (DTF2) *Interpreting Fractions*
 - (DFM1) *An Introduction to Fraction Models*
 - (DFM2) *Analyzing the Set Model of Fractions*
 - (DFM3) *Analyzing the Area Model of Fractions*
 - (DFM4) *Analyzing the Length Model of Fractions*

Student Learning Expectation & 21st Century Skills

Information Literacy

Critical Thinking

Spoken Communication

Written Performance

Interdisciplinary Connections

Stepping Stones

- Number of sides (Sports and Rec) (Module 7)
- Division Run (Sports and Rec) (Module 12)
- Word Search (Language Arts) (Module 12)
- Use centimeter grid paper to create a robot using polygons and calculating area of robot (Art)



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Collaboration

	Sep				Oct					Nov			Dec			Jan					Feb				Mar				Apr			May					Jun	
Unit:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Understanding Place Value	☑																																					
Multiplication and Division	☑																																					
Geometry	☑																																					
Addition and Subtraction	☑																																					
Measurement and Data	☑																																					
Fractions	☑																																					



Unit Planner: Understanding Place Value Math Grade 3

District Elementary > 2018-2019 > Grade 3 > Mathematics > Math Grade 3 > Week 1
- Week 32

Last Updated: Today by Amy Hiruo

Understanding Place Value

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

[Unit Web Template \(Optional\)](#)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
System and Structure

Generalizations / Enduring Understandings

Strand 1: 3-, 4-, and 5-Digit Numbers

Generalizations

Three-, Four- and Five-digit numbers can be compared using place value.

Digits correspond to different values depending on their place in a number.

Concepts

- comparison
- number names
- base ten
- rounding

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual:

What is the value of each number in a three, four, and five digit number?

Conceptual:

What is place value?

How can three-, four-, and five-digit numbers be compared using place value?

How are the values of digits determined?

Provocative:

Does rounding help you compare three, four, or five digit numbers? How?

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 3

Number & Operations in Base Ten

3.NBT.A. Use place value understanding and properties of operations to perform multi-digit arithmetic.

3.NBT.A.1. Use place value understanding to round whole numbers to the nearest 10 or 100.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

MP.1. Make sense of problems and persevere in solving them.

MP.2. Reason abstractly and quantitatively.

MP.3. Construct viable arguments and critique the reasoning of others.

MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.

MP.6. Attend to precision.

MP.7. Look for and make use of structure.

MP.8. Look for and express regularity in repeated reasoning.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

- Represent three, four, and five digit numbers in models, words, numerals, and expanded form
- Identify and locate three, four, and five digit numbers on a number line
- Compare and order three, four, and five digit numbers
- Round three, four, and five digit numbers

Critical Content & Skills

What students must KNOW and be able to DO

- **Identify the position of a three, four, and five-digit numbers on a number line.**
- **Represent numbers up to 99,999 in a variety of ways.**
- **Compare and order three three, four, and five-digit numbers.**
- **Round numbers to the nearest ten, hundred, thousand, and/or ten thousand.**

Core Learning Activities

Identify the position of a three, four, and five-digit number on a number line.

- use number lines to locate numbers

Represent numbers up to 99,999 in a variety of ways.

- use base ten blocks
- use base ten picture cards
- use three, four, and five-digit numeral expander

Compare and order three three, four, and five-digit numbers.

- use three, four, and five digit mix and match cards
- use clothespins marked with multiples of one hundred up to nine hundred to be attached to rope to make a large scale classroom number line
- create a "human" number line using numeral cards

Round up to five-digit numbers to the nearest ten, hundred, and/or thousand.

- use number lines to locate benchmark numbers

Assessments

Summative: Other written assessments

[3m3PT and Rubric.pdf](#)

[3M3.2.pdf](#)

[3m11.1.pdf](#)

Resources

Professional & Student

Professional and Student

Student Resources

Stepping Stones Student Journal

Stepping Stones Number Case

Stepping Stones Fundamentals Games: Going Great, Make the Greatest, High Score, Near-A-Hundred and Near-A-Ten

Stepping Stones Pretest, Check-ups, and Performance Tasks are found in the assessment tab of each module

District approved websites and apps as needed

Professional Resources

Stepping Stones Online Resources

Stepping Stones Math Ed Videos (within each module, select mathematics, then focus for available videos including some model lessons):

- Module 3:CNL 1 Introduction to Number Lines

Student Learning Expectation & 21st Century Skills

[Information Literacy](#)

[Critical Thinking](#)

[Spoken Communication](#)

[Written Performance](#)

Interdisciplinary Connections

Stepping Stones: (More math ---> Cross-curricula links)

- Number Movers (Module 1): sports and recreation activity
- The Game of Panda (Module 1): social studies
- Game Maker (Module 3): technology
- Ancient Greek Dust Board (Module 11): social studies
- More Money (Module 11): sports and recreation



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Unit Planner: Multiplication and Division

Math Grade 3

District Elementary > 2018-2019 > Grade 3 > Mathematics > Math Grade 3 > Week 3
- Week 38

Last Updated: Today by Amy Hiruo

Multiplication and Division

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
Patterns

Generalizations / Enduring Understandings

Strand 1: Fluency Strategies for Multiplication Generalizations

Strategies assist in the recall of multiplication facts.

Concepts

- Strategies
- Multiplication facts

Strand 2: Order of Operations Generalizations

Properties of operations facilitate multiplication and division.

Concepts

- strategies
- multiplication
- division
- Distributive Property
- Associative Property
- Commutative Property

Strand 3: Connecting Multiplication and Division Generalizations

Division relates to multiplication.

Strategies assist in the recall of division facts.

Concepts

- strategies
- fact families

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual:

- What is the symbol for multiplication?
- What are the symbols for division?
- What is a fact family for multiplication and division?

Conceptual:

- What is multiplication?
- What is division?
- What are the multiplication strategies?
- What are the division strategies?
- How are repeated addition and multiplication related?
- How are repeated subtraction and division related?
- How are multiplication and division related?
- Does the order matter when solving a multi-operational problem?
- What is the distributive property?
- What is the associative property?
- What is the commutative property?

Provocative:

- Can strategies be used to recall multiplication facts? Explain
- Can strategies be used to recall division facts? Explain.
- Why is having the order of operations important? Explain

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 3

Operations & Algebraic Thinking

3.OA.A. Represent and solve problems involving multiplication and division.

3.OA.A.1. Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.

3.OA.A.2. Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.

3.OA.A.3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.

3.OA.A.4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

3.OA.B. Understand properties of multiplication and the relationship between multiplication and division.

3.OA.B.5. Apply properties of operations as strategies to multiply and divide.

3.OA.B.6. Understand division as an unknown-factor problem.

3.OA.C. Multiply and divide within 100.

3.OA.C.7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

3.OA.D. Solve problems involving the four operations, and identify and explain patterns in arithmetic.

3.OA.D.8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

3.OA.D.9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

Number & Operations in Base Ten

3.NBT.A. Use place value understanding and properties of operations to perform multi-digit arithmetic.

3.NBT.A.3. Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Mathematical Practice

MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

MP.1. Make sense of problems and persevere in solving them.

MP.2. Reason abstractly and quantitatively.

MP.3. Construct viable arguments and critique the reasoning of others.

MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.

MP.6. Attend to precision.

MP.7. Look for and make use of structure.

MP.8. Look for and express regularity in repeated reasoning.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

- Understand multiplication and division symbols
- Use turnaround ideas with arrays
- Use strategies to understand multiplication and division facts 0-10
- Introduce multiplication facts 0-10
- Introduce division facts 0-10
- Solve word problems involving multiplication and division
- Extend known facts for multiplication
- Use the distributive property with two digits numbers (partial products)
- Use the associative property with two digit numbers (double and half)
- Investigate order with multiple operations
- Write equations to match two step word problems

Critical Content & Skills

*What students must **KNOW and be able to DO***

- **Represent multiplication and division with an array.**
- **Solve word problems involving multiple operations.**
- **Understand how the commutative, associative and distributive properties of multiplication work.**
- **Solve multiplication and division facts 0-10.**
- **Use strategies to solve multiplication and division problems.**
- **Identify multiplication and division patterns.**

Core Learning Activities

Represent multiplication and division with an array.

- use color tiles or connecting cubes to make a variety of arrays
- read One Hundred Hungry Ants by Elinor J. Pinczes and have students construct arrays to match the story
- create arrays using grid paper
- play Roll a Rectangle using dice and grid paper

Solve word problems involving multiple operations.

- Understand the relationship between multiplication and division.

- use objects to represent problems
- draw pictures to represent problems
- use charts to show multiple representations of problems

Understand how the Commutative, Associative and Distributive Properties of multiplication work.

- draw arrays on grid paper to show commutative property
- use double-and-half strategy to solve two-digit x one-digit problems

Solve multiplication and division facts 0-10.

Use strategies to solve multiplication and division problems.

Identify multiplication and division patterns.

Understand the relationship between multiplication and division.

- use share mats to represent facts
- use array cards to practice solving facts
- play games to increase understanding and fluency of multiplication and division
- use charts to show multiple representations of problems

Assessments

- [3 M1.1.pdf](#)
- [3 M1.2.pdf](#)
- [3 M1 PT.pdf](#)
- [G3 M1 PT Rubric.pdf](#)
- [3 M3.1.pdf](#)
- [3 M4.1.pdf](#)
- [3 M4.2.pdf](#)
- [3 M4 PT.pdf](#)
- [3 M4 PT Rubric.pdf](#)
- [3 M5.1.pdf](#)
- [3 M6.1.pdf](#)
- [3 M6 PT.pdf](#)
- [3 M6 PT Rubric.pdf](#)
- [3 M7.1.pdf](#)
- [3 M8.1.pdf](#)
- [3 M10.1.pdf](#)
- [3 M12.1.pdf](#)

Resources

Professional & Student
Professional and Student

Student Resources

Stepping Stones Student Journal

Stepping Stones Fundamentals Games:

Do the Ds, Double Double, It's a Fact, Pick a Product, That's a Fact, Use a Tens Fact, Division Dash, Division Detour, Doing Division, This I know

Stepping Stones Number Case

District approved websites and apps as needed

Stepping Stones Pretest, Check-ups, and Performance Tasks are found in the assessment tab of each module

Professional Resources:

Stepping Stones Online Resource

Stepping Stones Math Ed Videos (within each module, select mathematics, then focus for available videos including some model lessons)

- Module 3

- (CIMF) Introduction to teaching multiplication number facts
- (CLSM) Using language stages to develop multiplication concepts
- (CMS1) Teaching the "Use Ten" strategy for multiplication number facts (x five)
- (CMS2) Teaching the doubling strategy for multiplication number facts (x 2, x 4, x 8)
- (CMS3) teaching the "Build Up/Build Down" strategy for multiplication number facts (x 6 and x 9)
- (DCM1) Exploring the comparison model of multiplication

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Stepping Stones: (More math ----> Cross-curricula links)

- Numeral Search (Module 1): language arts and literature
- Number Jump (Module 3): sports and recreation
- Multiplication Relay Race (Module 5): sports and recreation
- Egyptian Multiplication (Module 6): social studies
- Multiplication Puzzle (Module 7): language arts and literature
- Word Search (Module 8): language arts and literature
- Number Movers (Module 10): sports and recreation
- Story Writing (Module 12): language arts and literature





Unit Planner: Geometry

Math Grade 3

District Elementary > 2018-2019 > Grade 3 > Mathematics > Math Grade 3 > Week 6
- Week 38

Last Updated: Today by Amy Hiruo

Geometry

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

[Unit Web Template \(Optional\)](#)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
Structure and Spatial Relationships

Generalizations / Enduring Understandings

Strand 1: 2D Shapes/3D Shapes

Generalizations

Attributes define 2D and 3D shapes.

Concepts

- attributes
- classification
- two-dimensional
- three-dimensional

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual:

- What are attributes of a 2-D shapes?
- What are attributes of a 3-D shapes?

Conceptual:

- What are the differences between 2-D and 3-D shapes?
- What are the similarities between 2-D and 3-D shapes?

Provocative:

- Can a shape fit into more than one category? Explain.

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 3

Geometry

3.G.A. Reason with shapes and their attributes.

3.G.A.1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

- Explore quadrilaterals (rectangles, rhombuses)
- Explore the relationship between 2-D shapes
- Describe quadrilaterals using attributes

Critical Content & Skills

What students must **KNOW** and be able to **DO**

- **Identify quadrilaterals.**
- **Explain relationship between rectangles and rhombuses.**
- **Categorize quadrilaterals.**

Core Learning Activities

Identify quadrilaterals.

- count sides of pattern blocks to identify quadrilaterals
- sort shape cards by number of sides
- use geoboards to construct quadrilaterals

Explain relationship between rectangles and rhombuses.

- sort shape cards by length of sides
- categorize shapes using Venn diagrams
- use geoboards to construct rectangles and rhombuses

Categorize quadrilaterals.

- categorize shapes using Venn diagrams
- sort shape cards by length of sides and by angles

Assessments

[3 M2.2.pdf](#)

[3 M12.2.pdf](#)

[3 M12 PT.pdf](#)

[3 M12 PT Rubric.pdf](#)

Resources

Professional & Student

Professional and Student

Student Resources

Stepping Stones Student Journal

Stepping Stones Number Case

District approved websites and apps as needed

Stepping Stones Pretest, Check-ups, and Performance Tasks are found in the assessment tab of each module

Professional Resources:

Stepping Stones Online Resources

Student Learning Expectation & 21st Century Skills

Information Literacy

Critical Thinking

Spoken Communication

Written Performance

Interdisciplinary Connections

Stepping Stones: (More math ---> Cross-curricula links)

- Painting Pictures (Module 2): music and art



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Unit Planner: Addition and Subtraction Math Grade 3

District Elementary > 2018-2019 > Grade 3 > Mathematics > Math Grade 3 > Week 5
- Week 27

Last Updated: Today by Amy Hiruo

Addition and Subtraction

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
Patterns and Equality

Generalizations / Enduring Understandings

Strand 1: Place Value Strategies for Addition and Subtraction

Generalizations

Numbers can be added and subtracted using place value.

Concepts

- place value
- two- and three- and four-digit numbers
- addition
- subtraction
- models: number line and standard algorithm

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual:

What is subtraction?
What is addition?

Conceptual:

Why is place value important when adding and/or subtracting two- and three- and four-digit numbers?
How are addition and subtraction related?
How are the standard algorithm and the number line similar?
How are the standard algorithm and the number line different?
How do you know when you need to regroup in addition and subtraction?

Provocative:

Is it important to be able to use more than one strategy for addition and subtraction? Why?

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 3

Number & Operations in Base Ten

3.NBT.A. Use place value understanding and properties of operations to perform multi-digit arithmetic.

3.NBT.A.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Mathematical Practice

MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

MP.1. Make sense of problems and persevere in solving them.

MP.2. Reason abstractly and quantitatively.

MP.3. Construct viable arguments and critique the reasoning of others.

MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.

MP.6. Attend to precision.

MP.7. Look for and make use of structure.

MP.8. Look for and express regularity in repeated reasoning.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

- Solve addition and subtraction word problems
- Identify addition and subtraction patterns
- Use a strategy to add and subtract two and three digit numbers (with composing and decomposing)
- Make addition and subtraction estimates
- Recognize and use the standard algorithm for addition and subtraction with two and three digit numbers (with and without composing)
- Use different strategies for adding and subtracting two and three digit numbers

Critical Content & Skills

*What students must **KNOW and be able to DO***

- **Use different strategies for adding and subtracting two and three-digit numbers.**

Core Learning Activities

Use different strategies for adding and subtracting two and-three digit numbers.

- Use base-ten blocks to solve addition and subtraction problems
- Use count-back, count-on and find-a-benchmark strategies on number line model add and subtract
- use standard algorithm to add and subtract once conceptual understanding is solidified (by using visual models)

Assessments

3 M2.1.pdf

Resources

Professional & Student

[3 M5.2.pdf](#)
[3 M5 PT.pdf](#)
[3 M5 PT Rubric.pdf](#)
[3 M7.2.pdf](#)
[3 M7 PT.pdf](#)
[3 M7 PT Rubric.pdf](#)
[3 M9.1.pdf](#)

Professional and Student

Student Resources

Stepping Stones Student Journal

Stepping Stones Fundamentals Games: Add Three, Add the Tens, Adding On, Adding Tens, Addition Fun, In the 90s, Using Doubles, Difference Decision, Digit Difference, Doing the Difference, Over the Edge, Pick and Choose, Pick and Choose Again

Stepping Stones Number Case

Stepping Stones Pretest, Check-ups, and Performance Tasks are found in the assessment tab of each module

District approved websites and apps as needed

Professional Resources:

Stepping Stones Online Resources

Stepping Stones Math Ed Videos (within each module, select mathematics, then focus for available videos including some model lessons)

- BHO3: Using a hands on approach to develop mental strategies for addition
- BMSA: Comparing mental strategies: addition
- CAP1: Using active problems to relate additions and subtraction and introduce functions
- CSFS: teaching the "Think Addition" strategy for subtraction number facts
- CSP1: Using static problems to relate addition and subtraction and introduce equality

Student Learning Expectation & 21st Century Skills

[Information Literacy](#)
[Critical Thinking](#)
[Spoken Communication](#)
[Written Performance](#)

Interdisciplinary Connections

Stepping Stones: (More math ---> Cross-curricula links)

- Word Search (Module 2): language arts and literature
- Working with Egyptian Numbers (Module 5): social studies
- Abacus Versus Algorithm (Module 7): social studies
- Difference Detectives (Module 9): technology



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Unit Planner: Measurement and Data Math Grade 3

District Elementary > 2018-2019 > Grade 3 > Mathematics > Math Grade 3 > Week 6
- Week 38

Last Updated: Today by Amy Hiruo

Measurement and Data

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

[Unit Web Template \(Optional\)](#)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
Process and Communication

Generalizations / Enduring Understandings

Strand 1: Time

Generalization

Time is measured in intervals and sequence.

Concepts

- time
- clocks
- sequence
- intervals

Strand 2: Data

Generalization

Charts and graphs represent data.

Concepts

- data
- charts/graphs
- scale

Strand 3: Area and Perimeter

Generalization

Squared units measure area.
Linear units measure perimeter.

Concepts

- measurement
- multiplication
- addition

Strand 4: Mass and Capacity

Generalization

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual:

How are the numbers on a clock spaced?
How many minutes are in an hour?
How many hours are in a day?
What do charts and graphs show?
What is area?
What is perimeter?
What is mass?
What is capacity?

Conceptual:

What activities take approximately one minute?
What activities take approximately one hour?
How can you figure out how much time has passed between two events?
Why would you use charts and/or graphs to show information?
How is area measured?
How is perimeter measured?
What is the difference between area and perimeter (squared units and linear units) ?
What operations are used to solve perimeter?
What operations are used to solve area?
What happens when your units of measure change?
How is mass measured?
How is capacity measured?
In what ways can we determine the mass of an object?
How are units in the same system of measurement related?

Provocative:

Can number lines help you tell time? Explain.
How do you decide which graph to use to display information?

Comparisons are made using standard units of measure.
Units of measurement identify mass and capacity.

Concepts

- comparison
- measurement
- mass
- capacity

Can multiple shapes with the same perimeter have different areas? Explain.
How do you decide which unit of measure is most appropriate to use?

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 3

Measurement & Data

3.MD.A. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

3.MD.A.1. Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

3.MD.A.2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

3.MD.B. Represent and interpret data.

3.MD.B.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.

3.MD.B.4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

3.MD.C. Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

3.MD.C.5. Recognize area as an attribute of plane figures and understand concepts of area measurement.

3.MD.C.5a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.

3.MD.C.5b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

3.MD.C.6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

3.MD.C.7. Relate area to the operations of multiplication and addition.

3.MD.C.7a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

3.MD.C.7b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in

mathematical reasoning.

