Board of Education
Newtown, Connecticut

Minutes of the Board of Education meeting on November 18, 2014 in the council chambers, 3 Primrose Street.

K. Alexander, Chair	J. Erardi
L. Roche, Vice Chair	L. Gejda
K. Hamilton, Secretary	R. Bienkowski
D. Leidlein (absent)	7 Staff
J. Vouros	4 Public
D. Freedman	1 Press
M. Ku	

Item 1 – Call to Order
Mr. Alexander called the meeting to order at 6:50 p.m.
MOTION: Mrs. Ku moved that the Board of Education go into executive session and invited Dr. Erardi, Mr. Bienkowski and Dr. Gejda to discuss litigation with transportation contracted services, an update on nurses and paraeducators negotiations, contract considerations pertaining to NFT and NASA, and the security grant. Mr. Vouros seconded. Motion passes unanimously.

Item 2 – Executive Session
The Board exited executive session at 7:31 p.m.
Item 3 – Public Session/Pledge of Allegiance
Item 4 – Consent Agenda
MOTION: Mrs. Roche moved that the Board of Education approve the consent agenda which included the donation to Newtown High School, the Newtown High School varsity softball team field trip, the extension of a child rearing leave of absence for Brandi Oatis, the extension of a leave of absence for Kathryn Spallone, and the correspondence report. Mrs. Ku seconded. Motion passes unanimously.

Item 5 – Public Participation - none
Item 6 – Reports
Chair Report: Mr. Alexander said he and Ms. Hamilton attended the Public Building and Site Commission meeting. Ms. Hamilton reported that the state approved the phase 4 construction of the new Sandy Hook School so we can go out to bid.
Mr. Alexander spoke about attending the tabletop emergency exercise last week with Mrs. Ku and Ms. Hamilton. Mrs. Ku attended the CABE conference was this past weekend. She said there were excellent speakers including an educator from Finland and Rick Mastracchio who was schooled in Waterbury and is now an astronaut.
Mr. Alexander sent out the standing committees list to update and would vote on at the next meeting.
Ms. Hamilton commented that the security tabletop exercise was interesting to watch. The biggest key is communication between the police and fire departments and the school system.

Superintendent's Report:
Dr. Erardi said the Newtown Public Schools was featured in the Education Connection newsletter regarding the $1.2M grant they received from the U.S. Department of Education which will bring more counselors to our elementary schools. He is looking for a conversation

with the Board in December or January regarding possibly adding a student to the Board of Education as a non-voting member.

Gregg Simon was here regarding a field trip and as a supporter girls' golf and boys' volleyball which will be an agenda item at the next meeting. These are self-funded programs for the spring of 2015. He mentioned the joint meeting tomorrow night with the Legislative Council, Board of Finance and Board of Selectman for a budget discussion and enrollment report. The aspirant administrator group that he and Dr. Gejda are meeting with consists of 24 educators in the district pursuing administrator status.

Mr. Vouros asked how many were new to the program.

Dr. Erardi said the range is from those that have their 092 certification to those who are just thinking about it. Of the 24, 25% already have their certification and are looking to gain experience here. Others are just starting coursework.

Committee Reports:

Mrs. Ku spoke about the community forum which focused on the language arts curriculum.

Ms. Hamilton said the policy committee continues to meet and have almost completed the 1000 series. They will start the 2000 series at the next meeting. The finance committee met to discuss the budget document. They also discussed the transfer report. She and Mr. Vouros toured the business and technology classes at the high school.

Mrs. Roche thanked Dr. Erardi for working with the policy committee.

Mrs. Ku said the Curriculum and Instruction committee met this week discussing the grade 7 and 8 math curriculum and the alignment of the advanced math program for students from Reed through the middle school. There was an update on homebound instruction from Julie Haggard. They looked at the proposal to offer daycare for children of our staff members. They currently have a center for Monroe staff located in Sandy Hook School. This is being vetted through legal counsel. They also discussed the possibility of foreign language in kindergarten to grade two. They are scheduled to visit the Southington program. There were updates on the GATES program, class size, professional development days and they will look at attendance on the early release days.

Mrs. Roche said there was a move to involve more students in higher level math or to offer it to more students.

Mrs. Ku said they don't have a goal for that. The goal is to meet the needs of the students.

Ms. Hamilton asked for an explanation of the process for students to take high level math.

Dr. Gejda said we have additional information like NWEA which allows us to look at the students. The shift of standards has impacted some of the assessments. The conversation extends from Reed to the high school. Students need to demonstrate their readiness for advancement.

Ms. Hamilton said there is compacted math at Reed but there is no information for parents.

Dr. Erardi stated that as a student leaves fourth grade, the intent is that in fifth and sixth grades they will have three years of math prep for algebra in grade seven.

Ms. Hamilton asked what happens with a student who is advanced in math but is not put in any advanced classes.

Dr. Erardi said there would be a time for the students to be placed and move forward.

Ms. Hamilton asked if Julie Haggard had a reason for the need for more homebound tutoring. Mrs. Ku said we can invite her to talk about that. This year it is significantly below last year. Dr. Erardi said we are presently looking to review our two contracts for homebound tutoring so there could be a savings there.

Mr. Freedman said the technology committee nominated Mrs. Leidlein as chair. They received an inventory of technology in the district broken down by school and year. They talked about moving the obsolescence forward to 6 years. They also spoke to Mrs. Amodeo about leveling spending. Leasing instead of buying equipment was discussed and there will be a replacement program for the Ipads we have.

Mrs. Ku attended the Education Connection Board meeting. They discussed the state offering mini grants to evaluate student assessments and there was a discussion about the regional calendar. They may also move their Danbury office to Brookfield.

Mrs. Roche said the Climate and Culture Committee discussed the staff survey. Three of the members would review the whole document and come back with a summary.

Full Day Kindergarten Report:
Dr. Gejda introduced Peggy Kennedy, lead teacher at Middle Gate School, kindergarten teachers Janet Vollmer, Beth Taverna, Melissa Massett and Dorothy Schmidt and first grade teacher Chandra Salvatore who presented the attached report on the full day kindergarten program.

Mr. Freedman asked if it was easier to identify student issues with them in school all day and how they are dealing with them.
Mrs. Schmidt said they found that some problems manifested being in school all day and they are handled by the various support provided in the schools.

Ms. Hamilton was concerned about stamina lasting for students being in school all day and if there were any changes to accommodate higher level learners.
Mrs. Vollmer said one was that there was an increase in the number of site words students are expected to know.
Mrs. Kennedy said there were also higher level readers coming in.

Mr. Alexander asked for any parent response to the full day program.
Mrs. Schmidt said most were happy it was a full day program and amazed at what their children were doing.
Mrs. Vollmer mentioned that there were always full time assistants in kindergarten and it's difficult at times without that extra help.

Financial Report:
MOTION: Ms. Hamilton moved that the Board of Education approve the financial report for the month ending October 31, 2014. Mr. Vouros seconded.
Mr. Bienkowski reviewed the report. He mentioned that the electricity rates would be going up 26% in January. We are looking at another provider with the town.
Ms. Hamilton asked if the numbers for the excess cost grant were reflected in the budget detail report. Mr. Bienkowski said they were not.
Motion passes unanimously.

Item 7 – Old Business
2015-2017 Calendars:
Dr. Erardi referred to Dr. Gejda's attached student attendance information on the early release Fridays which also included that Wednesday and Thursday. Mr. Bienkowski provided professional development information from districts in CASBO. A suggestion was made to start the professional development here at the beginning of the day. In Darien, South Windsor, Weston, and Wilton the students come in two hours later to allow professional development in the morning. He also received a revised draft of the proposed regional calendar.

Mrs. Roche said the regional calendar shows two professional development days.
Dr. Erardi stated that we first have to decide if we are interested in following a regional calendar which by statute we do not. If buying into that calendar we have to be ready to explain our reasons to the community.

Mr. Freedman said having conference days the week before Thanksgiving is a significant challenge. He recommended not having them just before Thanksgiving. He also suggested putting them on the master calendar.
Ms. Hamilton asked to also gather any staff absences on these three days.

Additional Budget Calendar Dates:
MOTION: Mrs. Ku moved that the Board of Education approve the dates in items 16 through 26 on the 2015-2016 school budget development calendar. Mrs. Roche seconded.

Mr. Alexander asked where we got these dates.
Dr. Erardi said Mr. Bienkowski worked with Bob Tait for the additional dates. Two dates are still to be determined. He would like to present this tomorrow evening.

Ms. Hamilton said we posted this on our website but we only should have listed 1 through 15. We should only be posting the dates we have control of. We don't control the Board of Finance and Legislative Council so it's best for the public to go to the town calendar for their information. She was not comfortable posting dates for other boards.

Mrs. Roche suggested a disclaimer that these dates are subject to change and to check the town calendar.
Mr. Alexander also feels there should be a link to the town to verify other boards meeting dates.
Vote: 5 ayes, 1 nay (Ms. Hamilton)

Item 8 – New Business
First Read of Curriculum: Algebra I, Algebra II and Geometry
Dr. Gejda said these have been worked on for the past several years. They've been revised after looking at updated resources.

Ms. Hamilton said some of this learning takes place in 6th and 8th grades and she was concerned about the vertical alignment.
Dr. Gejda said she would do some research and provide examples. There is a greater movement of algebra concepts moving down to the 8th grade.

First Read of Board Policies Series 0000 Mission-Goals-Objectives:
Ms. Hamilton said these are a combination of samples from other districts.

Mr. Alexander asked policy 600 regarding monitoring and reporting. There are no specific details.
Ms. Hamilton said the specific details involve keeping the Newtown public aware of what was going on in the district.
Dr. Gejda asked if changes could be made to the form without affecting the policy.
Ms. Hamilton said they could.

Minutes of November 5, 2014:
MOTION: Ms. Hamilton moved that the Board of Education approve the minutes of November 5, 2014. Mr. Vouros seconded. Vote: 5 ayes, 1 abstained (Mrs. Roche)

Schedule of 2015 Meetings:
MOTION: Mr. Freedman moved that the Board of Education approve the schedule of 2015 Board of Education meetings. Ms. Hamilton seconded. Motion passes unanimously.

Item 9 – Public Participation - None
MOTION: Mrs. Roche moved to adjourn. Mr. Freedman seconded. Motion passes unanimously.

Item 10 – Adjournment
The meeting adjourned at 9:43 p.m.

                                                    Respectfully submitted:

                                         _____
                                                    Kathryn Hamilton
                                                    Secretary

November 7, 2014

TO: Joseph Erardi

FROM: Lorrie Rodrigue

Please find a list of surplus hardware that the Computer Science Corporation wishes to donate to the Computer Repair Class. The students are very excited about the prospect of getting these devices. This donation will be very useful and will provide a perfect source for parts.

Thank you.

Donation from
Jory T. Lund
Surplus Asset Management
CSC Central Distribution Center
300 Pleasant Valley Road, South Windsor, CT 06074

Encl.

MODEL	MAKE	DEVICE TYPE	DESCRIPTION	SERIAL NUMBER	QUANTITY	VALUE ESTIMATE	
2960	CISCO	Network Switch	CATALYST 2960 24 10/100 ROUTER	FOC1130Z46W	1	$	100.00
E6400	DELL	LAPTOP	DELL LAPTOP LATITUDE E6400	F548WL1	1	$	100.00
E6400	DELL	LAPTOP	DELL LAPTOP LATITUDE E6400	3YX7WL1	1	$	100.00
E6400	DELL	LAPTOP	DELL LAPTOP LATITUDE E6400	BNMR4L1	1	$	100.00
E6400	DELL	LAPTOP	DELL LAPTOP LATITUDE E6400	4FNR4L1	1	$	100.00
E6400	DELL	LAPTOP	DELL LAPTOP LATITUDE E6400	B1D42M1	1	$	100.00
GX780D	DELL	DESKTOP	DELL OPTIPLEX 780 SFF BASE STANDAR	FXY94M1	1	$	100.00
GX780D	DELL	DESKTOP	DELL OPTIPLEX 780 SFF BASE STANDAR	DS2R5M1	1	$	100.00
GX780D	DELL	DESKTOP	DELL OPTIPLEX 780 SFF BASE STANDAR	7FXTPM1	1	$	100.00
GX780D	DELL	DESKTOP	DELL OPTIPLEX 780 SFF BASE STANDAR	J1HWPM1	1	$	100.00
GX780D	DELL	DESKTOP	DELL OPTIPLEX 780 SFF BASE STANDAR	C76XPM1	1	$	100.00
GX780D	DELL	DESKTOP	DELL OPTIPLEX 780 SFF BASE STANDAR	JMTVPM1	1	$	100.00
GX780D	DELL	DESKTOP	DELL OPTIPLEX 780 SFF BASE STANDAR	7PXVPM1	1	$	100.00
GX780D	DELL	DESKTOP	DELL OPTIPLEX 780 SFF BASE STANDAR	B60FPM1	1	$	100.00
GX780D	DELL	DESKTOP	DELL OPTIPLEX 780 SFF BASE STANDAR	9YXSLN1	1	$	100.00
GX780S	DELL	DESKTOP	DELL OPTIPLEX 780 SFF BASE STANDAR	6KCRMM1	1	$	100.00
GX780T	DELL	MINI-TOWER	DELL OPTIPLEX 780 MINITOWER BASE	7XYGPN1	1	$	150.00
GX780T	DELL	MINI-TOWER	DELL OPTIPLEX 780 MINITOWER BASE	7Y6BPN1	1	$	150.00
GX780W	DELL	MINI-TOWER	DELL OPTIPLEX 780 MINITOWER BASE	98F1GQ1	1	$	150.00
GX780W	DELL	MINI-TOWER	DELL OPTIPLEX 780 MINITOWER BASE	98XVFQ1	1	$	150.00
GX780W	DELL	MINI-TOWER	DELL OPTIPLEX 780 MINITOWER BASE	3QCVHQ1	1	$	150.00
NA	DELL	NA	DELL LAPTOP BAG	NA	5	$	50.00
NA	DELL	NA	DELL 17" LCD MONITOR	NA	15	$	1,125.00
NA	DELL	NA	DELL USB 5 BUTTON MOUSE	NA	15	$	150.00
NA	DELL	NA	DELL USB KEYBAORD	NA	15	$	150.00
					TOTAL	$	3,825.00

FIELD TRIP BUS REQUEST FORM

Teacher Making Request: _Gregg Simon NHS. A.D / NHS Softball Coach (Bob Guerrera)_ Date: _11/5/14_

Other Staff Involved: _____

Date of Proposed Field Trip: _4/10 - 4/15_

Class/Group Involved: _N.H.S. Varsity Softball Team_

Number of Students Scheduled to Make Trip: _18_

Other Adults (non-teachers) Chaperoning the Trip (list names): _Parents of players attending the trip._

Destination: _Disney - Florida_

Place and Time of Departure: _Depart N.H.S. at 10:30am on 4/10. Flight from Hartford 2:00_

Estimated Time of Return: _Arrive Hartford at 4:30 on 4/15 Arrive at NHS at 7:00_

Special Arrangements (i.e. stopping at a restaurant, picnic, etc.) _____

Estimated Cost of Transporation: _No bus needed_

Estimated Cost per Student: _____

Other Information: _See Attached_

PRINCIPAL APPROVAL BY SIGNATURE: _f. Rodriguez_ DATE: _11-7-14_

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 PUBLIC SCHOOLS
FIELD TRIP INFORMATION & PERMISSION

School **Newtown High School** Date of Trip **April 10 - April 15**

Place and time of departure **Depart NHS at 10:30 a.m. on 4/10. Flight to Orlando from Hartford at 2:00**

Estimated time of return **Arrive at Hartford 4:30 on 4/15. Arrive at N.H.S. at 7:00 p.m.**

Method of transportation **Bus to airport - Plane to Florida**

Description of activity **Varsity Softball Trip to Disney in Florida**

Teacher / Sponsor **Bob Guerrera - Head Softball Coach** Form due by _____
Stacy Laaksonen - Parent

Parent / Guardian Permission

_____ has my permission to participate in the trip described above.
(Student Name)

_____   _____
(Signature of Parent / Guardian)   (Date)

_____   _____
(Student's Address)   (Home Phone)

_____   _____
(Work phone -Parent / Guardian)   (Emergency Phone)

Health Information
(If none, please write none)

If your child requires **any** medication and / or medical treatment such as glucose testing, asthma inhalers, bee sting medication, or has known allergies or medical conditions, please indicate below.
MEDICAL/MEDICINE AUTHORIZATION FORM MUST BE ON FILE WITH THE SCHOOL NURSE.

Medical Condition _____

Medication _____

Treatment _____

Allergies _____

Other medical information that may be important _____

_____

Physician's name _____ phone _____

If the cost of the trip presents a severe financial hardship, please notify the teacher or the principal.

This entire form MUST be completed and returned to the school by the due date in order for the child to participate in this activity.

Newtown High School Varsity Softball Itinerary
Spring Training - ESPN Wide World of Sports
Dates: April 10, 2015 - April 15, 2015
All players, coaches and families will travel together
Public transportation will be used for all travel (Coach Bus, Disney Bus)

4/10/2015 Travel from NHS to Disney World
10:30am Depart NHS 10:00 AM via Coach Bus
12:00pm Arrive Bradley Airport
2:00pm Flight to Orlando
5:00pm Arrive Orlando Airport
6:00pm Depart Orlando Airport via Disney Magical Express
6:45pm Arrive Disney World Resort

4/10/2015 - 4/15/2015 Stay at WDW Resort (All Star Resort or Caribbean Beach)
4/11/2015 Registration
Batting Cages
Game 1
Game 2
Disney Parks
4/12/2015 Batting Cages
Game 3
Game 4
Disney Parks
4/13/2015 Off Day - Disney Parks
4/14/2015 Batting Cages
Game 5
Game 6
Disney Parks

4/15/2015 Travel from Disney World to NHS
10:30am Depart Walt Disney World via Disney Magical Express
11:15am Arrive Orlando Airport
1:30pm Flight to Hartford

4:30pm Arrive Hartford Airport
5:30pm Depart Hartford Airport Via Coach Bus
7:00pm Arrive NHS

November 12, 2014

Dear Dr. Erardi:

I am writing to request an extension to my child rearing leave. My original date of return was planned to be December 1, 2014. I am asking to return to work on Monday, January 5th, 2015.

Thank you in advance for your consideration.

Regards,

Brandi Oatis

Brandi Oatis
4th Grade
Hawley School

November 11, 2014
Superintendent Dr. Joseph Erardi
Principal Thomas Einhorn and Assistant Principal Jim Ross
Mr. Keith Alexander, Chair of the Board of Education
Mr. David Abbey, Interim Head of Human Relations

To Whom It May Concern:

I am a mathematics teacher on the 7-Blue Cluster at the Middle School and am currently on Family Medical Leave following a surgical procedure performed on Monday, November 10, 2014. My projected date of return was to be Monday, December 1, 2014.

