

7th GRADE ACCELERATED MATHEMATICS 2018-2019

Year-at-a-Glance

Year-at-a-Glance						
Unit 1 Ratios and Proportional Relationships 25 days	Unit 2 Rational Numbers 20 days	Unit 3 Expressions and Equations with Exponents and Scientific Notation 34 days	Unit 4 Percent and Proportional Relationships 20 days	Unit 5 Geometry with Congruence and Similarity 31 days	Unit 6 Statistics and Probability 23 days	Unit 7 Linear Relationships 18 days
Standards <ul style="list-style-type: none"> ● Rates ● Unit rates ● Proportional Relationships ● Writing Equations with Unit Rate ● Graphing Unit Rate ● Ratios ● Percents ● Scale Drawings 	Standards <ul style="list-style-type: none"> ● Adding and subtracting rational numbers ● Multiplying and dividing rational numbers ● Real world problems using all operations with rational numbers ● Equivalent expressions ● Write and solve equations 	Standards <ul style="list-style-type: none"> ● Use properties to solve linear expressions ● Write equivalent expressions ● Solve problems with rational numbers ● Write and solve equations and inequalities ● Graph and interpret inequalities ● Area and circumference of circles ● Find missing angle measures ● Surface area and volume of prisms <ul style="list-style-type: none"> ● Laws of Exponents ● Scientific Notation 	Standards <ul style="list-style-type: none"> ● Rates ● Unit rates ● Proportional Relationships ● Writing Equations with Unit Rate ● Graphing Unit Rate ● Ratios ● Percents ● Real World Percent Applications ● Scale Drawings ● Rational Number Operations 	Standards <ul style="list-style-type: none"> ● Draw geometric shapes with given conditions ● Slicing 3D figures ● Find missing angle measures ● Surface Area ● Volume ● Transformations ● Congruent Figures ● Angle Relationships ● Pythagorean Theorem 	Standards <ul style="list-style-type: none"> ● Use random sampling to draw inferences about a population ● Interpret data distributions ● Draw inferences using measures of center and variability ● Find the probability of an event ● Probability Models ● Determine Outcomes of an Event 	Standards <ul style="list-style-type: none"> ● Slope ● Proportional Relationships ● Graphs ● Tables ● Equations

COLOR KEY:

BLUE - Power Standard

BLACK - Additional Skills

RED - Closing the Achievement Gap

Green - Familiarity Only

[Unit 1](#)

[Unit 2](#)

[Unit 3](#)

[Unit 4](#)

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Unit 1	Ratios and Proportional Relationships	Grade Level	7 Accelerated	Approx Length	25 days
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CPSD Power Standards with Student Learning Objectives

7.RP.A.1 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 $(\frac{1}{2})/(\frac{1}{4})$ miles per hour, equivalently 2 miles per hour.

Student-Friendly Objectives:

- I can determine the unit rate through a variety of ways and interpret its meaning in the context of a problem.
 - I can find other fractions equivalent to a given fraction.
 - I can set up and solve a proportion.
 - I can simplify a complex fraction.

7.RP.A.2 Recognize and represent proportional relationships between quantities: 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); Identify unit rate (also known as the constant of proportionality) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships; Represent proportional relationships by equations (e.g., if total cost t is proportional to the number n of items purchased at a constant price p , the relationship between the total cost and the number of items can be expressed as $t = pn$); Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate Note: Unit rate connects to slope concept in 8th grade.

Student-Friendly Objectives:

- I can determine if two ratios are equal.
- I can check for a proportional relationship in
 - Graphs
 - Tables
 - Tape diagrams
 - Equations
 - Verbal descriptions.
- I can explain what the points on a proportional graph mean in the problem.
- I can find unit rates.
- I can write equations to describe proportional relationships.

7.RP.A.3 Use proportional relationships to solve multi-step ratio and percent problems Note: Examples include but are not limited to simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease.

Student-Friendly Objectives:

- I can predict whether the outcome of a problem will be greater than or less than the initial value.
- I can use percents and ratios to set up and solve real world problems.

7.EE.B.4a Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. Solve word problems leading to equations of these forms $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently.

Student-Friendly Objectives:

- I can use variables to write and solve equations and inequality for a given problem.
- I can interpret and graph the solution set of equalities and inequalities.

Learning Indicators of Power Standards

Students will know...