3.MD.C.7c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

3.MD.C.7d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

3.MD.D. Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

3.MD.D.8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Geometry

3.G.A. Reason with shapes and their attributes.

3.G.A.2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

MP.1. Make sense of problems and persevere in solving them.

MP.2. Reason abstractly and quantitatively.

MP.3. Construct viable arguments and critique the reasoning of others.

MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.

MP.6. Attend to precision.

MP.7. Look for and make use of structure.

MP.8. Look for and express regularity in repeated reasoning.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Time:

- Identify time to the minute (analog and digital clocks)
- Identify times to and past the hour (analog and digital clocks)
- Read times in different ways

- Measure intervals in time
- Solve time word problems

Data:

- Create, describe and interpret picture and bar graphs and line plots
- Solve data word problems

Area/Perimeter:

- Identify the total number of unit squares as the area of a shape
- Calculate the area of rectangles using customary and metric units
- Calculate the area of rectangles using multiplication and/or addition
- Decompose composite shape to calculate area
- Compare the area and perimeter of rectangles
- Calculate the perimeter of polygons and irregular polygons
- Solve area and perimeter word problems

Capacity/Mass:

- Estimate and measure capacity using gallons, quarts, pints, and cups
- Estimate and measure capacity using liter and parts of a liter
- Identify and measure kilograms and fractions of a kilogram (gram)
- Solve capacity and mass word problems

Critical Content & Skills

*What students must **KNOW** and be able to **DO***

- Time

**Read and tell time.
Solve time word problems.**

- Data

**Create, describe and interpret picture and bar graphs and line plots.
Solve data word problem.**

- Area/Perimeter

**Calculate the area and perimeter of a variety of 2-D shapes.
Solve area and perimeter word problems.**

- Capacity/Mass

Core Learning Activities

Time

**Read and tell time.
Solve time word problems.**

- use model clocks to model times
- use model clocks to calculate elapsed time
- use schedules and time-tables to calculate elapsed time

Data

**Create, describe and interpret picture and bar graphs and line plots.
Solve data word problems.**

- use templates to create bar and picture graphs and line plots.
- collect data to create bar and picture graphs and line plots.

Area/Perimeter

**Calculate the area and perimeter of a variety of 2-D shapes.
Solve area and perimeter word problems.**

- use pattern blocks to calculate area and

**Estimate and measure capacity and mass using customary and metric units.
Solve capacity and mass word problems.**

- perimeter of objects
- use color tiles to calculate area and perimeter of objects
- use grid paper to determine area and perimeter of shapes
- calculate all possible dimensions of a rectangle given its area
- join arrays to create composite shapes and calculate their area and perimeter
- model representations to solve area and perimeter word problems

Capacity/Mass

**Estimate and measure capacity and mass using customary and metric units.
Solve capacity and mass word problems.**

- predict the capacity of various containers after filling half with sand or rice
- use a balance and mass pieces to calculate the mass of various objects
- model representations to solve area and perimeter word problems

Assessments

- [3 M2.2.pdf](#)
- [3 M2 PT.pdf](#)
- [3 M2 PT Rubric.pdf](#)
- [3 M6.2.pdf](#)
- [3 M8.2.pdf](#)
- [3 M8 PT.pdf](#)
- [3 M8 PT Rubric.pdf](#)
- [3 M10.2.pdf](#)
- [3 M10 PT.pdf](#)
- [3 M10 PT Rubric.pdf](#)
- [3 M11.1.pdf](#)
- [3 M12.2.pdf](#)
- [3 M12 PT.pdf](#)
- [3 M12 PT Rubric.pdf](#)

Resources

*Professional & Student
Professional and Student*

Student Resources

Stepping Stones Student Journal

Stepping Stones Number Case

District approved websites and apps as needed

Stepping Stones Pretest, Check-ups, and Performance Tasks are found in the assessment tab of each module

Professional Resources:

Stepping Stones Online Resources

Student Learning Expectation & 21st Century Skills

- [Information Literacy](#)
- [Critical Thinking](#)
- [Spoken Communication](#)
- [Written Performance](#)

Interdisciplinary Connections

Stepping Stones: (More math ---> Cross-curricula links)

- Investigating Motion (Module 6): science
- [Lemonade for Sale](#) by Tricia Tusa (Module 6): language arts and literature
- Capacity Relay (Module 8): sports and recreation
- Word Search (Module 10): language arts and literature
- Biggest Homes (Module 10): social studies



Unit Planner: Fractions Math Grade 3

District Elementary > 2018-2019 > Grade 3 > Mathematics > Math Grade 3 > Week 13 - Week 27

Last Updated: Today by Amy Hiruo

Fractions

Bracksieck, Jill; Connors, Jenna; Feda, Kristine; Hiruo, Amy; Pierce, Chrissie

- [Unit Planner](#)
- [Lesson Planner](#)

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here
Relationships

Generalizations / Enduring Understandings

Strand 1: Representing Fractions Generalization

Fractions represent part of a whole.

Concepts

- equivalence
- unit fraction

Strand 2: Comparing Fractions

Generalization

Fractions can be compared using a visual model.
Fractions of a whole can be compared.

Concepts

- comparison
- numerator
- denominator
- models

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

Factual:

What is a fraction?
What is a numerator?
What is a denominator?
What is a proper fraction?
What is an improper fraction?
How can you compare fractions?

Conceptual:

What are the different models that can be used to represent a fraction? Explain.
How is division related to fractions?
How can a number line be used to model fractions? Explain.

Provocative:

What relationships can be discovered about fractions? Explain.

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 3

Number & Operations—Fractions

3.NF.A. Develop understanding of fractions as numbers.

3.NF.A.1. Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.

3.NF.A.2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.

3.NF.A.2a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and



ATLAS

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partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.

3.NF.A.2b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

3.NF.A.3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

3.NF.A.3a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

3.NF.A.3b. Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.

3.NF.A.3c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.

3.NF.A.3d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

MP.1. Make sense of problems and persevere in solving them.

MP.2. Reason abstractly and quantitatively.

MP.3. Construct viable arguments and critique the reasoning of others.

MP.4. Model with mathematics.

MP.5. Use appropriate tools strategically.

MP.6. Attend to precision.

MP.7. Look for and make use of structure.

MP.8. Look for and express regularity in repeated reasoning.

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Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

- Represent fractions (area, length, and number line models)
- Identify common fractions less than and greater than one whole
- Count common fractions beyond one whole
- Identify equivalent fractions less than one whole
- Explore improper fractions
- Represent whole numbers as common fractions

- Compare fractions using (length, and number line models)
- Compare fractions with the same denominator or same numerator (number line model)
- Solve common fraction comparison word problems

Critical Content & Skills

*What students must **KNOW** and be able to **DO***

- **Represent fractions using area and linear models.**
- **Recognize and represent equivalent fractions.**
- **Compare fractions using area and linear models.**

Core Learning Activities

Represent fractions using area and linear models.

- use fraction strips, circles and pattern blocks to represent fractions
- create fractions using counters/cubes
- locate fractions on a number line

Recognize and represent equivalent fractions.

- play matching games using fraction cards
- build equivalent fractions using pattern blocks and fractions strips and circles
- identify equal fractions on a number line

Compare fractions using area and linear models.

- create fraction charts to use for comparing fractions
- play comparison games using fraction cards
- identify fractions on a number line in order to compare them

Assessments

- [3 M4.2.pdf](#)
- [3 M8.1.pdf](#)
- [3 M8.2.pdf](#)
- [3 M9.2.pdf](#)
- [3 M9 PT.pdf](#)
- [3 M9 PT Rubric.pdf](#)

Resources

*Professional & Student
Professional and Student*

Student Resources

Stepping Stones Student Journal

Stepping Stones Fundamentals Games: Fraction Facts and Make One

Stepping Stones Number Case

District approved websites and apps as needed

Stepping Stones Pretest, Check-ups, and Performance Tasks are found in the assessment tab of each module

Professional Resources

Stepping Stones Online Resources

Stepping Stones Math Ed Videos:

(DAF1) Adding and subtracting common fractions: same denominators

(DCF1) Comparing common fractions

(DEF1) An introduction to equivalent fractions

(DEF2) Teaching equivalent fractions

(DFM1) Introduction to fraction models

(DFM2) Analyzing the set model of fractions

(DFM3) Analyzing the area model of fractions

(DFM4) Analyzing the length model of fractions
(DFM5) Analyzing the number line model of fractions
(DTF1) Naming fractions
(DTF2) Interpreting fractions

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Stepping Stones: (More math ----> Cross-curricula links)

- Word Search (Module 4): language arts and literature
- Word Search (Module 8): language arts and literature
- Eye of Horus (Module 8): social studies
- Capacity Relay (Module 8): sports and recreation
- Egyptian Fractions (Module 9) social studies
- Compare the Fractions (Module 9): sports and recreation



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Students

Reporting to Parents

District/School Report Cards

To provide pertinent information regarding the academic performance of the district and its schools, the Board shall annually develop and publicly disseminate a district report card and report cards for the individual schools, the Profile and Performance Report, in accordance with federal and state laws and regulations.

The Board, at its discretion, may include additional information not required by law on the district's Profile and Performance Report.

District Report Cards

District report cards and the Profile and Performance Report shall contain the following information:

1. Aggregate data on student achievement on state academic assessments in reading/language arts, mathematics, and science and disaggregated data reflecting race, ethnicity, gender, disability, migrant status, English proficiency and status as economically disadvantaged, via the District Performance Index (DPI).
2. Comparison of above student groups regarding achievement levels on state assessments.
3. Information on district data pertaining to percent of students in grades 4 and 8, who tested at each NAEP achievement level (below basic, basic, proficient and advanced) disaggregated by major racial and ethnic groups, students with disabilities, English learners and economically disadvantaged students on the National Assessment of Educational Progress (NAEP).
4. District Performance Index trend data in achievement disaggregated reflecting race, English Learners, status as economically disadvantaged, disabled, high needs and district total.
5. Extent of use of alternate assessments for students with the most significant cognitive disabilities. (number and percentage of students, by grade and subject)
6. Number and percentage of recently arrived English learners exempted from one administration of the reading/language arts assessments or whose results are excluded from certain state accountability system indicators.
7. Percentage of students in grades 4, 6, 8, 10 meeting or exceeding the "Health Fitness Zone Standard" on the Connecticut Physical Fitness Assessment (CPFA); also compared to state results.
8. Graduation rates for secondary schools, disaggregated by student groups, tabulated as a four year cohort and also as an extended six year cohort graduation rate.

Students

Reporting to Parents

District Report Cards (continued)

9. Information on district's performance and the number, percentage and names of schools identified for improvement, including how long they have been so identified.
10. Progress toward state-designed long term goals for academic achievement, graduation rates and English learners achieving English language proficiency disaggregated by major racial and ethnic groups, disabilities, English learners, and economically disadvantaged students.
11. Enrollment data, as of October 1, disaggregated by gender, race, ethnicity, English proficiency, disabilities and status as economically disadvantaged.
12. Number and percentage of students enrolled in preschool, disaggregated by major racial and ethnic groups, disabilities, English learners and gender.
13. Attendance and discipline data, in the categories of chronic absenteeism (excused and unexcused) and suspensions/expulsions disaggregated by gender, race, ethnicity, English proficiency, disabilities and status as economically disadvantaged. (in-school suspensions, out-of-school suspensions, expulsions, school-related arrests, referrals to law enforcement, incidents of violence) Percentage of students assessed and not assessed on state academic assessments, (participation rates) (Disaggregated by all, racial and ethnic groups, children with disabilities, English learners, economically disadvantaged, gender, and migrant status)
14. Participation rates for students with disabilities and for English learners on the NAEP.
15. Data pertaining to percentage of 9th graders earning at least five full-year credits in the year and no more than one failing grade in English, Mathematics, Science or Social Studies.
16. Percentage of students in grades 9 through 12 participating in at least one dance, theater, music or visual arts course in the school year.
17. Comparison of district students' achievements on state assessments to students in the state as a whole.
18. Data on educator qualifications, disaggregated by high and low poverty schools; the number and percentage of:
 - a. inexperienced teachers, principals, and other school leaders;
 - b. teachers teaching with emergency and provisional credentials;
 - c. teachers who are not teaching in the subject field for which the teacher is certified or licensed.

(Note: SEA required to define "inexperienced")
19. Classroom teacher attendance citing average number of days absent due to illness or personal time within district and compared to state average.

Students

Reporting to Parents

District Report Cards (continued)

20. Data pertaining to staff, including full-time equivalent count of teachers, instructors and paraprofessionals in general education and special education; administrators, coordinators and department chairs at the central office level and school level; library staff; instructional specialist who support teachers; counselors, social workers and psychologists; school nurses; and other staff providing support and non-instructional services.
21. Information about efforts to reduce racial, ethnic and economic isolation.
22. Special education data including identification rates by primary disability, achievement data, and number of students placed out-of-district in public schools in other districts or private schools or other settings.
23. Information about school district improvement plans and parental outreach activities.
24. Information about the equitable allocation of resource among district schools.
25. Number and percentage of students enrolled in accelerated course work (e.g., AP, IB) disaggregated by major racial and ethnic groups, disabilities, English learners and gender.
26. Data pertaining to college entrance and persistence by District and disaggregated by gender, race, English proficiency, status as economically disadvantaged.
27. Data pertaining to overall expenditures, special education expenditures and percent of expenditures by source.
28. Data pertaining to per-pupil expenditures (actual personnel and actual non-personnel) for the District and for each school, disaggregated by the source of funds (Federal, State and local), including, but not limited to, expenditures for administration, instruction, instructional support, student support services, pupil transportation services, operations and maintenance of plant, fixed charges, preschool, net expenditures to cover deficits for food services and student body activities, and any additional current expenditure categories designated by the State Department of Education, which may not include community services, capital outlay or debt service.

Data pertaining to percentage of students in grades 11 and 12 achieving benchmark scores on at least one of the following: Smarter Balanced 11th or SAT, or ACT or AP or IB.
29. Data pertaining to students in grades 11 and 12 participating in at least one of the following during high school – two courses in AP/IB dual enrollment, or two courses in one of seventeen CTE (Career Technical Education) categories or two workplace “courses” in any area.
30. Data pertaining to students with disabilities who spend 79.1 to 100 percent of time with non-disabled peers.
31. Statistics from Connecticut’s “Next Generation Accountability System” which is based on a broad set of 12 indicators. (Accountability Index)

Students

Reporting to Parents (continued)

School Report Cards

School report cards shall contain the following information:

1. Same information contained on the district report card.
2. Whether the school has been identified for improvement.
 - Amount of school improvement funds received
 - Types of strategies implemented by the school
3. Information that compares the school's students' achievement on state assessments to students in the district and the state as a whole.

The Superintendent or designee shall be responsible to ensure the following:

1. Required information is annually updated and posted.
2. ~~District report card and school report cards are provided to parents in an understandable and uniform format and, to the extent practicable, in a language the parents can understand.~~
2. District and school report cards are made available to the public through posting on the Internet, distribution to the media, and distribution to public agencies.
3. Public access is provided to the state report card and the school profile maintained by the state.

Legal Reference: Connecticut General Statutes

10-220(c) Duties of boards of education

PA 06-167 An Act Concerning Parental Involvement Reporting in School Profiles)

Policy adopted:

NEWTOWN PUBLIC SCHOOLS
Newtown, Connecticut

Students

Vandalism

The District may press legal charges against any student who, in any manner, advocates, teaches, incites, proposes, aids, abets, encourages or advises the unlawful injury or destruction of school property. The parent or guardian of any minor/unemancipated child who willfully cuts, defaces, or otherwise damages, in any way, any property, real or personal, belonging to the district shall be held monetarily liable for such actions up to the maximum amount allowed under state law. Injury shall include intentional unauthorized modifications made to computer hardware and/or software.

Liability of Parents and Students

The liability provided under Connecticut General Statutes 52-572 does not relieve the minor(s) of personal liability for such damage or injury. This liability of the parent or guardian for damages done by a minor child is in addition to any other liability which exists in law. Liability shall include all costs incurred to remedy the situation.

The parent or guardian of a minor child shall also be held liable for all property belonging to the district that has been lent to the student and not returned upon demand of the district. The student may also be liable to disciplinary action.

An adult student shall be held personally liable for any damage done to any property, real or personal, belonging to the district, including property that has been lent to the student and not returned upon demand of the district. The student may also be subject to disciplinary action.

Damaged or lost instructional articles will be replaced by the student and/or his or her parents/guardians. The individual school price list will be used in establishing replacement fees based on the list price and depreciation schedule.

Students

Vandalism

~~When a student engages in willful or malicious damage to school property, furnishings, buildings, fences, etc., sanctions may include, but shall not be limited to, co-curricular suspension (e.g. participation in all activities, plays, athletics, student offices, club memberships, assemblies, class functions, and other activities not directly related to class work), referral to authorities, suspension, and expulsion. Students and/or their parents shall be required to make satisfactory restitution for the damage.~~

~~The administration of each school is authorized to exclude a student from any or all co-curricular activities for all or part of a school year for failure to adhere to the standards of student conduct contained in Board policy or any other standards of student conduct contained in student handbooks.~~

~~Such exclusion may be in addition to or in lieu of suspension or expulsion pursuant to Board policy 5114.~~

~~Prior to excluding a student from any co-curricular activity or activities, the building administration shall provide the student concerned a hearing.~~

~~(cf. 5114—Suspension/Expulsion)~~

Legal Reference: _____ Connecticut General Statutes

_____ 52-572 (Parent liability for torts of minors)

Regulation approved:

eps-6/04

Students

Weapons and Dangerous Instruments

The Board of Education determines that possession, concealment, and/or use of a weapon by a student is detrimental to the welfare and safety of the students and school personnel within the district. Possession and/or use of any dangerous or deadly weapon, firearm, or destructive device in any school building on school grounds, in any school vehicle, or at any school-sponsored activity is prohibited.

A “dangerous weapon” is any weapon, device, instrument, material or substance, which under the circumstances in which it is used, attempted to be used or threatened to be used is readily capable of causing death or serious injury. A “deadly weapon” is any instrument, article or substance specifically designed for and presently capable of causing death or serious injury.

Such weapons include but are not limited to any pistol, revolver, rifle, shotgun, air gun or spring gun; slingshot; bludgeon; brass knuckles or artificial knuckles of any kind; knives having a blade of greater than two inches, any knife the blades of which can be opened by a flick of a button or pressure on the handle, or any pocketknife where the blade is carried in a partially opened position; martial arts weapon; destructive device.

~~**Alternate language:** A “dangerous weapon” is any weapon, device, instrument, material or substance, which under the circumstances in which it is used, attempted to be used or threatened to be used is readily capable of causing death or serious injury. A “deadly weapon” is any instrument, article or substance specifically designed for and presently capable of causing death or serious injury.~~

Pursuant to federal law, the term firearm includes, but is not limited to, any weapon designed to or may readily be converted to expel a projectile by the action of an explosive, the frame or receiver of any such weapon, a muffler or silencer for such a weapon, or destructive device. A student who violates this policy will be reported to law enforcement authorities.

A “destructive device” is considered any device with an explosive, incendiary or poison gas component or any combination of parts either designed or intended for use in converting any device into any destructive device or from which a destructive device may be readily assembled. A destructive device does not include any device which is designed primarily for use as a signaling, pyrotechnic, line-throwing, safety or similar device.

The possession or use of any such weapon or devices will require that the proceedings for the suspension and/or expulsion of the student involved will be initiated immediately by the principal. If the student is found to have possessed a firearm or other dangerous weapon as defined in Connecticut General Statutes 53a-3 in violation of 29-35 or 53-206, in or on the real property of a school or at any school activity as defined in Connecticut General Statutes 10-233a, he/she must be expelled for one calendar year. The Board of Education or hearing board may modify the period of expulsion on a case by case basis. To comply with federal law, any finding of an exception shall be reduced to writing. All legal restrictions and requirements will be adhered to pertaining to special education students.