After giving serious consideration to my health care providers' recommendation, I am saddened to submit a request for an extended medical leave. My personal physician has advised me, for medical reasons, to request an extended leave for the remainder of this academic year.

On Monday, November 17, 2014, I will be returning to my physician. If needed, I can request a letter from my physician providing support for his recommendation.

Additionally, I can also meet with Dr. Erardi and/or Principal Einhorn to discuss my situation to complete the details of this request.

I thank you in advance for considering this request, which has been a difficult decision for me. This will allow me the opportunity to follow the recommendation of my health care providers.

Sincerely,

Kathryn Spallone

Cc:
Mrs. Suzanne D'Eramo H.R. Coordinator
Mrs. Jeanne Cavallero Math Department Coordinator

From	Date	Subject
Carla Kron	11/6/2014	Inquiry about Enrollment Study

Administrative Report

November 18th

1. Education Connection: NPS Feature (Attachment #1)

2. Student Representative   - NBOE

3. NHS Athletics: Update / Spring 2015
   a. Girls' Golf
   b. Boys' Volleyball

4. Joint Meeting – Wednesday, November 19

5. Aspiring Administrator – NPS Professional Learning Community

Fall 2014

Making Connections

EDUCATION CONNECTION | Promoting the success of our school districts and communities.

EDUCATION CONNECTION and Newtown Public Schools Win $1.2M School Counseling Grant

Dr. Linda Gejda, Dr. Joseph Erardi, Julie Haggard, Juleen Flanigan (l to r)

This fall, EDUCATION CONNECTION and the Newtown Public Schools (NPS) launched a new initiative to bring a comprehensive continuum of prevention-focused elementary school counseling services to the nearly 1,500 students in Newtown's Sandy Hook, Hawley, Head O' Meadow, and Middle Gate K-4 Schools. The Elementary School Counseling Enhancement (ESCE) Program focuses on healthy youth development, the early identification of needs, and coordinated and timely intervention and treatment services.

The ESCE Program is funded through a highly competitive $1.2 million dollar grant awarded to EDUCATION CONNECTION from the U.S. Department of Education. The leadership team for this initiative includes Juleen Flanigan, EDUCATION CONNECTION's Director of Early Childhood Services, Dr. Joseph V. Erardi, Jr., NPS Superintendent of Schools, Dr. Linda Gejda, NPS Assistant Superintendent of Schools, and Julie Haggard, NPS Director of Pupil Services.

Since the December 2012 tragedy, Newtown's K-12 schools have benefited from the support of trauma and recovery-focused counselors funded through a federal Project School Emergency Response to Violence grant, or Project SERV. While Project SERV focuses

Youth Mental Health Initiative Launching in Northwest Corner

Over 25 mental health professionals, administrators, and legislators gathered at EDUCATION CONNECTION this fall to kickstart a new mental health initiative promoting the health and well-being of students in the northwest corner.

"We see a growing number of adolescents in our care for whom mental health issues or chemical dependency impacts their ability to learn and, by extension, darkens their future," comments Dr. Judy Palmer of Public School District 7, serving the communities of Barkhamsted, Colebrook, New Hartford, and Norfolk. Responding to this concern, Dr. Palmer and Rich Carmelich, Director of Finance and Operations for District 7, initiated grant research earlier this year to see what resources were available to bolster their district's mental health support offerings. "As we delved into grant research to augment services for our district, we saw many examples of other districts struggling with the same issues. This is not just a local concern; it is regional, state, even nationwide."

So they reached out to Jonathan Costa, Director of School and Programs Services for EDUCATION CONNECTION. "When we decided to take the initiative outside our own district, Jonathan Costa was the first person we called," says Palmer. "He wrapped his arms around the idea and ran with it." Carmelich adds, "Jonathan

on providing trauma and recovery services to students directly impacted by acts of violence, the ESCE Program focuses on prevention-focused education and counseling supports to foster healthy behaviors, social-emotional competencies, and resilience. Dr. Gejda commented, "Bringing the Elementary School Prevention Counseling Enhancement Program to bear at this time is an incredible opportunity for us because it dovetails with the supports that were initially implemented by Project SERV. It is allowing us to seamlessly carry on, refine, and develop prevention-focused counseling services and socio-emotional supports for all of our K-4 students."

A key feature of the ESCE program is the full integration of the Second Step (SS) Program, a classroom curriculum designed to increase students' school success and decrease problem behaviors. SS teaches skills that strengthen students' abilities to learn, experience empathy, manage emotions, and solve problems. It also targets key research-based risk and protective factors. "Second Step has yielded great returns for our students," says Julie Haggard. "We are very grateful for the opportunity to expand and strengthen its use in our classrooms."

Newtown Public Schools continue to rebuild with dignity, one student at a time. Our partnership with EDUCATION CONNECTION allows us to take a giant step forward on this path.

-Dr. Joseph Erardi
Superintendent
Newtown Public Schools

Four certified, masters-prepared elementary school counselors have been selected to provide direct counseling and support services in each of the district's K-4 schools. "We entered the interview process for the elementary counseling team with extremely high expectations," says ESCE Project Director Juleen Flanigan. "We are thrilled with the candidates that have been selected. All are great advocates for the students in building self-resiliency, character, and confidence as well as excellent assets to the schools in cultivating and sustaining climates that support social, behavioral, and emotional health."

The elementary school counselors will work in close collaboration with the project leadership team to build best practices that promote healthy student development, provide preventive education for student and parents, provide inservice training and coaching supports for classroom teachers, and refine and integrate systems for screening, early detection, and timely interventions where appropriate. EDUCATION CONNECTION's research and evaluation unit, the Center for Program Research and Evaluation, designed and is implementing the robust project evaluation plan, to ensure all outcome measures are systematically collected, analyzed, and integrated to inform continuous project improvement.

Mary Bevan, Director of Program and Grants Development at EDUCATION CONNECTION and the grant author, comments, "As one of only 41 grants awarded out of 566 applications, our proposal was subject to a highly competitive review process. The comprehensive needs assessment we conducted was essential to our success, as the school community's unique needs and the grant objectives were in remarkable alignment." "Newtown Public Schools continue to rebuild with dignity, one student at a time," states Dr. Erardi. "Our partnership with EDUCATION CONNECTION allows us to take a giant step forward on this path. We are *all in* to make this work."
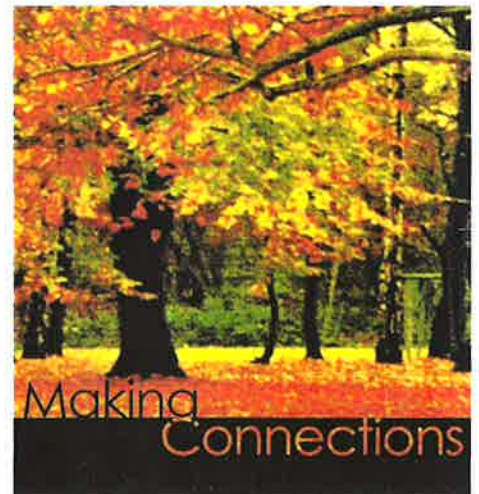
To learn more about EDUCATION CONNECTION's grant research and writing services, please contact Mary Bevan, Director of Program & Grants Development, at 860.567.0863 x179 or bevan@educationconnection.org.

Let us know when your district staff or programs receive awards, publish materials, or are recognized for their good work. *We will share the good news.*

Contact EDUCATION CONNECTION's Marketing & Communications Coordinator Liv LiaBraaten at 860.567.0863 or liabraaten@educationconnection.org.

NEWTOWN BOARD OF EDUCATION
2015 SCHEDULE OF MEETINGS

Meetings will be held in the Council Chambers in the Newtown Municipal Center, 3 Primrose Street, at 7:30 p.m. with the exception of the meetings on January 20 and November 4 which will be held in the Reed Intermediate School Library.

January 6 (budget overview)
January 8 (budget)
January 13 (budget)
January 20 – ***Reed Intermediate School Library***
February 3 (public hearing & discussion)
February 5 (budget adoption)
February 17
March 3
March 17
April 7
April 21
May 5
May 19
June 2
June 16
July 14
August 18
September 1
September 15
October 6
October 20
November 4 – ***Wednesday – Reed Intermediate School Library***
November 17
December 1
December 15

January 5, 2016
January 19, 2016 – ***Reed Intermediate School Library***

Approved November 18, 2014

NEWTOWN BOARD OF EDUCATION
MONTHLY FINANCIAL REPORT
OCTOBER 31, 2014

SUMMARY

The fourth financial report of the 2014-15 fiscal year to date is attached. In the month of October, the Board of Education spent approximately $9M; $5.2M on salaries, $2.2M on benefits, and $1.6M for all other objects. This report captures three payrolls, hence the increase in salary over the prior period. It also reflects another $2 million in quarterly payments to the self-insurance fund for school district employees.

Two additional columns appear on this report. The first addition is the "Anticipated Obligations" which will reflect the best current estimate for expenditures beyond active encumbrance. At this time the entries included here represent the budgeted amounts for the offsetting receipts related to the excess cost and agency placement grants. The first estimate of what the districts expected expenses will be reported to the State on December 1st. In many cases this column will eventually reflect the remaining budget balance, as expenditures are planned at this level. As further analysis and information becomes available these obligations will reflect such. The second new column includes the "Projected Balance" which is the result of the balance adjusted by the Anticipated Obligation. These now represent all of the active columns for all continuing Monthly Financial Reports. The above reporting reflects the results of the grants which will be embedded in these obligations moving forward.

All the main object accounts remain in a positive balance position for this month.

There are no transfers recommended this month.

This budget is extremely lean and needs to be carefully monitored. Forecasting anticipated obligations will be ongoing from now on and will modify the balances required to end the fiscal year within the allotted budget.

EXPENSE CATEGORY CONDITIONS

100 SALARIES

The total salary budget is expected to be adequate to continue all the planned services for the balance of the year

200 EMPLOYEE BENEFITS

Current estimates continue to be on track with no change.

300 PROFESSIONAL SERVICES

Current balance appears adequate, however increased legal activity from a settlement and the MTM trial, along with the pending nurses arbitration and para, custodial and secretarial negotiations will put significant pressure on the districts' legal budget. This component of Professional Services will be exceeded by next month.

400 PURCHASED PROPERTY SERVICES

This group of accounts provides services necessary to keep the buildings running along with classrooms repairs and rentals. Several emergency repairs occurred at the High School as follows: $10,500 to repair a broken sidewalk, $5,900 to replace a broken light post, $5,449 for safety repairs to the loading dock, $5,865 to repair a fire pump and $7,924 to repair the water heater and pump system.

500 OTHER PURCHASED SERVICES

Nothing significant to report at this time other than our insurance being $5,548 over budget.

600 SUPPLIES

This group of accounts includes the electricity, gas, and fuel accounts which will be more thoroughly reviewed and estimated as we enter the heating season.

The district's electricity supply account with Direct Energy will be expiring on December 1st. While we have been looking for an alternate provider the electricity market has been going from bad to worse. The recently announced CL&P rate at 12.629 cents per kilowatt will be a 63% increase over our current 2 year lock in at 7.769 cents per kilowatt. At this rate our current

budget would exceed the account appropriation by approximately $263,861. Securing a more favorable than the CL&P standard offer rate would put us in the 11.05 cent per kilowatt rate range which would still be about $178,133 over budget. We are currently looking at providers with the Town, the Consortium, and individually. Another account that is looking problematic is that of natural gas. For the same reasons behind the electricity spike, that of not being able to deliver enough gas, in spite of adequate supply, along with cold weather fears, the price of natural gas is expected to skyrocket. No estimate on gas has been prepared at this time.

700 PROPERTY

Current estimates continue to be on track with no change.

800 MISCELLANOUS

Current estimates continue to be on track with no change.

The budget will continue to be carefully monitored and any subsequent issues or opportunities will be presented as necessary.

REVENUE

No revenues were received during the month of October.

Ron Bienkowski
Director of Business
November 10, 2014

TERMS AND DEFINITIONS

The Newtown Board of Education's Monthly Financial Report provides summary financial information in the following areas:

- Object Code – a service or commodity obtained as the result of a specific expenditure defined by eight categories: Salaries, Employee Benefits, Professional Services, Purchased Property Services, Other Purchased Services, Supplies, Property, and Miscellaneous.

- Expense Category – further defines the type of expense by Object Code

- Expended 2013-14 – actual (unaudited) expenditures of the prior fiscal year (for comparison purposes)

- Approved Budget – indicates the town approved financial plan used by the school district to achieve its goals and objectives.

- YTD Transfers - identified specific cross object codes requiring adjustments to provide adequate funding for the fiscal period. This includes all transfers made to date.

- Current Transfers – identifies the recommended cross object codes for current month action. (No current transfers indicated)

- Current Budget – adjusts the Approved Budget calculating adjustments (+ or -) from transfers to the identified object codes.

- Year-To-Date Expended – indicates the actual amount of cumulative expenditures processed by the school district through the month-end date indicated on the monthly budget summary report.

- Encumbered – indicates approved financial obligations of the school district as a result of employee salary contracts, purchasing agreements, purchase orders, or other identified obligations not processed for payment by the date indicated on the monthly budget summary report.

- Balance – calculates object code account balances, subtracting expenditures and encumbrances from the current budget amount, indicating unobligated balances or shortages.

- Anticipated Obligation – is a column which provides a method to forecast expense category fund balances that have not been approved via an encumbrance, but are anticipated to be expended or remain with an account balance to maintain the overall budget funding level. Receivable revenue (i.e., grants) are now included in this column which has the effect of netting the expected expenditure.

- ▪ Projected Balance – calculates the object code balances subtracting the Anticipated Obligations. These balances will move up and down as information is known and or decisions are anticipated or made about current and projected needs of the district.

The monthly budget summary report also provides financial information on the State of Connecticut grant reimbursement programs (Excess Cost and Agency Placement Grants and Magnet Grant Transportation). These reimbursement grants/programs are used to supplement local school district budget programs as follows:

Excess Cost Grant – this State of Connecticut reimbursement grant is used to support local school districts for education costs of identified special education students whose annual education costs exceed local prior year per pupil expenditure by 4 ½. Students placed by the Department of Child and Family services (DCF) are reimbursed after the school district has meet the prior year's per pupil expenditure. School districts report these costs annually in December and March of each fiscal year. State of Connecticut grant calculations are determined by reimbursing eligible costs (60%-100%) based on the SDE grant allocation and all other town submittals. Current year receipts results from the state reporting done in December. We receive notice of what we are eligible for in early April.

Magnet Transportation Grant – provides reimbursement of $1,300 for local students attending approved Magnet school programs. The budgeted grant is $62,400 for this year while the expected receipt is now $67,600.

The last portion of the monthly budget summary reports school generated revenue fees that are anticipated revenue to the Town of Newtown, Fees include:

- • High school fees for three identified programs with the highest amount of fees anticipated from the high school sports participation fees.
- • Building related fees for the use of the high school pool facility, and
- • Miscellaneous fees.

NEWTOWN BOARD OF EDUCATION

BUDGET SUMMARY REPORT
FOR THE MONTH ENDING 10/31/2014

OBJECT CODE	EXPENSE CATEGORY	EXPENDED 2013 - 2014	APPROVED BUDGET	YTD TRANSFERS 2014 - 2015	CURRENT TRANSFERS	CURRENT BUDGET	YTD EXPENDED	ENCUMBER	BALANCE	ANTICIPATED OBLIGATIONS	PROJECTED BALANCE
	GENERAL FUND BUDGET										
100	SALARIES	$ 45,029,126	$ 44,999,627	$ -	$ -	$ 44,999,627	$ 11,284,147	$ 32,223,390	$ 1,492,089	$ (105,874)	$ 1,597,963
200	EMPLOYEE BENEFITS	$ 10,633,809	$ 11,169,344	$ -	$ -	$ 11,169,344	$ 5,403,830	$ 4,578,433	$ 1,187,081	$ -	$ 1,187,081
300	PROFESSIONAL SERVICES	$ 863,909	$ 749,083	$ -	$ -	$ 749,083	$ 254,709	$ 162,159	$ 332,215	$ (69,991)	$ 402,206
400	PURCHASED PROPERTY SERV.	$ 2,418,651	$ 2,139,419	$ -	$ -	$ 2,139,419	$ 917,730	$ 385,555	$ 836,133	$ -	$ 836,133
500	OTHER PURCHASED SERVICES	$ 6,809,463	$ 7,197,647	$ -	$ -	$ 7,197,647	$ 2,296,014	$ 4,766,772	$ 134,861	$ (1,102,170)	$ 1,237,031
600	SUPPLIES	$ 4,619,171	$ 4,480,093	$ -	$ -	$ 4,480,093	$ 1,334,447	$ 177,367	$ 2,968,279	$ -	$ 2,968,279
700	PROPERTY	$ 552,547	$ 534,735	$ -	$ -	$ 534,735	$ 337,418	$ 15,788	$ 181,529	$ -	$ 181,529
800	MISCELLANEOUS	$ 71,445	$ 75,356	$ -	$ -	$ 75,356	$ 49,895	$ 370	$ 25,091	$ -	$ 25,091
	TOTAL GENERAL FUND BUDGET	$ 70,998,119	$ 71,345,304	$ -	$ -	$ 71,345,304	$ 21,878,191	$ 42,309,834	$ 7,157,279	$ (1,278,035)	$ 8,435,314
900	TRANSFER NON-LAPSING	$ 47,185									
	GRAND TOTAL	$ 71,045,304	$ 71,345,304	$ -	$ -	$ 71,345,304	$ 21,878,191	$ 42,309,834	$ 7,157,279	$ (1,278,035)	$ 8,435,314

(Unaudited)

Excess Cost Grant Reimbursement - Budgeted		75.00%		T.B.D.	$ (1,278,035)

