

STANDARDS Alabama State Course of Study Standards Critical Standards	CURRICULUM & INSTRUCTION A+ College Ready      SchoolsPLP		INTERVENTION i-Ready
<b>Proportional Reasoning</b>			
1. Calculate unit rates of length, area, and other quantities measured in like or different units that include ratios or fractions.	4.1 Interpreting Distance Graphs 4.2 All Aboard 4.3 Interpreting Rate Graphs 4.4 Match My Run 4.5 Unit Rates and Proportional Relationship	Topic: Unit Rate	Unit Rates Involving Ratios of Fractions, Part 1 Unit Rates Involving Ratios of Fractions, Part 2 Practice: Unit Rates Involving Ratios of Fractions
2. Represent a relationship between two quantities and determine whether the two quantities are related proportionally.	4.5 Unit Rates and Proportional Relationship 4.6 Metric and Customary Measurements	Topic: Proportional Relationships	Understand Proportional Relationships Practice: Proportional Relationships Representing Proportional Relationships*
a. Use equivalent ratios displayed in a table or in a graph of the relationship in the coordinate plane to determine whether a relationship between two quantities is proportional.	4.5 Unit Rates and Proportional Relationship 4.6 Metric and Customary Measurements	Topic: Proportional Relationships	Understand Proportional Relationships Write Equations for Proportional Relationships
b. Identify the constant of proportionality (unit rate) and express the proportional relationship using multiple representations including tables, graphs, equations, diagrams, and verbal descriptions.	4.2 All Aboard 4.3 Interpreting Rate Graphs 4.5 Unit Rates and Proportional Relationship	Topic: Constant Proportionality	Practice: Proportional Relationships Representing Proportional Relationships* Write Equations for Proportional Relationships Practice: Proportional Relationships
c. Explain in context the meaning of a point (x,y) on the graph of a proportional relationship, with special attention to the points (0,0) and (1, r) where r is the unit rate.	4.5 Unit Rates and Proportional Relationship	Topic: Proportional Point	Understand Proportional Relationships Write Equations for Proportional Relationships Practice: Proportional Relationships
3. Solve multi-step percent problems in context using proportional reasoning, including simple interest, tax, gratuities, commissions, fees, markups and markdowns, percent increase, and percent decrease.	5.3 Applications of Percents 5.4 Minimizing Debt	Topic: Ratio and Percent	Solve Percent Problems, Part 1 Practice: Solve Percent Problems Solve Percent Problems, Part 2 Solve Percent Problems, Part 3 Percent Change
<b>Number Systems and Operations</b>			
4. Apply and extend knowledge of operations of whole numbers, fractions, and decimals to add, subtract, multiply, and divide rational numbers including integers, signed fractions, and decimals.	1.2 Teacher Led Instruction: Adding and Subtracting Integers	Topic: Add and Subtract Rationals	
a. Identify and explain situations where the sum of opposite quantities is 0 and opposite quantities are defined as additive inverses.		Topic: Opposite to Zero	Understand Addition with Integers* Practice: Adding and Subtracting Integers
	1.1 Understanding Additive Inverse		Add and Subtract Rationals Practice: Add and Subtract Rationals
b. Interpret the sum of two or more rational numbers, by using a number line and in real-world contexts.	1.5 Four Operations with Rational Numbers		Understand Addition with Integers Strategies to Add and Subtract Rationals* Practice: Strategies to Add and Subtract Rationals* Practice: Adding and Subtracting Integers
c. Explain subtraction of rational numbers as addition of additive inverses.	1.2 Teacher Led Instruction: Adding and Subtracting Integers	Topic: Opposite to Zero	Understand Distance on the Number Line Add and Subtract Rationals Practice: Add and Subtract Rationals Strategies to Add and Subtract Rationals* Practice: Strategies to Add and Subtract Rationals* Practice: Adding and Subtracting Integers Understand Subtraction with Integers
	1.3 Teacher Led Instruction: Adding and Subtracting Rational Numbers		
d. Use a number line to demonstrate that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	1.5 Four Operations with Rational Numbers	Topic: Subtract Rationals	Strategies to Add and Subtract Rationals Practice: Strategies to Add and Subtract Rationals
e. Extend strategies of multiplication to rational numbers to develop rules for multiplying signed numbers, showing that the properties of the operations are preserved.	1.4 Multiplying & Dividing Rational Numbers	Topic: Multiply Rationals	Multiply and Divide Rationals* Practice: Multiply and Divide Rationals* Multiply Integers Practice: Multiply and Divide Integers
f. Divide integers and explain that division by zero is undefined. Interpret the quotient of integers (with a non-zero divisor) as a rational number.	1.5 Four Operations with Rational Numbers	Topic: Divide Integers	Multiply and Divide Rationals* Practice: Multiply and Divide Rationals* Practice: Multiply and Divide Integers Divide Integers