The Board shall consider a student’s conduct off school grounds that is seriously disruptive of the educational process or is violative of publicized policies of the Board as grounds for expulsion.

Students

Weapons and Dangerous Instruments (continued)

Additional optional language to consider:

~~Weapons under the control of law enforcement personnel are permitted. The Superintendent may authorize other persons to possess weapons for courses, programs and activities approved by the District and conducted on District property.~~

~~In accordance with the federal Gun-Free School Zone Act, possession or discharge of a firearm in a school zone is prohibited. A “school zone” is defined by federal law, means in/on school grounds or within 1,000 feet of school grounds.~~

~~“Gun-Free School Zone” signs will/may be posted in cooperation with city/town officials as appropriate. Violations, unless otherwise excepted by law or this policy, shall be reported to the appropriate law enforcement agency.~~

(cf. 5114 - Suspension/Expulsion)

(cf. 5145.12 - Search and Seizure)

Legal Reference: Connecticut General Statutes
10-221 Boards of education to prescribe rules.
10-233a through 10-233f - Expulsion as amended by PA 95-304
53a-3 Definitions.
53a-217b - Possession of firearms and deadly weapons on school grounds
53-206 Carrying and sale of dangerous weapons.
PA 94-221 An Act Concerning School Discipline and Safety.
Gun-Free School Zones Act of 1990, 18 U.S.C. §§ 921(a)(25)-(26), 922(q)
(2006)
GOALS 2000: Educate America Act
18 U.S.C. 921 Definitions.
USCA 7151 – No Child Left Behind Act
Youth Handgun Safety Act, 18 U.S.C. §§ 922(x), 924(a)(6) (2006)
Safe and Drug-Free Schools and Communities Act, 20 U.S.C. §§ 7101-
7117

Policy adopted:

rev 5/03

rev 2/13

NEWTOWN PUBLIC SCHOOLS
Newtown, Connecticut

A regulation from Killingly to consider/modify.

Students

Weapons and Dangerous Instruments

I. Regulations - Generally

1. Students shall not possess firearms, facsimiles of firearms, deadly or dangerous weapons, dangerous instruments, or martial arts weapons on school grounds or buildings, ~~nor~~ **nor** on school buses, nor on any school-related or school-sponsored activity away from school facilities. Firearms, weapons, and dangerous instruments shall include those defined by law. (18 U.S.C. 921, C.G.S. 53a-3, 53-202 to 53-206, and 53-206c(a)(1).
2. Possession or use of such weapons or devices on school grounds or other areas under the control of the Board of Education may also be a violation of criminal law, and therefore any violation of this policy may be reported immediately to the local law enforcement agency, the Board of Education, and, if possible, the parent or guardian. Students who violate this policy shall be subject to appropriate disciplinary action as well as possible legal action, provided that a student found to possess a firearm, instrument or a weapon shall be expelled. Certain off school grounds violations shall also lead to expulsion.
3. Any dangerous device or weapon may be seized by an employee of the school system under the power granted to the Board of Education to maintain order and discipline in the schools, and to protect the safety of students, staff and the public.
4. Every employee seizing any weapon or dangerous instrument under the provisions of this policy shall report the incident to the building Principal immediately, and deliver the seized device to the Principal, together with the names of the persons involved, witnesses, location and circumstances of the seizure.
5. If an employee knows or has reason to suspect that a student has possession of such a device but has not been seized, the employee shall report the matter to the Principal immediately, and the Principal shall take such action as is appropriate. The Principal shall report all violations of this policy to the Superintendent or designee, and to the local law enforcement agency.
6. Whenever a student is expelled, notice of the expulsion and the conduct for which the student was expelled shall be included on the student's cumulative educational record. Such notice, except for notice of an expulsion based on possession of a firearm or deadly weapon, shall be expunged from the cumulative educational record by the Board of Education if a student graduates from high school.

Students

Weapons and Dangerous Instruments

Regulations - Generally (continued)

7. The Board of Education shall submit to the Commissioner of Education information on expulsions for the possession of weapons as required for purposes of the Gun-Free Schools Act of 1994, 20 U.S.C. 8921 ET SEQ.

II. Definition Of Terms

1. **Dangerous instrument** means any instrument, article or substance which, under the circumstances in which it is used or attempted or threatened to be used, is capable of causing death or serious physical injury, and includes a “vehicle”. (C.G.S. Sec. 53a-3(7).)
2. **Dangerous weapon** means any sling shot, air rifle, BB gun, blackjack, sand bag, metal or brass knuckles, or any dirk knife, or any switch knife, or any knife having an automatic spring release device by which a blade is released from the handle, having a blade of over one and one-half inches in length, or stiletto, or any knife, the edged portion of the blade of which is four inches or over in length, or any martial arts weapon or electronic defense weapon, or any other dangerous or deadly weapon or instrument. (C.G.S. Sec. 53-206.)
3. **Deadly weapon** means any weapon, whether loaded or unloaded, from which a shot may be discharged or a switchblade knife, gravity knife, billy, blackjack, bludgeon, or metal knuckles. (C.G.S. Sec. 53a-3(6).)
4. **Electronic defense weapon** means a weapon which by electronic impulse or current is capable of immobilizing a person temporarily, but is not capable of inflicting death or serious physical injury. (C.G.S. Sec. 53a-3(20).)
5. **Expulsion** means an exclusion from school privileges for more than ten consecutive school days and shall be deemed to include, but not limited to, exclusion from the school to which such student was assigned as the time such disciplinary action was taken, provided such exclusion shall not extend beyond a period of one calendar year. (C.G.S. Sec. 233a(e), P.A. 95-304)
6. **Facsimile of a firearm** means (A) any nonfunctional imitation of an original firearm which was manufactured, designed and produced since 1898, or (B) any nonfunctional representation of a firearm other than an imitation of an original firearm, provided such representation could reasonably be perceived to be a real firearm. Such term does not include any look-a-like, non-firing, collector replica of an antique firearm developed prior to 1898, or traditional BB, or pellet-firing air gun that expels a metallic or paint-contained projectile through the force of air pressure. (C.G.S. Sec. 53-206c(a) (1).)

Students

Weapons and Dangerous Instruments

Definition of Terms (continued)

7. **Firearm** means any sawed-off shotgun, machine gun, rifle, shotgun, pistol, revolver or other weapon, whether loaded or unloaded from which a shot may be discharged. (C.G.S. Sec. 53a-3(19).)
8. **Martial arts weapon** means a nunchaku, kama, kasari-fundo, octagon sai, tonfa or chinese star. (C.G.S. Sec. 53a-3(21).)
9. **Physical injury** means impairment of physical condition or pain. (C.G.S. Sec. 53a-3(3).)
10. **Possess** means to have physical possession or otherwise to exercise dominion or control over tangible property. (C.G.S. Sec. 53a-3(2).)
11. **Serious physical injury** means physical injury which creates a substantial risk of death, or which causes serious disfigurement, serious impairment of health or serious loss or impairment of the function of any bodily organ. (C.G.S. Sec. 53a-3(4).)
12. **Vehicle** means a “motor vehicle” as defined in Section 14-1, a snowmobile, any aircraft, or any vessel equipped for propulsion by mechanical means or sail. (C.G.S. Sec. 53a-3(8).)

III. Disciplinary Procedures

Students in violation of this policy shall be subject to the following disciplinary measures:

1. Possessing, using, carrying, drawing, exhibiting or brandishing a facsimile of a firearm in a threatening manner so as to frighten, vex or harass another person.
 - a. Suspension of up to 10 school days.
 - b. Mandatory referral to law enforcement agency.
 - c. Consideration of expulsion hearing as appropriate.
2. Possession and/or use of any dangerous instrument in a threatening manner so as to inflict bodily harm, or to intimidate, or to terrorize, frighten, vex or harass another person.
 - a. 10 school days suspension.
 - b. Mandatory referral to law enforcement agency.
 - c. Recommendation of expulsion hearing.

Students

Weapons and Dangerous Instruments (continued)

3. Use of any dangerous instrument to inflict physical injury, serious physical injury or death.
 - a. 10 school days suspension.
 - b. Mandatory referral to law enforcement agency.
 - c. Mandatory referral to expulsion proceedings.
4. Possession and/or use of a firearm, deadly weapon, dangerous instrument or martial arts weapons on or off school grounds or at a school sponsored activity.
 - a. 10 school days suspension.
 - b. Mandatory referral to law enforcement agency.
 - c. Mandatory referral to expulsion proceedings.
5. Possession of a firearm, or possession and use of a firearm, dangerous instrument, deadly weapon or martial arts weapon in the commission of a crime while off school grounds.
 - a. 10 school days suspension.
 - b. Mandatory referral to law enforcement agency.
 - c. Mandatory referral to expulsion proceedings.
 - (1) Such student shall be expelled for a period not to exceed one (1) calendar year if the Board of Education or impartial hearing board finds that the student did so possess a weapon as described in this section.
6. Possession and/or use of a dangerous weapon on or off school grounds or at a school sponsored activity.
 - a. Suspension of up to 10 school days.
 - b. Mandatory referral to law enforcement agency as appropriate.
 - c. Consideration of expulsion hearing as appropriate.
7. Possession and/or use of any other item, devise, instrument or weapon not specifically defined by law or conduct on school grounds or at a school sponsored activity is violative of a publicized policy of the Board of Education or is seriously disruptive of the educational process or endangers persons or property or whose conduct off school grounds is violative of such policy and is seriously disruptive of the educational process.
 - a. Suspension of up to 10 school days.
 - b. Mandatory referral to law enforcement agency as appropriate.
 - c. Consideration of expulsion hearing as appropriate.

Students

Weapons and Dangerous Instruments (continued)

Students and parents or guardians shall be notified of this policy annually.

(cf. 5114 - Suspension/ Expulsion; Due Process)

(cf. 5145.12 - Search and Seizure)

Legal Reference: Connecticut General Statutes
4- 176e through 4- 185 Uniform Administrative Procedure Act.
10-233a through 10-233f re in-school suspension, suspension, expulsion. (as amended by PA 98-139)
29-35 Carrying of pistol or revolver without permit prohibited.
29-38 Weapons in vehicles.
53a-3 Firearms and deadly weapons.
53-206 Carrying and sale of dangerous weapons.
53a-217b Possession of firearms and deadly weapons on school grounds.
PA 94-221 An Act Concerning School Safety.
18 U.S.C. 921 Definitions.
PL 103-382 Elementary and Secondary Education Act. (Sec. 14601 - Gun Free Requirements: Gun Free School Act of 1994)
PA 95-304 An Act Concerning School Safety.
PA 96-244 An Act Concerning Revisions to the Education Statutes.
Kyle P. Packer PPA Jane Packer v. Thomaston Board of Education. (SC 15862)

Regulation approved:

NEWTOWN PUBLIC SCHOOLS
Newtown, Connecticut

Students

Off School Grounds Misconduct

Students are subject to discipline, up to and including suspension and expulsion for misconduct, which is seriously disruptive of the educational process and is a violation of a publicized Board policy, even if such misconduct occurs off-school property and during nonschool time.

In compliance with judicial decisions, the Board considers conduct which is "severely disruptive of the educational process" to mean conduct that "markedly interrupts or severely impedes the day-to-day operations of a school" in addition to such conduct also being violative of publicized school policy. Such conduct includes, but is not limited to, phoning in a bomb threat, or making a threat, off school grounds, to kill or hurt a teacher or student.

In addition, in making the determination as to whether conduct is "seriously disruptive of the educational process," the administration may consider, but such consideration shall not be limited to (1) whether the incident occurred within close proximity of a school; (2) whether other students from the school were involved or whether there was any gang involvement; (3) whether the conduct involved violence, threats of violence or the unlawful use of a weapon, as defined in Section 2938 and whether any injuries occurred; and (4) whether the conduct involved the use of alcohol, narcotic drug, hallucinogenic drug, amphetamine, barbiturate or marijuana. ~~The conduct can also be the use of inappropriate electronic messages.~~

The Board of Education or impartial hearing board, in matters of expulsion for out of school misconduct, in making a determination as to whether conduct is "seriously disruptive of the educational process," may consider, but consideration is not limited to the same items listed previously.

Such discipline may result whether: 1) the incident was initiated in the school or on school grounds, or 2) even if the incident occurred or was initiated off-school grounds and nonschool time; if after the occurrence there was a reasonable likelihood that return of the student would contribute to a disruptive effect on the school education or its process, markedly interrupting or severely impeding the day-to day operation of a school, by threatening:

1. The school's orderly operations;
2. The safety of the school property;
3. The welfare of the persons who work or study there.

Examples of the type of such off-school misconduct that may result in such discipline include but are not limited to:

1. Use, possession, sale, or distribution of dangerous weapons; (as defined C.G.S. 53a3, 53-206, and 29-35)
2. Use, possession, sale, or distribution of illegal drugs; or
3. Violent conduct,
4. Making of a bomb threat, and/or creation of an explosive device.
5. Threatening to harm or kill another student or member of the staff.

where any such activity has the reasonable likelihood of threatening the health, safety or welfare of school property, individuals thereon, and/or the educational process.

Students

Off School Grounds Misconduct (continued)

For example, if it is determined that a student's use, possession, or sale of drugs in the community has a strong likelihood of endangering the safety of students or employees because of the possibility of such sales in the school; or if violent conduct in the community presents a reasonable likelihood of repeating itself in the school environment; or if any similar type of misconduct in the community has a reasonable likelihood of being continued or repeated in school or of bringing retaliation or revenge into the school for such off-school misconduct, the Board may impose discipline up to and including suspension and/or expulsion. The rationale to be applied in considering disciplinary action is whether the off-school grounds conduct will markedly interrupt or severely impede the day-to-day operation of a school.

A student who possessed and used a firearm, deadly weapon, dangerous instrument or martial arts weapon in the commission of a crime off-campus shall be expelled for one calendar year unless said expulsion is modified on a case-by-case basis.

Legal Reference: Connecticut General Statutes
4 176e through 4 185 Uniform Administrative Procedure Act.
10233a through 10233f re inschool suspension, suspension, expulsion. (as amended by PA 98139)
2935 Carrying of pistol or revolver without permit prohibited.
2938 Weapons in vehicles.
53a3 Firearms and deadly weapons.
53206 Carrying and sale of dangerous weapons.
53a217b Possession of firearms and deadly weapons on school grounds.
PA 94221 An Act Concerning School Safety.
18 U.S.C. 921 Definitions.
PL 103382 Elementary and Secondary Education Act. (Sec. 14601 Gun Free Requirements: Gun Free School Act of 1994)
PA 95304 An Act Concerning School Safety.
PA 96244 An Act Concerning Revisions to the Education Statutes.
Kyle P. Packer PPA Jane Packer v. Thomaston Board of Education. (SC 15862)
Wisniewski v. Bd. Of Educ., 494F.3d34 (2nd Cir. 2007)
Doninger v. Niehoff, 257F.3d (2nd Cir. 2008)

Policy adopted:

rev. 5/98
rev 7/98
rev 4/02

NEWTOWN PUBLIC SCHOOLS
Newtown, Connecticut

Students

Hazing

Purpose and Philosophy

Hazing and initiation activities that involve hazing are abusive and illegal behaviors that harm victims and negatively impact the school environment by creating an atmosphere of fear, distrust and mean-spiritedness. Because the District is committed to providing a safe and ~~orderly~~ **inclusive** environment for all students that promotes respect, civility, and dignity, it is the purpose of this policy to establish and preserve an educational environment free from any type of hazing or initiation activities that involve hazing.

Policy

The District strictly prohibits any person from engaging individually or collectively in any form of hazing or related initiation activity on school property, in conjunction with any school activity, or involving any person associated with the school, regardless of where it occurs. Consistent with the District's Conduct and Sexual Harassment policies, any person who participates in hazing or related initiation activity, or conspires to engage in hazing, will face immediate disciplinary action up to and including suspension, expulsion, exclusion, and loss of participation in extracurricular activities. In addition, persons who participate in hazing will be referred to law enforcement authorities and may face subsequent prosecution.

General Statement of Policy

- A. No student, teacher, administrator, volunteer, contractor or other employee or agent of the school district (here and after collectively referred to as "staff") shall plan, direct, encourage, aid, or engage in hazing.
- B. No staff member of the school district shall permit, condone, or tolerate hazing.
- C. Implied or expressed consent by a person being hazed does not lessen the prohibitions contained in this policy, and will not be considered as a defense or mitigation of any alleged violation of this policy.
- D. A person who engages in an act that violates school policy or law in order to initiate another person or to be initiated into or affiliated with a student organization shall be subject to discipline for that act.
- E. The school district will investigate complaints of hazing and take appropriate action including, but not limited to, discipline against any student or staff member of the district who is found to have violated this policy.
- F. Hazing activities are seriously disruptive of the education process. This policy applies to behavior that occurs on or off school property and during, before or after school hours."

Definitions

“Hazing” means any action which recklessly or intentionally endangers the health or safety of a person for the purpose of initiation, admission into or affiliation with, or as a condition for continued membership in a student organization. Hazing includes, but is not limited to:

- Requiring indecent exposure of the body;
- Requiring any activity that would subject the person to extreme mental stress, such as sleep deprivation or extended isolation from social contact;
- Confinement of the person to unreasonably small, unventilated, unsanitary or unlighted areas;
- Any assault upon the person; or
- Requiring the ingestion of any substance or any other physical activity which would adversely affect the health or safety of the individual.

Consent is no defense to hazing: i.e., the implied or expressed consent of a person or persons to hazing shall not be a defense to discipline under this policy.

“Related initiation activity” means any method of initiation, pre-initiation, or other activity required as a condition of initial or continued membership in a school club, team or organization, that causes or is reasonably likely to cause bodily danger or physical harm, severe mental or emotional harm, extreme embarrassment or ridicule, or personal degradation or loss of dignity to any student or other person associated with the school.

The term **“hazing”** and **“related initiation activity”** do not include customary, school-sponsored athletic events, intramural activities, or other similar school-sponsored student contests and competitions.

“Conspire to engage in hazing” means to plan, encourage, fail to take reasonable steps to prevent, or fail to report hazing and related initiation activities by this policy.

Prohibited Conduct

Activities that may be construed as hazing under this policy include, but are not limited to, the following:

- Any act that involves physical brutality or physical aggression that causes or is reasonably likely to cause, bodily danger or physical harm to an individual.
- Any act that involves forced consumption of food, alcohol, drugs, or other substance, or any other forced physical activity that could severely affect the physical health or safety of an individual.
- Any act that would subject an individual to extreme mental stress or emotional harm, or any other forced activity that could severely affect the mental health or dignity of the individual.

