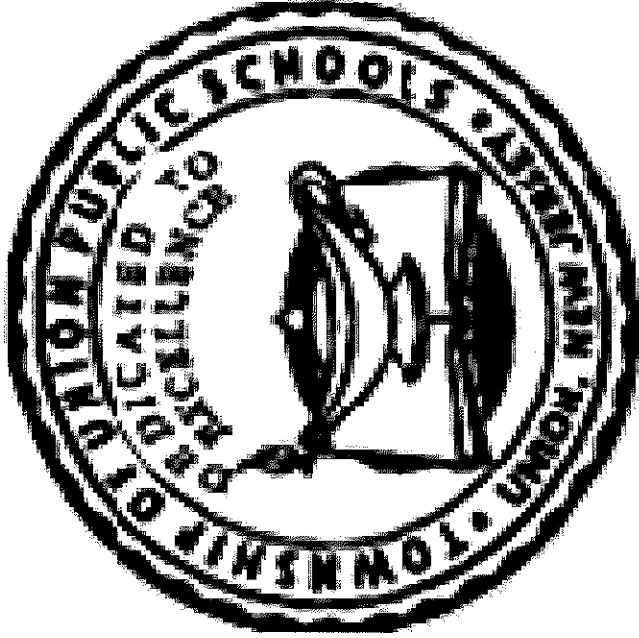


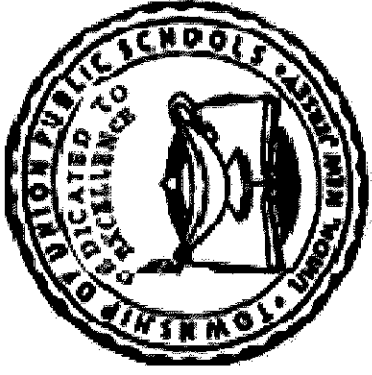
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TOWNSHIP OF UNION PUBLIC SCHOOLS



Honors Prealgebra  
**Curriculum Guide 2015**

Curriculum Guide Approved June 2015



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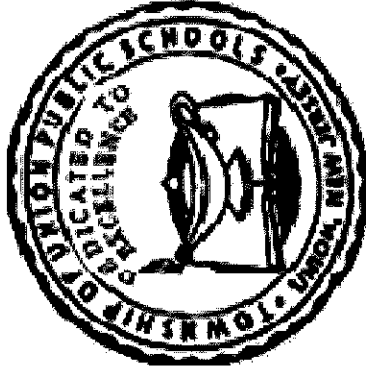
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**Curriculum Committee**

**Maria Grillias**

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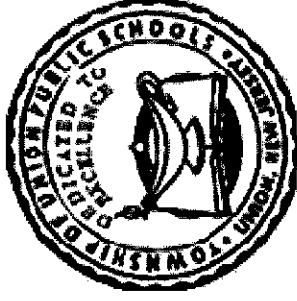
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## **District Mission Statement**

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.

## **District 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 the formulation of 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 principals.
- To be able to 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.
- Efficient and effective participation 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**

Honors Pre-Algebra is a seventh grade class suggested for students who have a strong background in mathematics. The purpose of this course is to introduce and prepare students for higher level mathematics classes offered in the honors and advanced placement program. The course is designed specifically for students who have demonstrated a desire to learn and appreciate mathematics.

Major units of study include: fundamentals of algebra, integers, equations, factors and fractions, rational numbers, ratio, proportion and percent, equations and inequalities, functions and graphing, real numbers and right triangles, two- and three-dimensional figures, and statistics, probability, and data analysis. Standardized test skills and Core Content Standards are incorporated throughout the course. Students will learn to use the graphing calculator, they will be exposed to careers which emphasize the application of math skills in real life work, and they will be challenged to understand and model the mathematical concepts delivered throughout the curriculum. Assessment will include: projects, content related reading, tests, quizzes, homework, classwork, portfolios, and group work.

**Recommended Textbooks**  
**Holt McDougal**  
**Larson**  
**Pre-Algebra**

## **Course Proficiencies**

### **Students will be able to...**

- Write and evaluate variable expressions.
- Perform operations with integers.
- Plot points in the coordinate plane.
- Use mathematical properties to simplify variable expressions.
- Write and solve one step equations.
- Perform operations with negative and positive decimals.
- Write and solve multi-step equations.
- Write and solve inequalities.
- Find greatest common factors and least common multiples.
- Identify equivalent fractions and write them in simplest form.
- Use rules of exponents and scientific notation.
- Write fractions as decimals and decimals as fractions.
- Perform operations with fractions and mixed numbers.
- Solve equations and inequalities with rational numbers.
- Write and compare ratios and rates.
- Write and solve proportions.
- Find theoretical and experimental probabilities.
- Find equivalent decimals, fractions and percent.
- Use proportions and percent equations to solve problems.
- Solve problems involving percent of change.
- Represent and interpret relations and functions.
- Write and graph linear equations in two variables.
- Write and graph systems and linear inequalities
- Use square roots and the Pythagorean Theorem to solve problems.
- Identify rational and irrational numbers.
- Use special right triangles and trigonometric ratios to solve problems.