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11/10/2014

NEWTOWN BOARD OF EDUCATION

BUDGET SUMMARY REPORT
FOR THE MONTH ENDING 10/31/2014

OBJECT CODE	EXPENSE CATEGORY	EXPENDED 2013 - 2014	APPROVED BUDGET	YTD TRANSFERS 2014 - 2015	CURRENT TRANSFERS	CURRENT BUDGET	YTD EXPENDED	ENCUMBER	BALANCE	ANTICIPATED OBLIGATIONS	PROJECTED BALANCE
100	**SALARIES**										
	Administrative Salaries	$ 3,013,832	$ 2,969,510	$ 11,950		$ 2,981,460	$ 1,000,838	$ 1,977,480	$ 3,142	$ -	$ 3,142
	Teachers & Specialists Salaries	$ 30,557,381	$ 30,434,118	$ (88,828)		$ 30,345,290	$ 7,041,504	$ 23,236,182	$ 67,604	$ (23,564)	$ 91,168
	Early Retirement	$ 16,000	$ 32,000	$ -		$ 32,000	$ 32,000	$ -	$ -	$ -	$ -
	Continuing Ed./Summer School	$ 85,584	$ 89,175	$ 763		$ 89,938	$ 60,812	$ 29,016	$ 110	$ -	110
	Homebound & Tutors Salaries	$ 388,172	$ 243,875	$ 1,405		$ 245,280	$ 75,605	$ 100,864	$ 68,811	$ -	68,811
	Certified Substitutes	$ 599,679	$ 641,325	$ -		$ 641,325	$ 114,057	$ 137,470	$ 389,799	$ -	389,799
	Coaching/Activities	$ 524,130	$ 529,749	$ -		$ 529,749	$ 890	$ -	$ 528,859	$ -	528,859
	Staff & Program Development	$ 172,357	$ 199,768	$ -		$ 199,768	$ 72,468	$ 82,892	$ 44,408	$ -	44,408
	CERTIFIED SALARIES	$ 35,357,135	$ 35,139,520	$ (74,710)	$ -	$ 35,064,810	$ 8,398,172	$ 25,563,905	$ 1,102,733	$ (23,564)	$ 1,126,297
	Supervisors/Technology Salaries	$ 628,445	$ 634,244	$ 10,632		$ 644,876	$ 207,678	$ 406,173	$ 31,025	$ -	31,025
	Clerical & Secretarial salaries	$ 1,961,645	$ 2,001,381	$ 9,090		$ 2,010,471	$ 610,922	$ 1,397,917	$ 1,632	$ -	1,632
	Educational Assistants	$ 2,007,432	$ 1,957,487	$ 74,710		$ 2,032,197	$ 500,432	$ 1,577,279	$ (45,515)	$ (11,353)	(34,162)
	Nurses & Medical advisors	$ 647,415	$ 658,255	$ -		$ 658,255	$ 186,957	$ 506,872	$ (35,574)	$ (20,301)	(15,273)
	Custodial & Maint Salaries	$ 2,807,655	$ 2,857,565	$ 647		$ 2,858,212	$ 919,424	$ 1,894,132	$ 44,656	$ -	44,656
	Non Certified Salary Adjustment	$ -	$ 66,716	$ (30,670)		$ 36,046	$ -	$ -	$ 36,046	$ -	36,046
	Career/Job salaries	$ 112,160	$ 222,898	$ 2,258		$ 225,156	$ 64,643	$ 104,889	$ 55,624	$ -	55,624
	Special Education Svcs Salaries	$ 727,151	$ 928,549	$ 7,850		$ 936,399	$ 234,401	$ 644,793	$ 57,206	$ (50,656)	107,862
	Attendance & Security Salaries	$ 381,784	$ 209,824	$ 193		$ 210,017	$ 54,154	$ 124,195	$ 31,668	$ -	31,668
	Extra Work - Non-Cert	$ 76,137	$ 69,825	$ -		$ 69,825	$ 41,243	$ 3,236	$ 25,347	$ -	25,347
	Custodial & Maint. Overtime	$ 280,772	$ 210,363	$ -		$ 210,363	$ 62,770	$ -	$ 147,593	$ -	147,593
	Civic activities/Park & Rec	$ 41,394	$ 43,000	$ -		$ 43,000	$ 3,351	$ -	$ 39,649	$ -	39,649
	NON-CERTIFIED SALARIES	$ 9,671,991	$ 9,860,107	$ 74,710	$ -	$ 9,934,817	$ 2,885,975	$ 6,659,485	$ 389,357	$ (82,310)	471,667
	SUBTOTAL SALARIES	$ 45,029,126	$ 44,999,627	$ -	$ -	$ 44,999,627	$ 11,284,147	$ 32,223,390	$ 1,492,089	$ (105,874)	$ 1,597,963

11/10/2014

NEWTOWN BOARD OF EDUCATION

BUDGET SUMMARY REPORT
FOR THE MONTH ENDING 10/31/2014

OBJECT CODE	EXPENSE CATEGORY	EXPENDED 2013 - 2014	APPROVED BUDGET	YTD TRANSFERS 2014 - 2015	CURRENT TRANSFERS	CURRENT BUDGET	YTD EXPENDED	ENCUMBER	BALANCE	ANTICIPATED OBLIGATIONS	PROJECTED BALANCE
200	**EMPLOYEE BENEFITS**										
	Medical & Dental Expenses	$ 8,206,890	$ 8,736,119	$ -		$ 8,736,119	$ 4,328,779	$ 4,335,789	$ 71,551	$ -	$ 71,551
	Life Insurance	$ 87,200	$ 87,337	$ -		$ 87,337	$ 27,770	$ -	$ 59,567	$ -	59,567
	FICA & Medicare	$ 1,357,437	$ 1,335,674	$ -		$ 1,335,674	$ 361,820	$ -	$ 973,854	$ -	973,854
	Pensions	$ 458,311	$ 441,667	$ -		$ 441,667	$ 426,647	$ 13,680	$ 1,340	$ -	1,340
	Unemployment & Employee Assist.	$ 61,034	$ 83,560	$ -		$ 83,560	$ 8,095	$ -	$ 75,465	$ -	75,465
	Workers Compensation	$ 462,937	$ 484,987	$ -		$ 484,987	$ 250,720	$ 228,964	$ 5,303	$ -	5,303
	SUBTOTAL EMPLOYEE BENEFITS	**$ 10,633,809**	**$ 11,169,344**	**$ -**	**$ -**	**$ 11,169,344**	**$ 5,403,830**	**$ 4,578,433**	**$ 1,187,081**	**$ -**	**$ 1,187,081**
300	**PROFESSIONAL SERVICES**										
	Professional Services	$ 660,280	$ 540,851	$ -		$ 540,851	$ 206,690	$ 118,313	$ 215,848	$ (69,991)	$ 285,839
	Professional Educational Ser.	$ 203,629	$ 208,232	$ -		$ 208,232	$ 48,019	$ 43,846	$ 116,367	$ -	116,367
	SUBTOTAL PROFESSIONAL SVCS	**$ 863,909**	**$ 749,083**	**$ -**	**$ -**	**$ 749,083**	**$ 254,709**	**$ 162,159**	**$ 332,215**	**$ (69,991)**	**$ 402,206**
400	**PURCHASED PROPERTY SVCS**										
	Buildings & Grounds Services	$ 653,698	$ 651,600	$ -		$ 651,600	$ 346,272	$ 225,566	$ 79,762	$ -	79,762
	Utility Services - Water & Sewer	$ 113,321	$ 117,000	$ -		$ 117,000	$ 25,261	$ -	$ 91,739	$ -	91,739
	Building, Site & Emergency Repairs	$ 503,610	$ 460,850	$ -		$ 460,850	$ 179,868	$ -	$ 280,982	$ -	280,982
	Equipment Repairs	$ 275,163	$ 270,433	$ -		$ 270,433	$ 84,082	$ 39,942	$ 146,409	$ -	146,409
	Rentals - Building & Equipment	$ 300,843	$ 305,536	$ -		$ 305,536	$ 128,599	$ 120,048	$ 56,890	$ -	56,890
	Building & Site Improvements	$ 572,017	$ 334,000	$ -		$ 334,000	$ 153,650	$ -	$ 180,350	$ -	180,350
	SUBTOTAL PUR. PROPERTY SER.	**$ 2,418,651**	**$ 2,139,419**	**$ -**	**$ -**	**$ 2,139,419**	**$ 917,730**	**$ 385,555**	**$ 836,133**	**$ -**	**836,133**

11/10/2014

NEWTOWN BOARD OF EDUCATION

BUDGET SUMMARY REPORT
FOR THE MONTH ENDING 10/31/2014

OBJECT CODE	EXPENSE CATEGORY	EXPENDED 2013 - 2014	APPROVED BUDGET	YTD TRANSFERS 2014 - 2015	CURRENT TRANSFERS	CURRENT BUDGET	YTD EXPENDED	ENCUMBER	BALANCE	ANTICIPATED OBLIGATIONS	PROJECTED BALANCE
500	**OTHER PURCHASED SERVICES**										
	Contracted Services	$ 363,526	$ 427,574	$ -		$ 427,574	$ 206,380	$ 70,955	$ 150,239	$ (1,596)	$ 151,835
	Transportation Services	$ 3,714,217	$ 3,891,158	$ -		$ 3,891,158	$ 870,696	$ 2,475,770	$ 544,692	$ (277,990)	$ 822,682
	Insurance - Property & Liability	$ 297,870	$ 319,261	$ -		$ 319,261	$ 185,739	$ 139,070	$ (5,548)	$ -	$ (5,548)
	Communications	$ 120,492	$ 118,143	$ -		$ 118,143	$ 30,968	$ 54,563	$ 32,613	$ -	$ 32,613
	Printing Services	$ 32,365	$ 39,782	$ -		$ 39,782	$ 12,792	$ 74	$ 26,916	$ -	$ 26,916
	Tuition - Out of District	$ 2,074,030	$ 2,177,958	$ -		$ 2,177,958	$ 929,937	$ 1,937,615	$ (689,594)	$ (822,584)	$ 132,990
	Student Travel & Staff Mileage	$ 206,963	$ 223,771	$ -		$ 223,771	$ 59,502	$ 88,724	$ 75,544	$ -	$ 75,544
	SUBTOTAL OTHER PURCHASED SE	**$ 6,809,463**	**$ 7,197,647**	**$ -**	**$ -**	**$ 7,197,647**	**$ 2,296,014**	**$ 4,766,772**	**$ 134,861**	**$ (1,102,170)**	**$ 1,237,031**
600	**SUPPLIES**										
	Instructional & Library Supplies	$ 906,748	$ 911,614	$ -		$ 911,614	$ 451,698	$ 82,357	$ 377,559	$ -	$ 377,559
	Software, Medical & Office Sup.	$ 175,444	$ 210,966	$ -		$ 210,966	$ 68,279	$ 52,150	$ 90,537	$ -	$ 90,537
	Plant Supplies	$ 351,501	$ 375,100	$ -		$ 375,100	$ 197,677	$ 35,349	$ 142,073	$ -	$ 142,073
	Electric	$ 1,406,552	$ 1,406,127	$ -		$ 1,406,127	$ 362,071	$ -	$ 1,044,056	$ -	$ 1,044,056
	Propane & Natural Gas	$ 319,537	$ 338,737	$ -		$ 338,737	$ 33,110	$ -	$ 305,627	$ -	$ 305,627
	Fuel Oil	$ 662,339	$ 528,038	$ -		$ 528,038	$ 22,296	$ -	$ 505,742	$ -	$ 505,742
	Fuel For Vehicles & Equip.	$ 531,906	$ 452,503	$ -		$ 452,503	$ 61,165	$ -	$ 391,338	$ -	$ 391,338
	Textbooks	$ 265,144	$ 257,008	$ -		$ 257,008	$ 138,151	$ 7,511	$ 111,346	$ -	$ 111,346
	SUBTOTAL SUPPLIES	**$ 4,619,171**	**$ 4,480,093**	**$ -**	**$ -**	**$ 4,480,093**	**$ 1,334,447**	**$ 177,367**	**$ 2,968,279**	**$ -**	**$ 2,968,279**

11/10/2014

NEWTOWN BOARD OF EDUCATION

BUDGET SUMMARY REPORT

FOR THE MONTH ENDING 10/31/2014

OBJECT CODE	EXPENSE CATEGORY	EXPENDED 2013 - 2014	APPROVED BUDGET	YTD TRANSFERS 2014 - 2015	CURRENT TRANSFERS	CURRENT BUDGET	YTD EXPENDED	ENCUMBER	BALANCE	ANTICIPATED OBLIGATIONS	PROJECTED BALANCE
700	**PROPERTY**										
	Capital Improvements (Sewers)	$ 124,177	$ 124,177	$ -		$ 124,177	$ 124,177	$ -	$ 0	$ -	$ 0
	Technology Equipment	$ 329,592	$ 378,900	$ -		$ 378,900	$ 192,458	$ 15,788	$ 170,654	$ -	$ 170,654
	Other Equipment	$ 98,778	$ 31,658	$ -		$ 31,658	$ 20,784	$ -	$ 10,874	$ -	10,874
	SUBTOTAL PROPERTY	**$ 552,547**	**$ 534,735**	**$ -**	**$ -**	**$ 534,735**	**$ 337,418**	**$ 15,788**	**$ 181,529**	**$ -**	**$ 181,529**
800	**MISCELLANEOUS**										
	Memberships	$ 71,445	$ 75,356	$ -		$ 75,356	$ 49,895	$ 370	$ 25,091	$ -	$ 25,091
	SUBTOTAL MISCELLANEOUS	**$ 71,445**	**$ 75,356**	**$ -**	**$ -**	**$ 75,356**	**$ 49,895**	**$ 370**	**$ 25,091**	**$ -**	**$ 25,091**
	TOTAL LOCAL BUDGET	**$ 70,998,119**	**$ 71,345,304**	**$ -**	**$ -**	**$ 71,345,304**	**$ 21,878,191**	**$ 42,309,834**	**$ 7,157,279**	**$ (1,278,035)**	**$ 8,435,314**

11/10/2014

NEWTOWN BOARD OF EDUCATION

BUDGET SUMMARY REPORT
FOR THE MONTH ENDING 10/31/2014

OBJECT CODE	EXPENSE CATEGORY	EXPENDED 2013 - 2014	APPROVED BUDGET	YTD TRANSFERS 2014 - 2015	CURRENT TRANSFERS	CURRENT BUDGET	YTD EXPENDED	ENCUMBER	BALANCE	ANTICIPATED OBLIGATIONS	PROJECTED BALANCE

SCHOOL GENERATED FEES	2014-15 APPROVED BUDGET	RECEIVED	BALANCE	% RECEIVED
HIGH SCHOOL FEES				
NURTURY PROGRAM	$8,000	$8,000.00	$0.00	100.00%
PARKING PERMITS	$20,000	$20,000.00	$0.00	100.00%
PAY FOR PARTICIPATION IN SPORTS	$84,800	$38,711.00	$46,089.00	45.65%
	$112,800	$66,711.00	$46,089.00	59.14%
BUILDING RELATED FEES				
ENERGY - ELECTRICITY	$313	$0.00	$313.00	0.00%
HIGH SCHOOL POOL - OUTSIDE USAGE	$500	$0.00	$500.00	0.00%
	$813	$0.00	$813.00	0.00%
MISCELLANEOUS FEES	$150	$345.00	($195.00)	230.00%
TOTAL SCHOOL GENERATED FEES	$113,763	$67,056.00	$46,707.00	58.94%

11/10/2014

DRAFT   NEWTOWN PUBLIC SCHOOLS 2015-2016 SCHOOL CALENDAR   **DRAFT**

AUGUST 3(6)

M	T	W	TH	F
24	*25*	*26*	27	28
31				

24-All Teachers Report
24, 25 & 26 –Staff Development Days
27-Students Report

SEPTEMBER 19(19)

M	T	W	TH	F
	1	2	3	4
--	8	9	10	11
--	15	16	17	18
21	22	--	24	25
28	29	30		

7-Labor Day, Schools Closed
14-Rosh Hashanah, Schools Closed
23-Yom Kippur-Schools Closed

OCTOBER 22(22)

M	T	W	TH	F
			1	2
5	6	*7	8	9
12	13	14	15	16
19	20	21	22	23
26	27	28	29	30

*7-Early Dismissal-Staff Dev.

NOVEMBER 18(19)

M	T	W	TH	F
2	--	4	5	6
9	10	11	12	13
16	17	18	19	20
23	24	*25	--	--
30				

3-Election Day-Schools Closed For Students, Staff Development Day
25-Early Dismissal for Thanksgiving
26-27-Thanksgiving Recess

DECEMBER 17(17)

M	T	W	TH	F
	1	*2	3	4
7	8	9	10	11
14	15	16	17	18
21	22	23	--	--
--	--	--	--	

*2-Early Dismissal-Staff Dev.
24-31-Holiday Recess

JANUARY 19(19)

M	T	W	TH	F
				--
4	5	6	7	8
11	12	*13	14	15
--	19	20	21	22
25	26	27	28	29

1-New Year's Day 2
*13-Early Dismissal-Staff Dev.
18-Martin Luther King Day, Schools Closed

FEBRUARY 19(19)

M	T	W	TH	F
1	2	*3	4	5
8	9	10	11	12
15	16	17	18	19
--	--	24	25	26
29				

*3-Early Dismissal-Staff Dev.
22-23-Schools Closed

MARCH 22(22)

M	T	W	TH	F
	1	*2	3	4
7	8	9	10	11
14	15	16	17	18
21	22	23	24	--
28	29	30	31	

*2-Early Dismissal-Staff Dev.
25 -Good Friday- Schools Closed

Student Days – 183
Teacher Days – 187

APRIL 16(16)

M	T	W	TH	F
				1
4	5	*6	7	8
--	--	--	--	--
18	19	20	21	22
25	26	27	28	29

*6-Early Dismissal-Staff Dev.
11-15 Schools Closed

MAY 21(21)

M	T	W	TH	F
2	3	*4	5	6
9	10	11	12	13
16	17	18	19	20
23	24	25	26	27
--	31			

*4-Early Dismissal-Staff Dev.
30-Memorial Day, Schools Closed

JUNE 7(7)

M	T	W	TH	F
		1	2	3
6	7	8	☼9	10
13	14	15	■16	17
20	21	22	23	24
27	28	29	30	

☼-Projected last day of school without emergency closing days
■-Projected last day of school if the 5 built-in days are used

The calendar builds-in five emergency closings, with the last day of school projected as June 16th. Unused closings will be deducted from this date. Extra closings will be added on June 17 and 20 with additional days taken from the April break starting with 4/15, 4/14, etc.

Open House Dates:
Elementary –
Reed Intermediate –
Middle School –
High School –

Conferences/Early Dismissals:
Elementary –
Reed Intermediate –
Middle School –
High School –

Adopted

DRAFT NEWTOWN PUBLIC SCHOOLS 2016-2017 SCHOOL CALENDAR DRAFT

AUGUST 3(6)

M	T	W	TH	F
		24	*25*	*26*
29	30	31		

24-All Teachers Report
24, 25 & 26 –Staff Development Days
29 Students Report

SEPTEMBER 21(21)

M	T	W	TH	F
			1	2
--	6	7	8	9
12	13	14	15	16
19	20	21	22	23
26	27	28	29	30

5-Labor Day, Schools Closed

OCTOBER 19(19)

M	T	W	TH	F
--	4	*5	6	7
10	11	--	13	14
17	18	19	20	21
24	25	26	27	28
31				

*5-Early Dismissal-Staff Dev.
3 – Rosh Hashanah-Schools Closed
12-Yom Kippur-Schools Closed

NOVEMBER 19(20)

M	T	W	TH	F
	1	2	3	4
7	--	9	10	11
14	15	16	17	18
21	22	*23	--	--
28	29	30		

8-Election Day-Schools Closed For Students, Staff Development Day
23-Early Dismissal for Thanksgiving
24-25-Thanksgiving Recess

DECEMBER 17(17)

M	T	W	TH	F
			1	2
5	6	*7	8	9
12	13	14	15	16
19	20	21	22	23
--	--	--	--	--

*7-Early Dismissal-Staff Dev.
26-30-Holiday Recess

JANUARY 20(20)

M	T	W	TH	F
--	3	4	5	6
9	10	*11	12	13
--	17	18	19	20
23	24	25	26	27
30	31			

*11-Early Dismissal-Staff Dev.
2-New Year's Day
16-Martin Luther King Day, Schools Closed

FEBRUARY 18(18)

M	T	W	TH	F
		*1	2	3
6	7	8	9	10
13	14	15	16	17
--	--	22	23	24
27	28			

*1-Early Dismissal-Staff Dev.
20-21-Schools Closed

MARCH 23(23)

M	T	W	TH	F
		*1	2	3
6	7	8	9	10
13	14	15	16	17
20	21	22	23	24
27	28	29	30	31

*1-Early Dismissal-Staff Dev.

