## Mathletics <br> Georgia Mathematics Standards Activities



Grades 7-8
September 2023
Mathletics

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Georgia Mathematics Standards Activities
September 2023
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## Grade 7

## 1 Numerical Reasoning

| Course Topic |
| :--- |
|  |
| subtract rational numbers |
|  |
|  |
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|  |
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| Activities Title |
| :--- |
| Integers on a Number Line |
| Ordering Integers (Number Line) |
| Comparing Integers |
| Add Like Fractions |
| Add Like Mixed Numbers |
| Subtract Like Fractions |

1.1 Solve relevant, mathematical problems, including multi-step problems, involving the four operations with rational numbers and quantities in any form (integers, percentages, fractions, and decimal numbers).

## 7.NR.1.1

Show that a number and its opposite have a sum of 0 (are additive inverses). Describe situations in which opposite quantities combine to make 0 .

| Course Topic | $\quad$ Activities Title |
| :--- | :--- | :--- |
| Teacher directed | Teacher directed |

## 7.NR.1.2

Show and explain $p+q$ as the number located a distance $|q|$ from $p$, in the positive or negative direction, depending on whether $q$ is positive or negative. Interpret sums of rational numbers by describing applicable situations.

Course Topic
7.NR. 1 Add \& subtract rational numbers

## Activities Title

## Add Integers

Adding Integers: Positive, Negative or Zero
Subtract Integers
Integers: Add and Subtract
Negative or Positive?
More with Integers

## 7.NR.1.3

Represent addition and subtraction with rational numbers on a horizontal or a vertical number line diagram to solve authentic problems.

Course Topic
7.NR. 1 Add \& subtract rational numbers

Activities Title
Add Unlike Fractions
Add Mixed Numbers: Signs Can Differ
Subtract Unlike Fractions
Subtract Mixed Numbers: Signs Differ
Subtract Negative Mixed Numbers

| 7.NR.1.4 |  |  |
| :--- | :--- | :---: |
| Show and explain subtraction of rational numbers as adding the additive inverse, |  |  |
| $p-q=p+(-q)$. Show that the distance between two rational numbers on the number |  |  |
| line is the absolute value of their difference and apply this principle in contextual |  |  |
| situations. |  |  |

## 7.NR.1.5

Apply properties of operations, including part-whole reasoning, as strategies to add and subtract rational numbers.

| Course Topic |  |
| :---: | :--- |
| Teacher directed | Teacher directed Activities Title |

## 7.NR.1.6

Make sense of multiplication of rational numbers using realistic applications.
Course Topic
Activities Title

Teacher directed
Teacher directed
7.NR.1.7

Show and explain that integers can be divided, assuming the divisor is not zero, and every quotient of integers is a rational number.

| Course Topic |  |
| :--- | :--- |
| Teacher directed | Teacher directed |

## 7.NR.1.8

Represent the multiplication and division of integers using a variety of strategies and interpret products and quotients of rational numbers by describing them based on the relevant situation.

| Course Topic | Activities Title |
| :--- | :--- |
| 7.NR.1 Multiply \& divide <br> rational numbers | Integers: Multiplication and Division |
|  | Multiplying and Dividing Integers |
|  | Integers: Order of Operations (PEDMAS) |
|  | Integers: Operations Order |

## 7.NR.1.9

Apply properties of operations as strategies to solve multiplication and division problems involving rational numbers represented in an applicable scenario.

Course Topic
Activities Title
7.NR. 1 Multiply \& divide rational numbers

Multiply Two Fractions 2
Divide Fractions by Fractions 2
Divide Mixed Numbers with Signs

## 7.NR.1.10

Convert rational numbers between forms to include fractions, decimal numbers and percentages, using understanding of the part divided by the whole. Know that the decimal form of a rational number terminates in Os or eventually repeats.