- Division procedures for fractions.
- Meaning of a unit rate (amount *per one*).
- The difference between linear and proportional relationships.
- The unit rate is the constant of proportionality.
- Proportional relationships are linear and pass through the origin.
- The ratios of the coordinates of the points of a proportional relationship are equivalent.
- Percent is a rate per 100.
- The relationships between proportions, ratios, and percents.
- Strategies for multiplying rational numbers.
- Simple interest, tax, markups, gratuities, fees, and percent increase *add to* a value.
- Markdowns and percent decrease *take away from* a value.
- Properties of equality.
- The importance of ensuring equality is preserved when solving an equation.

And be able to...

- Generate equivalent fractions.
- Find a unit rate.
- Use unit rates to solve problems.
- Interpret units and ratios of units in the context of a real world problem.
- Use proportional reasoning to simplify complex fractions.
- Determine if two ratios are equivalent.
- Explain what points on a proportional relationship graph mean in terms of the problem.
- Use proportional reasoning to test for equivalency in tables, graphs, equations or verbal descriptions.
- Write equations to represent proportional relationships.
- Set up a proportion as a fraction.
- Find unit rate in a table, graph, equation or verbal description.
- Predict an outcome as greater than or less than the initial value.
- Solve problems that include percents and ratios in real life using currency, measurements, population, etc.
- Set up and solve problems using proportional reasoning.
- Identify and understand a variable(s) in a real-world or mathematical problem.

Additional Arkansas State Standards

- 7.G.A.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.

Unit 2	Rational Numbers	Grade Level	7 Accelerated	Approx Length	20 days
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CPSD Power Standards with Student Learning Objectives

7.EE.B.4a Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities; Solve word problems leading to equations of these forms $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently.

Student-Friendly Objectives:

- I can use variables to write and solve equations and inequality for a given problem.
- I can interpret and graph the solution set of equalities and inequalities.

Learning Indicators of Power Standards

Students will know...

- Properties of equality.
- The importance of ensuring equality is preserved when solving an equation.

And be able to...

- Identify and understand a variable(s) in a real-world or mathematical problem.

Additional Arkansas State Standards

- 7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
 - Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*
 - Understand $p + q$ as the number located $|q|$ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
 - Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational number on the number line is the absolute value of their difference, and apply this principle in real-world context.
 - Apply properties of operations as strategies to add and subtract rational numbers.
- 7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
 - Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1)=1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.

- Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.
- Apply properties of operations as strategies to multiply and divide rational numbers.
- Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
- 7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.
- 7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05”.*

Unit 3	Expressions and Equations with Exponents and Scientific Notation	Grade Level	7 Accelerated	Approx Length	34 days
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CPSD Power Standards with Student Learning Objectives

7.EE.B.3 Solve multi-step, real-life, and mathematical problems posed with positive and negative rational numbers in any form using tools strategically; Apply properties of operations to calculate with numbers in any form (e.g., $-(1/4)(n-4)$); Convert between forms as appropriate (e.g., if a woman making \$25 an hour gets a 10% raise, she will make an additional $1/10$ of her salary an hour, or \$2.50, for a new salary of \$27.50); Assess the reasonableness of answers using mental computation and estimation strategies (e.g., if you want to place a towel bar $9\ 3/4$ inches long in the center of a door that is $27\ 1/2$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation).

Student-Friendly Objectives:

- I can locate and approximate rational numbers on a number line.
- I can solve problems with fractions using all four operations.
- I can change rational numbers into decimals using long division.
- I can apply order of operations to simplify or solve problems involving multiple operations.
- I can use positive and negative rational numbers appropriately while solving problems.
- I can convert between percents, decimals, and fractions as needed in a problem.
- I can check if my answer makes sense to the problem.

7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems by reasoning about the quantities; Solve word problems leading to equations of these forms $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently; Write an algebraic solution identifying the sequence of the operations used to mirror the arithmetic solution (e.g., The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? Subtract $2*6$ from 54 and divide by 2; $(2*6) + 2w = 54$); Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers; Graph the solution set of the inequality and interpret it in the context of the problem (e.g., As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.)

Student-Friendly Objectives:

- I can use variables to write and solve equations and inequality for a given problem.
- I can interpret and graph the solution set of equalities and inequalities.

7.G.B.4 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.

Student-Friendly Objectives:

- I can solve real-world problems involving the circumference and area of circles.
- I can explain how π relates to the circumference and area of a circle.
- I can show how circumference and area are related using a parallelogram.