Student Days – 183
Teacher Days – 187

APRIL 14(14)

M	T	W	TH	F
3	4	*5	6	7
10	11	12	13	--
--	--	--	--	--
24	25	26	27	28

*5-Early Dismissal-Staff Dev.
14-Good Friday- Schools Closed
17-21 Schools Closed

MAY 22(22)

M	T	W	TH	F
1	2	*3	4	5
8	9	10	11	12
15	16	17	18	19
22	23	24	25	26
--	30	31		

*3-Early Dismissal-Staff Dev.
29-Memorial Day- Schools Closed

JUNE 7(7)

M	T	W	TH	F
			1	2
5	6	7	8	☼9
12	13	14	15	■16
19	20	21	22	23
26	27	28	20	30

☼-Projected last day of school without emergency closing days
■-Projected last day of school if the 5 built-in days are used

The calendar builds-in five emergency closings, with the last day of school projected as June 16th. Unused closings will be deducted from this date. Extra closings will be added on June 19 and 20 with additional days taken from the April break starting with 4/21, 4/20, etc.

Open House Dates:
Elementary –
Reed Intermediate –
Middle School –
High School –

Conferences/Early Dismissals:
Elementary –
Reed Intermediate –
Middle School –
High School –

Adopted

	Activity	Responsibility	Date	Day	Meeting Type	
1.	Commencement of Budget Process	Supt & Director of Business	09/19/14	Fri	Senior Leadership Team	ADMINISTRATION
2.	Budget Calendar and Materials Distributed	Director of Business	10/02/14	Thur	CO Internal	
3.	Discussion and Expectations / Goals of Budget Process	Superintendent	10/10/14	Fri	Senior Leadership Team	
4.	Submission of Technology & Bldg & Grounds Requests	Dir's of Tech / Facilities	11/04/14	Tue	CO Internal	
5.	Submission of **All** Budget Requests	Principals / Directors	11/07/14	Fri	Senior Leadership Team	
6.	Submission of Salaries	Accountant & Personnel	11/11/14	Tue	CO Internal	
7.	Preliminary Update and Discussion of Budget in Progress	Superintendent	11/21/14	Fri	Senior Leadership Team	
8.	Individual Administrative Budget Meetings	Superintendent	12/1-12/10 Mon-Wed		Cost Center Leaders	
9.	Distribute Superintendent's Proposed Budget	Superintendent	12/22/14	Mon	CO Internal	
10.	**Superintendent's Overview** of Proposed Budget to BOE, *Elem & Reed*	Superintendent	01/06/15	Tue	Regular BOE Mtg	BOARD OF EDUCATION
11.	Budget Workshop - *Middle, High Schools, Pupil Pers & Health*	Board of Ed	01/08/15	Thurs	Workshop Mtg	
12.	Budget Workshop - *Special Ed, Curriculum, Technology & Gen Svs* *- Continuing Ed, Benefits, Plant & Transportation*	Board of Ed	01/13/15	Tue	Workshop Mtg	
13.	Budget Workshop - *Public Hearing & Discussion*	Board of Ed	02/03/15	Tue	PH & Regular BOE Mtg	
14.	Budget Workshop - **Adoption of Budget**	Board of Ed	02/05/15	Thurs	Workshop Mtg	
15.	BOE Budget Submitted to Financial Director *(Feb 14th submission deadline per Town Charter)*	Director of Business	02/13/15	Fri	Finance Internal *(Delivery)*	
	Schools Closed - Winter Recess	*2/16/15 thru 2/17/15*		*Mon - Tue*		
16.	Budget Proposals Published in Newspaper *(At least 5 days prior to Public Hearing per Town Charter)*	Finance Director	02/13/15	Fri	(Newspaper)	BOARD OF FINANCE
17.	Board of Finance Public Budget Hearing for the Town *(Not later than the first Wednesday in March, per Town Charter)*	Board of Finance	02/19/15	Thurs	Public Hearing	
18.	Board of Finance - Budget Review with Board of Ed	Board of Finance	TBD		Finance Board	
19.	Board of Finance recommends Budget to Legislative Council *(Not later than March 14th, per Town Charter)*	Board of Finance	03/11/15	Wed	Finance Board	
20.	Budget Proposals Published in Newspaper *(At least 5 days prior to Public Hearing per Town Charter)*	Finance Director	03/13/15	Fri	(Newspaper)	
21.	L.C. Education Sub-committee deliberations	Legislative Council	TBD		L.C. Sub-committee	LEGISLATIVE COUNCIL
22.	Legislative Council Public Budget Hearing for the Town *(Not later than last Wednesday in March, per Town Charter)*	Legislative Council	*03/18/15*	Wed	Public Hearing	
23.	Legislative Council Budget Meeting	Legislative Council	TBD		Legislative Council	
24.	Legislative Council adopts a Town Budget *(Not later than the 2nd Wednesday in April, per Town Charter)*	Legislative Council	*04/08/15*	Wed	Legislative Council	
	Schools Closed - Spring Recess	*4/13/15 thru 4/17/15*		*Mon - Fri*		
25.	LC Budget Proposal Published in Newspaper *(At least 5 days prior to Annual Budget Referendum per Town Charter)*	Finance Director	04/10/15	Fri	(Newspaper)	
26.	Town Budget Referendum *(4th Tuesday in April per Town Charter)*	Town Charter	04/28/15	Tue	Referendum Vote	

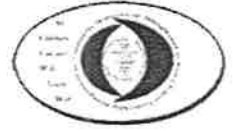**NOTE: Activities from 16. - 25. are subject to change at the discretion of the respective Board.**   **Click here for Town meetings**

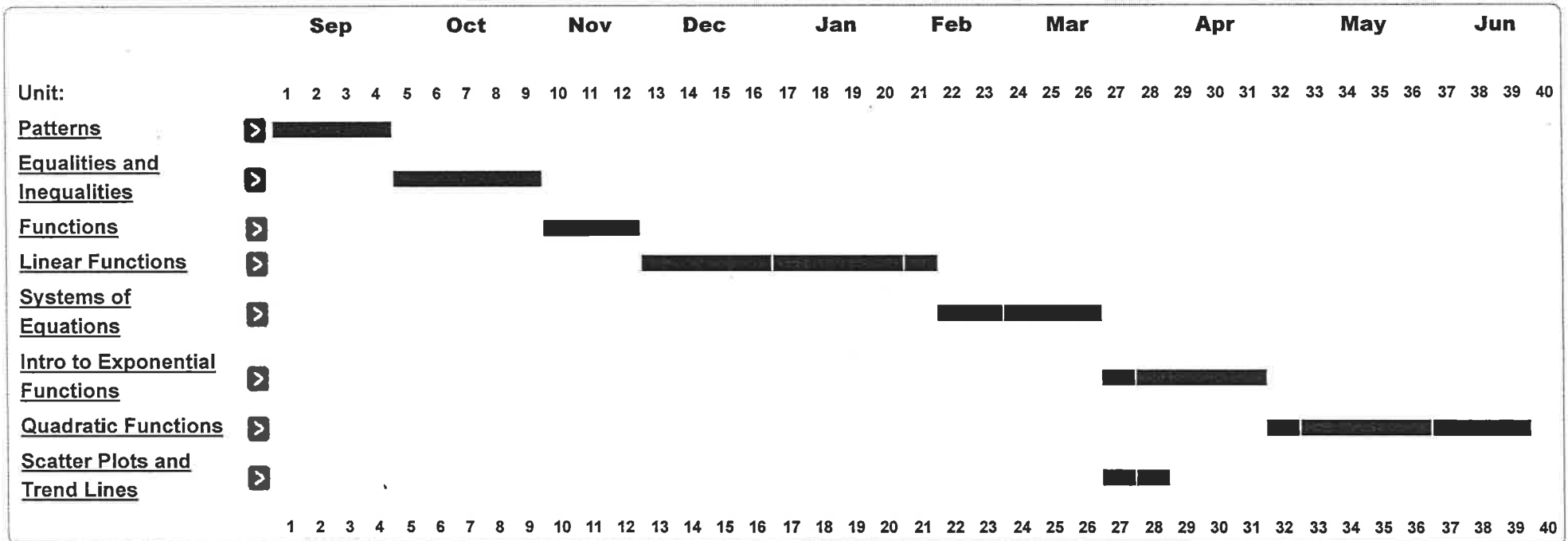*TBD = To Be Determined as they move along in the process*   **Approved 11/18/2014**

Newtown Public Schools
Course Assignments › Algebra I

✉ **Collaboration** | Grade 9 | Mathematics | Newtown High School

	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 39 40

Unit	Timeline
Patterns >	weeks 1–4
Equalities and Inequalities >	weeks 5–9
Functions >	weeks 10–12
Linear Functions >	weeks 13–21
Systems of Equations >	weeks 22–26
Intro to Exponential Functions >	weeks 27–31
Quadratic Functions >	weeks 32–40
Scatter Plots and Trend Lines >	weeks 27–28

  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 39 40

Last Updated: Thursday, October 23, 2014, 4:50PM

Atlas Version 8.0.4

10/29/2014 1:44 PM

Unit: Patterns (Week 1, 4 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

Analyzing patterns and writing recursive and explicit algebraic rules provides a powerful way to extend patterns and make predictions.

Essential Question(s)	Guiding Questions
What is a sequence? How can patterns be represented? What are the advantages and disadvantages of a recursive rule compared to an explicit rule?	*Factual, Conceptual, Provocative* How can analyzing patterns and writing recursive and explicit algebraic rules provide a powerful way to extend patterns and make predictions?

Standard(s)	Objective(s)
Content and CCSS **CCSS: Mathematics, CCSS: HS: Algebra, Seeing Structure in Expressions** HSA-SSE.A. Interpret the structure of expressions. • HSA-SSE.A.1. Interpret expressions that represent a quantity in terms of its context. • HSA-SSE.A.1a. Interpret parts of an expression, such as terms, factors, and coefficients. **CCSS: Mathematics, CCSS: HS: Functions, Interpreting Functions** HSF-IF.A. Understand the concept of a function and use function notation. • HSF-IF.A.3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. **CCSS: Mathematics, CCSS: HS: Functions, Building Functions** HSF-BF.A. Build a function that models a relationship between two quantities. • HSF-BF.A.1. Write a function that describes a relationship between two quantities. • HSF-BF.A.1a. Determine an explicit expression, a recursive process, or steps for calculation from a context. • HSF-BF.A.2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms. **CCSS: Mathematics, CCSS: HS: Functions, Linear, Quadratic, and Exponential Models** HSF-LE.A. Construct and compare linear and exponential models and solve problems.	**Bloom/ Anderson Taxonomy / DOK Language** To identify and extend patterns in sequences To represent arithmetic sequences using function notation To write and use recursive formulas for geometric sequences

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- HSF-LE.A.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

Content/Topics

Critical content that students must KNOW
Recursive rule
Explicit rule
Arithmetic sequence
Geometric sequence

Skills

Transferable skills that students must be able to DO
- 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities

Exit Slips
Hydrocarbon Lab
Sierpinski Tetrahedron
Activity 1.4.2 Applications of Geometric Sequences.doc
Activity 1.4.1 Doubling Your Money Geometric.doc
arithmetic geometric review.doc
Activity 1.3.3 Arithmetic Sequences with Calculators.doc
Activity 1.3.1 Recursive and Explicit Rules for Arithmetic Sequences.doc
Activity 1.3.1 building bridges arithmetic.doc
Activity 1.1.1 Exploring Patterns with Hydrocarbons.docx
Sierpinski Tetrahedron lab

Resources

Professional & Student
Professional
Fractal Geometry Workshop resources
teachers edition textbook
Student
Textbook: *Algebra 1,* 2007
computer with internet access

Assessments (Titles)

Patterns Test
Summative: Written Test

Algebra 1 Unit 1 Patterns Test

Graduation Standards

Information Literacy
Problem Solving
Spoken Communication
Written Performance
- Problem Solving

Interdisciplinary Connections

Find (specific term)
Write (recursive rule)
Write (explicit rule)
Draw (next in sequence)
Predict (nth term)

Unit: Equalities and Inequalities (Week 5, 5 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

To obtain a solution to an equation, no matter how complex, always involves the process of undoing the operations.

Essential Question(s)	Guiding Questions
- How can we use linear equations and linear inequalities to solve real world problems? - What is a solution set for a linear equation or linear inequality? - How can models and technology aid in the solving of linear equations and linear inequalities?	*Factual, Conceptual, Provocative* - What is an equation? - What is an expression? - What does equality mean? - What is an inequality?

Standard(s)	Objective(s)
Content and CCSS **CCSS: Mathematics, CCSS: HS: Num/Quantity, Quantities** HSN-Q.A. Reason quantitatively and use units to solve problems. - HSN-Q.A.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. - HSN-Q.A.2. Define appropriate quantities for the purpose of descriptive modeling. - HSN-Q.A.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. **CCSS: Mathematics, CCSS: HS: Algebra, Seeing Structure in Expressions** HSA-SSE.A. Interpret the structure of expressions. - HSA-SSE.A.1. Interpret expressions that represent a quantity in terms of its context. - HSA-SSE.A.1a. Interpret parts of an expression, such as terms, factors, and coefficients. - HSA-SSE.A.1b. Interpret complicated expressions by viewing one or more of their parts as a single entity. - HSA-SSE.A.2. Use the structure of an expression to identify ways to rewrite it. **CCSS: Mathematics, CCSS: HS: Algebra, Creating Equations** HSA-CED.A. Create equations that describe numbers or relationships.	**Bloom/ Anderson Taxonomy / DOK Language** Students will . . . - Interpret the structure of Expressions - Write expressions in equivalent form to solve problems - Create equations that describe numbers or relationships - Solve equations and inequalities in one variable - Understand solving equations as a process of reasoning and explain the reasoning - Reason quantitatively and use units to solve problems

3

- HSA-CED.A.1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
- HSA-CED.A.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

CCSS: Mathematics, CCSS: HS: Algebra, Reasoning with Equations & Inequalities
HSA-REI.A. Understand solving equations as a process of reasoning and explain the reasoning.

- HSA-REI.A.1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

HSA-REI.B. Solve equations and inequalities in one variable.

- HSA-REI.B.3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

CCSS: Mathematics, CCSS: HS: Algebra, 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.4. Model with mathematics.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Content/Topics	Skills
Critical content that students must KNOW Students must be able to: - Solve linear equations and inequalities in one variable - Model a real world problem with an equation/inequality and interpret the solution - Rearrange equations with multiple variables in terms of a given variable	*Transferable skills that students must be able to DO* - 2. Work independently and collaboratively to solve problems and accomplish goals. - 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions. - 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

4

Core Learning Activities	Resources
Combining like terms with Classwork notes and Practice sheets "Around the Room" Activities Equations in Education activity	*Professional & Student* Professional department developed materials Internet, textbook, Pearson's Algebra 1 , 2007 State of Ct Algebra 1 Moodle Student Textbook, Pearson's *Algebra 1,* 2007 internet, handouts

Core Learning Activities

Combining like terms with
Classwork notes and Practice sheets
"Around the Room" Activities
Equations in Education activity

📎 **Solving Equations Scavenger Hunt Mixed Practice.ppt**

📎 **Solving equations review stations.docx**

📎 **solving 2 step equations practice.doc**

📎 **Literal Equations Student version.pptx**

📎 **Inequalities Packet.docx**

📎 **Activity 2.6.6 Putting it All Together.docx**

📎 **Activity 2.4.5a Practice Solving Equations.docx**

📎 **Activity 2.3.3 Solving Equations with Variables on Both Sides.docx**

📎 **Activity 2.3.2 Solving Equations that Contain Like Terms.docx**

📎 **Activity 2.2.4 Equations in Education.docx**

📎 **Activity 2.2.3 Solving Equations CPA.docx**

📎 **Activity 2.2.1 Solving Equations using Flowcharts.docx**

📎 **Activity 2.1.4 Evaluating Algebraic Expressions.docx**

📎 **Activity 2.1.2 Representing Expressions using Flowcharts (after Unit 1 test).docx**

📎 **Activity 2.1.1 The Magic of Algebra.docx**

Resources

Professional & Student
Professional department developed materials
Internet, textbook, Pearson's Algebra 1 , 2007
State of Ct Algebra 1 Moodle
Student
Textbook, Pearson's *Algebra 1,* 2007
internet, handouts

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
Two-step solving equations quiz (including fractions) Summative: Other written assessments **Solving Equations Test including variables on both sides** Summative: Other written assessments **Solving inequalities Quiz** Summative: Other written assessments **Ipod performance task** Other written assessments 📎 **Test on solving equations.doc** 📎 **Unit 2 Performance Task iPods.docx** 📎 **End of Unit 2 test.doc**	**Information Literacy** **Problem Solving** **Spoken Communication** **Written Performance**	Students solve literal equations for multiple variables, useful for Science formulas

Unit: Functions (Week 10, 3 Weeks) ▦

Enduring Understanding(s)/ Generalization(s)

- Functions are a mathematical way to describe relationships between two quantities that vary.

Essential Question(s)

- How can functions be used to model real world situations, make predictions, and solve problems?

Guiding Questions

Factual, Conceptual, Provocative

- What is a function?
- What is function notation?
- How can we tell if a relationship is a function from multiple representations?
- What are the different ways in which functions may be represented?

Standard(s)

Content and CCSS

CCSS: Mathematics, CCSS: Grade 8, Functions
8.F.A. Define, evaluate, and compare functions.

- 8.F.A.1. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.
- 8.F.A.2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.

8.F.B. Use functions to model relationships between quantities.

- 8.F.B.5. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

CCSS: Mathematics, CCSS: HS: Algebra, Creating Equations
HSA-CED.A. Create equations that describe numbers or relationships.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will
- Create equations that describe numbers or relationships
- Represent and solve equations and inequalities graphically
- Understand the concept of a function and use function notation
- Interpret functions that arise in applications in terms of the context
- Analyze functions using different representations

6

- HSA-CED.A.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

CCSS: Mathematics, CCSS: HS: Algebra, 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.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.

CCSS: Mathematics, CCSS: HS: Functions, Interpreting Functions
HSF-IF.A. Understand the concept of a function and use function notation.