Course Topic
7.NR. 1 Convert between fractions, decimals \& percentages

Activities Title

| Fractions to Decimals |
| :--- |
| Decimals to Fractions 1 |
| Mixed to Improper Fractions |
| Improper Fraction to Mixed Numeral |
| Percents to Fractions |
| Fractions to Percentages (Non-Calculator) |
| Mixed decimal, percentage and fraction conversions |
| Decimal to Percentage |
| Percents and Decimals |

## 7.NR.1.11

Solve multi-step, contextual problems involving rational numbers, converting between forms as appropriate, and assessing the reasonableness of answers using mental computation and estimation strategies.
Course Topic
7.NR. 1 Contextual problems $\quad$ Fraction Word Problems
with rational numbers
Activities Title

More Fraction Problems
Percentage Word Problems

2 Patterning \& Algebraic Reasoning

| Course Topic | Activities Title |
| :--- | :--- |
|  <br> factorise expressions | Expanding Brackets |
|  | Factorising Expressions |
|  | Simplifying Expressions |

2.1 Use properties of operations, generate equivalent expressions and interpret the expressions to explain relevant situations.

| Apply properties of operations as strategies to add, subtract, factor, and expand linear <br> expressions with rational coefficients. |  |
| :--- | :--- |
|  | Activities Title |
|  | Using the Distributive Property |
|  | Expand then Simplify |
|  | Factorising |

## 7.PAR.2.2

Rewrite an expression in different forms from a contextual problem to clarify the problem and show how the quantities in it are related.

| Course Topic |  |
| :--- | :--- |
| Teacher directed | Teacher directed |

Course Topic
REVIEW 7.PAR. 3 Equations \& Inequalities

Activities Title
Writing Equations
I am Thinking of a Number!
Equations to Solve Problems
Solve Equations: Add, Subtract 1
Solve Equations: Multiply, Divide 1
Inequalities on a Number Line: Mixed Basics
2.2 Represent authentic situations using equations and inequalities with variables; solve equations and inequalities symbolically, using the properties of equality.

## 7.PAR.3.1

Construct algebraic equations to solve practical problems leading to equations of the form $p x+q=r$ and $p(x+q)=r$, where $p, q$, and $r$ are specific rational numbers.

Interpret the solution based on the situation.

Course Topic
7.PAR. 3 Equations \& Inequalities

## Activities Title

Write an Equation: Word Problems
Solve Equations: Add, Subtract 2
Solve Equations: Multiply, Divide 2

|  | Solve Multi-Step Equations |
| :--- | :--- |
|  | Solving Simple Equations |

## 7.PAR.3.2

Construct algebraic inequalities to solve problems, leading to inequalities of the form $\mathrm{px}+\mathrm{q}>\mathrm{r}, \mathrm{px}+\mathrm{q}<\mathrm{r}, \mathrm{px}+\mathrm{q} \leq \mathrm{r}$, or $\mathrm{px}+\mathrm{q} \geq \mathrm{r}$, where $\mathrm{p}, \mathrm{q}$, and r are specific rational numbers. Graph and interpret the solution based on the realistic situation that the inequalities represent.

| Course Topic | Activities Title |
| :--- | :--- |
|  <br> Inequalities | Inequalities on a Number Line: Basics |
|  | Solving Inequalities 2 |
|  | Solve One-Step Inequalities 1 |
|  | Solve One-Step Inequalities 2 |

Course Topic REVIEW 7.PAR. 4 Rates, Ratios \& Proportions

Activities Title

| Ratios |
| :--- |
| Equivalent Ratios |
| Ratio Word Problems |
| Word Problems: Ratio |
| Solve Proportions |
| Rate Word Problems |
| Calculating Percentages 1 |
| Percentage of an amount using fractions (<100\%) |
| Solve Percent Equations |

2.3 Recognize proportional relationships in relevant, mathematical problems; represent, solve, and explain these relationships with tables, graphs, and equations.


## 7.PAR.4.2

Determine the unit rate (constant of proportionality) in tables, graphs (1, r), equations, diagrams, and verbal descriptions of proportional relationships to solve realistic problems.

## Course Topic

Activities Title
Teacher directed
Teacher directed

| 7.PAR.4.3  <br> Determine whether two quantities presented in authentic problems are in a  <br> proportional relationship.  |  |
| :--- | :--- |
| Course Topic | Activities Title |
|  <br> Proportions | Average Speed |
|  | Distance Travelled |
|  | Time Taken |

## 7.PAR.4.4

Identify, represent, and use proportional relationships.

| Course Topic | Activities Title |
| :---: | :--- |
|  <br> Proportions | $\mathrm{y}=\mathrm{ax}$ |

## 7.PAR.4.5

Use context to 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.