g. Convert a rational number to a decimal using long division, explaining that the decimal form of a rational number terminates or eventually repeats.	1.6 Decimal Expansions of Fractions	Topic: Fractions and Decimals	Expressing Fractions as Decimals Solve Problems with Rational Numbers
5. Solve real-world and mathematical problems involving the four operations of rational numbers, including complex fractions. Apply properties of operations as strategies where applicable.		Topic: Multiply Rationals Topic: Divide Integers	Strategies to Add and Subtract Integers Practice: Strategies to Add and Subtract Integers Multiply Integers Practice: Multiply and Divide Integers* Multiply and Divide Rationals* Practice: Multiply and Divide Rationals* Solve Problems with Rational Numbers
<b>Algebra and Functions</b>			
6. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	2.1 Identify and Combine Like Terms 2.2 Equivalent Expressions Using Properties and Manipulatives 2.3 Equivalent Expressions Practice	Topic: Linear Expressions	Equivalent Linear Expressions Practice: Equivalent Linear Expressions Reasons for Equivalent Linear Expressions

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7. Generate expressions in equivalent forms based on context and explain how the quantities are related.	2.1 Identify and Combine Like Terms 2.2 Equivalent Expressions Using Properties and Manipulatives 2.3 Equivalent Expressions Practice 2.4 Applications of Equivalent Expressions 3.4 Working with Formulas 3.7 Working with Formulas	Topic: Word Problems	Reasons for Equivalent Linear Expressions
8. Solve multi-step real-world and mathematical problems involving rational numbers (integers, signed fractions and decimals), converting between forms as needed. Assess the reasonableness of answers using mental computation and estimation strategies.	1.3 Teacher Led Instruction: Adding and Subtracting Rational Numbers 3.1 Solving Equations with Manipulatives & Models 5.3 Applications of Percents	Topic: Reason and Estimate	Understand Multi-Step Equations* Solve Multi-Step Equations, Part 1* Solve Multi-Step Equations, Part 2* Write and Solve Multi-Step Equations* Practice: Write and Solve Multi-Step Equations* Solve Problems with Rational Numbers*
9. Use variables to represent quantities in real-world or mathematical problems and construct algebraic expressions, equations, and inequalities to solve problems by reasoning about the quantities.	2.4 Applications of Equivalent Expressions 3.1 Solving Equations with Manipulatives & Models 3.2 Solving Equations Algebraically 3.3 Solving Equations with Real-World Applications 3.5 Solving Inequalities 4.5 Unit Rates and Proportional Relationship		
a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$ , where $p$ , $q$ , and $r$ are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	3.1 Solving Equations with Manipulatives & Models 3.2 Solving Equations Algebraically 3.3 Solving Equations with Real-World Applications 3.5 Solving Inequalities 4.5 Unit Rates and Proportional Relationship	Topic: Multi-Step Equations	Write and Solve Multi-Step Equations Practice: Write and Solve Multi-Step Equations
b. 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.	3.1 Solving Equations with Manipulatives & Models 3.2 Solving Equations Algebraically 3.3 Solving Equations with Real-World Applications 3.5 Solving Inequalities	Topic: Inequalities	Understand Multi-Step Equations Understand Solutions of Inequalities Solve Problems with Inequalities Solve Inequalities
<b>Data Analysis, Statistics, and Probability</b>			
10. Examine a sample of a population to generalize information about the population.		Topic: Population Sample	
a. Differentiate between a sample and a population.	6.3 "Counting Ursus Arctos Horribilis, the Grizzly Bear"	Topic: Population Sample	Random Samples Making Statistical Inferences
b. Compare sampling techniques to determine whether a sample is random and thus representative of a population, explaining that random sampling tends to produce representative samples and support valid inferences.	6.3 "Counting Ursus Arctos Horribilis, the Grizzly Bear"	Topic: Population Sample	Making Statistical Inferences
c. Determine whether conclusions and generalizations can be made about a population based on a sample.	6.3 "Counting Ursus Arctos Horribilis, the Grizzly Bear"	Topic: Population Sample	
d. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest, generating multiple samples to gauge variation and making predictions or conclusions about the population.	6.3 "Counting Ursus Arctos Horribilis, the Grizzly Bear"	Topic: Population Sample	Using Mean and Mean Absolute Deviation to Compare Data* Using Measures of Center and Variability to Compare Data*
e. Informally explain situations in which statistical bias may exist.	6.3 "Counting Ursus Arctos Horribilis, the Grizzly Bear"	Topic: Population Sample	
11. 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.	6.3 "Counting Ursus Arctos Horribilis, the Grizzly Bear" 6.4 Stem-and-Leaf Plots 6.5 Box-and-Whisker Plots	Topic: Drawing Inferences	Using Mean and Mean Absolute Deviation to Compare Data* Using Measures of Center and Variability to Compare Data*