- HSF-IF.A.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).
- HSF-IF.A.2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

HSF-IF.B. Interpret functions that arise in applications in terms of the context.

- HSF-IF.B.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
- HSF-IF.B.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

HSF-IF.C. Analyze functions using different representations.

- HSF-IF.C.7b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
- HSF-IF.C.9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

Content/Topics	Skills
Critical content that students must KNOW Students must know:	*Transferable skills that students must be able to DO* • 1. Use real-world digital and other research tools to

7

- how to represent functions in multiple formats
- how to determine whether a relationship is a function
- how functions apply to real life situations

access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities

- Representing Relations
- Is it a Function?
- Bottled Water
- Hartford Precipitation
- Introduction to Function Notation
- Piecewise Functions
- Parent Functions

📎 **Parent functions Graphs.docx**

📎 **mapping diagram hw.docx**

📎 **Activity 3.4.3 Free Throws.docx**

📎 **Activity 3.3.2 Intro to Function Notation.docx**

📎 **Activity 3.3.1 Function Machines.docx**

📎 **Activity 3.2.3 Functions Everywhere (independent-dependent variables).docx**

📎 **Activity 3.2.2a Hartford Precipitation.docx**

📎 **Activity 3.2.1 Bottled Water.docx**

📎 **Activity 3.1.2 Is it a Function.docx**

📎 **Representing Relations.docx**

Resources

Professional & Student
Professional
Department developed materials
Internet, textbook: Pearson's, Algebra 1, 2007,
SDE Algebra 1 Moodle,
computer/projector
Student
computer with internet access, textbook, handouts, Kahn Academy

Assessments (Titles)

Unit 3 Quiz: Functions
Summative: Written Test
End of Unit Test including is a function with explanations,
Independent/Dependent variables with function rules, domain and range and function notation

Function Applications Pack
Summative: Group Project
Pack of function application problems including linear, quadratic, cubic, exponential growth, inverse, square root and step

Function Applications Quiz (Free

Graduation Standards

Information Literacy
Problem Solving
Spoken Communication
Written Performance
- Problem Solving

Interdisciplinary Connections

- For Bottled Water Activity discussed how long it takes for a plastic bottle to decompose and how many bottles of water were created/recyled every year.

Throws)
Summative: Written Test
Students use a linear model to create a table, graph and function rule and make predictions.

📎 **What is a Function journal entry.docx**

📎 **Unit 3 Quiz.docx**

📎 **Functions Applications key.docx**

📎 **Activity 3.4.3 Free Throws application quiz.docx**

9

Unit: Linear Functions (Week 13, 9 Weeks) ▦

Enduring Understanding(s)/ Generalization(s)

Linear functions are characterized by a constant average rate of change (or constant additive change).

Essential Question(s)

- What is a linear function?
- What are the different ways that linear functions may be represented?
- What is the significance of a linear function's slope and *y*-intercept?

Guiding Questions

Factual, Conceptual, Provocative

- How may linear functions model real world situations?
- How may linear functions help us analyze real world situations and solve practical problems?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Algebra, 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.

CCSS: Mathematics, CCSS: HS: Functions, Interpreting Functions
HSF-IF.B. Interpret functions that arise in applications in terms of the context.

- HSF-IF.B.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

HSF-IF.C. Analyze functions using different representations.

- HSF-IF.C.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
- HSF-IF.C.7a. Graph linear and quadratic functions

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will

- Interpret functions that arise in applications in terms of the context
- Analyze functions using different representations
- Construct and compare linear [and exponential] models and solve problems
- Interpret expressions for functions in terms of the situation they model

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and show intercepts, maxima, and minima.
- HSF-IF.C.8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

CCSS: Mathematics, CCSS: HS: Functions, Linear, Quadratic, and Exponential Models
HSF-LE.A. Construct and compare linear and exponential models and solve problems.

- HSF-LE.A.1. Distinguish between situations that can be modeled with linear functions and with exponential functions.
- HSF-LE.A.1a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
- HSF-LE.A.1b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
- HSF-LE.A.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

HSF-LE.B. Interpret expressions for functions in terms of the situation they model.

- HSF-LE.B.5. Interpret the parameters in a linear or exponential function in terms of a context.

Content/Topics

Critical content that students must KNOW
Using graphs to represent two quantities
Linear patterns
Graphing using a function rule
Writing a function rule from arithmetic sequence
Formalizing relations and functions

Skills

Transferable skills that students must be able to DO
- 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities

- What makes a function Linear
- Recognizing Linear Functions from Words, Tables and Graphs
- Using Tables to Determine if a Function is Linear
- Recognizing Linear Functions from Geometric Applications, Draining a Swimming Pool, Ordering DVD's, Teddy Bear Sale, (pack)

Resources

Professional & Student
Professional
Teachers edition textbook: Pearson's *Algebra 1*
SDE of CT Algebra 1 Moodle
Texas Instruments TI-84+
Calculator Based Ranger (CBR)
Student
Textbook

- Calculating and Interpreting Slope
- Slope-Intercept Form of a Line
- Horizontal and Vertical Lines
- Standard Form of a Linear Equation

internet
handouts
graphing calculator

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
Slope and Slope-Intercept Form of a Line Assessment **Summative: Written Test** Test on slope and slope-intercept form including horizontal and vertical lines 🖉 **End of unit test solving equations**	**Information Literacy** **Problem Solving** **Spoken Communication** **Written Performance**	

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Unit: Systems of Equations (Week 22, 5 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

Using algebra to describe lines.

Essential Question(s)	Guiding Questions
What does the slope of a line indicate about the line? What information does the equation of a line give you? How can you make a prediction based on a scatter plot?	*Factual, Conceptual, Provocative* What is unique about the rate of change for all lines? What is a direct variation? What is the difference between slope-intercept, point slope, and standard form of a line? How do you recognize parallel and perpendicular lines from their equations? What does the graph of an absolute value look like?

Standard(s)	Objective(s)
Content and CCSS **CCSS: Mathematics, CCSS: HS: Algebra, Seeing Structure in Expressions** HSA-SSE.A. Interpret the structure of expressions. • HSA-SSE.A.1a. Interpret parts of an expression, such as terms, factors, and coefficients. **CCSS: Mathematics, CCSS: HS: Algebra, Creating Equations** HSA-CED.A. Create equations that describe numbers or relationships. • HSA-CED.A.1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. • HSA-CED.A.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. • HSA-CED.A.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. • HSA-CED.A.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. **CCSS: Mathematics, CCSS: HS: Algebra, Reasoning with Equations & Inequalities** HSA-REI.A. Understand solving equations as a process of reasoning and explain the reasoning. • HSA-REI.A.1. Explain each step in solving a simple	**Bloom/ Anderson Taxonomy / DOK Language** Students will: • Identify rate of change and slope • Develop Direct Variation functions • Write equations of lines in different forms • identify Parallel and Perpendicular line equations • Graph absolute value functions

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equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

HSA-REI.B. Solve equations and inequalities in one variable.

- HSA-REI.B.3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

HSA-REI.C. Solve systems of equations.

- HSA-REI.C.5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.
- HSA-REI.C.6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

HSA-REI.D. Represent and solve equations and inequalities graphically.

- HSA-REI.D.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
- HSA-REI.D.11. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.
- HSA-REI.D.12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

Content/Topics	Skills
Critical content that students must **KNOW** Linear equations and system of equations Linear inequalities and systems of inequalities Equations of lines in standard, point-slope and slope-intercept form Graph piece-wise and absolute value functions x- and y- intercepts	Transferable skills that students must be able to **DO** - 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks. - 2. Work independently and collaboratively to solve problems and accomplish goals. - 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.

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- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities

Group work
individual practice
Round the Room activities
Geometer Sketchpad activities

Resources

Professional & Student
Department developed materials
text: Pearson's Algebra 1, 2007
SDE of Ct Algebra 1 Moodle
TI 84 calculators

Assessments (Titles)

Walker vs Runner
Summative: Personal Project
Performance task relating speed to graphs of a person walking to the speed of someone running in the same direction.

Graduation Standards

Information Literacy
Problem Solving
Spoken Communication
Written Performance

Interdisciplinary Connections

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Intro to Exponential Functions

✉ **Collaboration** Algebra I|Grade 9|Mathematics|Newtown High School|2014-2015

Wednesday, October 29, 2014, 2:27PM

Unit: Intro to Exponential Functions (Week 27, 5 Weeks) ▦

Enduring Understanding(s)/ Generalization(s)

Extending the idea of exponents to include zero and negative exponents.

Essential Question(s)

How can you represent numbers less than one using exponents?
How can you simplify expressions involving exponents?
What are the characteristics of an exponential function?

Guiding Questions

Factual, Conceptual, Provocative
How can you explain how to use negative and zero exponents?
Can you give examples of operations that represent the properties of exponents?
Can you apply exponents to growth and decay problems?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Functions, Linear, Quadratic, and Exponential Models
HSF-LE.A. Construct and compare linear and exponential models and solve problems.

- HSF-LE.A.1. Distinguish between situations that can be modeled with linear functions and with exponential functions.
- HSF-LE.A.1a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
- HSF-LE.A.1c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
- HSF-LE.A.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- HSF-LE.A.3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.
- HSF-LE.A.4. For exponential models, express as a logarithm the solution to $ab^{??} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.

HSF-LE.B. Interpret expressions for functions in terms of the situation they model.

- HSF-LE.B.5. Interpret the parameters in a linear or exponential function in terms of a context.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will:
Identify growth and decay factors
Write the equation of the exponential represented by a geometric sequence
Apply exponentials to interest problems

Content/Topics

Skills

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Critical content that students must **KNOW**	Transferable skills that students must be able to **DO**
Exponential properties Growth and Decay models Compound interest Geometric sequence	• 2. Work independently and collaboratively to solve problems and accomplish goals. • 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes. • 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions. • 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities	**Resources**
Graphing Group work Pairs TI 84	*Professional & Student* Text: Pearson's *Algebra 1,*2007 Department developed materials SDE of Ct Algebra 1 Moodle Khan Academy Online resources

Assessments (Titles)	**Graduation Standards**	**Interdisciplinary Connections**
College fund activity **Summative: Lab Assignment** Students will be given an allowance and must determine if they have enough to go to college under the given circumstances	**Information Literacy** **Problem Solving** **Spoken Communication** **Written Performance** • Problem Solving	

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Quadratic Functions

Unit: Quadratic Functions (Week 32, 8 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

The quadratic function is a type of non-linear functions that models certain situations where the rate of change is not constant. The graph of a quadratic function is a symmetric smooth curve, called a parabola, with a highest point or lowest point corresponding to the maximum or minimum value, called its vertex.

Essential Question(s)

What are the characteristics of quadratic functions?
How can you use quadratic functions to model real world situations?

Guiding Questions

Factual, Conceptual, Provocative
How do you solve quadratic equations by taking the square root?
What do you look for to solve quadratic equations by factoring?
What are the steps necessary to complete the square?
What is the difference between the vertex form and the standard form of a quadratic function?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Algebra, Seeing Structure in Expressions
HSA-SSE.A. Interpret the structure of expressions.

- HSA-SSE.A.1a. Interpret parts of an expression, such as terms, factors, and coefficients.
- HSA-SSE.A.2. Use the structure of an expression to identify ways to rewrite it.

HSA-SSE.B. Write expressions in equivalent forms to solve problems.

- HSA-SSE.B.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
- HSA-SSE.B.3a. Factor a quadratic expression to reveal the zeros of the function it defines.
- HSA-SSE.B.3b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will:

- Recognize and Solve quadratics three different ways.
- Use quadratic functions to represent real world situations
- Use the axis of symmetry to graph quadratics
- Find the vertex of a quadratic and analyze its meaning in real world situations
- Identify the discriminate, evaluate it and translate its meaning
-
-

Content/Topics

*Critical content that students must **KNOW***
Quadratics and their properties
Quadratics functions model situations
Solve quadratic equations
Complete the square
The Quadratic formula to solve quadratics
The Discriminate
Systems of quadratics or linear and quadratics

Skills

*Transferable skills that students must be able to **DO***
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and

	• 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities	Resources
Learning activities include: • group work • investigation • lab work • online research • Applying to real world situations	*Professional & Student* Text: Pearson's *Algebra 1*, 2007 Department developed materials shared on Google.doc SDE Moodle CCSM core curriculum and activities Khan Academy Ancillaries

working/learning conditions.

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
The Tennis Problem **Summative: Personal Project** The Tennis problem asks students if it is possible to ace your opponent by just touching the net and still having the ball land in the service area. They must research court dimensions, discuss size of the player, type of racquet and distance to the sweet spot. They must research the speed of the tennis ball and its trajectory. Students will use the Graduation Standard Rubric for Problem Solving to communicate their solution to the Tennis Problem	**Information Literacy** **Problem Solving** **Spoken Communication** **Written Performance** • Problem Solving	

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Unit: Scatter Plots and Trend Lines (Week 27, 2 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

- Although scatter plots and trend lines may reveal a pattern, the relationship of the variables may indicate a correlation, but not causation.

Essential Question(s)

- How do we make predictions and informed decisions based on current numerical information?
- What are the advantages and disadvantages of analyzing data by hand versus by using technology?
- What is the potential impact of making a decision from data that contains one or more outliers?

Guiding Questions

Factual, Conceptual, Provocative
Is there a pattern to the data?
Is there a Arithmetic or Geometric pattern?
Can this data be analyzed using technology?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: Grade 8, Statistics & Probability
8.SP.A. Investigate patterns of association in bivariate data.

- 8.SP.A.1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
- 8.SP.A.2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
- 8.SP.A.3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.

CCSS: Mathematics, CCSS: HS: Algebra, 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.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.

CCSS: Mathematics, CCSS: HS: Stats/Prob, Interpreting

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will

- Analyze functions using different representations
- Summarize, represent, and interpret data on a single count or measurement variable
- Summarize, represent, and interpret data on two categorical and quantitative variables
- Interpret linear models
- Use Central Tendencies to interpret and compare sets of data

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Categorical & Quantitative Data
HSS-ID.A. Summarize, represent, and interpret data on a single count or measurement variable

- HSS-ID.A.2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
- HSS-ID.A.3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

HSS-ID.B. Summarize, represent, and interpret data on two categorical and quantitative variables

- HSS-ID.B.6. Represent data on two quantitative variables on a scatter plot and describe how the variables are related.
- HSS-ID.B.6c. Fit a linear function for scatter plots that suggest a linear association.

HSS-ID.C. Interpret linear models

- HSS-ID.C.7. Interpret the slope (rate of change) and the intercept (constant term) of a linear fit in the context of the data.
- HSS-ID.C.8. Compute (using technology) and interpret the correlation coefficient of a linear fit.
- HSS-ID.C.9. Distinguish between correlation and causation.

Content/Topics

Critical content that students must KNOW
Patterns in data
Trend lines
Use of TI-84 to analyze data
Central tendencies
Quartiles
Residuals

Skills

Transferable skills that students must be able to DO
- 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities

Group work
Lab work
TI 84 activities
individual practice

Resources

Professional & Student
Text: Pearson's *Algebra 1* , 2007
Department developed materials
SDE Moodle CCSM Algebra 1 curriculum
Khan Academy
Additional Ancillaries

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
Unit test **Summative: Written Test** Students will be given scenarios and asked to produce sample data and analyze it, find trend lines and mid range information	**Information Literacy** **Problem Solving** **Spoken Communication** **Written Performance** • Information Literacy • Problem Solving	

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Newtown Public Schools

Course Assignments › Algebra II
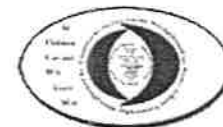
✉ Collaboration   Grade 11 | Mathematics | Newtown High School
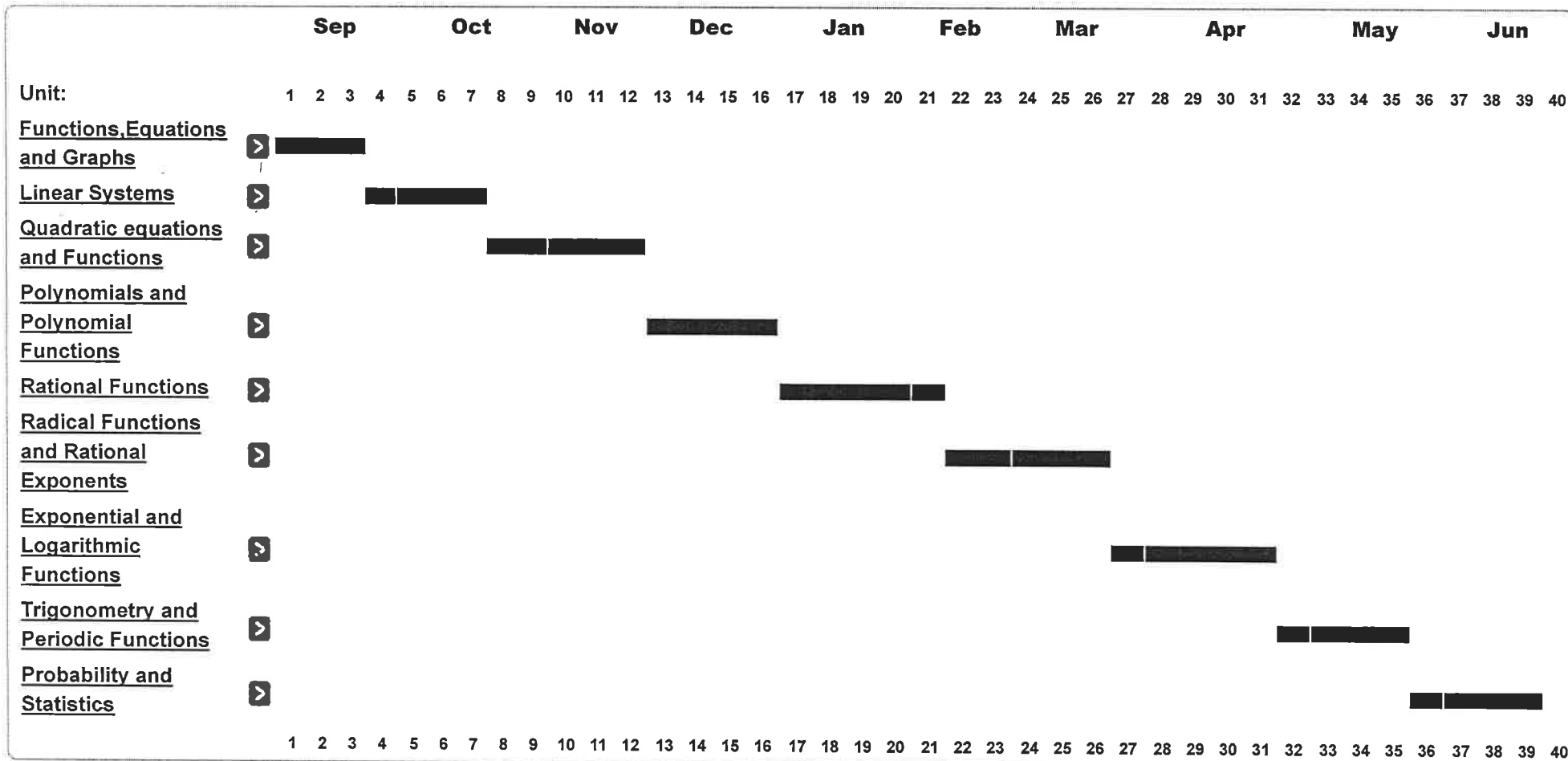
Unit:	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun

Weeks: 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 39 40

Unit	Weeks
Functions, Equations and Graphs	1–3
Linear Systems	4–7
Quadratic equations and Functions	8–12
Polynomials and Polynomial Functions	13–16
Rational Functions	17–21
Radical Functions and Rational Exponents	22–26
Exponential and Logarithmic Functions	27–31
Trigonometry and Periodic Functions	32–35
Probability and Statistics	36–39

Weeks: 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 39 40

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Functions, Equations and Graphs

Unit: Functions, Equations and Graphs (Week 1, 3 Weeks) 📅

Enduring Understanding(s)/ Generalization(s)

Relations may be functions which can be used to model data which can be classified into families of functions. Each family of functions can be contrasted by unique mathematical patterns, and compared by similar methods of transformation.