Students

Hazing

Definitions (continued)

~~Consistent with the District's Conduct and Sexual Harassment policies, school officials will examine the totality of the circumstances in determining whether a particular activity constitutes hazing and warrants discipline under this policy. As a general test, students and school officials should consider the following questions in determining whether an activity could be prohibited under this policy:~~

- ~~• Is the activity an education experience?~~
- ~~• Does the activity promote or conform to the values of the school?~~
- ~~• Will the activity increase the respect for the school and the individuals participating?~~
- ~~• Do current and new or prospective members participate together equally in the activity?~~
- ~~• Would students and/or faculty be willing to allow parents, community members, school officials, or the press to witness the activity?~~
- ~~• Would students and/or faculty be able to defend the activity in a court of law?~~
- ~~• Does the activity have value in and of itself?~~

Examples

~~Many different types of activities can be considered hazing. Although not intended as an exhaustive list, the following list provides examples of specific misconduct that may be considered hazing under this policy as an informational and educational tool for students, parents, and educators:~~

- ~~• Any activity that involves brutality of a physical nature and that a reasonable person could foresee would bring physical harm to an individual, such as whipping; beating; branding; electric shocking; paddling; tying; taping or otherwise restraining an individual against his or her will; excessive calisthenics; or exposure to the elements.~~
- ~~• Any activity that unreasonably interferes with a student's academic efforts by causing exhaustion, sleep deprivation, or loss of reasonable study time.~~

Students

Hazing

Examples (continued)

- ~~Morally degrading or humiliating games, pranks, stunts, practical jokes or any other activities that make an individual the object of amusement, shame, embarrassment, or intimidation.~~
- ~~Forcing or coercing the consumption of alcohol, drugs, foreign or unusual foods, or any other substance that endangers the mental or physical health of an individual.~~
- ~~Throwing or applying whipped cream, shaving cream, toothpaste, paint, honey, eggs, or other foods or substances on an individual's body.~~
- ~~Requiring personal servitude.~~
- ~~Harassment such as pushing, shoving, cursing, shouting, and yelling.~~
- ~~Requiring an individual to wear uncomfortable, ridiculous, humiliating, or embarrassing clothing or underclothing.~~
- ~~Requiring an individual to participate in acts of vandalism, theft, assault, sexual acts, or other criminal activity.~~
- ~~Causing indecent exposure or any other gross or lewd behavior involving nudity.~~
- ~~Subjecting an individual to extreme mental stress, or to cruel or unusual psychological conditions for any reason.~~
- ~~Compelling an individual to participate in any activity that is illegal, perverse, publicly indecent, or contrary to the rules, policies, and regulations of the School District.~~

Reporting Requirement

School personnel who become aware of hazing or related initiation activity shall report such incident immediately to your immediate supervisor and/or the Principal ~~or Superintendent~~ so that the incident can be promptly investigated and so that appropriate action can be taken.

School employees who ~~become aware of hazing and~~ fail to report it to the Principal or Superintendent will be subject to appropriate disciplinary action.

~~Students who observe hazing and fail to intervene or report the hazing to school officials may face disciplinary action, and prosecution, for conspiring to engage in hazing.~~

Students

Hazing

Policy Dissemination

A summary of this policy shall be posted in a prominent place in each District school. The policy shall also be published in student registration materials; student, parent, and employee handbooks; and other appropriate school publications as directed by the Superintendent.

Each District Principal, athletic coach, ~~cheerleading advisor,~~ and other extracurricular supervisor shall inform his/her students about this policy on a regular basis. At a minimum, such communication shall take place at the beginning of each school year or ~~and~~ prior to the beginning of each team or group's activities for the year. ~~Each student participating in athletics, cheerleading, student government, clubs, music programs, and other extracurricular activities shall be required to submit the written statement of commitment attached to this policy as a condition of participation.~~

~~The coach, advisor, or supervisor responsible for the particular program shall keep all statements of commitment on file for the duration of the current school year.~~

Policy adopted:

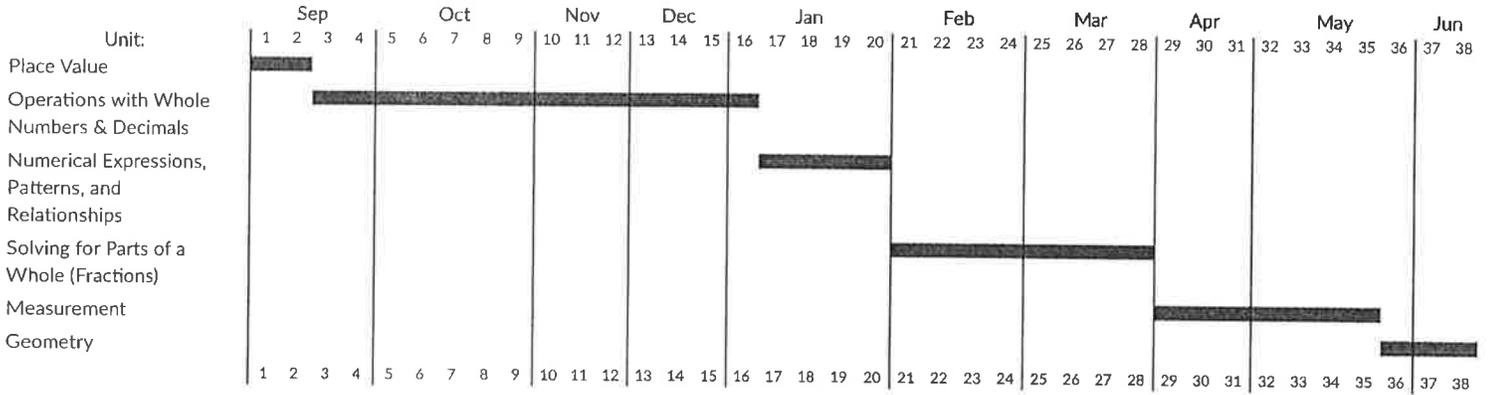
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rev. 3/05



Newtown Public Schools
Math Grade 5

Reed Intermediate School > Grade 5 > Mathematics > Math Grade 5

Collaboration





Place Value

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

SYSTEM

Concepts:
place value
number system

Generalizations / Enduring Understandings

The base ten system represents the relationship among numbers.

The base ten system applies symbolism to represent numbers within the base ten system.

An understanding of place value transfers to navigating the real world.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What is a digit? (factual)
- What is a value? (factual)
- How can you write a fraction as a decimal? (factual)
- How can you represent a decimal or a fraction as part of a whole. (factual)
- How can you compare and order decimals? (factual)
- What patterns do place value relationships follow? (conceptual)
- How are fractions related to decimals and percents? (conceptual)
- How do decimals and fractions affect the decisions made in everyday life? (conceptual)
- What is the value of seeing the relationship between decimals, fractions and percents? (provocative)
- What is the benefit of using one form over another (decimal, fraction, percent)? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 5

Number & Operations in Base Ten

5.NBT.A. Understand the place value system.

- 5.NBT.A.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- 5.NBT.A.3. Read, write, and compare decimals to thousandths.
- 5.NBT.A.3b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to ...

- understand the relationship of how digits in a multi-digit number relate to one another and their place value
- apply decimal understanding to place value and fractions
- compare and order decimals in multiple forms (standard, word and expanded)
- extend and identify patterns using decimals
- use the base ten numeration system to solve problems

Critical Content & Skills

What students must KNOW and be able to DO

Understand the place value system.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

Represent decimals (tenths,hundredths, thousandths) as fractions.

Write decimals in standard, expanded and word form through thousandths.

Compare and order decimals through thousandths.

Vocabulary:

place value, decimal, decimal point, patterns, multiply, divide, tenths, thousands, greater than, less than, equal to, $>$, $<$, $=$, compare/comparison, round, number system

Core Learning Activities

Understand the place value system.

- manipulating numbers using a place value map
- creating a place value map

Perform operations with multi-digit whole numbers and with decimals to hundredths.

- modeling

Represent decimals (tenths,hundredths, thousandths) as fractions.

- modeling
- representing decimals using base ten blocks
- looking for patterns through use of decimal grid

Write decimals in standard, expanded and word form through thousandths.

- writing decimals in each form

Compare and order decimals through thousandths.

- organizing decimals into place-value chart

Assessments

Resources

Professional & Student

- * enVision Math Topic 1 (all lessons)

-  Adding and subtracting whole numbers and decimals.docx
-  Modified Topic One Test.docx
-  Unit 1 lessons 1-3.docx
-  Unit 1 lessons 4-6.docx
-  Topic 1

Atlas - Place Value

*1-1, 1-2, 1-3, 1-4: Our number system is based on groups of ten. In a multi-digit number a digit in ones place represents tens times what it would represent in the place immediately to its right and one-tenth to the place immediately to its left.
 *1-5 Place value can be used to compare and order whole numbers and decimals.

Problem-Solving:

*1-6 Some problems can be solved by identifying elements that repeat in a predictable way.

 <http://www.insidemathematics.org/assets/common-core-math-tasks/decimals.pdf>

 IXL

 5NBT Pretest.docx

 Assessment Pack

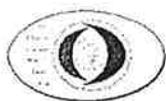
Student Learning Expectation & 21st Century Skills

- Information Literacy
- Critical Thinking
- Spoken Communication
- Written Performance

Interdisciplinary Connections

- Reading for Information
- Explanatory Writing
- Speaking and Listening





Operations with Whole Numbers & Decimals

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

PROCESS

Concepts:
place value
Properties of Operations
compatible numbers
standard algorithm

Generalizations / Enduring Understandings

The use of compatible numbers to estimate solutions provides a viable strategy to check for reasonableness and accuracy.

Addition and subtraction of decimals and whole numbers follows the same process of breaking apart numbers using place value.

The use of the Properties of Operations and powers of 10 facilitate the process of computation.

An awareness of the relative size of a dividend, divisor and quotient in conjunction with a mathematical number sense facilitates the process of division.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What are the standard procedures for adding and subtracting whole numbers and decimals? (factual)
- What are compatible numbers? (factual)
- What is the advantage of rounding numbers including decimals? (conceptual)
- How can estimation validate the reasonableness of sums, differences, products and quotients? (conceptual)
- What makes a rule become a property? (conceptual)
- Does using estimation aid you in the real world? (provocative)
- Is it advantageous to use mental math to add, subtract, multiply and/or divide? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 5

Number & Operations in Base Ten

5.NBT.A. Understand the place value system.

- 5.NBT.A.2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

- 5.NBT.A.4. Use place value understanding to round decimals to any place.
- 5.NBT.B. Perform operations with multi-digit whole numbers and with decimals to hundredths.
 - 5.NBT.B.5. Fluently multiply multi-digit whole numbers using the standard algorithm.
 - 5.NBT.B.6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
 - 5.NBT.B.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to ...

- use mental math and rounding to estimate sums and differences with decimals
- model and solve addition and subtraction of decimals
- multiply two-digit numbers by multiples of ten
- multiply two-digit by three-digit numbers
- estimate and divide by one-digit divisors
- understand that a zero represents a place holder within a quotient
- use patterns to divide
- estimate quotients
- divide by multiples of ten resulting in one-digit or two-digit quotients
- estimate the product and multiply decimals with powers of ten
- divide decimals by powers of ten
- divide by a whole number or by a decimal
- solve problems involving multi-steps
- solve problems by drawing a picture and writing an equation
- solve problems by testing for reasonableness
- solve problems involving missing or extraneous information

Critical Content & Skills

What students must KNOW and be able to DO

Perform operations with multi-digit whole numbers and with decimals to hundredths.

Estimate decimals or whole numbers using rounding and/or compatible numbers.

Recognize our number system is based on the powers of ten.

Multiply and divide by powers of ten.

Gain an awareness of what happens when two decimals are either multiplied or divided.

Use the Properties of Operations to solve problems.

Vocabulary:

place value, decimal, decimal point, estimate, patterns, multiply, divide, tenths, thousands, greater than, less than, equal to, $>$, $<$, $=$, compare/comparison, round, Commutative, Associative, Identity and Zero Property of Multiplication, Properties of Operations, mental math, multiple, model, algorithm, compatible numbers, rounding, array, area model

Core Learning Activities

Perform operation with multi-digit whole numbers and with decimals to hundredths.

- solving problems using graph paper
- math games
- scavenger hunt
- modeling
- bar modeling
- using estimation
- checking answer for reasonableness
- performing standard multiplication algorithm

Estimate decimals or whole numbers using rounding and/or compatible numbers.

- estimating decimals or whole numbers using number lines
- estimating decimals or whole numbers using a multiplication chart

Recognize our number system is based on the powers of ten.

- using place-value flip-chart to recognize our number system is based on powers of ten

Multiply and divide by powers of ten.

- drawing a picture
- writing an equation
- bar modeling
- looking for and explaining patterns

Gain an awareness of what happens when two decimals are either multiplied or divided.

- modeling using grids

Use the Properties of Operations to solve problems.

- identifying the properties
- modeling the properties

Assessments

 Adding and subtracting whole numbers and decimals.docx

 Unit 2 lessons 1-3.docx

 Unit 2 lessons 4-6.docx

 Topic 2

 Topic 3

 Topic 4

 Topic 5

 Topic 6

 Topic 7

Resources

Professional & Student

*enVision Math Topics 2 - 7

*2-1 There is more than one way to do mental calculation. Techniques for doing addition or subtraction calculations mentally involve changing the numbers so the calculation is easy to do mentally.

*2-2 A number line can be used to round whole numbers and decimals by making it easy to see which multiple of 10, 100, etc., or 0.1, 0.01, etc., a number is closest to.

*2-3 There is more than one way to estimate a sum or difference. Some sequences of numbers or objects repeat or grow in predictable ways.

*2-4 Models and algorithms for adding or subtracting multi-digit decimals are just an extension of models and algorithms for adding and subtracting multi-digit whole numbers.

*2-5 & 2-6 Adding or subtracting multi-digit decimals is similar to adding or subtracting multi-digit whole numbers.

*3-1 The properties of multiplication can be used to simplify computation and to verify mental math and paper and pencil algorithm

*3-2, 3-3, 5-1 Basic math facts and place value patterns can be used to find products or quotients when one factor is a multiple of 10, 100 or 1, 000

*3-4, 3-5 The standard multiplication algorithm breaks the calculations into simpler calculations using place values starting with the ones, then the tens and so on.

*4-1 Basic facts and place value patterns can be used to divide multiples of ten, one hundred, and so forth by one-digit numbers.

*4-2, 5-2, 5-6, 5-7 There is more than one way to estimate a quotient. Substituting compatible numbers is an efficient technique for estimating quotients.

- *4-3 Answers to problems should always be checked for reasonableness using either estimation or checking the answer against the question in the problem.
- *4-4 & 4-5 The sharing interpretation of division and money can be used to model the standard algorithm.
- *4-6 The standard division algorithm uses basic facts, place value and the relationship between multiplication and division along with estimation.
- *5-3 An array/area model can be used to model the process for dividing whole numbers by two-digit divisors.
- *5-4 Estimation and place value can help determine the placement of digits in the quotient.
- *5-5 Some real-world quantities have a mathematical relationship; the value of one quantity can be found if you know the value of the other quantity.
- *6-1 & 7-1 Patterns can be used to mentally multiply and divide decimals by 10, 100, and 1,000
- *6-2 Rounding and compatible numbers can be used to estimate the product of a whole number and a decimal.
- *6-3 The location of decimal points can sometimes be decided by reasoning of the relative size of the given numbers.
- *6-4 & 6-5 Place value determines the placement of a decimal in a product
- *6-6 The product of two decimals less than one is less than either factor
- *7-2 Substituting compatible numbers can be used when estimating quotients for calculations with decimals dividends and divisors
- *7-3 The location of decimal points in decimal division can sometimes be decided by reasoning about the relative size of the given numbers.
- *7-4, 7-5 & 7-6 Place value determines the placement of a decimal in a quotient.

Problem Solving:

- *3-6 & 4-7 Information in a problem can often be shown using a diagram and used to solve the problem. Some problems can be solved by writing and completing a number sentence or equation.
- *5-8 Some problems have data missing needed to find the answer and some problems have extra data not needed to solve the problem.
- *2-7, 6-7 & 7-7 Some problems can be solved by first finding and solving a sub-problem and then using that answer to solve the original problem.

 <http://www.insidemathematics.org/assets/common-core-math-tasks/decimals.pdf>

 IXL

 5NBT Pretest.docx

 Assessment Pack

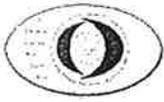
Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Reading for Information
Explanatory Writing
Speaking and Listening





Numerical Expressions, Patterns, and Relationships

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

PATTERNS

Concepts:
variable(s)
Order of Operations
patterns

Generalizations / Enduring Understandings

Numerical expressions follow a specific pattern and relationship between two quantities.

Evaluating the structure of a numerical expression leads to identifying the numerical value through the use of Order of Operations.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- How can you translate words into expressions? (factual)
- How can you evaluate a numerical expression with more than one operation which may include brackets? (factual)
- How can you determine a rule and write an expression? (factual)
- How can you determine the relationship between two sequences? (conceptual)
- Why do you need an agreed upon order for which operations within an numerical expression are performed? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 5

Operations & Algebraic Thinking

5.OA.A. Write and interpret numerical expressions.

- 5.OA.A.1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- 5.OA.A.2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

5.OA.B. Analyze patterns and relationships.

- 5.OA.B.3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

Mathematical Practice

MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to...

- evaluate expressions
- solve problems by using reasonableness
- use patterns to extend tables given a set of values
- identify the relationship between variables in a pattern or table
- apply Order of Operations

Critical Content & Skills

What students must KNOW and be able to DO

Write and interpret numerical expressions. (Order of Operations)

Evaluate expressions.

Write a rule given a pattern.

Vocabulary:

parentheses, brackets, braces, numerical expressions, algebraic expressions, variable, Order of Operations, corresponding terms, numerical expression, patterns, quantities

Core Learning Activities

Write and interpret numerical expressions. (order of operations)

- writing an expression using a variable
- simplify an expression using Order of Operations

Evaluate expressions.

- utilizing a table to evaluate expressions
- using patterns to extend tables

Write a rule given a pattern.

- writing a rule using a table
- creating a table using a rule

Assessments

 Operations and Algebraic Thinking.tst

 Unit 8 lessons 1-3.docx

 Unit 8 lessons 4-8.docx

 Topic 8

Resources

Professional & Student

*enVision Math Topic 8

- *8-1 Mathematical phrases can be represented using a numerical expression.
- *8-2 & 8-3 There is an agreed upon order for which operations within an numerical expression are performed.
- *8-4 & 8-5 Patterns can be used to identify a relationship between two quantities. The value of one quantity can be found if you know the value of the other quantity.
- *8-6 Patterns that repeat in predictable ways may be used to identify relationships (extending tables).

Problem Solving:

*8-7 Solve problems by using reasoning & drawing conclusions using given information.

<http://www.mrmaffesoli.com/index.html>

 <http://www.insidemathematics.org/assets/common-core-math-tasks/hexagons%20in%20a%20row.pdf>

 IXL

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

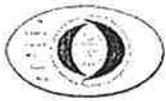
Interdisciplinary Connections

Reading for Information
Explanatory Writing
Speaking and Listening



Atlas Version 9.3.7

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Solving for Parts of a Whole (Fractions)

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

VALUES/EQUALITIES

Concepts:

fractions

compatible numbers

Generalizations / Enduring Understandings

Good number sense aids recognizing the value of fractional parts.

There are different methods that can be used when solving for the value of a number less than one.

Fractions can be represented in different forms and maintain value.

The Fundamental Theorem of Arithmetic states that a number can be factored into prime factors in exactly one way regardless of the order of factors.

Each real number (whole numbers, integers and fractions) can be associated with a unique point on the number line.

Finding common denominators enables adding and subtracting of fractions.

Multiplying a whole number by a fraction involves division as well as multiplication.

Dividing a whole number by a fraction involves multiplying by a reciprocal and/or finding a common denominator.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- How can a number line be used to determine the nearest half or whole it is closest to? (factual)
- How can you estimate when one or more of the numerical representations is less than one? (factual)
- What are the variety of processes implemented when solving a fractional problem involving addition, subtraction, multiplication and division of fractions? (factual)
- Why are a variety of processes implemented when solving a fractional problem involving addition, subtraction, multiplication and division of fractions? (factual)
- How can you use number sense and benchmark fractions to estimate? (factual)
- How can two different fractional numbers represent the same unique point on a number line? (conceptual)
- Why when you multiply two fractions that are less than one the product is smaller than either fraction? (conceptual)
- Is using a compatible number ever better than rounding? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 5

Number & Operations—Fractions

5.NF.A. Use equivalent fractions as a strategy to add and subtract fractions.

