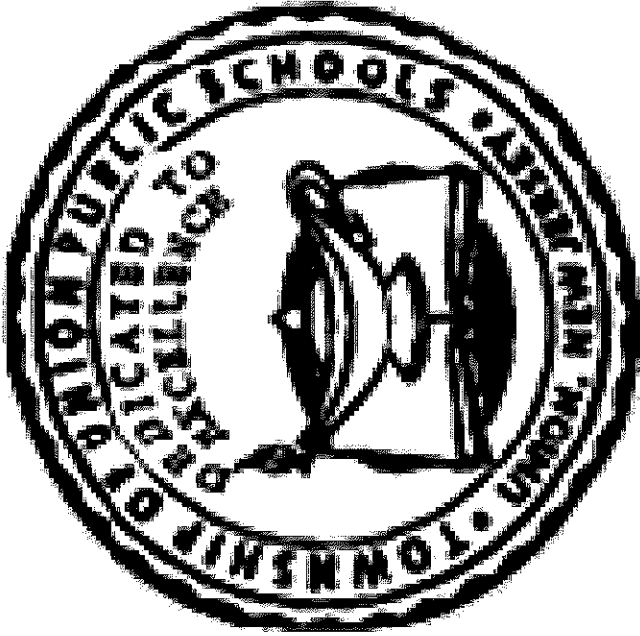


aa

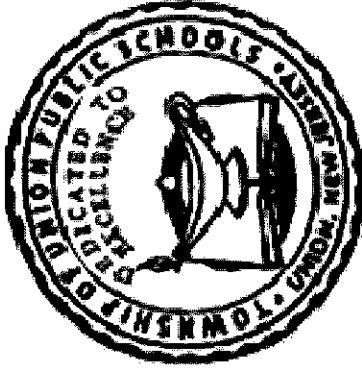
TOWNSHIP OF UNION PUBLIC SCHOOLS



Math Readiness for College & Careers

2015 Curriculum Guide

Curriculum Guide Approved June 2015



Board Members

David Arminio, President

Vito Nufrio, Vice President

Guy Francis

Richard Galante

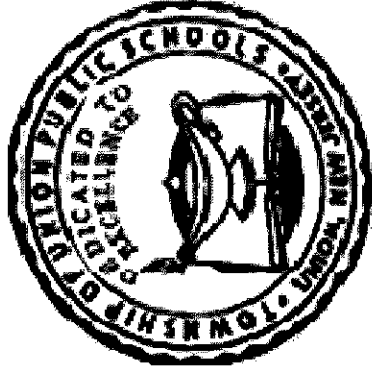
Lois Jackson

Thomas Layden

Ronald McDowell

Angel Salcedo

Nancy Zuena



TOWNSHIP OF UNION PUBLIC SCHOOLS
Administration

- District Superintendent Mr. Greg Tatum**
- Assistant Superintendent Dr. Noreen Lishak**
- Director of Student Information/TechnologyMs. Ann M. Hart**
- Director of Athletics, Health, Physical Education and Nurses.....Ms. Linda Ionta**

DEPARTMENT SUPERVISORS

Language Arts/Social Studies 3-5	Mr. Robert Ghiretti
Mathematics/Science 3-5	Ms. Terri Mathews
Elementary Pre K-2 (All Subjects)	Ms. Maureen Corbett
Guidance K-12/SAC	Ms. Nicole Ahern
Language Arts 6-12	Ms. Mary Malyska
Math 6-12.....	Mr. Jason Mauriello
Science 6-12.....	Ms. Maureen Guilfoyle
Social Studies/Business 6-12.....	Ms. Libby Galante
World Language/ESL/Career Education/G&T/Technology.....	Ms. Yvonne Lorenzo
Art/Music	Mr. Ronald Rago

Math Readiness for College and Careers

Curriculum Committee Members

James Bencivenga

Elias Brantley

Robert Sukovich

Table of Contents

Title Page.....	1
Board Members.....	2
Administration.....	3
Department Supervisors.....	4
Curriculum Committee.....	5
Table of Contents.....	6
District Mission/Philosophy Statement.....	7
District Goals.....	8
Course Description.....	9
Course Proficiencies.....	10-12
Curriculum Units.....	13
Pacing Guide.....	14
Curriculum.....	15-32

Mission Statement

The Township of Union Board of Education believes that every child is entitled to an education designed to meet his or her individual needs in an environment that is conducive to learning. State standards, federal and state mandates, and local goals and objectives, along with community input, must be reviewed and evaluated on a regular basis to ensure that an atmosphere of learning is both encouraged and implemented. Furthermore, any disruption to or interference with a healthy and safe educational environment must be addressed, corrected, or when necessary, removed in order for the district to maintain the appropriate educational setting.