Essential Question(s)	Guiding Questions
How are functions related to their respective graphs?	*Factual, Conceptual, Provocative* In what ways can you distinguish between a relation and a function? How can you compare and contrast different methods to represent mathematical relationships? How can you modify an existing function to create a new one?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Functions, Interpreting Functions
HSF-IF.A. Understand the concept of a function and use function notation.

- HSF-IF.A.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).
- HSF-IF.A.2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
- HSF-IF.A.3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.

HSF-IF.B. Interpret functions that arise in applications in terms of the context.

- HSF-IF.B.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
- HSF-IF.B.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
- HSF-IF.B.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will

- define relation, function, domain/range
- map diagrams to represent functions and relations
- apply function notation to relations that pass the vertical line test
- restrict domain and range
- represent real world situations using piecewise functions through graphing
- Assess functions and any restrictions set on the graph (asymptotes)

rate of change from a graph.

HSF-IF.C. Analyze functions using different representations.

- HSF-IF.C.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
- HSF-IF.C.7a. Graph linear and quadratic functions and show intercepts, maxima, and minima.
- HSF-IF.C.7b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
- HSF-IF.C.7c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
- HSF-IF.C.7d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.
- HSF-IF.C.7e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
- HSF-IF.C.8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
- HSF-IF.C.8a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
- HSF-IF.C.8b. Use the properties of exponents to interpret expressions for exponential functions.
- HSF-IF.C.9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

Content/Topics	Skills
Critical content that students must **KNOW** Students will be able to: - Write a linear equation, using appropriate notation, in multiple forms given varied data. - Construct piecewise graphs from functions or data. - Construct piecewise graphs from graphs. - Categorize family of functions by inspection of an equation, a graph, or a set of data. - Graph an absolute value function and identify distinguishing characteristics. - Interpret how parameters cause transformations in absolute value and other families of functions. - Illustrate linear inequalities and systems of inequalities in one and two variables.	Transferable skills that students must be able to **DO** - 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks. - 2. Work independently and collaboratively to solve problems and accomplish goals. - 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes. - 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions. - 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities	Resources
- Graphing exploration for transformations - Equation Stations Also attached are three related worksheets asking students to compare different functions through graphs and tables. 📎 **HowShouldIMove-AS-Graphs.pdf** 📎 **HowShouldIMove-AS-Comparison.pdf** 📎 **HowShouldIMove-AS-Questions.pdf**	*Professional & Student* - Text: *Bellman, Bragg, Charles, Hall, Handlin, Kennedy,* **Algebra 2** , Prentice Hall, 2009 - Ancillaries - Math department generated materials - Department reference books - Internet resources

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
Functions Equations & Graphs Summative: Written Test	**Information Literacy** **Problem Solving** **Spoken Communication** **Written Performance**	

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Unit: Linear Systems (Week 4, 4 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

The study of linear systems provides students with a powerful tool to model and solve real-world applications.

Essential Question(s)	Guiding Questions
How do linear systems enable you to make choices for maximum profit, minimum cost and business applications? What is linear programming?	*Factual, Conceptual, Provocative* What methods can be used to solve linear systems? What method is best suited to solve a particular system? What is the connection between the graph of a system and its solution set? How could these methods be expanded to solve other types of systems, including non-linear? How do we extend our learning to solve linear inequalities and linear inequality systems?

Standard(s)	Objective(s)
Content and CCSS **CCSS: Mathematics, CCSS: HS: Algebra, Creating Equations** HSA-CED.A. Create equations that describe numbers or relationships. • HSA-CED.A.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. • HSA-CED.A.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. **CCSS: Mathematics, CCSS: HS: Algebra, Reasoning with Equations & Inequalities** HSA-REI.C. Solve systems of equations. • HSA-REI.C.5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. • HSA-REI.C.6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. HSA-REI.D. Represent and solve equations and inequalities graphically. • HSA-REI.D.12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear	<u>Bloom/ Anderson Taxonomy</u> / <u>DOK Language</u> Students will • define linear functions as a having a constant rate of change and a degree of one. • construct graphs from equations and equations from graphs • apply three techniques to solving systems • apply real world meaning to graphical representations given a situation • classify systems and how to solve based on information provided • find interpret feasible regions while linear programming • optimize results in linear programming feasible region

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inequalities in two variables as the intersection of the corresponding half-planes.

CCSS: Mathematics, CCSS: HS: Modeling, 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.4. Model with mathematics.
- MP.5. Use appropriate tools strategically.

Content/Topics

Critical content that students must KNOW
Students will be able to:

- Graph lines
- Use graphing calculator to find intersection of lines
- Write systems of equations and equations using word problems
- Solve systems using appropriate methods (graphing, substitution, combination)
- Graph linear inequalities
- Find maximum profit or minimum cost in linear programming

Skills

Transferable skills that students must be able to DO
- 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities

- Linear Programming Packet

Attached also is a problem solving project involving supply and demand comparisons within a system of equations.
📎 **Supply-AS-sheet1.pdf**
📎 **Supply-AS-sheet2.pdf**

Resources

Professional & Student

- Text: *Bellman, Bragg, Charles, Hall, Handlin, Kennedy,* **Algebra 2** , Prentice Hall, 2009
- Ancillaries
- Math department generated materials
- Department reference books
- Internet resources

Assessments (Titles)

How do we solve systems?
Formative: Other Visual Assessments
White board exercises

How do we graph system of inequalities?
Formative: Other Visual Assessments

Graduation Standards

Information Literacy
Problem Solving
Spoken Communication
Written Performance
- Problem Solving

Interdisciplinary Connections

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White Board exercises		
Linear Programming Assessment **Summative: Written Report** Take-home quiz **Unit Test on linear systems** **Summative: Written Test**		

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Quadratic equations and Functions

Unit: **Quadratic equations and Functions** (Week 8, 5 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

Real-world applications of projectile motion, minimum cost/value, maximum profit use quadratic models and the characteristics of the related graph including vertex, maximum or minimum value, intercepts, etc. to visually link algebra to life models.

Essential Question(s)

- How are quadratic functions used to model actual data?
- How are characteristics of graphs of parabolas related to real-world applications i.e. projectile motion?

Guiding Questions

Factual, Conceptual, Provocative

- What patterns are found in the graph of the parent function of y=x squared ?
- How do changes to the parent function impact the graph of the parent function?
- Can you model data using a quadratic function? When?
- How do you find x-intercepts or solve when y=0?
- How does this function differ/same as linear model?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Algebra, Seeing Structure in Expressions
HSA-SSE.B. Write expressions in equivalent forms to solve problems.

- HSA-SSE.B.3a. Factor a quadratic expression to reveal the zeros of the function it defines.

CCSS: Mathematics, CCSS: HS: Algebra, Reasoning with Equations & Inequalities
HSA-REI.B. Solve equations and inequalities in one variable.

- HSA-REI.B.4. Solve quadratic equations in one variable.
- HSA-REI.B.4a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.
- HSA-REI.B.4b. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will be able to:

- Apply Skilll & concepts-solving quadratic equations
- Analyze data tables using strategic thinking/reasoning to determine if quadratic
- Evaluate how to most efficiently solve quadratics by describing, comparing and contrasting solution methods.

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Content/Topics	Skills
Critical content that students must KNOW Students will be able to: • How to graph parabolas given standard and vertex form. • How to solve all types of quadratic equations for real and/or complex roots. • How to analyze a graph for maximum, minimum, y-intercept and x-intercepts. • How to factor quadratics • How to find quadratic regression equation on graphing calculator • How to apply characteristics of a quadratic function and graph to real-world applications	*Transferable skills that students must be able to DO* • 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks. • 2. Work independently and collaboratively to solve problems and accomplish goals. • 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes. • 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions. • 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving. • 6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

Core Learning Activities	Resources
• Graph parabolas given function in both forms. • Solve quadratics using all methods. Problem solving activity representing a quadratic function with an egg launch, looking at trajectories of flying objects. (Two sheets included are how to use the calculator) 📎 **EggLaunch-AS-sheet1.pdf** 📎 **MaxMinZeros-OV-UsingCalc.pdf** 📎 **Regression-OV-UsingCalc(1).pdf**	*Professional & Student* • Text: *Bellman, Bragg, Charles, Hall, Handlin, Kennedy,* **Algebra 2** , Prentice Hall, 2009 • Ancillaries • Math department generated materials • Department reference books • Internet resources

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
Solving quadratic equation in one variable - factoring **Summative: Written Test** **Use completing the square to solve.** **Formative: Other Visual Assessments** Use white boards **Use completing the square to solve quadratic equation - including complex #** **Summative: Written Test** **Solving all types of quadratic equations** **Formative: Other written assessments** 1 of each problem **Solving quadratics using all**	<u>Information Literacy</u> <u>Problem Solving</u> <u>Spoken Communication</u> <u>Written Performance</u> • Problem Solving	Projectile Motion

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methods Summative: Written Test		

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Polynomials and Polynomial Functions

Wednesday, October 29, 2014, 2:35PM

Unit: Polynomials and Polynomial Functions (Week 13, 4 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

Polynomial functions provide an opportunity for students to use a variety of learned algebra skills: factoring, solutions, and zeros; degree of polynomial, number of solutions/zeros, and end behavior; etc, to see related characteristics between a polynomial expression, a related polynomial equation, function and graph.

Essential Question(s)

What is the relationship between a polynomial function and its graph?
How can we find the characteristics of a polynomial function?
How do polynomial functions help find answers to relative minimum/maximum values, particularly in geometry?

Guiding Questions

Factual, Conceptual, Provocative
How is degre of a polynomial related to its end behavior?
How is degre of a polynomial related to its zeros?
How does the x-intercepts relate to the structure of the poynomial?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Algebra, Seeing Structure in Expressions
HSA-SSE.A. Interpret the structure of expressions.

- HSA-SSE.A.1b. Interpret complicated expressions by viewing one or more of their parts as a single entity.
- HSA-SSE.A.2. Use the structure of an expression to identify ways to rewrite it.

CCSS: Mathematics, CCSS: HS: Algebra, Arithmetic with Polynomials & Rational Functions
HSA-APR.A. Perform arithmetic operations on polynomials.

- HSA-APR.A.1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

HSA-APR.B. Understand the relationship between zeros and factors of polynomials.

- HSA-APR.B.2. Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.
- HSA-APR.B.3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

HSA-APR.C. Use polynomial identities to solve problems.

- HSA-APR.C.4. Prove polynomial identities and use

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

- Understand the relationship between a graph and its factors, degree and # of zeros, both real and complex.
- Describe, compare and constrast solution methods to find x-intercepts
- Apply long and synthetic division to solve polynomial equations.

them to describe numerical relationships.

Content/Topics

Critical content that students must KNOW

- Given a graph, find factors of polynomial.
- Given factors, write in standard form.
- Given factors, sketch a graph.
- Use Remainder Theorem to identify zeros.
- Use Rational Roots Theorem and synthetic division to find all zeros.

Skills

Transferable skills that students must be able to DO

- 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities

Three polynomial activities are attached to be used with the problem solving standard
these activities are manipulating what students know about specific types of functions to create relationships between linear, quadratic and cubic functions.

📎 **BuildingPolys-AS-Building.pdf**

📎 **BuildingPolys-AS-Backwards.pdf**

📎 **BuildingPolys-AS-HigherDegree.pdf**

Resources

Professional & Student

- Text: *Bellman, Bragg, Charles, Hall, Handlin, Kennedy,* **Algebra 2** , Prentice Hall, 2009
- Ancillaries
- Math department generated materials
- Department reference books
- Internet resources

Assessments (Titles)

Graduation Standards

Information Literacy
Problem Solving
Spoken Communication
Written Performance
- Problem Solving

Interdisciplinary Connections

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Unit: Rational Functions (Week 17, 5 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

There is a continuity of structure that seamlessly connects fundamental arithmetic operations with fractions to more sophisticated algebraic rational expressions.

Essential Question(s)

How do algebraic rational expressions relate to arithmetic rational numbers?

Why is factoring expressions valuable in simplifying and/or performing mathematical operations with rational expressions?

How can rational functions be used to model real world scenarios and solve complex problems that involve ratios of key variables?

Guiding Questions

Factual, Conceptual, Provocative

How can we compare the rules for simplifying and performing operations for rational numbers with the related rules for rational expressions?

How can we maximize the volume of a 3 dimensional object while managing/minimizing the surface area of the object?

How can we utilize knowledge of critical points, pints of discontinuity and end-bahvior to predict, visualize and sketch a graph of a rational function?

Standard(s)

Content and CCSS

CCSS: Mathematics, CCSS: HS: Algebra, Arithmetic with Polynomials & Rational Functions

HSA-APR.D. Rewrite rational expressions.

- HSA-APR.D.7. (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.

CCSS: Mathematics, CCSS: HS: Algebra, Reasoning with Equations & Inequalities

HSA-REI.A. Understand solving equations as a process of reasoning and explain the reasoning.

- HSA-REI.A.2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

HSA-REI.D. Represent and solve equations and inequalities graphically.

- HSA-REI.D.11. Explain why the x-coordinates of the points where the graphs of the equations y = f(x) and y = g(x) intersect are the solutions of the equation f(x) = g(x); find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

- Define rational function.
- Classify families of functions and translations
- Analyze limiting behavior including asymptotes
- Interpret domain and range restrictions
- Compute products, quotients, sums and differences of rational expressions
- Find removable discontinuities, asymptotes and end behavior of rational functions
- Graph complex rational functions using aforementioned properties
- Compare expressions versus equations, connect manipulation versus alteration
- Solve rational equations by eliminating the denominator
- Investigate extraneous roots

CCSS: Mathematics, CCSS: HS: Functions, Interpreting Functions
HSF-IF.C. Analyze functions using different representations.

- HSF-IF.C.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

Content/Topics

Critical content that students must KNOW
Students will be able to:

- Factor and simplify rational expressions.
- Understand domain/range and restricted domain values.
- Multiply and divide rational expressions, include simple complex fractions.
- Define and determine LCM/LCD of polynomial/rational expressions.
- Add and subtract rational expressions, include harder complex fractions.
- Solve rational equations and identify extraneous solutions.
- Set-up and solve applications of rational equation problems (e.g. related rate, shared work)
- Find inverse variations (all variations for honors)
- Graph and transform reciprocal functions.
- Graph relational functions *points of discontinuity

* vertical and horizontal asymptotes

- Solve application problems with function given

Skills

Transferable skills that students must be able to DO
- 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.
- 6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

Core Learning Activities

Problem solving graduation standard activity attached as a link.

📎 **Grad standard rational functions.pdf**

Resources

Professional & Student

Assessments (Titles)

Graduation Standards

Information Literacy
Problem Solving
Spoken Communication
Written Performance
- Problem Solving

Interdisciplinary Connections

<< Previous Year

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Radical Functions and Rational Exponents

✉ **Collaboration** **Algebra II** Grade 11|Mathematics|Newtown High School|2014-2015

Wednesday, October 29, 2014, 2:37PM

Unit: Radical Functions and Rational Exponents (Week 22, 5 Weeks) 🖩

Enduring Understanding(s)/ Generalization(s)

Extending students' knowledge of radical expressions to rational exponents we enable a more sophisticated set of tools to model and understand more complicated real-world phenomena.

Essential Question(s)	Guiding Questions
How are radical expressions and rational exponents related? What is the value of transforming a radical expression into simplest form? How can the inverse of a function help us find the set of conditions that produce a certain output?	*Factual, Conceptual, Provocative* What are the key questions that students should ask to determine if a radical expression is in simplest form? How can the techniques and procedure for radical operations be used to manipulate formulas and equations? What are some of the various methods that can be used to determine if two functions/relations are inverse of each other?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Num/Quantity, The Real Number System
HSN-RN.A. Extend the properties of exponents to rational exponents.

- HSN-RN.A.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.

CCSS: Mathematics, CCSS: HS: Algebra, Creating Equations
HSA-CED.A. Create equations that describe numbers or relationships.

- HSA-CED.A.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

CCSS: Mathematics, CCSS: HS: Functions, Interpreting Functions
HSF-IF.B. Interpret functions that arise in applications in terms of the context.

- HSF-IF.B.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
- HSF-IF.B.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
- HSF-IF.B.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will

- compute and simplify with radicals, employing rationalization techniques
- calculate then check answers for extraneous solutions when solving through squaring once then twice and so on
- compare outcomes with handling arbitrary constants, applying patterns to the Fundamental theorem of Variation
- define direct and inverse variation
- identify patterns found using compositions of functions
- apply general and particular equations to phenomena in the real world

rate of change from a graph.

HSF-IF.C. Analyze functions using different representations.

- HSF-IF.C.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
- HSF-IF.C.9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

CCSS: Mathematics, CCSS: HS: Functions, Building Functions
HSF-BF.B. Build new functions from existing functions.

- HSF-BF.B.3. Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

Content/Topics

Critical content that students must KNOW
Students will

- simplify radical expressions
  - using square roots and nth roots considering only the real number system and using absolute value for even roots with honors.
- multiply, divide and rationalize radical expressions
  - including binomial rationalization
- use rational exponents
  - convert between rational exponents and radical expressions
  - apply properties of exponents to simplify and perform operations with rational exponents
- Solve radical equations, including equations involving rational exponents
- graph and translate radical functions (mainly square root and cube functions)
- revisit inverse functions to find inverses of radical and higher degree polynomials functions through
  - graphs with their inverses
  - the use of composition of functions to prove/disprove inverse relations
  - identify inverse functions through analyzing the domain and range

Skills

Transferable skills that students must be able to DO
- 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.
- 6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

Core Learning Activities

Resources

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	Professional & Student	
Assessments (Titles)	**Graduation Standards**	**Interdisciplinary Connections**
	<u>Information Literacy</u> <u>Problem Solving</u> <u>Spoken Communication</u> <u>Written Performance</u> • Problem Solving	

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Exponential and Logarithmic Functions

Unit: Exponential and Logarithmic Functions (Week 27, 5 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

Patterns of exponential growth and decay are commonplace in both the man-made and physical world. Logarithms are uniquely and critically important to solve the real world problems that require finding solutions that are exponential in nature.