| Course Topic | Activities Title |
| :--- | :--- |
|  <br> Proportions | Conversion Graphs |

## 7.PAR.4.6

Solve everyday 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.

| Course Topic | Activities Title |
| :--- | :--- |
|  <br> Proportions | Scale Factor |
|  | Scale Measurement |
|  | Floor Plans |

## 7.PAR.4.7

Use similar triangles to explain why the slope, $m$, is the same between any two distinct points on a nonvertical line in the coordinate plane.

| Course Topic |  |
| :---: | :--- |
| Teacher directed | Teacher directed Activities Title |

## 7.PAR.4.8

Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

## Course Topic

Activities Title
Slope of a Line

|  <br> Proportions | Equation of a Line 1 |  |  |
| :--- | :--- | :---: | :---: |
| Course Topic |  |  |  |
| Activities Title |  |  |  |
| REVIEW 7.PAR.4 <br> Percentage problems | Best Buy |  |  |
|  | Percent Increase and Decrease |  |  |
|  | Solve Percent Equations |  |  |

## 7.PAR.4.9

Use proportional relationships to solve multi-step ratio and percent problems presented in applicable situations.

Course Topic
7.PAR. 4 Percentage problems

Activities Title
Commission
Successive Discounts
Profit and Loss
Simple Interest
Percentage Error
Percentage Word Problems

## 7.PAR.4.10

Predict characteristics of a population by examining the characteristics of a representative sample. Recognize the potential limitations and scope of the sample to the population.

| Course Topic |  |
| :--- | :--- |
| Teacher directed | Teacher directed Activities Title |

## 7.PAR.4.11

Analyze sampling methods and conclude that random sampling produces and supports valid inferences.

| Course Topic | Activities Title |
| :---: | :--- |
| 7.PAR.4.11 Data sampling | Data sampling |
|  | Methods of Data Sampling |

## 7.PAR.4.12

Use data from repeated random samples to evaluate how much a sample mean is expected to vary from a population mean. Simulate multiple samples of the same size.

## Course Topic

Activities Title
Teacher directed

## 3 Geometric \& Spatial Reasoning

| Course Topic | Activities Title |
| :--- | :--- |
| REVIEW 7.GSR.5 Angle <br> relationships | What Type of Angle 2? |
|  | Classifying Angles |

3.1 Solve practical problems involving angle measurement, circles, area of circles, surface area of prisms and cylinders, and volume of cylinders and prisms composed of cubes and right prisms.

| 7.GSR.5.1 |  |
| :--- | :---: |
| Measure angles in whole nonstandard units. |  |
| Course Topic | Activities Title |
| Teacher directed | Teacher directed |

## 7.GSR.5.2

Measure angles in whole number degrees using a protractor.

## Course Topic

Activities Title
7.GSR. 5 Angle relationships

Measuring Angles
Estimating Angles

## 7.GSR.5.3

Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve equations for an unknown angle in a figure.

Course Topic
7.GSR. 5 Angle relationships

Equal, Complement, or Supplement?
Vertically Opposite: Value of $x$
Vertically Opposite Angles: Unknown Values

| Course Topic | Activities Title |
| :--- | :--- |
| REVIEW 7.GSR.5 <br> Circumference \& area of <br> circles | Circle Terms |

## 7.GSR.5.4

Explore and describe the relationship between pi, radius, diameter, circumference, and area of a circle to derive the formulas for the circumference and area of a circle.

Course Topic

Activities Title
Teacher directed
Teacher directed

| Given the formula for the area and circumference of a circle, solve problems that exist <br> in everyday life. |  |  |
| :--- | :--- | :---: |
| Course Topic | Activities Title |  |
|  <br> area of circles | Calculate Circumference of Circles |  |
|  | Area: Circles 1 |  |
|  | Area: Circles 2 |  |
|  | Perimeter and Circles |  |
|  | Area: Annulus |  |

## Course Topic

Activities Title
REVIEW 7.GSR. 5 Surface area \& volume including cylinders

| Nets |
| :--- |
| Surface Area: Cuboids |
| Surface Area: Rectangular Prisms |
| Surface Area: Rectangular Prisms 1 |
| Surface Area: Triangular Prisms 1 |
| Volume of Rectangular Prisms 1 |

## 7.GSR.5.6

Solve realistic problems involving surface area of right prisms and cylinders. Course Topic Activities Title

|  |
| :--- |
| volume including cylinders |

Surface Area: Cylinders

## 7.GSR.5.7

Describe the two-dimensional figures (cross sections) that result from slicing threedimensional figures, as in the plane sections of right rectangular prisms, right rectangular pyramids, cones, cylinders, and spheres.
Course Topic
Activities Title
Teacher directed
Teacher directed

## 7.GSR.5.8

Explore volume as a measurable attribute of cylinders and right prisms. Find the volume of these geometric figures using concrete problems.