Philosophy Statement

The Township of Union Public School District, as a societal agency, reflects democratic ideals and concepts through its educational practices. It is the belief of the Board of Education that a primary function of the Township of Union Public School System is to formulate a learning climate conducive to the needs of all students in general, providing therein for individual differences. The school operates as a partner with the home and community.

Statement of District Goals

- **Develop reading, writing, speaking, listening, and mathematical skills.**
- **Develop a pride in work and a feeling of self-worth, self-reliance, and self-discipline.**
- **Acquire and use the skills and habits involved in critical and constructive thinking.**
- **Develop a code of behavior based on moral and ethical principles.**
- **Work with others cooperatively.**
- **Acquire a knowledge and appreciation of the historical record of human achievement and failures and current societal issues.**
- **Acquire a knowledge and understanding of the physical and biological sciences.**
- **Participate effectively and efficiently in economic life and the development of skills to enter a specific field of work.**
- **Appreciate and understand literature, art, music, and other cultural activities.**
- **Develop an understanding of the historical and cultural heritage.**
- **Develop a concern for the proper use and/or preservation of natural resources.**
- **Develop basic skills in sports and other forms of recreation.**

Course Description

The purpose of this senior-level math course is to provide instructions in general mathematical concepts with a heavy concentration in real-world applications of mathematics. Students will improve their reasoning abilities by making generalizations and drawing logical conclusions. Concepts in Algebra 1, Geometry, Algebra 2, & Trigonometry are explored as they relate to business, science, finance, data collection, and careers.

Course Proficiencies

Students will be able to...

UNIT 1: Foundations of Algebra

- Convert between fractions, decimals, and percents
- Use $<$, $=$, or $>$ to compare rational numbers
- Plot and order rational numbers on a number line
- Perform all operations on rational numbers
- Use exponents & radicals to simplify expressions
- Use order of operations to simplify expressions
- Use fractions, decimals, and percents to calculate sales tax, tip, commissions, percent change
- Use mean, median, mode, and range to organize and summarize data
- Calculate theoretical and experimental probability
- Use bar graphs, histograms, flow charts, circle graphs, line graphs, and scatter plots to interpret and analyze data

UNIT 2: Real-World Functions and Formulas

- Define a function
- Graph a function using the set of ordered pairs consisting of an input and the corresponding output
- Find the domain and range of a function
- Read, interpret, and analyze functions graphically
- Calculate the distance of line segments, the perimeter and area of 2D shapes, the circumference and area of circles, and the surface area and volume of 3D shapes.

UNIT 3: Linear Relationships

- Solve equations in one variable (one-step, two-step, multi-step, double-side variable).
- Find slope when given two points and when given a linear equation written in any form.
- Write equation in slope-intercept form or standard form when given two points.
- Convert equations in between forms (slope-intercept form, standard form, point-slope form).
- Solve literal equation.
- Find intercepts of a line when given two points or when given a linear equation in any form.
- Graph linear equations written in standard form or slope-intercept form.
- Solve and graph inequalities, both in one variable and linear.
- Solve absolute value equations.
- Solve systems (Systems of Equations, 2 Equations w/ 2 variables; Systems of Inequalities)

UNIT 4: Non-Linear Relationships

- Simplify expressions using the properties of exponents.
- Add, subtract, and Multiply Polynomials (Recognize Special Polynomial Products).
- Factor monomials and quadratics.
- Solve quadratic equations (Factoring, Completing the Square, and Quadratic Formula).
- Solve Rational Expressions

UNIT 5: Polynomials, Rational Functions, and Trigonometry

- Factor polynomials, expand polynomials, simplify rational expressions.
- Solve a two variable system using graphing, elimination, and substitution.
- Solve a system of inequalities by graphing.
- Solve a quadratic equation by factoring, completing the square, and using the quadratic formula.
- Calculate the area of a polygon on a coordinate plane.
- Calculate the area of a triangle on a coordinate plane using Heron's Formula.
- Perform vector operations.