7.G.B.6 Solve real-world and mathematical problems involving area of two-dimensional objects and volume and surface area of three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Student-Friendly Objectives:

- I can use the correct units in problems involving area, volume, and/or surface area.
- I can solve problems involving the area of 2D shapes with or without a context.
- I can solve problems involving the volume of 3D shapes with or without a context.
- I can solve problems involving the surface area of 3D shapes with or without a context.
- I can determine if a given amount of surface area will be enough to cover the dimensions of an object.

8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions using product, quotient, power to a power, or expanded form.

Student-Friendly Objectives:

- I can identify a coefficient, base, and exponent/power in an expression.
- I can write expressions in standard form.
- I can write expressions in expanded form.
- I can write expressions in exponential form.
- I can simplify expressions by using exponent rules.
- I can show how the exponent rules are developed

Learning Indicators of Power Standards

Students will know...

- The characteristics of rational numbers (i.e.; terminating with 0, repeating).
- Properties of operations
 - Commutative, associative, transitive
 - Distributive, inverse, identity
- The structured order used in solving problems involving multiple

And be able to...

- Locate and approximate rational numbers on a number line.
- Model operations and use algorithms for rational numbers.
- Convert rational numbers to decimals using long division.
- Apply order of operations to simplify expressions or solve equations.
- Convert between percents, decimals, and fractions as appropriate to a given problem.

operations.

- Properties of equality.
- The importance of ensuring equality is preserved when solving an equation.
- When to change the sign when solving an inequality.
- Attributes of a circle (center, radius, diameter, circumference).
- π is the ratio of the circumference to the diameter.
- π is an irrational number.
- Multiple strategies exist for finding surface area.
- Area formulas for triangle, parallelogram, and trapezoid.
- Vocabulary related to exponents (coefficient, base, and exponent/power).
- The exponent rules in order to simplify exponential expressions:
 - Product (Add)
 - Quotient (Subtract)
 - Power to a Power (Multiply)
 - Negative exponents (Reciprocal)
 - Zero power (always = 1)
- x^2 is not the same as $2x$ is not the same as $x/2$

- Use strategies and operations to solve problems including rational numbers or numbers in any form.
- Assess the reasonableness of answers using estimation.
- Identify and understand a variable(s) in a real-world or mathematical problem.
- Use variables to write and solve equations and inequalities.
- Write an equation with the order of operations in mind and demonstrate using properties of equality to solve.
- Graph the solution set of an inequality on a number line.
- Interpret the solution of an inequality in the context of the problem.
- Recite the formulas for area and circumference of a circle.
- Solve real-world problems involving the circumference and area of circles.
- Show how the circumference and area are related using a parallelogram.
- Use units appropriately in a given problem.
- Solve problems involving the area of two-dimensional objects composed of triangles, quadrilaterals, and polygons.
- Solve problems involving the volume and surface area of three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
- Use the exponent rules in order to simplify exponential expressions
 - Product (Add)
 - Quotient (Subtract)
 - Power to a Power (Multiply)
 - Negative exponents (Reciprocal)
 - Zero power (always = 1)
- Write expressions in 3 main forms:
 - Standard
 - Expanded
 - Exponential
- Show how the exponent rules are developed

Additional Arkansas State Standards

- 7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
- 7.EE.A.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05”.*

- 7.G.B.5 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.
- 8.EE.A.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. *For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9 , and determine that the world population is more than 20 times larger.*
- 8.EE.A.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.

Unit 4	Percent and Proportional Relationships	Grade Level	7 Accelerated	Approx Length	20 days
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CPSD Power Standards with Student Learning Objectives

7.RP.A.1 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 $(\frac{1}{2})/(\frac{1}{4})$ miles per hour, equivalently 2 miles per hour.

Student-Friendly Objectives:

- I can determine the unit rate through a variety of ways and interpret its meaning in the context of a problem.
 - I can find other fractions equivalent to a given fraction.
 - I can set up and solve a proportion.
 - I can simplify a complex fraction.

7.RP.A.2 Recognize and represent proportional relationships between quantities: 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); Identify unit rate (also known as the constant of proportionality) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships; Represent proportional relationships by equations (e.g., if total cost t is proportional to the number n of items purchased at a constant price p , the relationship between the total cost and the number of items can be expressed as $t = pn$); Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate Note: Unit rate connects to slope concept in 8th grade.