- 5.NF.A.1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
- 5.NF.A.2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

5.NF.B. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 5.NF.B.3. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.NF.B.4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- 5.NF.B.4a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$.
- 5.NF.B.4b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- 5.NF.B.5. Interpret multiplication as scaling (resizing), by:
 - 5.NF.B.5a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
 - 5.NF.B.5b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
- 5.NF.B.6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.NF.B.7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
- 5.NF.B.7a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.
- 5.NF.B.7b. Interpret division of a whole number by a unit fraction, and compute such quotients.
- 5.NF.B.7c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.

Mathematical Practice

MP:The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to...

- find the least common multiple to add and subtract fractions with unlike denominators
- find the greatest common factor to simplify fractions not in simplest form
- develop proficient methods and algorithms for adding and subtracting fractions
- illustrate and explain (using pictures and/or models) for estimation of fractional computations
- estimate, model and solve addition and subtraction of mixed numbers
- problem-solve by writing a picture and drawing an equation
- estimate, model and solve to multiply fractions
- solve multi-step problems
- divide fractions by non-zero whole numbers
- solve problems by drawing a picture and writing an equation

Critical Content & Skills

What students must KNOW and be able to DO

Use equivalent fractions as a strategy to add and subtract fractions.

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Core Learning Activities

Use equivalent fractions as a strategy to add and subtract fractions.

- using fraction strips and tiles
- drawing fractional models
- using recipes

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Estimate sums, differences and products of fractions and mixed numbers.

Solve problems with fractions and mixed-numbers using all operations.

Vocabulary:

fraction, equivalent, addition/ add, sum, subtraction/subtract, models, difference, unlike denominator, numerator, benchmark fraction, estimate, reasonableness, mixed numbers, scaling, resizing, LCD, GCF, reciprocal, relative size, rounding, compatible numbers, improper fractions

- simplifying problems (cross-cancellation)

Estimate sums, differences and products of fractions and mixed numbers.

- using number lines
- utilizing benchmark fractions
- creating area models
- using compatible numbers and/or rounding to scale and/or resize

Solve problems with fractions and mixed-numbers using all operations.

- drawing pictures
- writing equations

Assessments

- 📎 Fraction Review Quiz.doc
- 📎 Multiplying Fractions nf4-5.tstrtf.rtf
- 📎 Unit 9 lessons 1-4.docx
- 📎 Topic 9
- 📎 Topic 10
- 📎 Topic 11

Resources

Professional & Student

*enVision topics 9-11

*9-2 & 11-2 A number line can be used to help with estimating if a fraction is closest to which whole number on a number line. Use a number line to estimate sums and differences of fractions. The relative size of the factors can be used to determine the relative size of the product.

*9-3, 9-4, 9-5, 9-6 The product of the denominator of two fractions is the common denominator of both.

*10-1 Sums and differences of mixed numbers can be estimated by rounding each mixed number to the nearest whole number.

*10-2 Models can be used to show different ways of adding and subtracting mixed numbers.

*10-3 & 10-4 One way to add or subtract mixed numbers is to use a number line and find common denominators. Sometimes whole numbers or fractions need to be renamed.

*10-5 There is more than one way to add and subtract mixed numbers.

*11-1 The product of a whole number and a fraction can be interpreted in certain ways. For example using repeated addition or division.

*11-3 Rounding and compatible numbers can be used to estimate the product of fractions or mixed numbers.

*11-4 & 11-5 When you multiply two fractions that are less than one the product is smaller than either fraction.

*11-6 One way to find the product of mixed numbers is to change the calculation to an equivalent one involving improper fractions

*11-8 A fraction describes the division of a whole into equal parts and can be interpreted in more than one way depending on the whole to be divided.

*11-9 A fraction, mixed number or decimal can be used to represent the quotient of whole numbers.

*11-10 & 11-11 One way to find a quotient of a whole number divided by a fraction is to multiply the whole number by the reciprocal of a fraction.

Problem Solving:

*9-1, 9-7 Mathematical explanations can be given using words, pictures, numbers and symbols. A good explanation should be correct, simple, complete and easily understood.

*10-6 & 11-12 Some problems can be solved by writing or completing a number sentence or equation.

*11-7 Some problems can be solved by first finding and solving a sub-problem(s) and then using that answer(s) to solve the original problem.

🔗 <http://www.insidemathematics.org/assets/common-core-math-tasks/cindy's%20cats.pdf>

🔗 <http://www.insidemathematics.org/assets/common-core-math-tasks/fractions.pdf>

🔗 IXL

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

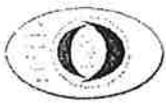
Interdisciplinary Connections

Reading for Information
Explanatory Writing
Speaking and Listening



Atlas Version 9.3.7

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Measurement

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

STRUCTURE

Concepts:
conversion
measurement
relative size

Generalizations / Enduring Understandings

Models with mathematics facilitates the use of structure to solve problems.

There is a structure to the organization of measurement that expedites the conversion of one unit to another.

Graphs are a representation of data that communicates values in a variety of ways.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What are different strategies to find volume? (factual)
- How can three-dimensional shapes be represented and analyzed? (factual)
- How does a model help to represent the volume of a rectangular prism? (conceptual)
- How do different types of graphs represent the same data? (conceptual)
- How can a graph express everyday situations that involve time, distance, relationships and rate of change? (conceptual)
- Will knowing the volume of a solid help you in a real-life situation? (provocative)
- Can altering the graphic representation manipulate the interpretation of the data? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 5

Measurement & Data

5.MD.A. Convert like measurement units within a given measurement system.

- 5.MD.A.1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

5.MD.B. Represent and interpret data.

- 5.MD.B.2. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots.
- 5.MD.C. Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.
- 5.MD.C.3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
 - 5.MD.C.3a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
 - 5.MD.C.3b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
 - 5.MD.C.4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
 - 5.MD.C.5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
 - 5.MD.C.5a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
 - 5.MD.C.5b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
 - 5.MD.C.5c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

Mathematical Practice

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- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to...

- recognize, convert and compare the relationship between metric units (measure length, mass and capacity)
- recognize, convert and compare the relationship between customary units (measure length, mass and capacity)
- develop and apply strategies and formulas for finding volume
- recognize that volume is additive and will apply to solve real world problems
- use models and formulas to find and discuss volume
- construct and interpret frequency tables, line plots, graphs and surveys
- write to explain solution of problem

Critical Content & Skills

What students must KNOW and be able to DO

Convert like measurement units within a given measurement system (customary and metric).

Understand concepts of volume and relate volume to multiplication and to addition.

Represent and interpret data.

Vocabulary:

conversion/convert, metric and customary measurement, relative size, liquid volume, cubic units, mass, capacity, weight, length, kilometer (km), meter (m), centimeter (cm), kilogram (kg), gram (g), liter (L), milliliter (mL), inch (in), foot (ft), yard (yd), mile (mi), ounce (oz), pound (lb), cup (c), pint (pt), quart (qt), gallon (gal), hour, minute, second, line plot, survey, outlier, volume, edge, frequency table, data, survey, sub-problem

Core Learning Activities

Convert like measurement units within a given measurement system (customary and metric).

- utilizing ruler and yard sticks
- utilizing different containers to represent volume
- apply multiplication and division skills to conversions
- reading and applying conversion tables

Understand concepts of volume and relate volume to multiplication and to addition.

- using 3-D shapes to determine volume
- modeling volume through the use of Unifix cubes
- manipulating irregular shapes to determine volume

Represent and interpret data.

- creating line plots
- interpreting data using line plots
- creating surveys
- collecting data

Assessments

 Grade 5 Measurement data testedit.docx

 Grade 5 Measurement data test.docx

 Topic 12

 Topic 13

 Topic 14

Resources

Professional & Student

*enVision topics 12-14

*12-1 & 12-2 Volume is a measure of the amount of space into a solid figure.

*12-3 The volume of some objects can be found by breaking apart the object into other objects in which the volume of each can be found.

*13-1, 13-2, 13-3, 13-4 Convert like measurement units within a given measurement system.

*13-5 and 13-6 Relationships exist that enable you to convert between units of capacity, weight or mass

*14-1 and 14-3 A line plot organizes data on a number line and is useful for showing how a set of data is distributed.

*14-2 and 14-4 Some questions can be answered using a survey.

Problem Solving:

*12-4 Some problems can be solved by using objects to act out the action in the problem and/or reasoning about conditions within the problem.

*13-7 Some problems can be solved by first finding and solving a sub-problem and then using that answer to solve the original problem.

 <http://www.insidemathematics.org/assets/common-core-math-tasks/how%20many%20cubes.pdf>

 IXL

Student Learning Expectation & 21st Century Skills

Information Literacy

Critical Thinking

Spoken Communication

Written Performance

Interdisciplinary Connections

Reading for Information

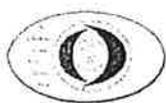
Explanatory Writing

Speaking and Listening



Atlas Version 9.3.7

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Geometry

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

SPATIAL RELATIONSHIPS

Concepts:
classification
coordinates

Generalizations / Enduring Understandings

An object's location in space can be expressed quantitatively.

Commonalities and attributes of objects and situations can be found and used to make generalizations about relationships.

Models with mathematics facilitates the use of structure to solve problems.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What attributes classify polygons? (factual)
- How can angles be measured and classified? (factual)
- How do you read an ordered pair? (factual)
- What are the applications for geometry to architectural design? (factual)
- What attributes classify polygons? (conceptual)
- How could a coordinate grid be used in the real world? (conceptual)
- Why is the understanding of geometry the basis for engineering?(provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 5

Operations & Algebraic Thinking

5.OA.B. Analyze patterns and relationships.

- 5.OA.B.3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

Geometry

5.G.A. Graph points on the coordinate plane to solve real-world and mathematical problems.

- 5.G.A.1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
- 5.G.A.2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points

in the context of the situation.

5.G.B. Classify two-dimensional figures into categories based on their properties.

- 5.G.B.3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
- 5.G.B.4. Classify two-dimensional figures in a hierarchy based on properties.

Mathematical Practice

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- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to...

- classify 2-Dimensional figures based on a hierarchy of properties
- understand that attributes belonging to a category of 2-dimensional figures also belong to all subcategories of that category
- identify and compare algebraic rules and patterns by graphing on a coordinate grid
- problem solve by making and testing generalizations
- problem solve by working backwards

Critical Content & Skills

What students must KNOW and be able to DO

Identify and classify two-dimensional figures into categories based on their properties.

Graph points on a coordinate plane to solve real world and mathematical problems.

Vocabulary:

Polygons, plane shapes, two-dimensional shapes, quadrilaterals, regular polygons, parallelograms, trapezoid, rhombus, parallel sides, equilateral triangle, isosceles triangle, scalene triangle, right triangle, acute triangle, obtuse triangle, coordinate grid, x-axis, y-axis, origin, ordered pair, coordinate system, x coordinate, y coordinate, commonalities, attributes, perpendicular lines

Core Learning Activities

Identify and classify two-dimensional figures into categories based on their properties.

- identifying polygons based on their attributes
- classifying polygons based on their attributes
- sorting polygons
- testing generalizations about polygons

Graph points on a coordinate plane to solve real world and mathematical problems.

- graphing points on a coordinate grid
- reading ordered pairs
- utilizing tables to create ordered pairs
- solving distance problems using a coordinate plane/grid

Assessments

Measurement and Data Test.tst

Classifying Plane Figures.docx

Topic 15

Topic 16

Resources

Professional & Student

*enVision topics 15 & 16

*15-1, 15-2, 15-3 Polygons can be describes by their sides and angles. Plane shapes have many properties that make them different from one another.

*15-4 & 15-5 Classify two-dimensional shapes into categories based on their properties.

*15-6 Commonalities and attributes of objects and situations can be found and used to make generalizations about relationships.

*16-1 The coordinate system is a scheme that uses two perpendicular lines interesting at zero to name the points in the plane.

*16-2,16-3, 16-4 Ordered pairs that satisfy the rule can be used to graph the data.

Problem-Solving:

*16-5 Some problems with the initial data point unknown can be solved by starting with the end result and reversing the steps and processes to work backwards to find the initial data.

*14-5 Mathematical explanations can be given using words, pictures, numbers and symbols. A good explanation should be correct, simple, complete and easy to understand.

<http://www.insidemathematics.org/assets/common-core-math-tasks/granny's%20balloon%20trip.pdf>

[IXL](#)

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Reading for Information
Explanatory Writing
Speaking and Listening

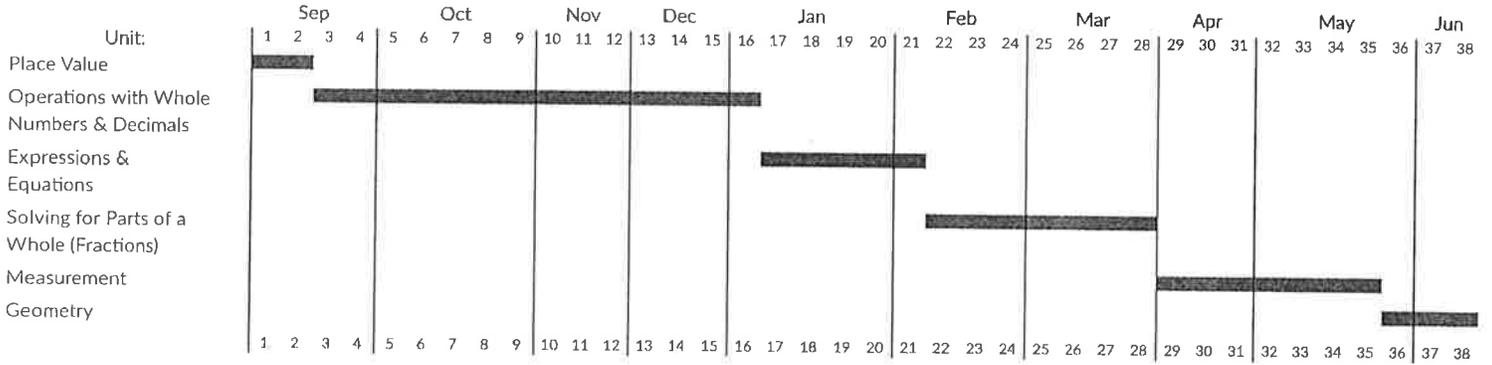




Newtown Public Schools
Math 5 +2018

Reed Intermediate School > Grade 5 > Mathematics > Math 5 +2018

Collaboration





Place Value

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

SYSTEM

Concepts:

place value
number system

Generalizations / Enduring Understandings

The base ten system represents the relationship among numbers.

An understanding of place value transfers to navigating the real world.

Exploring an alternate number system develops a deeper understanding of our base ten system.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What is a digit? (factual)
- What is a value? (factual)
- How can you write a fraction as a decimal? (factual)
- How can you represent a decimal or a fraction as part of a whole. (factual)
- How can you compare and order decimals? (factual)
- What patterns do place value relationships follow? (conceptual)
- How are fractions related to decimals and percents? (conceptual)
- How do decimals and fractions affect the decisions made in everyday life? (conceptual)
- What is the value of seeing the relationship between decimals, fractions and percents? (provocative)
- What is the benefit of using one form over another (decimal, fraction, percent)? (provocative)
- Is the base ten number system easier to use than other number systems in the world? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 5

Number & Operations in Base Ten

5.NBT.A. Understand the place value system.

- 5.NBT.A.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- 5.NBT.A.3. Read, write, and compare decimals to thousandths.
- 5.NBT.A.3b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

Mathematical Practice

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- MP.1. Make sense of problems and persevere in solving them.
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- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to ...

- understand the relationship of how digits in a multi-digit number relate to one another and their place value
- apply decimal understanding to place value and fractions
- compare and order decimals in multiple forms (standard, word and expanded)
- extend and identify patterns using decimals
- use the base ten numeration system to solve problems

Critical Content & Skills

What students must KNOW and be able to DO

Understand the place value system.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

Represent decimals (tenths,hundredths, thousandths) as fractions.

Write decimals in standard, expanded and word form through thousandths.

Compare and order decimals through thousandths.

Vocabulary:

place value, decimal, decimal point, patterns, multiply, divide, tenths, thousands, greater than, less than, equal to, $<$, $>$, $=$, compare/comparison, round, number system

Core Learning Activities

Understand the place value system.

- manipulating numbers using a place value map
- creating a place value map

Perform operations with multi-digit whole numbers and with decimals to hundredths.

- modeling

Represent decimals (tenths,hundredths, thousandths) as fractions.

- modeling
- representing decimals using base ten blocks
- looking for patterns through use of decimal grid

Write decimals in standard, expanded and word form through thousandths.

- writing decimals in each form

Compare and order decimals through thousandths.

- organizing decimals into place-value chart

Assessments

Resources

Professional & Student

- enVision Math Topic 1 (all lessons)

-  Adding and subtracting whole numbers and decimals.docx
-  Modified Topic One Test.docx
-  Unit 1 lessons 1-3.docx
-  Unit 1 lessons 4-6.docx
-  Topic 1

Atlas - Place Value

*1-1, 1-2, 1-3, 1-4: Our number system is based on groups of ten. In a multi-digit number a digit in ones place represents tens times what it would represent in the place immediately to its right and one-tenth to the place immediately to its left.
 *1-5 Place value can be used to compare and order whole numbers and decimals.

Problem-Solving:

*1-6 Some problems can be solved by identifying elements that repeat in a predictable way.

5+ Topic 1 Resources

-  <http://www.insidemathematics.org/assets/common-core-math-tasks/decimals.pdf>
-  IXL
-  5NBT Pretest.docx
-  Assessment Pack

Student Learning Expectation & 21st Century Skills

- Information Literacy
- Critical Thinking
- Spoken Communication
- Written Performance

Interdisciplinary Connections

- Reading for Information
- Explanatory Writing
- Speaking and Listening





Operations with Whole Numbers & Decimals

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

PROCESS

Concepts:
place value
Properties of Operations
compatible numbers
standard algorithm

Generalizations / Enduring Understandings

The use of compatible numbers to estimate solutions provides a viable strategy to check for reasonableness and accuracy.

Addition and subtraction of decimals and whole numbers follows the same process of breaking apart numbers using place value.

The use of the Properties of Operations and powers of 10 facilitate the process of computation.

An awareness of the relative size of a dividend, divisor and quotient in conjunction with a mathematical number sense facilitates the process of division.

Determine most efficient strategy to solve mathematical problems.

Justify conclusions, communicate them to others, and respond to arguments to deepen understanding.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What are the standard procedures for adding and subtracting whole numbers and decimals? (factual)
- What are compatible numbers? (factual)
- What is the advantage of rounding numbers including decimals? (conceptual)
- How can estimation validate the reasonableness of sums, differences, products and quotients? (conceptual)
- What makes a rule become a property? (conceptual)
- How many numbers are there between any two ordinal numbers? (conceptual)
- Does using estimation aid you in the real world? (provocative)
- Is it advantageous to use mental math to add, subtract, multiply and/or divide? (provocative)
- When is it better to represent your remainder as a fraction, a decimal, or to round your answer? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

Number & Operations in Base Ten

5.NBT.A. Understand the place value system.

- 5.NBT.A.2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- 5.NBT.A.4. Use place value understanding to round decimals to any place.

5.NBT.B. Perform operations with multi-digit whole numbers and with decimals to hundredths.

- 5.NBT.B.5. Fluently multiply multi-digit whole numbers using the standard algorithm.
- 5.NBT.B.6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 5.NBT.B.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Mathematical Practice

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- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to ...

- use mental math and rounding to estimate sums and differences with decimals
- model and solve addition and subtraction of decimals
- multiply two-digit numbers by multiples of ten
- multiply two-digit by three-digit numbers
- estimate and divide by one-digit divisors
- understand that a zero represents a place holder within a quotient
- use patterns to divide
- estimate quotients
- divide by multiples of ten resulting in one-digit or two-digit quotients
- estimate the product and multiply decimals with powers of ten
- divide decimals by powers of ten
- divide by a whole number or by a decimal
- solve problems involving multi-steps
- solve problems by drawing a picture and writing an equation
- solve problems by testing for reasonableness
- solve problems involving missing or extraneous information

Critical Content & Skills

What students must KNOW and be able to DO

Perform operations with multi-digit whole numbers and with decimals to hundredths.