- Calculate distance and magnitudes of resultant vectors
- Perform function operations
- Determine maximum profits using linear programming.
- Perform function operations
- Determine the break-even point for a production of a product or event.
- Use Pythagorean Theorem to find missing sides of right triangles
- Use trigonometry to find missing parts of right triangles.

Curriculum Units

Unit 1: Foundations of Algebra

Unit 2: Real-World Functions and Formulas

Unit 3: Linear Relationships

Unit 4: Non-Linear Relationships

Unit 5: Polynomials, Rational Functions, and Trigonometry

Pacing Guide- Course

<u>Content</u>	<u>Number of Days</u>
<u>Unit 1: Foundations of Algebra</u>	35
<u>Unit 2: Real-World Functions and Formulas</u>	35
<u>Unit 3: Linear Relationships</u>	35
<u>Unit 4: Non-Linear Relationships</u>	35
<u>Unit 5: Polynomials, Rational Functions, and Trigonometry</u>	40

Unit 1: Foundations of Algebra

Essential Questions	Instructional Objectives/ Skills and Benchmarks, (CPIs)	Activities	Assessments	CCSS
<ul style="list-style-type: none"> • <u>When is it advantageous to use fractions instead of decimals/percents, decimals instead of fractions/percents, or percents instead of fractions/decimals?</u> 	<ul style="list-style-type: none"> • <u>Convert between fractions, decimals, and percents</u> • <u>Use $<$, $=$, or $>$ to compare rational numbers</u> • <u>Plot and order rational numbers on a number line</u> 	<ul style="list-style-type: none"> • <u>Choose the rational number (fraction, decimal, or percent) that is most sensible</u> • <u>Given a pair of rational numbers, fill in $<$, $=$, or $>$</u> • <u>Given a list of rational numbers, plot and order them on a number line</u> 	<ul style="list-style-type: none"> • <u>Given a real life scenario and a list of 3 equivalent rational numbers, choose the most appropriate rational number (fraction, decimal, or percent)</u> • <u>Fill in $<$, $=$, or $>$</u> • <u>$\frac{2}{3}$ 0.6</u> • <u>Plot and order the following: $\frac{4}{9}$, $\frac{2}{5}$, 42%, 0.41, $\frac{9}{20}$</u> 	<p><u>6.RP.2-3</u> <u>7.RP.1-3</u> <u>7.SP.1-2, 5</u> <u>S-ID.1-4</u> <u>S-CP.2, 6-9</u></p>
<ul style="list-style-type: none"> • <u>How are rational numbers used to solve real-life problems?</u> • <u>What is the best way to simplify</u> 	<ul style="list-style-type: none"> • <u>Perform all operations on rational numbers</u> • <u>Use exponents & radicals to simplify</u> 	<ul style="list-style-type: none"> • <u>Simplify numerical expressions by adding, subtracting, multiplying, and dividing</u> 	<ul style="list-style-type: none"> • <u>The Lincoln Tunnel EZPass weekday off-peak toll is \$9.75 and peak toll is \$11.75. If you travel into NYC</u> 	<p><u>6.RP.2-3</u> <u>7.RP.1-3</u> <u>7.SP.1-2, 5</u> <u>S-ID.1-4</u> <u>S-CP.2, 6-9</u></p>