- Identify special pairs of angles and find their measures.
- Find the measures of interior and exterior angles of polygons.
- Translate, reflect, rotate, and dilate geometric figures.
- Find angle measures and side lengths of triangles and quadrilaterals.
- Find area of parallelograms, trapezoids, and circles.
- Find the surface area and volume of prisms, cylinders, pyramids, and cones.
- Make and interpret data displays.
- Analyze survey results.
- Calculate probabilities of events
- Determine probability of events

**Curriculum Units:**

**Unit 1  
Real Numbers: Ratios and  
Proportional Relationships**

**Unit 2  
Geometry**


**Unit 3  
Analyzing Functions and Linear  
Equations**

**Unit 4  
Data Analysis, Probability, and  
Transformation**

## Unit 1 (Real Numbers: Ratios and Proportional Relationships)

Note: Students entering CCM-8 in Grade 7 should have been taught the following Grade 7 Standards: 7.RP.A.1, 7.NS, 7.EE.A.1 and 7.EE.B.4. Check for student understanding of these standards and address any content gaps as needed.

#	STUDENT LEARNING OBJECTIVES	CORRESPONDING CCSS
1	<p>Analyze proportional relationships and use them to solve real world problems.</p> <ol style="list-style-type: none"> <li>1. Compute unit rates associated with ratios and fractions, including ratios of lengths, areas and other quantities measures.</li> </ol>	7.RP.1
2	<p>Recognize and represent proportional relationships between quantities.</p>	7.RP.2
3	<p>Use proportional relationships to solve multistep ratio and percent problems.</p> <ol style="list-style-type: none"> <li>1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.</li> <li>2. Compute simple interest, tax, mark-ups, and mark-downs gratuities and commissions, fees, percent increase and decrease, percent error.</li> <li>3. Use the proportional relationships to solve multistep ratio and percent problems.</li> </ol>	7.RP.3
4	<p>Know that there are numbers that are not rational, and approximate them by rational numbers.</p> <ol style="list-style-type: none"> <li>1. Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion, which repeats eventually into a rational number.</li> </ol>	7.NS.A

	<p>2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions.</p>	
	<p><b>Work with radicals and integer exponents.</b></p> <ol style="list-style-type: none"> <li>1. Know and apply the properties of integer exponents to generate equivalent numerical expressions.</li> <li>2. Use square root and cube root symbols to represent solutions to equations of the form <math>x^2 = p</math> and <math>x^3 = p</math>, where <math>p</math> is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that <math>\sqrt{2}</math> is irrational.</li> <li>3. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.</li> <li>4. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.</li> </ol>	

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**Major Content Supporting Content**

**Additional Content** (Identified by PARCC Model Content Frameworks).

**Bold type indicates grade level fluency requirements.** (Identified by PARCC Model Content Frameworks).

### Selected Opportunities for Connection to Mathematical Practices

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

*All of the content presented at this grade level has connections to the standards for mathematical practices.  
Bold type identifies possible starting points for connections to the SLOs in this unit.*

**Code #**

**7 RP**

**Common Core State Standards**

Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks  $\frac{1}{2}$  mile in each  $\frac{1}{4}$  hour, compute the unit rate as the complex fraction  $\frac{1/2}{1/4}$  miles per hour, equivalently 2 miles per hour.





	<p>Recognize and represent proportional relationships between quantities.</p> <p>M 2 D</p> <ul style="list-style-type: none"> <li>• 7.RP.2.a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</li> <li>• 7.RP.2.b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</li> <li>• 7.RP.2.c Represent proportional relationships by equations. For example, if total cost <math>t</math> is proportional to the number <math>n</math> of items purchased at a constant price <math>p</math>, the relationship between the total cost and the number of items can be expressed as <math>t = pn</math>.</li> <li>• 7.RP.2.d Explain what a point <math>(x, y)</math> on the graph of a proportional relationship means in terms of the situation, with special attention to the points <math>(0, 0)</math> and <math>(1, r)</math> where <math>r</math> is the unit rate.</li> </ul>
7.RP.2	Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups
8.EE.1	Mark-downs, gratuities and commissions, fees, percent increase and decrease, percent error.
8.EE.2	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
8.EE.3	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ , where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.
8.EE.4	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.