Student-Friendly Objectives:

- I can determine if two ratios are equal.
- I can check for a proportional relationship in
 - Graphs
 - Tables
 - Tape diagrams
 - Equations
 - Verbal descriptions.
- I can explain what the points on a proportional graph mean in the problem.
- I can find unit rates.
- I can write equations to describe proportional relationships.

7.RP.A.3 Use proportional relationships to solve multi-step ratio and percent problems Note: Examples include but are not limited to simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease.

Student-Friendly Objectives:

- I can predict whether the outcome of a problem will be greater than or less than the initial value.
- I can use percents and ratios to set up and solve real world problems.

7.EE.B.3 Solve multi-step, real-life, and mathematical problems posed with positive and negative rational numbers in any form using tools strategically: Apply properties of operations to calculate with numbers in any form (e.g., $-(1/4)(n-4)$); Convert between forms as appropriate (e.g., if a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50); Assess the reasonableness of answers using mental computation and estimation strategies (e.g., if you want to place a towel bar $9\ 3/4$ inches long in the center of a door that is $27\ 1/2$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation).

Student-Friendly Objectives:

- I can locate and approximate rational numbers on a number line.
- I can solve problems with fractions using all four operations.
- I can change rational numbers into decimals using long division.
- I can apply order of operations to simplify or solve problems involving multiple operations.
- I can use positive and negative rational numbers appropriately while solving problems.
- I can convert between percents, decimals, and fractions as needed in a problem.
- I can check if my answer makes sense to the problem.

Learning Indicators of Power Standards

Students will know...

- Division procedures for fractions.
- Meaning of a unit rate (amount *per one*).
- The difference between linear and proportional relationships.
- The unit rate is the constant of proportionality.
- Proportional relationships are linear and pass through the origin.
- The ratios of the coordinates of the points of a proportional relationship are equivalent.
- Percent is a rate per 100.
- The relationships between proportions, ratios, and percents.
- Strategies for multiplying rational numbers.
- Simple interest, tax, markups, gratuities, fees, and percent increase *add to* a value.
- Markdowns and percent decrease *take away from* a value.
- The characteristics of rational numbers (i.e.; terminating with 0, repeating).

And be able to...

- Generate equivalent fractions.
- Find a unit rate.
- Use unit rates to solve problems.
- Interpret units and ratios of units in the context of a real world problem.
- Use proportional reasoning to simplify complex fractions.
- Determine if two ratios are equivalent.
- Explain what points on a proportional relationship graph mean in terms of the problem.
- Use proportional reasoning to test for equivalency in tables, graphs, equations or verbal descriptions.
- Write equations to represent proportional relationships.
- Set up a proportion as a fraction.
- Find unit rate in a table, graph, equation or verbal description.
- Predict an outcome as greater than or less than the initial value.

- Properties of operations
 - Commutative, associative, transitive
 - Distributive, inverse, identity
- The structured order used in solving problems involving multiple operations.

- Solve problems that include percents and ratios in real life using currency, measurements, population, etc.
- Set up and solve problems using proportional reasoning.
- Locate and approximate rational numbers on a number line.
- Model operations and use algorithms for rational numbers.
- Convert rational numbers to decimals using long division.
- Apply order of operations to simplify expressions or solve equations.
- Convert between percents, decimals, and fractions as appropriate to a given problem.
- Use strategies and operations to solve problems including rational numbers or numbers in any form.

Additional Arkansas State Standards

- 7.G.A.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.

Unit 5	Geometry with Congruence and Similarity	Grade Level	7 Accelerated	Approx Length	31 days
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CPSD Power Standards with Student Learning Objectives

7.G.B.6 Solve real-world and mathematical problems involving area of two-dimensional objects and volume and surface area of three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Student-Friendly Objectives:

- I can use the correct units in problems involving area, volume, and/or surface area.
- I can solve problems involving the area of 2D shapes with or without a context.
- I can solve problems involving the volume of 3D shapes with or without a context.
- I can solve problems involving the surface area of 3D shapes with or without a context.
- I can determine if a given amount of surface area will be enough to cover the dimensions of an object.