<p><u>expressions involving several operations?</u></p> <ul style="list-style-type: none"> • <u>expressions</u> <u>Use order of operations to simplify expressions</u> 	<ul style="list-style-type: none"> • <u>Simplify numerical expressions using exponents and radicals</u> • <u>Simplify numerical expressions using the order of operations</u> 	<p><u>through the Lincoln Tunnel Monday – Friday for four weeks, how much money would you save when traveling off-peak hours compared to peak hours?</u></p> <ul style="list-style-type: none"> • <u>Simplify</u> $4 + 8 \times \sqrt[3]{27} \div (2 + 4)$ 	
<ul style="list-style-type: none"> • <u>When are rational numbers used to solve real-life problems?</u> • <u>How are rational numbers used to analyze information and guide decision-making?</u> 	<ul style="list-style-type: none"> • <u>Use fractions, decimals, and percents to calculate sales tax, tip, commissions, percent change</u> • <u>Use mean, median, mode, and range to organize and summarize data</u> • <u>Calculate theoretical and experimental probability</u> 	<ul style="list-style-type: none"> • <u>Calculate the final price of a refrigerator costing \$850, with a 15% off coupon, and 7% sales tax.</u> • <u>Find the real estate's commission for a house sold at \$375,000 at a 6% rate.</u> • <u>Given a list of values from a real-life scenario, calculate the mean.</u> 	<p><u>6.RP.2-3</u> <u>7.RP.1-3</u> <u>7.SP.1-2, 5</u> <u>S-ID.1-4</u> <u>S-CP.2, 6-9</u></p>

median,
mode, and range
and determine
what's the
most
revealing
measure of
central
tendency
Given a real-
life scenario,
calculate the
experimental
probability
Given an
event or
series of
events,
calculate the
theoretical
probability
that the
scenario
occurs.

mean, median,
mode, and range
and determine
what's the most
revealing
measure of
central tendency
The skateboard
manufacturer
inspects 2500
skateboards and
found that 2450
of them had no
defects. Find the
probability that a
skateboard
selected at
random has no
defects.
You take a five-
question multiple
choice quiz and
guess on all
questions
selecting one of
four answers
randomly each
time. What is the
probability you
will get a perfect
score?

How are graphs used to analyze data and guide decision-making?

- Use bar graphs, histograms, flow charts, circle graphs, line graphs, and scatter plots to interpret and analyze data

- Given a graph, interpret and analyze the data presented
- Given a table of data or word problem, create a graph that best depicts this data

- Given three tables, create a graph for each that best depicts the data (bar graph, line graph, circle graph).
- Analyze graph to make decisions

6.RP.2-3
7.RP.1-3
7.SP.1-2, 5
S-ID.1-4
S-CP.2, 6-9

Unit 2: Real World Functions and Formulas

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments	CCSS
<ul style="list-style-type: none"> • <u>What are functions and how are they used to help us understand the relationship between two quantities?</u> • <u>How are graphs used to represent and analyze functions?</u> • <u>What are examples of real-world linear functions and how can we model them with equations?</u> 	<ul style="list-style-type: none"> • <u>A function is a rule that assigns to each input exactly one output.</u> • <u>The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.</u> • <u>Geometry formulas allow us to calculate the distance of line segments, the perimeter and area of 2D shapes, the circumference and area of circles, and the surface area and volume of 3D shapes.</u> 	<ul style="list-style-type: none"> • <u>Given a function rule, fill out an input-output table.</u> • <u>Given two sets of quantities, write the function rule and graph the function.</u> • <u>Given the graph of a function, identify the ordered pairs and write the function rule.</u> • <u>Use an appropriate domain for a given real world scenario,</u> 	<ul style="list-style-type: none"> • <u>Given $y = 5x - 2$, complete an input-output table.</u> • <u>Given $(0, 1)$, $(2, 4)$, $(4, 7)$, $(6, 10)$, write the function rule and graph the function.</u> • <u>Al's Auto Rental charges \$32 per day plus \$0.28 per mile for an automobile rental. Elaine rented a car for 2 days and drove 83 miles.</u> 	<p><u>F-IF.4, 6-9</u> <u>F-LE.1-3</u> <u>A-SSE.3</u></p>

<ul style="list-style-type: none"> • <u>How are geometry formulas used in the real world?</u> 		<p><u>find the corresponding range, write and graph the function.</u></p> <ul style="list-style-type: none"> • <u>Solve real world problems involving coordinate geometry using formulas for distance, midpoint, perimeter, circumference, and area.</u> 	<p><u>How much did she pay?</u> <u>Ramon paid \$60 to rent a car for one day. How far did he drive?</u></p> <ul style="list-style-type: none"> • <u>A bakery sells a 9" by 13" cake for the same price as an 8" diameter round cake. If the round cake is twice the height of the rectangular cake, which option gives the most money?</u>
--	--	---	--