Estimate decimals or whole numbers using rounding and/or compatible numbers.

Recognize our number system is based on the powers of ten.

Multiply and divide by powers of ten.

Gain an awareness of what happens when two decimals are either multiplied or divided.

Use the Properties of Operations to solve problems.

Core Learning Activities

Perform operation with multi-digit whole numbers and with decimals to hundredths.

- solving problems using graph paper
- math games
- scavenger hunt
- modeling
- bar modeling
- using estimation
- checking answer for reasonableness
- performing standard multiplication algorithm

Estimate decimals or whole numbers using rounding and/or compatible numbers.

- estimating decimals or whole numbers using number lines
- estimating decimals or whole numbers using a multiplication chart

Vocabulary:

place value, decimal, decimal point, estimate, patterns, multiply, divide, tenths, thousands, greater than, less than, equal to, $<$, $>$, $=$, compare/comparison, round, Commutative, Associative, Identity and Zero Property of Multiplication, Properties of Operations, mental math, multiple, model, algorithm, compatible numbers, rounding, array, area model

Recognize our number system is based on the powers of ten.

- using place-value flip-chart to recognize our number system is based on powers of ten

Multiply and divide by powers of ten.

- drawing a picture
- writing an equation
- bar modeling
- looking for and explaining patterns

Gain an awareness of what happens when two decimals are either multiplied or divided.

- modeling using grids

Use the Properties of Operations to solve problems.

- identify the properties
- modeling the properties

Assessments

 Adding and subtracting whole numbers and decimals.docx

 Unit 2 lessons 1-3.docx

 Unit 2 lessons 4-6.docx

 Topic 2

 Topic 3

 Topic 4

 Topic 5

 Topic 6

 Topic 7

Resources

Professional & Student

*enVision Math Topics 2 - 7

*2-1 There is more than one way to do mental calculation. Techniques for doing addition or subtraction calculations mentally involve changing the numbers so the calculation is easy to do mentally.

*2-2 A number line can be used to round whole numbers and decimals by making it easy to see which multiple of 10, 100, etc., of 0.1, 0.01, etc., a number is closest to.

*2-3 There is more than one way to estimate a sum or difference. Some sequences of numbers or objects repeat or grow in predictable ways.

*2-4 Models and algorithms for adding or subtracting multi-digit decimals are just an extension of models and algorithms for adding and subtracting multi-digit whole numbers.

*2-5 & 2-6 Adding or subtracting multi-digit decimals is similar to adding or subtracting multi-digit whole numbers.

*3-1 The properties of multiplication can be used to simplify computation and to verify mental math and paper and pencil algorithm

*3-2, 3-3, 5-1 Basic math facts and place value patterns can be used to find products or quotients when one factor is a multiple of 10, 100 or 1,000

*3-4, 3-5 The standard multiplication algorithm breaks the calculations into simpler calculations using place values starting with the ones, then the tens and so on.

*4-1 Basic facts and place value patterns can be used to divide multiples of ten, one hundred, and so forth by one-digit numbers.

*4-2, 5-2, 5-6, 5-7 There is more than one way to estimate a quotient. Substituting compatible numbers is an efficient technique for estimating quotients.

*4-3 Answers to problems should always be checked for reasonableness using either estimation or checking the answer against the question in the problem.

*4-4 & 4-5 The sharing interpretation of division and money can be used to model the standard algorithm.

*4-6 The standard division algorithm uses basic facts, place value and the relationship between multiplication and division along with estimation.

*5-3 An array/area model can be used to model the process for dividing whole numbers by two-digit divisors.

*5-4 Estimation and place value can help determine the placement of digits in the quotient.

*5-5 Some real-world quantities have a mathematical relationship; the value of one quantity can be found if you know the value of the other quantity.

*6-1 & 7-1 Patterns can be used to mentally multiply and divide decimals by 10, 100, and 1,000

- *6-2 Rounding and compatible numbers can be used to estimate the product of a whole number and a decimal.
- *6-3 The location of decimal points can sometimes be decided by reasoning of the relative size of the given numbers.
- *6-4 & 6-5 Place value determines the placement of a decimal in a product
- *6-6 The product of two decimals less than one is less than either factor
- *7-2 Substituting compatible numbers can be used when estimating quotients for calculations with decimals dividends and divisors
- *7-3 The location of decimal points in decimal division can sometimes be decided by reasoning about the relative size of the given numbers.
- *7-4, 7-5 & 7-6 Place value determines the placement of a decimal in a quotient.

Problem Solving:

- *3-6 & 4-7 Information in a problem can often be shown using a diagram and used to solve the problem. Some problems can be solved by writing and completing a number sentence or equation.
- *5-8 Some problems have data missing needed to find the answer and some problems have extra data not needed to solve the problem.
- *2-7, 6-7 & 7-7 Some problems can be solved by first finding and solving a sub-problem and then using that answer to solve the original problem.

 5+ Topic 2 Resources

 5+ Topic 3 Resources

 5+ Topic 4 Resources

 5+ Topic 5 Resources

 5+ Topic 6 Resources

 5+ Topic 7 Resources

 5NBT Pretest.docx

 Assessment Pack

 <http://www.insidemathematics.org/assets/common-core-math-tasks/decimals.pdf>

 IXL

Student Learning Expectation & 21st Century Skills

- Information Literacy
- Critical Thinking
- Spoken Communication
- Written Performance

Interdisciplinary Connections

- Reading for Information
- Explanatory Writing
- Speaking and Listening





Expressions & Equations

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

BALANCE

Concepts:

numerical expressions
algebraic expressions
Properties of Operations
order of operations
inequalities
independent and dependent variables

Generalizations / Enduring Understandings

Solving linear equations and inequalities involves the inverse of operations.

A linear relationship is developed through the use of patterns and expressions.

Context gives meaning to the impact of the independent variable on the dependent variable.

Maintaining balance is the foundation of all algebraic reasoning.

Numerical patterns and relationships have structure and can be related to an algebraic expression.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What are the Commutative, Distributive, Associative and Identity Properties? (factual)
- How do you use properties of operations to simplify expressions? (factual)
- What is an input/output table? (factual)
- How do you simplify an expression? (factual)
- What are the properties of inequalities? (factual)
- How can you write a number using exponents? (factual)
- How do you use the Distributive Property to evaluate expressions? (factual)
- How do you simplify an algebraic expression? (factual)
- How do you use the Distributive Property to identify equivalent expressions? (factual)
- How can you write an inequality to describe a situation? (factual)
- How can using an inverse operation solve an algebraic equation? (conceptual)
- What is the value of using exponential notation? (conceptual)
- How can you keep an equation balanced? (conceptual)
- What does it mean for one quantity to depend on another quantity? (conceptual)
- How can you use patterns to solve an equation? (conceptual)
- What is the real world application of understanding algebraic reasoning? (conceptual)
- What would be the result of not having the order of operations? (conceptual)
- What else in our world depends on balance? (provocative)
- What would be the result of not having the order of operations? (conceptual)
- Can time be a dependent variable? (provocative)
- What could be an independent variable? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 6

The Number System

6. NS.B. Compute fluently with multi-digit numbers and find common factors and multiples.

- 6.NS.B.4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

Expressions & Equations

6.EE.A. Apply and extend previous understandings of arithmetic to algebraic expressions.

- 6.EE.A.1. Write and evaluate numerical expressions involving whole-number exponents.
- 6.EE.A.2. Write, read, and evaluate expressions in which letters stand for numbers.
 - 6.EE.A.2a. Write expressions that record operations with numbers and with letters standing for numbers.
 - 6.EE.A.2b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.
 - 6.EE.A.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
- 6.EE.A.3. Apply the properties of operations to generate equivalent expressions.
- 6.EE.A.4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

6.EE.B. Reason about and solve one-variable equations and inequalities.

- 6.EE.B.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
- 6.EE.B.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
- 6.EE.B.7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

6.EE.C. Represent and analyze quantitative relationships between dependent and independent variables.

- 6.EE.C.9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will have the ability to ...

- use GCF, LCM and Distributive Property to compute fluently
- develop understanding of a whole-number exponent as shorthand for repeated multiplication of a number times itself
- extend understanding of order of operations to include exponents
- define what a variable is
- introduce and define coefficient and term
- read expressions aloud to explore the concept of quantities
- use Properties of Operations to simplify expressions, therefore producing equivalent expressions
- use properties of equality to solve algebraic equations
- write and solve inequalities
- identify dependent and independent variables
- recognize patterns within input/output tables

Critical Content & Skills

What students must KNOW and be able to DO

Apply and extend previous understandings of arithmetic to algebraic expressions.

Understand and apply the Distributive Property to evaluate expressions.

Write and evaluate exponents in a variety of ways.

Vocabulary:

numerical expressions, whole-number, exponents, algebraic expressions, term, product, factor, coefficient, formula, order of operations, equivalent, combine like terms, equivalent expressions, equation, inequality, substitution, solution, variable, Commutative, Distributive, Associative, Identity Property, Multiplication and Division Property of Equality

Core Learning Activities

Apply and extend previous understandings of arithmetic to algebraic expressions.

- evaluating expressions
- applying properties to simplify different algebraic expressions
- utilizing order of operations
- substituting a number for a variable
- writing equivalent expressions

Understand and apply the Distributive Property to evaluate expressions.

- modeling

Write and evaluate exponents in a variety of ways.

- utilizing place-value charts
- writing numbers in expanded form using exponents

Assessments

 Topic 1

Resources

Professional & Student

 enVision Math topic 1 (Grade 6)

- *1.1 Place values (10, 100, 1000, and so on) can be represented using exponents.
- *1.2 The commutative, associative and identity properties can be applied to addition and multiplication for all sets of numbers.
- *1.3 There is an order in which operations are carried out in a numerical expression.
- *1.4 The Distributive Property is another property that can be used to help simplify expressions.
- *1.5 Numerical expressions can be evaluated through an order of operations.
- *1.6-1.8 Some mathematical phrases can be represented & simplified/solved using a variable in an algebraic expression.
- *1.9 The input output table represents an algebraic relationship.
- *1.10 You can simplify algebraic expressions by combining like terms.
- *1.11 & 1.12 You can apply the Distributive and other properties of operations to write equivalent expressions.

Problem Solving:

Using an organized list or a table, looking for numerical patterns, drawing a picture or writing an equation are all problem solving strategies.

Some problems can be solved by reasoning about the conditions in the problems.

Math and Literature: "Clever Calculations" pp 6-7

Math and Literature: "Precise Patterns" pp 22-23

Math and Literature: "Made in America" pp 6-7

 5+ 6th Grade Unit 1

 <http://www.insidemathematics.org/assets/common-core-math-tasks/boxes.pdf>

 <http://www.insidemathematics.org/assets/common-core-math-tasks/gym.pdf>

 Passport_for_Around_the_World_order_of_operations (1).docx

Student Learning Expectation & 21st

Interdisciplinary Connections

Century Skills

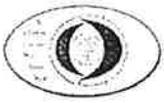
Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Reading for Information
Explanatory Writing
Speaking and Listening



Atlas Version 9.3.7

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Solving for Parts of a Whole (Fractions)

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

VALUES/EQUALITIES

Concepts:
fractions
compatible numbers

Generalizations / Enduring Understandings

Good number sense aids recognizing the value of fractional parts.

There are different methods that can be used when solving for the value of a number less than one.

Fractions can be represented in different forms and maintain value.

The Fundamental Theorem of Arithmetic states that a number can be factored into prime factors in exactly one way regardless of the order of factors.

Each real number (whole numbers, integers and fractions) can be associated with a unique point on the number line.

Finding common denominators enables adding and subtracting of fractions.

Multiplying a whole number by a fraction involves division as well as multiplication.

Dividing a whole number by a fraction involves multiplying by a reciprocal and/or finding a common denominator.

Fractions, decimals, or percentages can be used interchangeably to represent the identical part of a whole.

Percents can be greater than one hundred or less than one which allows for numbers to be used for different purposes.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- How can a number line be used to determine the nearest half or whole it is closest to? (factual)
- How can you estimate when one or more of the numerical representations is less than one? (factual)
- What are the variety of processes implemented when solving a fractional problem involving addition, subtraction, multiplication and division of fractions? (factual)
- How can you use number sense and benchmark fractions to estimate? (factual)
- Why are a variety of processes implemented when solving a fractional problem involving addition, subtraction, multiplication and division of fractions? (conceptual)
- How can two different fractional numbers represent the same unique point on a number line? (conceptual)
- Why when you multiply two fractions that are less than one the product is smaller than either fraction? (conceptual)
- Is using a compatible number ever better than rounding? (provocative)
- Is it better to solve a problem using fractions or decimals? (provocative)
- What factors help you strategically apply different division algorithms (an area model, multiplying by a reciprocal or finding a common denominator)? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 5

Number & Operations—Fractions

5.NF.A. Use equivalent fractions as a strategy to add and subtract fractions.

- 5.NF.A.1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
- 5.NF.A.2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

5.NF.B. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 5.NF.B.3. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.NF.B.4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- 5.NF.B.4a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$.
- 5.NF.B.4b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- 5.NF.B.5. Interpret multiplication as scaling (resizing), by:
 - 5.NF.B.5a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
 - 5.NF.B.5b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
- 5.NF.B.6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.NF.B.7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
- 5.NF.B.7a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.
- 5.NF.B.7b. Interpret division of a whole number by a unit fraction, and compute such quotients.
- 5.NF.B.7c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to...

- find the least common multiple to add and subtract fractions with unlike denominators
- find the greatest common factor to simplify fractions not in simplest form
- develop proficient methods and algorithms for adding and subtracting fractions
- illustrate and explain (using pictures and/or models) for estimation of fractional computations
- estimate, model and solve addition and subtraction of mixed numbers
- problem-solve by writing a picture and drawing an equation
- estimate, model and solve to multiply fractions
- solve multi-step problems
- divide fractions by non-zero whole numbers
- solve problems by drawing a picture and writing an equation

Critical Content & Skills

What students must **KNOW** and be able to **DO**

Use equivalent fractions as a strategy to add and subtract fractions.

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Estimate sums, differences and products of fractions and mixed numbers.

Solve problems with fractions and mixed-numbers using all operations.

Vocabulary:

fraction, equivalent, addition/ add, sum, subtraction/subtract, models, difference, unlike denominator, numerator, benchmark fraction, estimate, reasonableness, mixed numbers, scaling, resizing, LCD, GCF, reciprocal, relative size, rounding, compatible numbers, improper fractions

Core Learning Activities

Use equivalent fractions as a strategy to add and subtract fractions.

- using fraction strips and tiles
- drawing fractional models
- using recipes

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- simplifying problems (cross-cancellation)

Estimate sums, differences and products of fractions and mixed numbers.

- using number lines
- utilizing benchmark fractions
- creating area models
- using compatible numbers and/or rounding to scale and/or resize

Solve problems with fractions and mixed-numbers using all operations.

- drawing pictures
- writing equations

Assessments

 Fraction Review Quiz.doc

 Multiplying Fractions nf4-5.tstrtf.rtf

 Unit 9 lessons 1-4.docx

 Topic 9

 Topic 10

 Topic 11

Resources

Professional & Student

*enVision topics 9-11

*9-2 & 11-2 A number line can be used to help with estimating if a fraction is closest to which whole number on a number line. Use a number line to estimate sums and differences of fractions. The relative size of the factors can be used to determine the relative size of the product.

*9-3, 9-4, 9-5, 9-6 The product of the denominator of two fractions is the common denominator of both.

*10-1 Sums and differences of mixed numbers can be estimated by rounding each mixed number to the nearest whole number.

*10-2 Models can be used to show different ways of adding and subtracting mixed numbers.

*10-3 & 10-4 One way to add or subtract mixed numbers is to use a number line and find common denominators. Sometimes whole numbers or fractions need to be renamed.

*10-5 There is more than one way to add and subtract mixed numbers.

*11-1 The product of a whole number and a fraction can be interpreted in certain ways. For example using repeated addition or division.

*11-3 Rounding and compatible numbers can be used to estimate the product of fractions or mixed numbers.

*11-4 & 11-5 When you multiply two fractions that are less than one the product is smaller than either fraction.

*11-6 One way to find the product of mixed numbers is to change the calculation to an equivalent one involving improper fractions

*11-8 A fraction describes the division of a whole into equal parts and can be interpreted in more than one way depending on the whole to be divided.

*11-9 A fraction, mixed number or decimal can be used to represent the quotient of whole numbers.

*11-10 & 11-11 One way to find a quotient of a whole number divided by a fraction is to multiply the whole number by the reciprocal of a fraction.

Problem Solving:

*9-1, 9-7 Mathematical explanations can be given using words, pictures, numbers and symbols. A good explanation should be correct, simple, complete and easily understood.

*10-6 & 11-12 Some problems can be solved by writing or completing a number sentence or equation.

*11-7 Some problems can be solved by first finding and solving a sub-problem(s) and then using that answer(s) to solve the original problem.

 5+ Topic 9 Resources

 5+ Topic 10 Resources

 5 + Topic 11 Resources

 <http://www.insidemathematics.org/assets/common-core-math-tasks/cindy's%20cats.pdf>

 <http://www.insidemathematics.org/assets/common-core-math-tasks/fractions.pdf>

 IXL

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Reading for Information
Explanatory Writing
Speaking and Listening





Measurement

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

STRUCTURE

Concepts:
conversion
measurement
relative size

Generalizations / Enduring Understandings

Models with mathematics facilitates the use of structure to solve problems.

There is a structure to the organization of measurement that expedites the conversion of one unit to another.

Graphs are a representation of data that communicate values in a variety of ways.

The volume of irregular solids can be calculated by strategically analyzing the volume of two or more rectangular prisms.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What are the different strategies to find volume? (factual)
- How can three-dimensional shapes be represented and analyzed? (factual)
- How does a model help to represent the volume of a rectangular prism? (conceptual)
- How do different types of graphs represent the same data? (conceptual)
- How can a graph express everyday situations that involve time, distance, relationships and rate of change? (conceptual)
- How is the measure of volume related to the area of the base of a polygon? (conceptual)
- When can volume be expressed without using cubic units? (conceptual)
- How can you use an understanding of the volume of a solid to help you solve real-life problems? (provocative)
- Can altering the graphic representation of a data set manipulate the interpretation of the data? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 5

Measurement & Data

5.MD.A. Convert like measurement units within a given measurement system.

- 5.MD.A.1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

5.MD.B. Represent and interpret data.

- 5.MD.B.2. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots.

5.MD.C. Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

- 5.MD.C.3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- 5.MD.C.3a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
- 5.MD.C.3b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
- 5.MD.C.4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
- 5.MD.C.5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
- 5.MD.C.5a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
- 5.MD.C.5b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
- 5.MD.C.5c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to...

- recognize, convert and compare the relationship between metric units (measure length, mass and capacity)
- recognize, convert and compare the relationship between customary units (measure length, mass and capacity)
- develop and apply strategies and formulas for finding volume
- recognize that volume is additive and will apply to solve real world problems
- use models and formulas to find and discuss volume
- construct and interpret frequency tables, line plots, graphs and surveys
- write to explain solution of problem

Critical Content & Skills

What students must KNOW and be able to DO

Convert like measurement units within a given measurement system (customary and metric).

Understand concepts of volume and relate volume to multiplication and to addition.

Represent and interpret data.

Vocabulary:

conversion/convert, metric and customary measurement, relative size, liquid volume, cubic units, mass, capacity, weight, length, kilometer (km), meter (m), centimeter (cm), kilogram (kg), gram (g), liter (L), milliliter (mL), inch (in), foot (ft), yard (yd), mile (mi), ounce (oz), pound (lb), cup (c), pint (pt), quart (qt), gallon (gal), hour, minute, second, line plot, survey, outlier, volume, edge, frequency table, data, survey, sub-problem

Core Learning Activities

Convert like measurement units within a given measurement system (customary and metric).