Essential Question(s)	Guiding Questions
What is the relationship between exponential functions and logarithmic functions? How are logarithms a different representation of an exponent? What does it mean if a scientific scale of measure is logarithmic?	*Factual, Conceptual, Provocative* How can you plan how much time it will take for an initial amount of money to grow to a specific sum? How can you find the growth/decay rate for something that is changing exponentially, and then use that rate to make predictions about subsequent values? Why are logarithms a valuable tool to mathematicians, scientists, and others for computational purposes before the advent of technology?

Standard(s)

Content and CCSS

CCSS: Mathematics, CCSS: HS: Algebra, Creating Equations

HSA-CED.A. Create equations that describe numbers or relationships.

- HSA-CED.A.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- HSA-CED.A.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.
- HSA-CED.A.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

CCSS: Mathematics, CCSS: HS: Functions, Interpreting Functions

HSF-IF.C. Analyze functions using different representations.

- HSF-IF.C.7e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
- HSF-IF.C.8b. Use the properties of exponents to interpret expressions for exponential functions.
- HSF-IF.C.9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will:

- Identify exponential growth/decay functions, and indicate rate of growth or decay
- Model and build functions for a variety of real-world applications (population, half-life, finance, etc.)
- Derive the concept of logarithms from the inverse of an exponential function
- Apply properties of logarithms, as expansion and contraction of log expressions
- Convert between logarithmic and exponetial form
- Evalute logarithms, including solving for missing values in a logarithmic statement
- Analyze a situation to formulate an exponetial function in order to solve for a missing value in the given scenario
- Solve exponential and logarithmic equations, and test the validity of solutions
- Use common log, natural logs or log with selected base to solve a problem situation.
- Use the change of base formula as needed
-

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CCSS: Mathematics, CCSS: HS: Functions, Building Functions

HSF-BF.A. Build a function that models a relationship between two quantities.

- HSF-BF.A.1c. (+) Compose functions.

HSF-BF.B. Build new functions from existing functions.

- HSF-BF.B.4. Find inverse functions.

CCSS: Mathematics, CCSS: HS: Functions, Linear, Quadratic, and Exponential Models

HSF-LE.A. Construct and compare linear and exponential models and solve problems.

- HSF-LE.A.4. For exponential models, express as a logarithm the solution to ab?? = d where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.

Content/Topics	Skills
Critical content that students must KNOW Students will be able to: • Review and understand basic exponential functions • Write exponential functions from rates, given information or points • Identify growth function/decay function, as well as rate of growth or decay • Model various real-world exponential growth and decay scenarios such as population groth/decay, half life, simple interest,etc. • For the exponential functions, evaluate and model using compound interest formula; use the natural base, e, evaluate and model using the formula: $P=e^{rt}$, and related applications (positive r for growth and negative r for decay) • Understand anduse the fundamental definition of a logarithm • Graphically demonstrate log as inverse of exponential function • Evaluate logarithms • Convert between exponential and logarithmic form • Apply applications (mainly scientific like Ph, decibel scale, and Richter scale) • Use properties of logarithms: expand and contract logarithmic expressions, and change of base formulas • Solve exponential and logarithmic equations including integer base, common log, base e, and natural log	*Transferable skills that students must be able to DO* • 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks. • 2. Work independently and collaboratively to solve problems and accomplish goals. • 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes. • 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions. • 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities	Resources
Two potential problem solving activities attached	*Professional & Student*

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- Exponents with banking
- Using a slide ruler to predict logarithmic values.

📎 **CompInterest-AS-SavingsAccount.pdf**
📎 **CompInterest-AS-CreditCard.pdf**
📎 **LogarithmsDemystified-AS.pdf**
📎 **LogarithmsDemystified-SlideRuleTemplates.pdf**

- Text: *Bellman, Bragg, Charles, Hall, Handlin, Kennedy,* **Algebra 2** , Prentice Hall, 2009
- Ancillaries
- Math department generated materials
- Department reference books
- Internet resources

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
	Information Literacy **Problem Solving** **Spoken Communication** **Written Performance**	

<< Previous Year

Last Updated: Friday, June 20, 2014, 12:26PM

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Trigonometry and Periodic Functions

Unit: Trigonometry and Periodic Functions (Week 32, 4 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

Trigonometric functions can be used to mode, monitor and study many physical, mechanical and natural phenomena in the real world that are critical or periodic in nature.

Essential Question(s)	Guiding Questions
What the value of radian measure of angles compared to degrees? How can you compare and contrast phase shifts and frequency compression/expansion of periodic functions with more fundamental transformation of functions? What is the inter-relationship between the six trig functions?	*Factual, Conceptual, Provocative* What patterns can be discovered using radian measures? In what way is the unit circle helpful when graphing trig functions? How would you mathematically model the height of a boat deck from a dock under a period of shifting tides?

Standard(s)

Content and CCSS

CCSS: Mathematics, CCSS: HS: Functions, Trigonometric Functions

HSF-TF.A. Extend the domain of trigonometric functions using the unit circle.

- HSF-TF.A.1. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
- HSF-TF.A.2. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.

HSF-TF.B. Model periodic phenomena with trigonometric functions.

- HSF-TF.B.5. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.

HSF-TF.C. Prove and apply trigonometric identities.

- HSF-TF.C.8. Prove the Pythagorean identity $\sin^2(?) + \cos^2(?) = 1$ and use it to calculate trigonometric ratios.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

- Define radians as a ratio of arclength to radius
- Convert degrees to radians and vice-versa
- Find arclength and area of sectors
- Define sine, cosine and tangent of an angle using the unit circle
- Connect that tangent = sine/cosine
- Investigate reciprocal functions with critical values
- Connect the definition of sine and cosine to graphs from x = 0 to x = 2pi
- Analyze periodicity and critique the period, frequency and amplitude
- Discuss how changes affect graphs
- Modeling periodic data with sinusoidal curves

Content/Topics

Critical content that students must KNOW

Students will be able to:

- Recall/Review right triangle trig (SOH, CAH, TOA) and special rights.
- Use general periodicity (vocab: period, cycle,

Skills

Transferable skills that students must be able to DO

- 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.

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amplitude)
- Use key trig terminology: angles, standard position, co-terminal angles.
- Use the Unit Circle (degree measure)
- Calculate radian measure (conversions, arc length)
- Graph trig functions (all six and with transformations)
- Model periodic phenomena by employing an appropriate trig function.
- Calculate trig identities.

- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.
- 6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

Core Learning Activities

graduation standard activity attached

📎 grad standard problem.pdf

Resources

Professional & Student

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
	Information Literacy Problem Solving Spoken Communication Written Performance • Problem Solving	

<< Previous Year

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Unit: Probability and Statistics (Week 36, 4 Weeks) 📅

Enduring Understanding(s)/ Generalization(s)

Understanding the basic tenets of the collection, display and analysis of data is a critical life skill in a world wehere we are constantly exposed to statistical references and data.

Essential Question(s)

How can the statistical study of a population in general help make predictions about a group in the future and/or quantify the likelihood of a specific outcome?
What is the value of using statistical methods and models to make decisions and answer questions in a variety of situations?
How dies the understanding of statistics help a person be a critical consumer of information?

Gulding Questions

Factual, Conceptual, Provocative
How can we choose an appropriate method to collect, display, summarize and analyze a data set?
What is a standard deviation an indicator of and what does standard deviation tell you about the nature of your data set?
How does the assumption of normal data allow us to make prediction about a population?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Stats/Prob, Interpreting Categorical & Quantitative Data
HSS-ID.A. Summarize, represent, and interpret data on a single count or measurement variable

- HSS-ID.A.2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
- HSS-ID.A.3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
- HSS-ID.A.4. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets and tables to estimate areas under the normal curve.

CCSS: Mathematics, CCSS: HS: Stats/Prob, Making Inferences & Justifying Conclusions
HSS-IC.A. Understand and evaluate random processes underlying statistical experiments

- HSS-IC.A.1. Understand that statistics is a process for making inferences about population parameters based on a random sample from that population.

CCSS: Mathematics, CCSS: HS: Stats/Prob, Using Probability to Make Decisions
HSS-MD.B. Use probability to evaluate outcomes of decisions

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will

- define "random"
- differentiate between population vs samples
- observe studies vs experiments, pros/cons, correlations/causation
- illustrate general probability distributions
- interpret margins of error, looking at where 90% or 95% of sample means fall after repeated simulations to estimate a margin of error
- compare distributions from two treatments to estimate significant differences between treatments
- apply percentages using area, spreadsheets, bar graphs

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- HSS-MD.B.6. (+)Use probabilities to make fair decisions
- HSS-MD.B.7.(+) Analyze decisions and strategies using probability concepts

Content/Topics

Critical content that students must KNOW
Students will be able to

- use measures of central tendency
- understand and apply percentiles
- read and create histogram/box and whisker plots
- use standard deviation
- use and apply Z-scores
- apply normal distributions and probability
- (optional) create and understand binomial distributions

Skills

Transferable skills that students must be able to DO
- 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.
- 6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

Core Learning Activities

Attached are two problem solving activities.

- Debris in orbit dealing with stats and modeling the probability of orbital collisions
- Portion sizes and caloric in take using statistics

📎 **Calories-AS1.pdf**

📎 **Calories-AS2.pdf**

📎 **Orbit-AS-Debris.pdf**

📎 **Orbit-AS-Effects.pdf**

Resources

Professional & Student

Assessments (Titles)

Graduation Standards

Information Literacy
Problem Solving
Spoken Communication
Written Performance
- Problem Solving

Interdisciplinary Connections

Newtown Public Schools
Course Assignments › Geometry
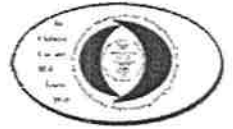
Collaboration | High School | Mathematics | Newtown High School

Unit:	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun

Month markers: Sep, Oct, Nov, Dec, Jan, Feb, Mar, Apr, May, Jun

Week numbers: 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 39 40

Transformations, Congruence, and Constructions — weeks 1–8

Polygons — weeks 9–16

Similarity, Right Triangles, and Trigonometry — weeks 17–23

Geometric Measurement and Dimension — weeks 24–28

Circles and Other Conic Sections — weeks 29–33

Applications of Probability — weeks 34–38

Week numbers: 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 39 40

Last Updated: Friday, October 17, 2014, 5:03PM

Unit: Transformations, Congruence, and Constructions (Week 1, 8 Weeks) ▦

Enduring Understanding(s)/ Generalization(s)

You can change the position of a figure and preserve angle measure and the distance between points.

Essential Question(s)

How can you change a figure's position without changing its size and shape?
How can you change a figure's size without changing its shape?
How can you represent transformations in the coordinate plane?
how do you recognize congruence and similarity?

Guiding Questions

Factual, Conceptual, Provocative
What makes a transformation a translation?
What makes a transformation a dilation?
What makes a transformation a rotation?
What makes a transformation a reflection?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Geometry, Congruence
HSG-CO.A. Experiment with transformations in the plane

- HSG-CO.A.1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
- HSG-CO.A.2. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).
- HSG-CO.A.4. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
- HSG-CO.A.5. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

HSG-CO.B. Understand congruence in terms of rigid motions

- HSG-CO.B.6. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.
- HSG-CO.B.7. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will:

- develop the properties of all transformations
- recognize image and pre-image
- define isometry
-

and corresponding pairs of angles are congruent.

- HSG-CO.B.8. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

HSG-CO.C. Prove geometric theorems

- HSG-CO.C.9. Prove theorems about lines and angles.

HSG-CO.D. Make geometric constructions

- HSG-CO.D.12. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.
- HSG-CO.D.13. Construct an equilateral triangle, a square and a regular hexagon inscribed in a circle.

CCSS: Mathematics, CCSS: HS: Geometry, Expressing Geometric Properties with Equations
HSG-GPE.B. Use coordinates to prove simple geometric theorems algebraically

- HSG-GPE.B.4. Use coordinates to prove simple geometric theorems algebraically.
- HSG-GPE.B.5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).
- HSG-GPE.B.6. Find the point on a directed line segment between two given points that divide the segment in a given ratio.
- HSG-GPE.B.7. Use coordinates to compute perimeters of polygons and areas for triangles and rectangles, e.g. using the distance formula.

CCSS: Mathematics, CCSS: HS: Geometry, 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.
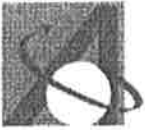- MP.7. Look for and make use of structure.

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

Content/Topics

Critical content that students must KNOW
Translations
reflections
Rotations
dilations
congruence transformations
similarity transformations

Skills

Transferable skills that students must be able to DO
- 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks.
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.
- 6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

Core Learning Activities

constructions
partner work
internet research

Resources

Professional & Student
Department developed materials
text: Pearson's *Geometry, 2007*
Geometer sketchpad
online resources

Assessments (Titles)

Transformation unit assessment
Summative: Written Test

Construction Project
Lab Assignment

Graduation Standards

Information Literacy
Problem Solving
Spoken Communication
Written Performance
- Problem Solving

Interdisciplinary Connections

<< Previous Year

3

Polygons

Unit: Polygons (Week 9, 8 Weeks) 📅

Enduring Understanding(s)/ Generalization(s)

The sum of the interior angles of a polygon depends on the number of sides.
The sum of the exterior angels of any polygon is always constant
Quadrilaterals have special properties regarding their angles and sides.

Essential Question(s)

What is the Polygon-Sum Theorem?
How can we prove a quadrilateral is a parallelogram?
What are the properties of special quadrilaterals?
How can you use the coordinate plane to prove geometric figures?

Guiding Questions

Factual, Conceptual, Provocative
How can you find the sum of the measures of the angles of any polygon?
How do you classify Quadrilaterals?
How can you use coordinate geometry to prove general relationships?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Geometry, Congruence
HSG-CO.A. Experiment with transformations in the plane

- HSG-CO.A.3. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.

HSG-CO.C. Prove geometric theorems

- HSG-CO.C.10. Prove theorems about triangles.
- HSG-CO.C.11. Prove theorems about parallelograms.

HSG-CO.D. Make geometric constructions

- HSG-CO.D.13. Construct an equilateral triangle, a square and a regular hexagon inscribed in a circle.

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will:
identify congruence
use the coordinate plane for geometric proof
apply all the properties of special quadrilaterals
find the sum of the measures of the angles in any polygon

Content/Topics

Critical content that students must KNOW
Polygon-Sum Theorem
Regular polygons
properties of all special quadrilaterals

Skills

Transferable skills that students must be able to DO
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.
- 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

Core Learning Activities

Resources

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	Professional & Student
Group activities round the room investigations	Department developed materials Text: Pearson's Geometry, 2007 Online resources Geometer sketchpad

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
quadriaterals quiz Formative: Written Test Polygon Sum investigation Formative: Lab Assignment	**Information Literacy** **Problem Solving** **Spoken Communication** **Written Performance** • Problem Solving	

5

Similarity, Right Triangles, and Trigonometry

✉ **Collaboration** Geometry High School|Mathematics|Newtown High School|2014-2015

Wednesday, October 29, 2014, 2:44PM

Unit: Similarity, Right Triangles, and Trigonometry (Week 17, 7 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

- congruence is a special case of similarity (with a 1-1 ratio)
- corresponding sides of similar figures have a content ratio
- corresponding angles must be equal
-

Essential Question(s)

How are the concepts of similarity and congruence related to each other?
How would you use similarity in a real world application?
Is it necessary to have AAS or ASA theorem to prove two triangles are similar?

Guiding Questions

Factual, Conceptual, Provocative
How do you show figures are similar?
How is the concept of similarity used to make scale drawings?

Standard(s)

Content and CCSS
CCSS: Mathematics, CCSS: HS: Geometry, Similarity, Right Triangles, & Trigonometry
HSG-SRT.A. Understand similarity in terms of similarity transformations

- HSG-SRT.A.1. Verify experimentally the properties of dilations:
- HSG-SRT.A.1b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
- HSG-SRT.A.2. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all pairs of angles and the proportionality of all pairs of sides.
- HSG-SRT.A.3. Use the properties of similarity transformations to establish the AA criterion for similarity of triangles.

HSG-SRT.B. Prove theorems involving similarity

- HSG-SRT.B.4. Prove theorems about triangles using similarity transformations.
- HSG-SRT.B.5. Use triangle congruence and similarity criteria to solve problems and to prove relationships in geometric figures.

HSG-SRT.C. Define trigonometric ratios and solve problems involving right triangles

- HSG-SRT.C.6. Understand that by similarity, side

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language
Students will be able to:

- write and simplify ratios
- set up proportions and use them to solve problems
- Identify similar polygons
- solve real world problems by applying properties of similar polygons
- prove triangles similar using various methods
- solve problems involving similar triangles
- use properties of similar triangles to find lengths
- apply properties involving similar triangles
- use ratios for indirect measurement
- use coordinate plane to prove two figures similar

ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.

- HSG-SRT.C.7. Explain and use the relationship between the sine and cosine of complementary angles.
- HSG-SRT.C.8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

HSG-SRT.D. Apply trigonometry to general triangles

- HSG-SRT.D.9. (+) Derive the formula A = ½ ab sin© for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.
- HSG-SRT.D.10. (+) Prove the Laws of Sines and Cosines and use them to solve problems.
- HSG-SRT.D.11. (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

CCSS: Mathematics, CCSS: HS: Geometry, Modeling with Geometry
HSG-MG.A. Apply geometric concepts in modeling situations

- HSG-MG.A.1. Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
- HSG-MG.A.2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).
- HSG-MG.A.3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy constraints or minimize cost; working with typographic grid systems based on ratios).

Content/Topics	Skills
Critical content that students must KNOW Triangle similarity: AA, SSS, SAS	*Transferable skills that students must be able to DO* • 1. Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks. • 2. Work independently and collaboratively to solve problems and accomplish goals. • 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes. • 4. Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions. • 5. Effectively apply the analysis, syntheses, and evaluative processes that enable productive problem solving.

	• 6. Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

Core Learning Activities	Resources
	Professional & Student

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
	Information Literacy Problem Solving Spoken Communication Written Performance	

<< Previous Year

Last Updated: Thursday, January 16, 2014, 3:55PM

8

Geometric Measurement and Dimension

Unit: Geometric Measurement and Dimension (Week 24, 5 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

Students will understand why particular formulas and units are to used find measurements in both 2-D and 3-D

Essential Question(s)	Guiding Questions
How is the Pythagorean Theorem improtant in finding the area of polygons? How is the area of a polygon of n-sides calculated? Why does tripling the radius not triple the area of a circle? Can you determine the geometric probability of a variety of events occurring?	*Factual, Conceptual, Provocative* How is the area of a regular polygon affected as the number of sides increases and the radius remains constant?