Unit 3: Linear Relationships

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments	CCSS
<ul style="list-style-type: none"> • <u>Is there an advantage to solve equations algebraically vs. guess and check method?</u> 	<ul style="list-style-type: none"> • <u>Solving Equations in one variable (One-Step, Two-Step, Multi-step, Variables on both sides)</u> 	<ul style="list-style-type: none"> • <u>Show slight differences in problems and common mistakes.</u> • <u>Creating equations to help solve real-life problems.</u> 	<ul style="list-style-type: none"> • <u>3 consecutive integers add up to 39. What are the 3 integers?</u> 	<ul style="list-style-type: none"> • <u>HSA.REI.A.1,</u> • <u>HSA.REI.A.2</u>

<ul style="list-style-type: none"> • <u>What is the best way to represent change mathematically?</u> 	<ul style="list-style-type: none"> • <u>Finding slope of a line when given two points on the line.</u> • <u>Identifying slope of a linear equation (Slope-intercept form, standard form, and point-slope form).</u> • <u>Finding</u> 	<ul style="list-style-type: none"> • <u>Slope-Speed Dating: Each student will be given a unique ordered pair, students will be given a time to pair with another student and find the slope of the line that passes between their</u> 	<ul style="list-style-type: none"> • <u>Find the slope of the line that passes through the following points: (2,3) and (12,6).</u> • <u>Rental Car Company "A" charges \$30 to rent a car and \$0.50 for each mile driven. Rental</u> 	<ul style="list-style-type: none"> • <u>HSA.REI.B.3</u>
---	---	--	---	--

intercepts of linear equations.

- Solving literal equations.

points, after the time passes students will go on the next student. (This activity could be done with midpoint formula, distance formula, or equation of a line.)

- Convert the following equation to slope-intercept form.
- Students will be separated and asked to graph an equation using 3 different methods. (Slope-intercept form,

car company "B" charges a flat rate of \$75. If you have to use a rental car to drive 80 miles, which company is economically better?

- List the pros and cons of each of the methods of graphing.
- $A^2 + B^2 = C^2$; solve for B, then solve for C.

Compare your results to a formula that you already know.

<ul style="list-style-type: none"> • <u>How can linear inequalities be used to solve real-life problems?</u> 	<ul style="list-style-type: none"> • <u>Solve and graph inequalities written in one variable.</u> • <u>Graph linear inequalities.</u> 	<p><u>intercepts, and using t-chart)</u></p> <ul style="list-style-type: none"> • <u>Use the smart board to show how changing an inequality affects the graph of that inequality.</u> 	<ul style="list-style-type: none"> • <u>Give an example of a real life limit and express that limit as an inequality.</u> • <u>Solve and graph the following inequality: $2x - 5x > 2(x-4)$</u> 	<ul style="list-style-type: none"> • <u>HSA.REI.B.3</u>
<ul style="list-style-type: none"> • <u>How can systems be used to help solve real-life problems?</u> • <u>When can a system of equations be used?</u> • <u>When can a system of inequalities be used?</u> 	<ul style="list-style-type: none"> • <u>Solve systems of equations using both the elimination and substitution methods.</u> • <u>Graph systems of inequalities. (Tell whether a point falls within the solution.)</u> 	<ul style="list-style-type: none"> • <u>Have students solve systems using graphing, elimination, and substitution and show them that each method will provide the same answer if done correctly.</u> • <u>Give students</u> 	<ul style="list-style-type: none"> • <u>Kimberly went to the movie theatre and purchased 2 adult tickets and 5 student tickets for \$45. Malcolm went to the same theatre and purchased 5 adult tickets and 2 student tickets for \$65. What is</u> 	<ul style="list-style-type: none"> • <u>HSA.REI.C.5-9</u>

	<p><u>the price of each ticket?</u></p>	<p><u>a linear equation and tell them to find a partner and choose a method to tell where there equations meet.</u></p>	<p><u>What is the meaning of absolute value and when does it apply?</u></p>	<p><u>What are the differences between the two absolute value equations: $3 x+1 =30$ and $3x+3 =30$</u></p>
<p><u>HSA.REI.D.11</u></p>		<p><u>Students will review common mistakes</u></p>	<p><u>Solve absolute value equations.</u></p>	