- utilizing ruler and yard sticks
- utilizing different containers to represent volume
- apply multiplication and division skills to conversions
- reading and applying conversion tables

Understand concepts of volume and relate volume to multiplication and to addition.

- using 3-D shapes to determine volume
- modeling volume through the use of Unifix cubes
- manipulating irregular shapes to determine volume

Represent and interpret data.

- creating line plots
- interpreting data using line plots
- creating surveys
- collecting data

Assessments

Grade 5 Measurement data testedit.docx

Grade 5 Measurement data test.docx

Topic 12

Topic 13

Topic 14

Resources

Professional & Student

*enVision topics 12-14

- *12-1 & 12-2 Volume is a measure of the amount of space into a solid figure.
- *12-3 The volume of some objects can be found by breaking apart the object into other objects in which the volume of each can be found.
- *13-1, 13-2, 13-3, 13-4 Convert like measurement units within a given measurement system.
- *13-5 and 13-6 Relationships exist that enable you to convert between units of capacity, weight or mass
- *14-1 and 14-3 A line plot organizes data on a number line and is useful for showing how a set of data is distributed.
- *14-2 and 14-4 Some questions can be answered using a survey.

Problem Solving:

- *12-4 Some problems can be solved by using objects to act out the action in the problem and/or reasoning about conditions within the problem.
- *13-7 Some problems can be solved by first finding and solving a sub-problem and then using that answer to solve the original problem.

5+ Topic 12 Resources

5+ Topic 13 Resources

5+ Topic 14 Resources

<http://www.insidemathematics.org/assets/common-core-math-tasks/how%20many%20cubes.pdf>

IXL

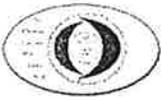
Student Learning Expectation & 21st Century Skills

- Information Literacy
- Critical Thinking
- Spoken Communication
- Written Performance

Interdisciplinary Connections

- Reading for Information
- Explanatory Writing
- Speaking and Listening





Geometry

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

SPATIAL RELATIONSHIPS

Concepts:
classification
coordinates

Generalizations / Enduring Understandings

An object's location in space can be expressed quantitatively.

Understanding that positive and negative numbers' values allows plotting points in all four quadrants of a coordinate plane.

Commonalities and attributes of objects and situations can be found and used to make generalizations about relationships.

Analyzing the attributes of polygons allows you to construct arguments about how they are classified.

A function is a relationship between two variables in which there is only one y value for each x value.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What attributes classify polygons? (factual)
- How can angles be measured and classified? (factual)
- How do you read an ordered pair? (factual)
- What are the applications for geometry to architectural design? (factual)
- What attributes classify polygons? (conceptual)
- How could a coordinate grid be used in the real world? (conceptual)
- What effect does a change in one value of a function have on the other? (conceptual)
- Why is the understanding of geometry the basis for engineering? (provocative)
- How can you classify polygons in a hierarchy based on their properties? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 5

Operations & Algebraic Thinking

5.OA.B. Analyze patterns and relationships.

- 5.OA.B.3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

Geometry

5.G.A. Graph points on the coordinate plane to solve real-world and mathematical problems.

- 5.G.A.1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
- 5.G.A.2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points

in the context of the situation.

5.G.B. Classify two-dimensional figures into categories based on their properties.

- 5.G.B.3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
- 5.G.B.4. Classify two-dimensional figures in a hierarchy based on properties.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to...

- classify 2-Dimensional figures based on a hierarchy of properties
- understand that attributes belonging to a category of 2-dimensional figures also belong to all subcategories of that category
- identify and compare algebraic rules and patterns by graphing on a coordinate grid
- problem solve by making and testing generalizations
- problem solve by working backwards

Critical Content & Skills

What students must KNOW and be able to DO

Identify and classify two-dimensional figures into categories based on their properties.

Graph points on a coordinate plane to solve real world and mathematical problems.

Vocabulary:

Polygons, plane shapes, two-dimensional shapes, quadrilaterals, regular polygons, parallelograms, trapezoid, rhombus, parallel sides, equilateral triangle, isosceles triangle, scalene triangle, right triangle, acute triangle, obtuse triangle, coordinate grid, x-axis, y-axis, origin, ordered pair, coordinate system, x coordinate, y coordinate, commonalities, attributes, perpendicular lines

Core Learning Activities

Identify and classify two-dimensional figures into categories based on their properties.

- identifying polygons based on their attributes
- classifying polygons based on their attributes
- sorting polygons
- testing generalizations about polygons

Graph points on a coordinate plane to solve real world and mathematical problems.

- graphing points on a coordinate grid
- reading ordered pairs
- utilizing tables to create ordered pairs
- solving distance problems using a coordinate plane/grid

Assessments

Measurement and Data Test.tst

Classifying Plane Figures.docx

Topic 15

Topic 16

Topic 14

Resources

Professional & Student

*enVision topics 15 & 16

*15-1, 15-2, 15-3 Polygons can be describes by their sides and angles. Plane shapes have many properties that make them different from one another.

*15-4 & 15-5 Classify two-dimensional shapes into categories based on their properties.

*15-6 Commonalities and attributes of objects and situations can be found and used to make generalizations about relationships.

*16-1 The coordinate system is a scheme that uses two perpendicular lines interesting at zero to name the points in the plane.

*16-2.16-3, 16-4 Ordered pairs that satisfy the rule can be used to graph the data.

Problem-Solving:

*16-5 Some problems with the initial data point unknown can be solved by starting with the end result and reversing the steps and processes to work backwards to find the initial data.

*14-5 Mathematical explanations can be given using words, pictures, numbers and symbols. A good explanation should be correct, simple, complete and easy to understand.

 [5+ Topic 15 Resources](#)

 [5+ Topic 16 Resources](#)

 <http://www.insidemathematics.org/assets/common-core-math-tasks/granny's%20balloon%20trip.pdf>

 [IXL](#)

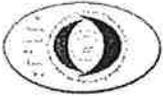
Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Reading for Information
Explanatory Writing
Speaking and Listening





Expressions & Equations

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

BALANCE

Concepts:

numerical expressions

algebraic expressions

Properties of Operations

order of operations

inequalities

independent and dependent variables

Generalizations / Enduring Understandings

Solving linear equations and inequalities involves the inverse of operations.

A linear relationship is developed through the use of patterns and expressions.

Context gives meaning to the impact of the independent variable on the dependent variable.

Maintaining balance is the foundation of all algebraic reasoning.

Numerical patterns and relationships have structure and can be related to an algebraic expression.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What are the Commutative, Distributive, Associative and Identity Properties? (factual)
- How do you use properties of operations to simplify expressions? (factual)
- What is an input/output table? (factual)
- How do you simplify an expression? (factual)
- What are the properties of inequalities? (factual)
- How can you write a number using exponents? (factual)
- How do you use the Distributive Property to evaluate expressions? (factual)
- How do you simplify an algebraic expression? (factual)
- How do you use the Distributive Property to identify equivalent expressions? (factual)
- How can you write an inequality to describe a situation? (factual)
- How can using an inverse operation solve an algebraic equation? (conceptual)
- What is the value of using exponential notation? (conceptual)
- How can you keep an equation balanced? (conceptual)
- What does it mean for one quantity to depend on another quantity? (conceptual)
- How can you use patterns to solve an equation? (conceptual)
- What is the real world application of understanding algebraic reasoning? (conceptual)
- What would be the result of not having the order of operations? (conceptual)
- What else in our world depends on balance? (provocative)
- Can time be a dependent variable? (provocative)
- What could be an independent variable? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 6

The Number System

6. NS.B. Compute fluently with multi-digit numbers and find common factors and multiples.

- 6.NS.B.4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

Expressions & Equations

6.EE.A. Apply and extend previous understandings of arithmetic to algebraic expressions.

- 6.EE.A.1. Write and evaluate numerical expressions involving whole-number exponents.
- 6.EE.A.2. Write, read, and evaluate expressions in which letters stand for numbers.
- 6.EE.A.2a. Write expressions that record operations with numbers and with letters standing for numbers.
- 6.EE.A.2b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.
- 6.EE.A.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
- 6.EE.A.3. Apply the properties of operations to generate equivalent expressions.
- 6.EE.A.4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

6.EE.B. Reason about and solve one-variable equations and inequalities.

- 6.EE.B.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
- 6.EE.B.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
- 6.EE.B.7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

6.EE.C. Represent and analyze quantitative relationships between dependent and independent variables.

- 6.EE.C.9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will have the ability to ...

- use GCF, LCM and Distributive Property to compute fluently
- develop understanding of a whole-number exponent as shorthand for repeated multiplication of a number times itself
- extend understanding of order of operations to include exponents
- define what a variable is
- introduce and define coefficient and term
- read expressions aloud to explore the concept of quantities
- use Properties of Operations to simplify expressions, therefore producing equivalent expressions
- use properties of equality to solve algebraic equations
- write and solve inequalities
- identify dependent and independent variables
- recognize patterns within input/output tables

Critical Content & Skills

What students must KNOW and be able to DO

Apply and extend previous understandings of arithmetic to algebraic expressions.

Understand and apply the Distributive Property to evaluate expressions.

Write and evaluate exponents in a variety of ways.

Reason about and solve one-variable equations and inequalities.

Represent and analyze quantitative relationships between dependent and independent variables.

Vocabulary:

numerical expressions, whole-number, exponents, algebraic expressions, term, product, factor, coefficient, formula, order of operations, equivalent, combine like terms, equivalent expressions, equation, inequality, input output table, inverse relationship, independent & dependent variable, Addition, Subtraction, Multiplication and Division Property of Equality, substitution, solution, variable, reciprocal, Commutative, Distributive, Associative, Identity Property

Core Learning Activities

Apply and extend previous understandings of arithmetic to algebraic expressions.

- evaluating expressions
- applying properties to simplify different algebraic expressions
- utilizing order of operations
- substituting a number for a variable
- writing equivalent expressions

Understand and apply the Distributive Property to evaluate expressions.

- modeling

Write and evaluate exponents in a variety of ways.

- utilizing place-value charts
- writing numbers in expanded form using exponents

Reason about and solve one-variable equations and inequalities.

- using bar models
- applying properties of equality
- drawing pictures to model properties of equalities
- writing inequalities using one variable

Represent and analyze quantitative relationships between dependent and independent variables.

- highlighting and/or underlining variables
- using tables to find patterns

Assessments

 Topic 1

 Topic 2

 Topic 3

Resources

Professional & Student

*enVision Math topics 1, 2 & 3

- *1.1 Place values (10, 100, 1000, and so on) can be represented using exponents.
- *1.2 The commutative, associative and identity properties can be applied to addition and multiplication for all sets of numbers.
- *1.3 There is an order in which operations are carried out in a numerical expression.
- *1.4 The Distributive Property is another property that can be used to help simplify expressions.
- *1.6-1.8 Some mathematical phrases can be represented & simplified/solved using a variable in an algebraic expression.
- *1.9 The input output table represents an algebraic relationship.
- *1.10 You can simplify algebraic expressions by combining like terms.
- *1.11 & 1.12 You can apply the Distributive and other properties of operations to write equivalent expressions.
- *2.1 An equation is true when both sides of the equation are equal.
- *2.2 Use the properties of equality to balance equations.
- *2.3, 2.5 & 2.6 Use inverse operations to solve simple equations.
- *2.7 & 2.8 Inequalities compare two values or show that two values are not equal
- *3.1 Variables can be used to represent two quantities that change in relationship to one another. The dependent variable changes in response to the independent variable.
- *3.2 & 3.3 Patterns can sometimes help identify the relationship between quantities, and equation can be written describing the relationship.

Problem Solving:

*1-13, 2-9 & 3-4 Using an organized list or a table, looking for numerical patterns, drawing a picture or writing an equation are all problem solving strategies. Some problems can be solved by reasoning about the conditions in the problems.

Math and Literature: "Clever Calculations" pp 6-7

Math and Literature: "Precise Patterns" pp 22-23

Math and Literature: "Made in America" pp 6-7

OMIT: lesson 1.5 (process of decimals taught later in the year)

<http://www.insidemathematics.org/assets/common-core-math-tasks/boxes.pdf>

<http://www.insidemathematics.org/assets/common-core-math-tasks/gym.pdf>

[Passport_for_Around_the_World_order_of_operations \(1\).docx](#)

[IXL](#)

Student Learning Expectation & 21st Century Skills

Information Literacy

Critical Thinking

Spoken Communication

Written Performance

Interdisciplinary Connections

Reading for Information

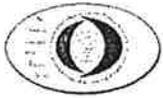
Explanatory Writing

Speaking and Listening



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Operations with Whole Numbers and Decimals

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

PROCESS

Concepts:

round numbers
compatible numbers
place value
standard algorithm

Generalizations / Enduring Understandings

The use of compatible numbers and/or rounding to estimate solutions provides viable strategies to check for reasonableness and accuracy.

Solving for addition and subtraction of decimals and whole numbers follows the same process of decomposing numbers using place value.

An awareness of the relative size of the product or quotient in conjunction with a mathematical number sense facilitates the process of multiplication and division.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- How can you estimate with decimals? (factual)
- How can you add whole numbers and decimals? (factual)
- How can you multiply or divide whole numbers and decimals? (factual)
- What happens when you multiply two decimals that are less than one? (conceptual)
- Why does multiplication of decimals create a smaller product? (conceptual)
- What happens when you divide a decimal by a whole number? (conceptual)
- What is the relative size of a quotient when you divide a decimal by a decimal? (conceptual)
- Does a divisor need to be a whole number? (conceptual)
- Is there a benefit to using compatible numbers versus rounding? (provocative)
- When is it appropriate to estimate solutions involving decimals in the real world? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 6

The Number System

- 6. NS.B. Compute fluently with multi-digit numbers and find common factors and multiples.
 - 6.NS.B.2. Fluently divide multi-digit numbers using the standard algorithm.
 - 6.NS.B.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Expressions & Equations

6.EE.A. Apply and extend previous understandings of arithmetic to algebraic expressions.

- 6.EE.A.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

6.EE.B. Reason about and solve one-variable equations and inequalities.

- 6.EE.B.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
- 6.EE.B.7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The student will have the ability to...

- identify compatible whole numbers to estimate solutions to decimal problems
- round decimal numbers to estimate solutions
- fluently add, subtract, multiply and divide multi-digit decimals
- evaluate expressions and solve equations using decimals

Critical Content & Skills

What students must KNOW and be able to DO

Estimate decimals or whole numbers using rounding and/or compatible numbers.

Compute fluently with multi-digit numbers and decimals to the ten-thousandths.

Evaluate expressions and solve equations with decimals.

Vocabulary:

estimate, compatible numbers, quotient, standard algorithm, dividend, divisor, remainder, quotient, decimal, place value, product, sum, difference, expressions, evaluate, equations, inverse, sub-problem (hidden question)

Core Learning Activities

Estimate decimals or whole numbers using rounding and/or compatible numbers.

- modeling
- estimating decimals and whole numbers using rounding and/or compatible numbers

Compute fluently with multi-digit numbers and decimals to the ten-thousandths.

- using inverse operations
- applying standard algorithm for all operations (decimals and whole numbers)

Evaluate and solve expressions and equations with decimals.

- evaluating and solving expressions with decimals
- using inverse operations

Assessments

Resources

Professional & Student

*enVision Math Topics 4 - 5

*4-1 & 4-4 There is more than one way to estimate a sum or difference. Rounding and looking for compatible numbers are processes for finding the multiple of 10, 100 etc. or 0.1, .01 etc. closest to a given number.

4-2 Standard addition and subtraction algorithms facilitate computation.

*4-3 & 5-7 Addition, subtraction and even division equations can be solved by using inverse operations.

*4-5 & 5-4 The standard multiplication algorithm and division algorithm involving decimals are extensions of the standard algorithm for multiplying and dividing whole numbers.

*5-1 There is more than one way to estimate a quotient. Substituting compatible numbers is an efficient technique for estimating quotients.

*5-2 & 5-3 Dividing with two-digit divisors is just an extension of the steps for dividing with one-digit divisors.

*5-5 Moving the decimal point the same number of places in both the divisor and the dividend signifies multiplying both by the same power of ten.

*5-6 Evaluating expressions with decimals can be solved by replacing the variable with a given decimal.

Problem-Solving:

*4-6 Recording information in a table can help you understand and solve some problems.

*5-8 Some problems can be solved by first finding and solving a sub-problem (hidden question) and then using that answer to solve the original problem.

Math and Literature: "Clever Calculations: pp 10-11

<http://www.insidemathematics.org/assets/common-core-math-tasks/baseball%20players.pdf>

<http://www.insidemathematics.org/assets/common-core-math-tasks/rabbit%20costumes.pdf>

[IXL](#)

 Topic 4

 Topic 5

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Reading for Information
Explanatory Writing
Speaking and Listening



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Fractions and Percents

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

TRANSFORMATION

Concepts:

fraction
reciprocal
percent

Generalizations / Enduring Understandings

Fractions, decimals or percentages can be transformed to represent the identical part of a whole.

There are different processes when solving problems containing fractions and/or mixed numbers.

Numbers can exhibit an inverse relationship to transform a division problem into a multiplication problem.

Percents can be greater than one hundred or less than one which allows for numbers to be used for different purposes.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What ways can you find the GCF of a set of whole numbers? (factual)
- What ways can you find the LCM of two whole numbers? (factual)
- How can fractions be represented using a model? (factual)
- How do you find the quotient when dividing a whole number by a fraction, a fraction by a fraction, or a fraction by a mixed number? (factual)
- What are some of the methods we can use to check to see if an answer is reasonable? (conceptual)
- Is there more than one way to estimate the quotient of a mixed number? (conceptual)
- Are the strategies used to evaluate or solve an algebraic expression or equation involving fractions different than the strategies used with whole numbers? (conceptual)
- When can a percentage be over one hundred or less than one? (provocative)
- When is it appropriate to estimate solutions involving fractions in the real world? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 6

Ratios & Proportional Relationships

6.RP.A. Understand ratio concepts and use ratio reasoning to solve problems.

- 6.RP.A.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double

number line diagrams, or equations.

- 6.RP.A.3c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

The Number System

6.NS.A. Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

- 6.NS.A.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

6.NS.B. Compute fluently with multi-digit numbers and find common factors and multiples.

- 6.NS.B.4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

6.NS.C. Apply and extend previous understandings of numbers to the system of rational numbers.

- 6.NS.C.6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

Expressions & Equations

6.EE.A. Apply and extend previous understandings of arithmetic to algebraic expressions.

- 6.EE.A.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

6.EE.B. Reason about and solve one-variable equations and inequalities.

- 6.EE.B.7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

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- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will have the ability to...

- identify the GCF and the LCM
- divide with fractions and mixed numbers
- solve algebraic expressions and equations using fractions
- determine the equivalent forms of fractions, decimals, and percents
- determine a percent of a number
- determine the percent of a whole

Critical Content & Skills

What students must KNOW and be able to DO

Find common factors and multiples of whole numbers.

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

Understand the relationship between fractions, percents and decimals.

Core Learning Activities

Find common factors and multiples of whole numbers.

- utilizing prime factorization to determine GCF and LCM
- listing factors and/or multiples to determine GCF and LCM

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

- modeling
- using reciprocals to divide fractions
- estimating quotients using rounding and/or compatible numbers
- solving real-world problems using visual fraction models

Solve real-world and mathematical problems based on percents.

Vocabulary:

quotient, fraction, mixed numbers, improper fraction, visual fraction model, reciprocal, standard algorithm, dividend, divisor, remainder, quotient, decimal, place value, product, sum, difference, greatest common factor (GCF), least common multiple (LCM), prime factorization, Distributive Property, compute, whole numbers, express, rounding, compatible numbers, evaluating expressions, inverse, equivalent, percent

- evaluating expressions that include decimals
- solving equations that include decimals

Understand the relationship between fractions, percents and decimals.