**Major Content Supporting Content Additional Content** (Identified by PARCC Model Content Frameworks).  
**7.NF.A.1** (Identified by PARCC Model Content Frameworks).  
**8.EE.A.1** (Identified by PARCC Model Content Frameworks).  
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CCSS #	Assessments
7.RP.1	The shadow of a goalpost on a football field is 20 feet long. A football player who is 6 feet tall stands next to the goal post and cast a shadow 32 inches long. How tall is the goalpost
8.EE.1	Simplify: $3^2 \times 3^5 = 3^3 = 1/33 = 1/27$ .
8.EE.2	Evaluate square roots of small perfect squares and cube roots of small perfect cubes.
7.RP.3	Is the $\sqrt{2}$ rational or irrational.
8.EE.3	A retail store buys a DVD player for 140 and wants to mark it up 150%. What is the retail price of the DVD player?
8.EE.4	Estimate the population of the United States as $3 \times 10^8$ and the population of the world as $7 \times 10^9$ , and determine that the world population is more than 20 times larger.

## Unit 2 (Geometry)

#	STUDENT LEARNING OBJECTIVES	CORRESPONDING CCSS
<b>1</b>	<p><b>Understand and apply the Pythagorean Theorem.</b></p> <ol style="list-style-type: none"> <li>1. Explain a proof of the Pythagorean Theorem and its converse.</li> <li>2. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.</li> <li>3. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.</li> </ol>	<b>8.G.B</b>
<b>2</b>	<p><b>Draw, construct, and describe geometrical figures and describe the relationships between them.</b></p> <ol style="list-style-type: none"> <li>1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. <b>Note: Include solving for unknowns with similar figures.</b></li> <li>2. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine an unique triangle, more than one triangle, or no triangle.</li> <li>3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.</li> </ol>	<b>7.G.A</b>

	<p><b>Understand congruence and similarity using physical models, transparencies, or geometry software.</b></p> <ol style="list-style-type: none"> <li>1. Verify experimentally the properties of rotations, reflections, and translations:             <ol style="list-style-type: none"> <li>a. Lines are taken to lines, and line segments to line segments of the same length.</li> <li>b. Angles are taken to angles of the same measure.</li> <li>c. Parallel lines are taken to parallel lines.</li> </ol> </li> <li>2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.</li> <li>3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.</li> <li>4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.</li> <li>5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.</li> </ol>	
	<p>Know the formulas for the volumes of cones, spheres, cylinders and use them to solve real world problem.</p>	

**Math Content Supporting Content Additional Content** (Identified by PARCC Model Content Frameworks).

**Bold type indicates grade level fluency requirements.** (Identified by PARCC Model Content Frameworks).

### Selected Opportunities for Connection to Mathematical Practices

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

*All of the content presented at this grade level has connections to the standards for mathematical practices.*

***Bold type identifies possible starting points for connections to the SLOs in this unit.***

Code #	Common Core State Standards
<b>7.G.4</b>	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. A 4 R 7.G.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
<b>7.G.6</b>	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
<b>8.G.7</b>	Explain and prove the Pythagorean Theorem and its converse.
<b>8.G.8</b>	Apply the Pythagorean Theorem to determine unknown side lengths in a right triangle in real world and mathematical problems in 2 and three dimensions. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.



<b>8.G.7</b>	Know the formulas for the volumes of cones, spheres, cylinders and use them to solve real world problem.
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**Major Content Supporting Content Additional Content** (Identified by PARCC Model Content Frameworks).  
**Bold type indicates grade level fluency requirements.** (Identified by PARCC Model Content Frameworks).

<b>Assessments</b>	
<b>CCSS #</b>	
<b>8.G.6</b> <b>8.G.7</b>	In 432B.C. part of the Greek city of Olynthus was divided into rectangular city blocks measuring 120 feet by 300 feet. To the nearest foot, what is the diagonal distance across each city block?
<b>7.G.6</b> <b>7.G.4</b>	Plot the points D(7,3), and F(-4,1), and G(-1,-3), in a coordinate plane. Connect the points form a rectangle. Explain how to find the perimeter and area of the rectangle. Find distance the distance of its diagonal using the distance formula
<b>8.G.9</b>	The diameter of a cone cup is 8cm and the height is 10cm. the radius of another cone shaped paper cup is 3 cm and the height is 11cm. a. Predict which cup will hold more water. Explain your prediction. b. Find the volume of each paper cup to the nearest 10 <sup>th</sup> cubic cm. Which cup holds more water? Compare your results.
<b>7.G.4</b>	Find the measure of each interior angle of a regular pentagon, heptagon, dodecagon. If the measure of $\angle 1 = 35$ degrees what is the measurement of its supplement?