Unit 4: Non Linear Relationships

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CPIs)	Activities	Assessments	CCSS
<ul style="list-style-type: none"> • <u>How can we use mathematical language to describe non-linear change?</u> • <u>How can we model situations using quadratics?</u> • <u>How can we model situations using exponents?</u> 	<ul style="list-style-type: none"> • <u>Use the properties of exponents to simplify the following exponential expressions.</u> • <u>Recognize and solve problems that can be modeled using a quadratic function.</u> <u>Interpret the solution in terms of the context of the original problem.</u> • <u>Solve equations involving several variables for one variable in terms of the others.</u> 	<ul style="list-style-type: none"> • <u>Show video clip of Tarzan swinging from vine and baseball hit to represent parabolic curves and discuss shape, location, and meaning of vertex, domain, range, max/min and opening direction.</u> • <u>Have students choose between an allowance of \$5 a day or start with a penny and double daily for one month.</u> • <u>Use the Smart Board to illustrate changes to the</u> 	<ul style="list-style-type: none"> • <u>Determine the vertex of the function</u> $F(x) = 4x^2 - 4x + 8$ • <u>Given the following increasing numerical pattern, determine the type of relationship that exists (linear quadratic or exponential) and justify your conclusion:</u> <u>-3, -1, 5, 23, 77, ...</u> • <u>An owl is circling a field at a height of 70 feet and sees a mouse. The owl folds its wings and begins to dive with an initial</u> 	<p style="text-align: center;"><u>HAS.REI.B.4</u></p>

	<ul style="list-style-type: none"> • <u>Solve single-variable quadratic equations.</u> • <u>Provide and describe multiple representations of solutions to simple exponential equations using concrete models, tables, graphs, symbolic expressions and technology.</u> 	<ul style="list-style-type: none"> • <u>vertical motion model in real-life problems.</u> • <u>Given the volume of various solids, students will rewrite the formulas in terms of height.</u> • <u>Use the graphing calculator to identify the zeroes of the quadratic equation.</u> • <u>Students will track a credit card purchase over a given period of time. Students will graph the final result.</u> 	<p><u>speed of 6 feet per second. Estimate the time the mouse has to escape. The model for the height of the owl at time t is $h = -16t^2 - 6t + 70$</u></p> <ul style="list-style-type: none"> • <u>Solve for r: $V = \frac{1}{3}\pi r^2 h$</u> • <u>Solve for x: $(3x - 7) = 0$</u> • <u>Solve for x: $5x^2 - 2x - 10 = -13$</u> • <u>What is the solution set for $6x^2 + 7x - 5 = 0$?</u> • <u>Using a table, graph, and/or symbolic expressions, solve the following equation. Provide more than one</u>
--	--	--	---

representation of
the solutions and
explain your work.

$16 = 2^x$

Unit 5: Polynomials, Rational Functions, and Trigonometry

Essential Questions	Instructional Objectives/ Skills and Benchmarks (CP/Is)	Activities	Assessments	CCSS
<ul style="list-style-type: none"> • <u>Is there a way to easily factor polynomials when the leading coefficient is not one?</u> • <u>Why can I not solve for two variables with one equation?</u> • <u>How can I find the area of a polygon on a coordinate plane?</u> • <u>How can I figure out how to maximize profits and minimize costs?</u> 	<ul style="list-style-type: none"> • <u>Factor polynomials, expand polynomials, simplify rational expressions.</u> • <u>Solve a two variable system using graphing, elimination, and substitution.</u> • <u>Solve a system of inequalities by graphing.</u> • <u>Solve a quadratic equation by factoring, completing the square, and using the quadratic formula.</u> 	<ul style="list-style-type: none"> • <u>Expand polynomials by distributing, multiplying polynomials using distribution.</u> • <u>Simplifying rational expressions by factoring and identifying any restrictions on variables.</u> • <u>Graphing various costs for a cell phone plan to see which plan is better for the consumer.</u> • <u>Splitting the</u> 	<ul style="list-style-type: none"> • <u>Algebra Operations- Evaluate</u> $2x-8$, x^2+5x+4 , x^2-16 , $x^2+8x+16$ <u>State all restrictions on the variables.</u> • <u>Solutions of Equations and Inequalities- A restaurant's supper club offers 6 meals for \$300 and 12 meals for \$480. Each package requires you to buy into the supper club at the restaurant and includes a one-time membership fee in the package price. What is the cost of each meal?</u> • <u>Coordinate</u> 	<ul style="list-style-type: none"> • <u>HSA.APR.A.1,</u> • <u>HSA.APR.B.2</u> • <u>HSA.REI.C.(5-9)</u> • <u>HSG.GPE.B.7</u> • <u>HSA.CED.A.3</u> • <u>HSG.SRT.C.8</u>