- estimating using compatible numbers
- modeling using grids and number lines
- using calculators
- converting between fractions, percents and decimals

Solve real-world and mathematical problems based on percents.

- estimating using compatible numbers
- determining what percent one number is of another
- determining the whole when given the percent and corresponding part

Assessments

Topic 6

Topic 11

Resources

Professional & Student

enVision topic 6 & Topic 11

*6.1 Greatest Common Factor is always the greatest number that divides evenly into each of two whole numbers.

*6.2 Least Common Multiple is the smallest common multiple of two or more numbers.

*6.3 & 6.5 When dividing by a fraction that is less than one, the quotient is greater than the dividend.

*6.4 & 6.6 Dividing by a fraction is the same as multiplying by its reciprocal.

*6.7 Rounding and compatible numbers can be used to estimate the quotient of mixed numbers.

*6.8 Rewrite the mixed numbers as improper fractions before rewriting the division expression as a multiplication expression using the reciprocal of the divisor.

*6.9 Evaluating expressions with fractions can be solved by replacing the variable with a given fraction.

*6.10 Equations with fractions and mixed numbers can be solved using properties of equality and inverse operations.

*11.1 A percent represents a part of one hundred.

*11.2 A part of a whole or a part of a set can be represented by a fraction, a decimal and a percent

*11.3 Percents greater than one hundred and less than one can be expressed in equivalent decimal and fraction forms.

*11.4 Compatible numbers can be used to estimate percents of numbers and to determine what percent one number is of another.

*11.5 The percent of a number can be found by changing the percent to a decimal and multiplying.

*11.6 The whole can be found when you are given a percent and a part.

Problem-Solving:

*11.7 Answers to problems should always be checked for reasonableness and this can be done in different ways.

Math and Literature: "Clever Calculations" pp10-11

Math and Literature: "Made In America" pp10-11

<http://www.insidemathematics.org/assets/common-core-math-tasks/baseball%20players.pdf>

<http://www.insidemathematics.org/assets/common-core-math-tasks/rabbit%20costumes.pdf>

[IXL](#)

Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Reading for Information
Explanatory Writing
Speaking and Listening



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Integers

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

EXPRESSIONS

Concepts:
equalities
inequalities
absolute value
rational numbers

Generalizations / Enduring Understandings

Positive and negative numbers are used together to express quantities having opposite directions or values.

Rational numbers are the set of all numbers that include the subsets of natural numbers, whole numbers and integers.

Absolute value represents distance from zero.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What are integers? (factual)
- What are rational numbers? (factual)
- How can you compare and order integers? (factual)
- What is absolute value? (factual)
- How can you compare rational numbers on a number line? (factual)
- How can you order rational numbers on a number line? (factual)
- What is the relationship between absolute value and integers? (conceptual)
- How can you use absolute value to compare positive and negative quantities in a real-world situation, such as how prices change? (conceptual)
- What does a negative integer on a weather report indicate? (conceptual)
- What does the distance from zero mean when using negative numbers? (conceptual)
- Why is absolute value always a positive number? (conceptual)
- Is zero ever a counting number? (provocative)
- What real-world situations would involve positive and negative numbers? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 6

The Number System

6.NS.C. Apply and extend previous understandings of numbers to the system of rational numbers.

- 6.NS.C.5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

- 6.NS.C.6c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- 6.NS.C.7a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
- 6.NS.C.7c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

Mathematical Practice

MP.The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

The students will have the ability to...

- compare and order integers
- identify the absolute value of both positive and negative numbers
- compare and order rational numbers
- use reasoning to solve problems

Critical Content & Skills

What students must KNOW and be able to DO

Apply and extend previous understandings of numbers to the system of integers and rational numbers.

Identify the absolute value of a number.

Vocabulary:

positive, negative, opposite, zero, integer, elevation, sea level, credits/debits, deposits, withdrawals, ascend/descend, opposite sign, zero, number line, positive, negative, double negative, integers, rational numbers, inequality, greater than, less than, equal to, temperature, positive and negative charge, absolute value/distance, counting numbers, magnitude/length, positive/negative quantities

Core Learning Activities

Apply and extend previous understandings of numbers to the system of integers and rational numbers.

- using number lines
- writing integers and rational numbers on a number line
- comparing and ordering integers and rational numbers

Identify the absolute value of a number.

- identifying the absolute value of integers and rational numbers

Assessments

 Topic 7

Resources

Professional & Student

enVision Topic 7

- *7.1 Integers are the counting numbers, their opposites and zero.
- *7.2 & 7.5 Comparing and ordering integers and rational numbers
- *7.3 Absolute value is used to define the distance from a number to zero
- *7.4 Rational numbers can be associated with a unique point on a number line

Problem-Solving:

- *7.6 Some problems can be solved by reasoning

Use teacher-created sets of "I have..., Who Has..." cards to have students practice solving problems involving comparing integers and rational numbers.

Have students develop a set of "I have...,Who Has..." cards using problems and models from class, internet sources, or other resources.

Math and Literature: "It's a Goal" pp. 20-21

<http://www.insidemathematics.org/assets/common-core-math-tasks/percent%20cards.pdf>

<http://math-mania.pcsstn.com/resources/i-have-who-has-game-cards>

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Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Reading for Information
Explanatory Writing
Speaking and Listening



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Rates and Ratios

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

COMPARISONS

Concepts:

unit rate

ratios

linear relationship

Generalizations / Enduring Understandings

A ratio demonstrates a relationship between two quantities in which these quantities can be like or unlike.

A rate is a special type of ratio that compares two quantities with different units of measures. A unit rate is a special ratio in which comparison is to one unit. For example: 3 lbs. of cheese for \$9.60 The unit rate would be 1 lb. for \$3.20.

Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.

An awareness that ratio tables can demonstrate a linear relationship through data tables and graphing.

Use ratio and rate reasoning to solve real-world and mathematical problems.

Use ratio reasoning to convert measurement units.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What is a mathematical way to compare quantities? (factual)
- How can you find equivalent ratios? (factual)
- What are ratios and how are they used in solving problems? (factual)
- How can a diagram help you solve a ratio problem? (conceptual)
- How can you use ratio tables to solve a proportion? (conceptual)
- How can you use tables and graphs to represent equivalent ratios? (conceptual)
- How are rates a special type of ratio? (conceptual)
- What distinguishes rates from ratios? (conceptual)
- Why are unit rates important? (provocative)
- Why is the United States the only major country not using the metric system? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 6

Ratios & Proportional Relationships

6.RP.A. Understand ratio concepts and use ratio reasoning to solve problems.

- 6.RP.A.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

- 6.RP.A.2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.
- 6.RP.A.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- 6.RP.A.3a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
- 6.RP.A.3b. Solve unit rate problems including those involving unit pricing and constant speed.
- 6.RP.A.3d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Mathematical Practice

MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will have the ability to ...

- use a ratio as a comparison of any two quantities
- use a ratio as a comparison of part-to-whole or part-to-part
- use a unit rate to find an equivalent ratio with a denominator of 1
- use multiplicative recursive patterns
- use multiplicative relationships to extend an initial ratio to equivalent ratios
- recognize a linear relationship appears when the pairs are plotted on the coordinate plane
- use division to determine unit rate
- introduce percent as a special rate where a part is compared to a whole and the whole always has a value of 100
- solve problems using equivalent ratios
- expand ratio reasoning to units of measurement

Critical Content & Skills

What students must KNOW and be able to DO

Understand ratio concepts and use ratio reasoning to solve problems.

Understand a rate is a special ratio that compares two quantities with different units of measure.

Vocabulary:

ratio, relationship, quantities, unit rate, ratio relationship, table, coordinate plane, equivalent ratios, x-coordinate /x-axis, y-coordinate /y-axis, constant speed, unit pricing, proportion, part, whole, percent, quantity, fraction, metric units of measurement, customary units of measurement, models, plot, distance, rate, time

formula: $d = r \times t$

Core Learning Activities

Understand ratio concepts and use ratio reasoning to solve problems.

- expressing ratios in 3 different ways
- identifying proportions using equivalent ratios
- modeling ratios using double number lines
- using ratio tables
- identifying part-to-part and part-to-whole ratios

Understand a rate is a special ratio that compares two quantities with different units of measure.

- utilizing rates to make comparisons
- determining units rates through the use of tables, diagrams, double number lines or equations
- using ratio reasoning to convert customary and metric measurement units
- solving real-world problems involving distance, rate, and time

Assessments

Resources

Professional & Student

 Topic 9

 Topic 10

enVision topic 9 and 10

*9-1 A ratio is a special relationship between two quantities where for every x unit of one quantity there are y units of another quantity.

*9-2 In a proportional relationship there are an infinite number of ratios equal to the simplest form.

*9-3 Ratio models can be used to reason about solutions to problems.

*9-4 Some proportion problems can be solved by generating equal ratios using multiplication or division.

*9-5 Equivalent ratios can be represented in a table or plotted on a coordinate plane

*10-1 A rate is a special ratio that compares two quantities with different units of measure. A unit rate is a rate that compares a quantity to one unit of another quantity.

*10-2 Rates are easily compared when each is expressed as a unit rate.

*10-3 & 10-4 Some proportions can be solved by finding and using the unit rate.

*10-5 A special proportional relationship involves distance(d), rate(r), and time(t).

*10-6 & 10-7 Measurement can be represented in equivalent ways using customary or metric units.

Problem-Solving:

*9-6 A picture can be used to show, understand and solve a problem

*10-8 Mathematical explanations can be given using words, pictures, numbers, or symbols.

Math and Literature: " Clever Calculations" pp. 22-23

 <http://www.insidemathematics.org/assets/common-core-math-tasks/sewing.pdf>

 <http://www.insidemathematics.org/assets/common-core-math-tasks/snail%20pace.pdf>

 <http://www.insidemathematics.org/assets/common-core-math-tasks/truffles.pdf>

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Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

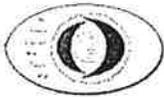
Interdisciplinary Connections

Reading for Information
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Geometry

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

SPATIAL RELATIONSHIPS

Concepts:

surface area
volume
classification
ordered pairs

Generalizations / Enduring Understandings

Ordered pairs can be represented on a coordinated plane.

Graphing coordinates identifies a linear relationship.

Area, surface area, and volume can be used to solve real-world and mathematical problems.

The measure of area is expressed as a product of length times width.

The measure of volume is expressed as a product of base-area times height.

Attributes of a shape determine its classification.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- How can different formulas be used to find different areas of various polygons? (factual)
- How can you graph a point on the coordinate plane? (factual)
- How can you use formulas to find the area of an irregular shape? (factual)
- How can you find the area of a polygon on the coordinate plane? (factual)
- How can you find the perimeter of a polygon on the coordinate plane? (factual)
- How can coordinate pairs be used to graph a linear equation? (factual)
- When is it applicable to find the area in real-world situations? (conceptual)
- Why would you use coordinates to find the area of a shape? (conceptual)
- Why do you use absolute value to find distance between two points on a coordinate plane? (conceptual)
- Why are area units expressed as square units? (conceptual)
- How are equations that can relate to real-world quantities graphed? (provocative)
- Can area be expressed without using square units? (provocative)
- Can volume be expressed without using cubic units? (provocative)
- What is the most efficient way to determine area of a shape? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 6

The Number System

6.NS.C. Apply and extend previous understandings of numbers to the system of rational numbers.

- 6.NS.C.6b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
- 6.NS.C.8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Expressions & Equations

6.EE.C. Represent and analyze quantitative relationships between dependent and independent variables.

- 6.EE.C.9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Geometry

6.G.A. Solve real-world and mathematical problems involving area, surface area, and volume.

- 6.G.A.1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
- 6.G.A.2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- 6.G.A.3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
- 6.G.A.4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Mathematical Practice

MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will have the ability to...

- use ordered pairs to determine distance on a coordinate plane
- identify which quadrant the ordered pair will be located
- combine triangles to create rectangles
- partition quadrilaterals and polygons into all triangles or a combination of triangles and rectangles/squares
- conclude that the base and height of a right triangle are the length and width of a rectangle to discover the formula $A = 1/2bh$

Critical Content & Skills

What students must KNOW and be able to DO

Identify and graph points with integer coordinates on the coordinate plane.

Solve real-world and mathematical problems involving area, surface area, and volume.

Vocabulary:

right triangle, triangle, quadrilaterals, polygons, area, compose, decompose, volume, right rectangular prism, base, width, height, length, coordinate plane, vertices, ordered pairs, nets, 3-dimensional figures, surface area, perpendicular number lines, absolute values, relationship, graph, formula, parallelogram, triangle, decomposing, irregular, polyhedron, solid figure, edge, face, base, perimeter

Core Learning Activities

Identify and graph points with integer coordinates on the coordinate plane.

- graphing points on a four quadrant coordinate plane
- calculating distance on a coordinate plane using absolute value
- graphing linear equations on a coordinate plane

Solve real-world and mathematical problems involving area, surface area, and volume.

- calculating area of regular polygons and special quadrilaterals
- using coordinate planes to calculate the area of polygons
- utilizing nets to represent 3-D shapes and to calculate surface area
- modeling volume using fractional edge lengths

Assessments

 Topic 8

 Topic 12

 Topic 13

Resources

Professional & Student

envision Math Topic 8, 12 and 13

*8-1 & 8-2 The Coordinate Plane is a model using two perpendicular number lines intersecting at zero to tell the location to points in the plane.

*8-3 & 8-4 The distance between two points in the coordinate plane with the same first coordinate or second coordinate is found by adding or subtracting the absolute values of the coordinates that are not the same.

*8-5 Graphs of relationships in the form of $ax + by = c$ (a is a real number) as straight lines. The graph of $y = ax$ passes through the origin. The graph of $y = x + a$ does not pass through the origin, unless $a = 0$.

*8-6 Graphs of relationship in the form of $y = ax + b$ (a and b are real numbers) are straight lines. If b is not 0 they do not pass through the origin.

*12-1 The area of a figure is the amount of surface it covers, and area can be found using square units.

*12-2 The formula for area of a parallelogram is derived from the formula for area of a rectangle.

*12-3 The formula for area of a triangle is derived from the formula for area of a parallelogram.

*12-4 The area of some irregular shapes can be found by decomposing the shape into polygons for which formulas exist for finding area.

*12-5 & 12-6 The area of some learning irregular shapes can be found by decomposing the shape into polygons for which formulas exist for finding area.

*13.1 A polyhedron is a three-dimensional figure made of flat surfaces.

*13-2 Formulas for finding the area of polygons can be used to find the surface area of some solids.

*13-3 Volume is a measure of the amount of space inside a solid figure.

*13-4 The volume of rectangular prisms with fractional edge lengths can be determined in the same way as the volume of rectangular prisms with whole number edge lengths.

Problem-Solving:

*8-7 Some problems can be solved by first finding a problem and solving a sub-problem and then using that answer to solve the original problem.

*12-7 & 13-5 Some problems can be solved by using objects to act out the actions in the problem.

Math and Literature: " It's a goal" p 12

Math and Literature : " Made in America" pp 10-11

Math and Literature: " it's a Goal" pp 10-11

 <http://www.insidemathematics.org/assets/common-core-math-tasks/building%20blocks.pdf>

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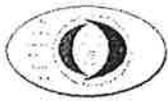
Student Learning Expectation & 21st Century Skills

Information Literacy
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Explanatory Writing
Speaking and Listening





Statistics

Collaboration

Concept-Based Unit Development Graphic Organizer (Download)

Unit Web Template (Optional)

Concepts / Conceptual Lens

Please attach your completed Unit Web Template here

INTERPRETATION

Concepts:

measures of center
measures of variability
data distribution
data analysis
statistical question

Generalizations / Enduring Understandings

Statistical measures include measures of center and variability.

Data can be manipulated to influence an audience.

Obtaining and analyzing data leads to the answers of questions.

Data can be represented visually using tables, graphs and charts.

Guiding Questions

Please identify the type of question: (F) Factual, (C) Conceptual, (P) Provocative [Debatable]

- What is a statistical question? (factual)
- How can you describe a data distribution? (factual)
- How can you make and use a frequency table? (factual)
- How can graphs be used to represent data and answer questions? (conceptual)
- What is the purpose of a box plot? (conceptual)
- How can you interpret the variability of data with one number? (conceptual)
- Which measure of center is most useful to describe a given situation? (conceptual)
- How does the spread of data lead to a generalization of the sample? (conceptual)
- How does the data dictate the type of visual representation used? (provocative)
- How can data be manipulated to influence an audience? (provocative)
- How can the design of your statistical question influence responses? (provocative)

Standard(s)

Connecticut Core Standards / Content Standards

CCSS: Mathematics

CCSS: Grade 6

Statistics & Probability

6.SPA. Develop understanding of statistical variability.

- 6.SPA.1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
- 6.SPA.2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
- 6.SPA.3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

6.SP.B. Summarize and describe distributions.

- 6.SP.B.4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- 6.SP.B.5a. Reporting the number of observations.
- 6.SP.B.5c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
- 6.SP.B.5d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Mathematical Practice

MP:The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will have the ability to...

- introduce and develop statistical reasoning
- determine the difference between a statistical and a non-statistical question
- develop conceptual understanding of the characteristics of a data set
- develop an understanding of outliers
- understand that median and mean are measures of center
- understand range as a measure of variation
- look at a set of data and estimate the measures of center
- recognize that a dot plot is a line plot
- recognize that a box plot is a box-and-whisker plot
- conceptually understand statistical interpretation, focusing on the context of data sets
- identify data that are outliers and understand how they affect the measures of central tendency

Critical Content & Skills

What students must KNOW and be able to DO

Develop understanding of statistical variability.

Summarize and describe distributions.

Vocabulary:

statistical question, non-statistical question, variability, data, center, mean, median, spread, range, interquartile range (IQR), mean absolute deviation (MAD), overall shape, measure of center, dot plot, histogram, box plot, number line, observations, data set, units of measurement, overall pattern, measures of center, measures of variability, data distribution, context of data collection, central tendency

Core Learning Activities

Develop understanding of statistical variability,

- determining whether a question is statistical
- describing data distribution
- utilizing centers of measure to describe data sets
- determining appropriate graph(s) to represent data

Summarize and describe distributions.

- using MAD (mean absolute deviation) and IQR (interquartile range) to measure variability of data
- determining appropriate measure of variability (MAD or IQR)
- utilizing measures to interpret real-world data (MAD or IQR)

Assessments

Resources

Professional & Student

enVision topic 14

- * 14-1 Statistical questions anticipate various answers in the data. The question to be answered dictates how data is displayed.
- * 14-2 All data has a definite shape that can be described by its center spread and overall shape.
- * 14-3 & 14-4 Different measures can be used to describe the center of a numerical data set. Each measure is most appropriate depending upon the characteristics of the data.
- * 14-5 Each type of graph is most appropriate for certain kinds of data.
- * 14-6 Box plots are useful for plotting data over a number line. Box plots show the spread for each quarter of the data.
- * 14-7 A measure of variability describes how the values in a data set vary using a single number.
- * 14-8 The best descriptor of the center of numerical data is determined by the nature of the data and the question to be answered. Organizing data makes it easier to find measures of central tendency.
- * 14-9 A set of data collected to answer a statistical question has a distribution which can be described by its center, spread and overall shape.

Problem Solving

- * 14-10 Some problems can be solved by using reasoning first to arrive at what the answer might be. Through additional reasoning the correct answer can be found.

 IXL

Topic 14

Student Learning Expectation & 21st Century Skills

Information Literacy
Critical Thinking
Spoken Communication
Written Performance

Interdisciplinary Connections

Reading for Information
Explanatory Writing
Speaking and Listening



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