## Unit 3 (Analyzing Functions and Linear Equations) 7.RP/8.EE8.F

#	STUDENT LEARNING OBJECTIVES	CORRESPONDING CCSS
1	<p><b>Define, evaluate, and compare functions.</b></p> <ol style="list-style-type: none"> <li>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.</li> <li>2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).</li> </ol>	8.F.A
2	<p><b>Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP)</b></p> <ol style="list-style-type: none"> <li>1. Recognize and represent proportional relationships between quantities.               <ol style="list-style-type: none"> <li>a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</li> <li>b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</li> <li>c. Represent proportional relationships by equations.</li> <li>d. Explain what a point <math>(x, y)</math> on the graph of a proportional relationship means in terms of the situation, with special attention to the points <math>(0, 0)</math> and <math>(1, r)</math> where <math>r</math> is the unit rate.</li> </ol> </li> </ol>	7.RP.A

<p style="text-align: center;"><b>3</b></p>	<p><b>Understand the connections between proportional relationships, lines, and linear equations.</b></p> <ol style="list-style-type: none"> <li>Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. <b>Note: Build on student understanding of constant of proportionality (7.RP.2) to build understanding of slope.</b></li> <li>Use similar triangles to explain why the slope <math>m</math> is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation <math>y = mx</math> for a line through the origin and the equation <math>y = mx + b</math> for a line intercepting the vertical axis at <math>b</math>.</li> </ol>	
<p style="text-align: center;"><b>4</b></p>	<p><b>Define, evaluate, and compare functions.</b></p> <ul style="list-style-type: none"> <li>Interpret the equation <math>y = mx + b</math> as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.</li> </ul>	



<p style="text-align: center;"><b>5</b></p>	<p><b>. Use functions to model relationships between quantities.</b></p> <ol style="list-style-type: none"> <li>1. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two <math>(x, y)</math> values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. <b>Note: Introduce concepts of independent and dependent variables.</b></li> <li>2. 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.</li> </ol>	<p style="text-align: center;"><b>8.EE.5</b></p>
<p style="text-align: center;"><b>6</b></p>	<p><b>Analyze and solve linear equations and pairs of simultaneous linear equations.</b></p> <ol style="list-style-type: none"> <li>4. <b>Solve linear equations in one variable.</b> <ol style="list-style-type: none"> <li>a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form <math>x = a</math>, <math>a = a</math>, or <math>a = b</math> results (where <math>a</math> and <math>b</math> are different numbers).</li> <li>b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. <b>Note: Check understanding of solving equations involving distributive property (7.EE.A.1 and 7.EE.B.4) and build on prior knowledge.</b></li> </ol> </li> <li>5. <b>Analyze and solve pairs of simultaneous linear equations.</b></li> </ol>	<p style="text-align: center;"><b>8.EE.6</b></p>

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| <ul style="list-style-type: none"> <li>a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.</li> <li>b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.</li> <li>c. Solve real-world and mathematical problems leading to two linear equations in two variables.</li> </ul> |  |
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**Major Content Supporting Content Additional Content** (Identified by PARCC Model Content Frameworks).

**Bold type indicates grade level fluency requirements.** (Identified by PARCC Model Content Frameworks).

**Selected Opportunities for Connection to Mathematical Practices**

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

*All of the content presented at this grade level has connections to the standards for mathematical practices.*

***Bold type identifies possible starting points for connections to the SLOs in this unit.***

<b>Common Core State Standards</b>	
<b>8.EEC</b>	Analyze and solve linear equations and pairs of simultaneous linear equations.
<b>8.F.B</b>	Use functions to model relationships between quantities.
<b>7.RP.A</b>	Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP)

**Motor Content Supporting Content: Additional Content** (Identified by PARCC Model Content Frameworks).

**Bold type indicates grade level fluency requirements.** (Identified by PARCC Model Content Frameworks).

<b>Assessments</b>	
<b>8.EEC</b>	Show that the table represents a linear function. Then write the equation of the function. (-2,-5), (-1,-2), (0,1) (1,4)
<b>7.RP.A</b>	Write a direct variation equation that has (4,20) as a solution
<b>7.RP.A</b>	Lisa and John work in different department stores. Lisa earns a salary of 18,000 a year plus 2% commission on her sales. John receives a salary that receives a 6% commission on his sales. For each person show if annual sales and annual earnings show a direct variation. Justify your answer mathematically
<b>8.F.B</b>	The system of inequalities shown below $y > 2x$ $y < -x + 2$



Draw both graphs in the same coordinate plane and use a different color for each graph. Is the ordered pair  $(-1, 3)$  a solution of the system? Explain.