<ul style="list-style-type: none"> • <u>How can I determine if a business is profitable?</u> • <u>Is there any way to tell if parts of a building will violate the building code?</u> 	<ul style="list-style-type: none"> • <u>Calculate the area of a polygon on a coordinate plane.</u> • <u>Calculate the area of a triangle on a coordinate plane using Heron's Formula.</u> • <u>Perform vector operations.</u> • <u>Calculate distance and magnitudes of resultant vectors</u> • <u>Perform function operations</u> • <u>Determine maximum profits using linear programming.</u> • <u>Perform function operations</u> • <u>Determine the break-even point for a production of a product or</u> 	<p><u>class in two to substitute and eliminate (one side solves for x first while the other side solves for y first to show that order is not important)</u></p> <ul style="list-style-type: none"> • <u>Modeling a quadratic equation by throwing a ball in an arc and determining when it's at a certain height.</u> • <u>Plot a figure on a plane and calculate the area. This is done using normally oriented figures and abnormally oriented</u> 	<p><u>Geometry- A boat has a speed of 48 mi/h in still water. A river is flowing at 14 mi/h due south. If the boat is heading due east, what are the boats resultant speed and direction?</u></p> <ul style="list-style-type: none"> • <u>Applications and other Algebra Topics- A t-shirt takes 10 min to make, costs \$4 to make, and yields a profit of \$6. A sweatshirt takes 30 min to make, costs \$20 to make, and yields a profit of \$20.</u> <p><u>Fred is selling the shirts at a summer concert series. He will spend no more than 20 hours making shirts, no</u></p>	
---	---	---	---	--

	<p><u>event.</u></p> <ul style="list-style-type: none"> • <u>Use Pythagorean Theorem to find missing sides of right triangles</u> • <u>Use trigonometry to find missing parts of right triangles.</u> 	<p><u>figures. Use Heron's formula for area of a triangle including calculating semiperimeter.</u></p> <ul style="list-style-type: none"> • <u>Add and subtract vectors to show resultant magnitude.</u> • <u>Show how water affects vectors by putting a boat in a bucket of water and having the students blow the boat in different directions.</u> • <u>Have the students each open a business and</u> 	<ul style="list-style-type: none"> • <u>more than \$600 making shirts, and will make at least 50 total shirts. How many of each shirt should Fred make to maximize profit? How much is the profit?</u> • <u>Functions- The CookieMan Cookie shop sells all cookies for \$2. The daily cost of the shop (gas, electricity) is \$120. Each cookie costs \$1.40 to make. How many cookies must the CookieMan sell to break even daily?</u> • <u>Trigonometry- A town's building code requires a ramp to be 6 in. high for every 3 ft long. The ramp must attach to</u> 	
--	---	---	--	--

put different parameters on the business to try to prevent profitability.
See which student of group of students can remain profitable despite different constraints.
• Examine the cost of doing business in the United States versus the cost of moving production overseas.
Identify why business' move production overseas and identify factors

a landing that is 5 ft high. If there are 45 ft. available in which to build the ramp, will it be up to code? What angle will the ramp and the ground form?

that could keep
production in
the US. Have
students start
businesses in
the US and
overseas and
identify which
are more
profitable.

- Build a model
handicapped
ramp. Identify
the angle that
the ramp rises
at and the
different
lengths of the
sides. Examine
different
national
building codes
to determine if
the ramp is
within the
building codes.