8.G.A.3 Given a two-dimensional figure on a coordinate plane, identify and describe the effect (rule or new coordinates) of a transformation (dilation, translation, rotation, and reflection): • Image to pre-image • Pre-image to image

Student-Friendly Objectives:

- I can flip a figure or point on the coordinate plane using reflection rules.
- I can turn a figure or point on the coordinate plane using rotation rules.
- I can slide a figure or point on the coordinate plane using translation rules.
- I can enlarge or shrink a figure on the coordinate plane using dilation rules.
- I can write the rules for a given flip, turn, slide, or dilation.

Learning Indicators of Power Standards

Students will know...

- Multiple strategies exist for finding surface area.
- Area formulas for triangle, parallelogram, and trapezoid.
- Coordinate plane
- Transformation vocabulary:
 - image, pre-image, prime marks
 - dilation, translation, rotation, and reflection

And be able to...

- Use units appropriately in a given problem.
- Solve problems involving the area of two-dimensional objects composed of triangles, quadrilaterals, and polygons.
- Solve problems involving the volume and surface area of three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
- Graph pre-image on a coordinate plane
- Use transformation rules to transform a pre-image into an image on a

coordinate plane

- Write a rule to describe a given transformation

Additional Arkansas State Standards

- 7.G.A.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 a unique triangle, more than one triangle, or no triangle.
- 7.G.A.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.
- 7.G.B.5 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.
- 8.G.C.9 Know the formulas for the volume of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.
- 8.G.A.1 Verify experimentally the properties of rotations, reflections, and translation:
 - Lines are taken to lines, and line segments to line segments of the same length.
 - Angles are taken to angles of the same measure.
 - Parallel lines are taken to parallel lines.
- 8.G.A.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.
- 8.G.A.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.
- 8.G.A.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. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*

Unit 6	Statistics and Probability (Module 5 Eureka)	Grade Level	7 Accelerated	Approx Length	23 days
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CPSD Power Standards with Student Learning Objectives

None

Additional Arkansas State Standards

- 7.SP.A.1 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.
- 7.SP.A.2 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. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*
- 7.SP.B.3 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. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*
- 7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.*
- 7.SP.C.5 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 likelihood. A probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither likely or unlikely, and a probability near 1 indicates a likely event.
- 7.SP.C.6 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. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*
- 7.SP.C.7 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.
 - Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*
 - Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*
- 7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

- 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.
- Represent sample space 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.
- Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question; If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*

Unit 7	Linear Relationships	Grade Level	7 Accelerated	Approx Length	18 days
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CPSD Power Standards with Student Learning Objectives

8.EE.B.6 Using a non-vertical or non-horizontal line, show why the slope m is the same; Write the equation $y = mx + b$ for a line through the origin; Be able to write the equation $y = mx + b$ for a line intercepting the vertical axis at b

Student-Friendly Objectives:

- I can identify slope and y -intercept in an equation.
- I can graph lines using slope and y -intercept.
- I can write an equation of a line from the graph.
- I can simplify slopes of a line between any two points.

8.EE.C.7 Solve linear equations in one variable; Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms Note: Students should solve equations with variables on both sides.

Student-Friendly Objectives:

- I can use the distributive property.
- I can combine like terms.
- I can use order of operations properly.
- I can solve a one-step equation.
- I can solve a two-step equation.
- I can solve a multi-step equation.
- I can solve an equation with a variable on both sides.
- I can solve an equation with rational coefficients.
- I can solve an equation and check my solution by using substitution.
- I can determine when an equation has infinite or no solution.

Learning Indicators of Power Standards

Students will know...

- Coordinate System
 - Horizontal and vertical axis (x and y axis)
 - Origin
 - Quadrant

And be able to...

- Identify slope and y -intercept in an equation
- Graph lines using slope and y -intercept
- Write an equation of a line from a graph
- Simplify slopes (fractions) to show correlation between rise over run

- Coordinate plane
- Slope
 - Rate of Change
 - Slope is rise/run and y/x
 - Different types of slope (positive, negative, zero, and undefined)
- Slope intercept form ($y = mx+b$)
 - y -intercept
- Independent and dependent variables
- Distributive property and combining like terms
- Order of operations
- Strategies for solving equations
 - One-step, two-step, multi-step, and with variables on both sides
- Vocab: Term, variable, coefficient, rational, linear, and solution
- Graph lines using slope intercept form

- between any 2 points on a line
- Evaluate expressions using the distributive property, combining like terms, and order of operations
- Solve one-step equations
- Solve two-step equations
- Solve multi-step equations
- Solve equations with variables on both sides
- Solve equations with rational coefficients

Additional Arkansas State Standards

- 8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*