Write an equation of a line that is parallel to the given line and passes through the given point.

$Y = -9x + 1$ ;  $(2, 4)$

## Unit 4 (Data Analysis, Probability, and Transformation)

#	STUDENT LEARNING OBJECTIVES	CORRESPONDING CCSS
1	<p>Use random sampling to draw inferences about a population.</p> <ol style="list-style-type: none"> <li>Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</li> <li>Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.</li> </ol>	7.SP.A
2	<p>Draw informal comparative inferences about two populations.</p> <ol style="list-style-type: none"> <li>Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.</li> <li>Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.</li> </ol>	7.SP.B
3	<p>Investigate chance processes and develop, use, and evaluate probability models.</p> <ol style="list-style-type: none"> <li>Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater</li> </ol>	7.SP.C

	<p>likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. <b>Note: Introduce concepts of sample space, independent and dependent events.</b></p> <ol style="list-style-type: none"> <li>2. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.</li> <li>3. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.       <ol style="list-style-type: none"> <li>a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.</li> <li>b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.</li> </ol> </li> <li>4. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.       <ol style="list-style-type: none"> <li>a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.</li> <li>b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space, which compose the event.</li> <li>c. Design and use a simulation to generate frequencies for compound events.</li> </ol> </li> </ol>	
4	Investigate patterns of association in bivariate data	
5	Use the measures of central tendency and variability to draw informal inferences about two populations.	

**Major Content Supporting Content** **Additional Content** (Identified by PARCC Model Content Frameworks).  
**Bold type indicates grade level fluency requirements.** (Identified by PARCC Model Content Frameworks).

**Selected Opportunities for Connection to Mathematical Practices**

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

*All of the content presented at this grade level has connections to the standards for mathematical practices.*

**Bold type identifies possible starting points for connections to the SLOs in this unit.**

Code #	Common Core State Standards
7SPA	<p>Use random sampling to draw inferences about a population.</p> <p>Investigate chance processes and develop, use, and evaluate probability models.</p>
7SPB	<p>Draw informal comparative inferences about two populations. Use random sampling to draw inferences about a population.</p>

Investigate patterns of association in bivariate data

8.SP1  
8.SP2  
8.SP4

**Major Content Supporting Content Additional Content** (Identified by PARCC Model Content Frameworks).  
**Minor Content Supporting Content Additional Content** (Identified by PARCC Model Content Frameworks).

**Bold type indicates grade level fluency requirements.** (Identified by PARCC Model Content Frameworks).

CCSS #	Assessments
7.SP.A	<p>Which question is not biased?</p> <ol style="list-style-type: none"><li>Don't you think that that renovating and old town hall would be a mistake?</li><li>Do you support the governor's proposal to reduce taxes?</li><li>Are you willing to deal with heavy increases in traffic where you live just so another mall will be built?</li><li>Do you think we should elect a new mayor in the next election, or re-elect the leader who has served this town for many years?</li></ol>
7.SP.A	<p>There are about 105 million households in the united states. If in a survey 780 households watch a certain program, estimate the number of households that watch the same program in the united states.</p>
7.SP.C	<p>How many different permutations of the letters ELF are possible? Of the letters EEL? Of the letters EEE</p>
7.SP.D	<p>A spinner is divided into eight equal parts, and its numbered 1-8. What is the probability of an event that you will spin the spinner 2 times and land on a multiple of 3?</p> <p>Which of the following could produce a misleading histogram?</p> <ol style="list-style-type: none"><li>There are no spaces between bars</li><li>Intervals are equal size</li><li>Vertical axis is broken</li><li>Bar heights are different</li></ol>



## Pacing Guide – Course

<u>Content</u>	<u>Number of Days</u>
<u>Unit 1: Integers, Equations and Inequalities: Chapters 1-3</u>	<u>40</u>
<u>Unit 2: Rational Numbers and Proportions: Chapters 4-7</u>	<u>50</u>
<u>Unit 3: Functions, Geometry, and Measurement: Chapters 8-10</u>	<u>45</u>
<u>Unit 4: Data Analysis and Probability: Chapters 11-13</u>	<u>30</u>
<u>PARCC testing</u>	<u>05</u>
<u>Performance Assessment and special related projects</u>	<u>10</u>