12. Make informal comparative inferences about two populations using measures of center and variability and/or mean absolute deviation in context.	6.3 "Counting Ursus Arctos Horribilis, the Grizzly Bear" 6.5 Box-and-Whisker Plots	Topic: Population Statistics	
13. Use a number from 0 to 1 to represent the probability of a chance event occurring, explaining that larger numbers indicate greater likelihood of the event occurring, while a number near zero indicates an unlikely event.		Topic: Probability Modeling	
14. Define and develop a probability model, including models that may or may not be uniform, where uniform models assign equal probability to all outcomes and non-uniform models involve events that are not equally likely.		Topic: Observing Frequencies	
a. Collect and use data to predict probabilities of events.	7.4 Family Fun - Binomial Probability	Topic: Probability Model	
b. Compare probabilities from a model to observed frequencies, explaining possible sources of discrepancy.	7.4 Family Fun - Binomial Probability	Topic: Probability Model	
15. Approximate the probability of an event using data generated by a simulation (experimental probability) and compare it to the theoretical probability.	7.5 Bull's Eye		Experimental Probability
a. Observe the relative frequency of an event over the long run, using simulation or technology, and use those results to predict approximate relative frequency.		Topic: Observing Frequencies	
16. Find probabilities of simple and compound events through experimentation or simulation and by analyzing the sample space, representing the probabilities as percents, decimals, or fractions.		Topic: Compound Events	

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<p>a.Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams, and determine the probability of an event by finding the fraction of outcomes in the sample space for which the compound event occurred.</p> <p>b.Design and use a simulation to generate frequencies for compound events.</p> <p>c.Represent events described in everyday language in terms of outcomes in the sample space which composed the event.</p>	<p>7.3 Sample Space, Tree Diagrams Fundamental Counting Principle 7.4 Family Fun - Binomial Probability</p> <p>7.3 Sample Space, Tree Diagrams Fundamental Counting Principle 7.4 Family Fun - Binomial Probability</p> <p>7.3 Sample Space, Tree Diagrams Fundamental Counting Principle 7.4 Family Fun - Binomial Probability</p>	<p>Topic: Compound Events</p> <p>Topic: Compound Events</p> <p>Topic: Compound Events</p>	<p>Probability of Compound Events</p> <p>Simulations of Compound Events</p>
<b>Geometry and Measurement</b>			
<p>17.Solve problems involving scale drawings of geometric figures, including computation of actual lengths and areas from a scale drawing and reproduction of a scale drawing at a different scale.</p>	<p>8.1 State the Area</p>	<p>Topic: Scales</p>	<p>Scale Drawings</p>
<p>18.Construct geometric shapes (freehand, using a ruler and a protractor, and using technology), given a written description or measurement constraints with an emphasis 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.</p>	<p>9.1 Triangle Inequality Investigation 9.2 Triangle Investigation with Sides and Angles</p>	<p>Topic: Triangles</p>	<p>Polygons in the Coordinate Plane* Construction of Triangles</p>
<p>19.Describe the two-dimensional figures created by slicing three-dimensional figures into plane sections.</p>	<p>10.1 Slicing Solids</p>	<p>Topic: Slicing</p>	<p>Cross-sections of Prism and Pyramids</p>
<p>20.Explain the relationships among circumference, diameter, area, and radius of a circle to demonstrate understanding of formulas for the area and circumference of a circle.</p> <p>a.Informally derive the formula for area of a circle.</p> <p>b.Solve area and circumference problems in real-world and mathematical situations involving circles.</p>	<p>8.3 Finding Pi 8.5 Discovering Area</p> <p>8.4 Deriving the Area of a Circle</p> <p>8.6 Circumference and Area of Circles Practice</p>	<p>Topic: Area, Volume, Surface Area</p> <p>Topic: Area, Volume, Surface Area</p> <p>Topic: Area, Volume, Surface Area</p>	<p>Area and Circumference of a Circle</p>
<p>21.Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve simple equations for an unknown angle in a figure</p>	<p>9.3 Angle Relationships - Complementary, Supplementary, Adjacent, and Vertical Angles 9.4 Using Angle Relationships to Solve Problems</p>	<p>Topic: Angles</p>	<p>Problem Solving with Angles</p>
<p>22.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 rectangular prisms.</p>	<p>10.3 Investigating Surface Area 10.4 Surface Area and Volume in Real-World Applications</p> <p>8.1 State the Area 8.2 A Shoe Print, Trapezoids, and Area 10.2 Surface Area &amp; Volume 10.3 Investigating Surface Area 10.4 Surface Area and Volume in Real-World Applications</p>	<p>Topic: Area, Volume, Surface Area</p>	<p>Surface Area of Composed Figures Volume of Composed Figures Area of Composed Figures</p>