Standard(s)

Content and CCSS

CCSS: Mathematics, CCSS: HS: Geometry, Geometric Measurement & Dimension

HSG-GMD.A. Explain volume formulas and use them to solve problems

- HSG-GMD.A.1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.
- HSG-GMD.A.2. (+) Given an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.
- HSG-GMD.A.3. Use volume formulas for cylinders, pyramids, cones and spheres to solve problems.

HSG-GMD.B. Visualize the relation between two-dimensional and three-dimensional objects

- HSG-GMD.B.4. Identify cross-sectional shapes of slices of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

CCSS: Mathematics, CCSS: HS: Geometry, Modeling with Geometry

HSG-MG.A. Apply geometric concepts in modeling situations

- HSG-MG.A.1. Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
- HSG-MG.A.2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).

Objective(s)

Bloom/ Anderson Taxonomy / DOK Language

Students will be able to:

- find the area and perimeter of of triangles
- find the area and perimeter of various quadrilaterals
- Find the area and circumference of circles
- find the area and perimeter of regular polygons
- find the area and perimeter of composite figures
- find the area and perimieter of figures in the coordinate plane
- approximate area of irregular shapede figures
- describe the effect on perimeter and area when one or more dimensions of a figure are changed
- determine basic probabilites of events involving geometric models
-

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Content/Topics	Skills
Critical content that students must KNOW	*Transferable skills that students must be able to DO*

Core Learning Activities	Resources
	Professional & Student

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
	Information Literacy **Problem Solving** **Spoken Communication** **Written Performance** • Problem Solving	

<< Previous Year

10

Circles and Other Conic Sections

Unit: Circles and Other Conic Sections (Week 29, 5 Weeks) 🗓

Enduring Understanding(s)/ Generalization(s)

There is a special relationship between the radius of a circle and its tangent at the point of tangency.
A circle has a special relationship to any triangle inscribe in it or circumscribed about it.
There are unique relationships between arcs, chords, segments and the circle that hold for all circles.
A parabola, circle, ellipse or hyperbola can be expressed as a locus of points in a plane.

Essential Question(s)	Guiding Questions
What is the relationship between segments and arcs in a circle? What is the relationship between angles and arcs in a circle? What is the relationship between angles and segments in a circle? How can the equation of a circle be written from information on the coordinate plane? How can a circle be discussed as a locus of points?	*Factual, Conceptual, Provocative* How can you prove relationships between angles and arcs in a circle? When segments intersect a circle or within a circle, how do you find the measures of the resulting angles, arcs and segments? Can you sketch a circle and its tangent at a given point of tangency? Can you sketch the situation in which two secant segments intersect at a given point outside the circle? What is the difference between inscribed and circumscribed polygons? Can you write the equation of a parabola using the focus and directrix? Can you write the equation of an ellipse or hyperbola as defined by a locus of points?

Standard(s)	Objective(s)
Content and CCSS **CCSS: Mathematics, CCSS: HS: Modeling, 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.2. Reason abstractly and quantitatively. • MP.5. Use appropriate tools strategically. • MP.6. Attend to precision. • MP.7. Look for and make use of structure. **CCSS: Mathematics, CCSS: HS: Geometry, Circles** HSG-C.A. Understand and apply theorems about circles • HSG-C.A.1. Prove that all circles are similar. • HSG-C.A.2. Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle. • HSG-C.A.3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a	**Bloom/ Anderson Taxonomy / DOK Language** Students will: • Define tangents, secants and chords • Define special angles and arcs • Write the equations of a conic from a locus of points • Find the measures of angles, arcs and segments formed by intersecting segments within or with a circle.

circle.
- HSG-C.A.4. (+) Construct a tangent line from a point outside a given circle to the circle.

HSG-C.B. Find arc lengths and areas of sectors of circles

- HSG-C.B.5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

CCSS: Mathematics, CCSS: HS: Geometry, Expressing Geometric Properties with Equations
HSG-GPE.A. Translate between the geometric description and the equation for a conic section

- HSG-GPE.A.1. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
- HSG-GPE.A.2. Derive the equation of a parabola given a focus and directrix.
- HSG-GPE.A.3. (+) Derive the equations of ellipses and hyperbolas given two foci for the ellipse, and two directrices of a hyperbola.

HSG-GPE.B. Use coordinates to prove simple geometric theorems algebraically

- HSG-GPE.B.4. Use coordinates to prove simple geometric theorems algebraically.

Content/Topics

Critical content that students must KNOW

- Interior and exterior angles
- chord, secant and tangent segments
- Parabolas and their features
- Ellipses and their features
- Hyperbolas and their features
- circles and their features

Skills

Transferable skills that students must be able to DO
- 2. Work independently and collaboratively to solve problems and accomplish goals.
- 3. Communicate information clearly and effectively using a variety of tools/media in varied contexts for a variety of purposes.

Core Learning Activities

Locus: A set of points
Anglegrams
"Sunshine Sailboat Company Logo" performance task

Resources

Professional & Student
Text: Pearson's Geometry, 2007
Ancillaries
Department developed materials

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
Segements Related to Circles Summative: Written Test Angles, Arcs and Segments	Information Literacy Problem Solving Spoken Communication Written Performance	

| measures
Summative: Group Project

Conic Sections
Summative: Personal Project | •   Problem Solving | 13 |

<< Previous Year

13

Unit: Applications of Probability (Week 34, 5 Weeks)

Enduring Understanding(s)/ Generalization(s)

Students expand their knowledge of probability.

Essential Question(s)	**Guiding Questions**
What is the difference between experimental probability and theoretical probability? What is a frequency table and how can it be used? What does it mean for an event to be random? How can you model randomness to make fair decisions?	*Factual, Conceptual, Provocative*

Standard(s)	**Objective(s)**
Content and CCSS **CCSS: Mathematics, CCSS: HS: Stats/Prob, Conditional Probability & the Rules of Probability** HSS-CP.A. Understand independence and conditional probability and use them to interpret data	**Bloom/ Anderson Taxonomy / DOK Language**

- HSS-CP.A.1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").
- HSS-CP.A.2. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
- HSS-CP.A.3. Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.
- HSS-CP.A.4. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.
- HSS-CP.A.5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.

HSS-CP.B. Use the rules of probability to compute probabilities of compound events in a uniform probability model

- HSS-CP.B.6. Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A and interpret the answer in terms of the model.

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- HSS-CP.B.7. Apply the Addition Rule, P(A or B) = P(A) + P(B) − P(A and B), and interpret the answer in terms of the model.
- HSS-CP.B.8. (+) Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B|A) = P(B)P(A|B), and interpret the answer in terms of the model.
- HSS-CP.B.9. (+) Use permutations and combinations to compute probabilities of compound events and solve problems.

Content/Topics	Skills
Critical content that students must KNOW	*Transferable skills that students must be able to DO*

Core Learning Activities	Resources
	Professional & Student

Assessments (Titles)	Graduation Standards	Interdisciplinary Connections
	Information Literacy Problem Solving Spoken Communication Written Performance	

<< Previous Year

15

NEWTOWN PUBLIC SCHOOLS

MISSION-GOALS-OBJECTIVES   SERIES 0000

Mission-Goals-Objectives

Mission of the Newtown Public Schools

The Mission of the Newtown Public Schools, a partnership of students, families, educators, and community is to *INSPIRE EACH STUDENT TO EXCEL*, in attaining and applying the knowledge, skills and attributes that lead to personal success while becoming a contributing member of a dynamic global community. To achieve this goal, which is a responsibility shared by the Board of Education, staff, students, parents, and community, we subscribe to the following tenets:

1. that our obligation is to help students mature into independent, reasoning, and responsible individuals who can adapt constructively to an ever-changing, global society;

2. that this obligation can be accomplished by challenging students and staff to perform at their highest capabilities;

3. that students will best attain these capabilities if their unique needs, interests, strengths, weaknesses, backgrounds, learning styles, and range of scholastic and creative abilities are acknowledged;

4. that students need to develop self-esteem, an appreciation of the worth of others, a joy in learning, and a desire and willingness to achieve a standard of excellence commensurate with their abilities;

5. that students need to develop a respect for the earth's unique and diverse human and natural resources;

6. that the schools must convey to students the purpose of the educational program and help them to understand that they must share responsibility for its success;

7. that the curriculum will provide comprehensive programs and a range of instructional strategies to meet the requirements of students with varied backgrounds, abilities, aspirations, and needs, and that this curriculum will be evaluated periodically to ensure that it does so;

8. that the schools actively will seek community support and involvement through close communication and cooperation;

9. that our educational aim will best be achieved in an atmosphere of mutual respect, concern, and support;

10. that in the final analysis, we are all to be accountable for the present and the future success of the Newtown Public Schools.

11. it's our responsibility to employ qualified staff and provide appropriate supervision, evaluation, and training for the continual improvement and updating of skills and knowledge;

12. it's our responsibility to work with elected officials at the local, state and national levels to insure sufficient financial support.

Policy adopted: NEWTOWN PUBLIC SCHOOLS
                                                             Newtown, Connecticut

(Reviewed and approved by Policy Review Committee)

Newtown's existing Code of Ethics currently codified as bylaw #9271.

Mission-Goals-Objectives

Code of Ethics

The success of every school system depends on an effective working relationship between the Board of Education and Superintendent of Schools. This code incorporates those standards and responsibilities most critical to productive Board and Superintendent relations.

- Board members and Superintendents ensure the opportunity for high quality education for every student and make the well-being of students the **fundamental goal** of all decision-making and actions.

- Board members and Superintendents are **staunch advocates** of high quality free public education for **all** Connecticut children.

- Board members and Superintendents **honor all** national, state and local laws and regulations pertaining to education and public agencies.

- Board members and Superintendents recognize that clear and appropriate communications are key to the successful operation of the school district.

- Board members and Superintendents will always carry out their respective roles with the highest levels of **professionalism, honesty** and **integrity**.

- Board members recognize that they represent the **entire** community and that they must ensure that **the** community remains fully informed on school-related matters.

- Superintendents and Board members recognize that the Superintendent serves as the Board of Education's **agent** and will, in that role, **faithfully apply** the policies and contracts adopted by the Board.

- Board members adhere to the principle that they shall confine the Board's role to **policy-making, planning** and **appraisal** while the Superintendent shall **implement** the Board's policies.

- Board members and Superintendents both recognize that they serve as a part of an educational team with **mutual respect, trust, civility** and **regard** for each other's respective roles and responsibilities.

- Board members are committed to the concept that the strength of the Superintendent is in being the **educational leader** of the school district.

- Board members and Superintendents practice and promote ethical behavior in the **Boardroom** as described in Newtown's Code of Ethics.

- Board members and Superintendents consider and decide all issues **fairly** and **without bias**.

(cf. 2000.1 – Board-Superintendent Relationship)
(cf. 2300 – Statement of Ethics for Administrators)

Policy adopted: NEWTOWN PUBLIC SCHOOLS
                                                                   Newtown, Connecticut

(Reviewed and approved by Policy Review Committee)

A reworking of existing policy, #1-100 adopted 10/10/95.

Mission-Goals-Objectives

Goals and Objectives

Goals of District

The Newtown Board of Education believes that the effectiveness of the educational program of Newtown Public Schools is based upon an agreed-upon set of goals, high expectations, continuous improvement, quality of instruction and learning environment, and civic responsibility.

Goals for Newtown Public Schools include:

1. Students develop and consistently demonstrate a skill set that includes problem-solving, critical and creative thinking, collaboration and application of technology.

2. In order to increase the quality of instruction and student knowledge, there needs to be a continuous process of evaluation of teaching and learning.

   For both staff and students, continuous evaluation includes:

   - Creating goals in collaboration with mentors
   - Defining timeframes by which goals will be completed
   - Defining measurement tools by which progress can be determined
   - Evaluating the effectiveness of goals and/or processes

3. In order to support a continuous evaluation of teaching and learning and chart a course for the future of Newtown Public Schools:

   - A strategic plan will be developed and evaluated at least every five (5) years.
   - The Newtown Board of Education and the Superintendent will develop, publish and evaluate district goals on a yearly basis.
   - The capital project planning will include providing the required facilities and technological infrastructure to support the staff and student body.

4. Clear and concise communication will keep the community informed of the successes experienced in the Newtown Public Schools.

5. Communication outside of the town of Newtown will provide students an opportunity for a broader perspective and appreciation of global affairs.

6. To create an environment of optimal safety and security for teaching and learning.

Policy adopted: NEWTOWN PUBLIC SCHOOLS
                                                   Newtown, Connecticut

(Reviewed and approved by Policy Review Committee)

A new policy to consider.

Mission – Goals – Objectives

Nondiscrimination

The District shall promote nondiscrimination and an environment free of harassment based on an individual's race, color, religion, sex, sexual orientation, gender identity/expression, national origin, ancestry, disability, (including, but not limited to, intellectual disability, past or present history of mental disorder, physical disability or learning disability), genetic information, marital status or age or because of the race, color, religion, sex, sexual orientation, gender identity or expression, national origin, disability, genetic information, marital status or age of any other persons with whom the individual associates. The District provides equal access to the Boy Scouts and other designated youth groups.

In keeping with requirements of federal and state law, the District strives to remove any vestige of discrimination in employment, assignment and promotion of personnel; in educational opportunities and services offered to students; in student assignment to schools and classes; in student discipline; in location and use of facilities; in educational offerings and materials; and in accommodating the public at public meetings.

The Board encourages staff to improve human relationships within the schools and to establish channels through which citizens can communicate their concerns to the administration and the Board.

The Superintendent shall appoint and make known the individuals to contact on issues concerning the Americans with Disabilities Act (ADA), Section 504 of the Rehabilitation Act of 1974, Title VI, Title VII, Title IX and other civil rights or discrimination issues. The Board will adopt and the District will publish grievance procedures providing for prompt and equitable resolution of student and employee complaints.

Federal civil rights laws prohibit discrimination against an individual because he/she has opposed any discrimination act or practice or because that person has filed a charge, testified, assisted or participated in an investigation, proceeding or hearing. ADA further prohibits anyone from coercing, intimidating, threatening or interfering with an individual for exercising the rights guaranteed under the Act.

(cf. 4111 – Recruitment and Selection)
(cf. 4111.1/4211.1 – Affirmative Action)
(cf. 4118.11 – Nondiscrimination)
(cf. 4118.111 – Grievance Procedure-Title IX)
(cf. 4118.113/4218.113 – Harassment)
(cf. 5145.4 – Nondiscrimination)
(cf. 5145.5 – Sexual Harassment)
(cf. 5145.51 – Peer Sexual Harassment)
(cf. 5145.52 – Harassment)
(cf. 5145.6 – Student Grievance Procedure)
(cf. 6121 – Nondiscrimination)
(cf. 6121.1 - Equal Educational Opportunity)

Mission – Goals – Objectives

Nondiscrimination

Legal Reference: Title VII, Civil Rights Act, 42 U.S.C. 2000e, et seq.
29 CFR 1604.11, EEOC Guidelines on Sex Discrimination.
Title IX of the Educational Amendments of 1972, 20 U.S.C. 1681 et seq.
34 CFR Section 106.8(b), OCR Guidelines for Title IX.
Definitions, OCR Guidelines on Sexual Harassment, Fed. Reg. Vol 62, #49, 29 CFR Sec. 1606.8 (a0 62 Fed Reg. 12033 (March 13, 1997) and 66 Fed. Reg. 5512 (January 19, 2001)
20 U.S.C. 7905 (Boy Scouts of America Equal Access Act contained in No Child Left Behind Act of 2001)
Meritor Savings Bank. FSB v. Vinson, 477 U.S. 57 (1986)
Faragher v. City of Boca Raton, No. 97-282 (U.S. Supreme Court, June 26,1998)
Gebbser v. Lago Vista Indiana School District, No. 99-1866, (U.S. Supreme Court, June 26,1998)
Davis v. Monro County Board of Education, No. 97-843, (U.S. Supreme Court, May 24, 1999.)
The Vietnam Era Veterans' Readjustment Act of 1974, as amended, 38U.S.C. §4212
Title II of the Genetic Information Nondiscrimination Act of 2008
Connecticut General Statutes
46a-60 Discriminatory employment practices prohibited.
10-15c Discrimination in public schools prohibited. School attendance by five-year olds. (Amended by P.A. 97-247 to include "sexual orientation" and P.A. 11-55 to include "gender identity or expression")
10-153 Discrimination on account of marital status.
17a-101 Protection of children from abuse.
The Americans with Disabilities Act as amended by the ADA Amendments Act of 2008
Public Law 111-256
Meacham v. Knolls Atomic Power Laboratory 128 S.Ct. 2395, 76 U.S.L.W. 4488 (2008)
Federal Express Corporation v. Holowecki 128 S.Ct. 1147, 76 U.S.L.W. 4110 (2008)
Kentucky Retirement Systems v. EEOC 128 S.Ct. 2361, 76 U.S.L.W. 4503 (2008)
Sprint/United Management Co. v. Mendelsohn 128 S.Ct. 1140, 76 U.S.L.W. 4107 (2008)

Policy adopted: NEWTOWN PUBLIC SCHOOLS
Newtown, Connecticut

(Reviewed and approved by Policy Review Committee)

NEWTOWN PUBLIC SCHOOLS
Newtown, Connecticut

REPORT FORM FOR COMPLAINTS OF DISCRIMINATION

Complainant: _____

Home Address: _____

Home Phone: _____

School building: _____

Date of Alleged Incident(s): _____

Alleged harassment was based on: (Check all that apply.)

☐ Race ☐ Color ☐ National Origin ☐ Gender Identity or Expression
☐ Gender ☐ Disability ☐ Religion
☐ Ancestry ☐ Age ☐ Sexual Orientation

Name of person you believe violated the District's nondiscrimination policy:

_____

If the alleged discrimination was directed against another person, identify the other person:

_____

Describe the incident as clearly as possible, including any verbal statements (i.e., threats, derogatory remarks, demands, etc.) and any actions or activities. Attach additional pages if necessary:

_____
_____
_____
_____
_____

When and where incident occurred: _____

List any witnesses who were present: _____

_____

This complaint is based on my honest belief that _____ has discriminated against me or another person. I certify that the information provided in this complaint is true, correct and complete to the best of my knowledge.

_____   _____
Complainant's Signature   Date

_____   _____
Received By   Date

A new policy to consider.

Mission-Goals-Objectives

Monitoring and Reporting: State

Reporting Accomplishments to the Public

The Board shall keep the public informed of the school system's progress in accomplishing its goals and indicators of success, including programs established to achieve them. The Superintendent shall maintain a communication program for this purpose, which shall include, but not be limited to, public meetings, publications in local newspapers and school newsletters, PTA meetings, and other appropriate methods.

Policy adopted: NEWTOWN PUBLIC SCHOOLS
                                                       Newtown, Connecticut

(Reviewed and approved by Policy Review Committee)