## Course Topic <br> Activities Title

7.GSR. 5 Surface area \& volume including cylinders

| Volume: Cuboid 2 |
| :--- |
| Volume: Rectangular Prisms 2 |
| Volume of Triangular prisms |
| Volume: Prisms |
| Volume: Cylinders |

## 4 Probability Reasoning

### 4.1 Using mathematical reasoning, investigate chance processes and develop, evaluate, and use probability models to find probabilities of simple events presented in authentic situations.

## 7.PR.6. 1

Represent the probability of a chance event as a number between 0 and 1 that expresses the likelihood of the event occurring. Describe that 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.

| Course Topic |  |
| :--- | :--- |
| 7.PR.6 Probability | Chance Dial Activities Title |
|  | Probability Scale |

## 7.PR.6.2

Approximate the probability of a chance event by collecting data on an event and observing its long-run relative frequency will approach the theoretical probability.

Course Topic
7.PR.6 Probability

## Activities Title

Relative Frequency Simple Probability

## 7.PR.6.3

Develop a probability model and use it to find probabilities of simple events. Compare experimental and theoretical probabilities of events. If the probabilities are not close, explain possible sources of the discrepancy

| Course Topic | Activities Title |
| :--- | :--- |
| 7.PR.6 Probability | Find the Probability |
|  | Introductory Probability |
|  | Dice and Coins |

## 7.PR.6.4

Develop a uniform probability model by assigning equal probability to all outcomes and use the model to determine probabilities of events.

| Course Topic |  |
| :--- | :--- |
| Teacher directed | Teacher directed Activities Title |

## 7.PR.6.5

Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.

| Course Topic | Activities Title |
| :---: | :--- |
| 7.PR.6 Probability | Probability Tables |


|  | Probability With Replacement |
| :--- | :--- |
|  | Probability Without Replacement |


| Course Topic | Activities Title |
| :--- | :--- |
| REVIEW 7.PR.6 Data <br> analysis | Dot Plots |
|  | Histograms |
|  | Understanding Box-and-Whisker Plots |
|  | Mean from Frequency Table |
|  | Median from Frequency Table |
|  | Mode from Frequency Table |
|  | Calculating Interquartile Range |
|  | Data extremes and Range |

## 7.PR.6.6

Use appropriate graphical displays and numerical summaries from data distributions with categorical or quantitative (numerical) variables as probability models to draw informal inferences about two samples or populations.

| Course Topic | Activities Title |
| :--- | :--- |
| 7.PR.6 Data analysis | Divided Bar Graphs |
|  | Double Stem and Leaf Plots |
|  | Box-and-Whisker Plots 2 |
|  | Data Extremes and Range |
|  | Which Measure of Central Tendency? |

## Grade 8

## 1 Numerical Reasoning

| Course Topic | Activities Title |
| :--- | :--- |
| REVIEW 8.NR.1 Rational <br> numbers | Exponents |
|  | Powers of Integers |

1.1 Solve problems involving irrational numbers and rational approximations of irrational numbers to explain realistic applications.

| 8.NR.1.1 <br> Distinguish between rational and irrational numbers using decimal expansion. Convert <br> a decimal expansion which repeats eventually into a rational number. |  |
| :---: | :---: |
|  | Activities Title |
|  | Fraction to Terminating Decimal |
|  | Recurring Decimals |
|  | Irrational Numbers |

8.NR.1.2

Approximate irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions.

Activities Title
8.NR. 1 Rational numbers
1.2 Solve problems involving radicals and integer exponents including relevant application situations; apply place value understanding with scientific notation and use scientific notation to explain real phenomena.

| 8.NR.2.1 <br> Apply the properties of integer exponents to generate equivalent numerical expressions. |  |
| :---: | :---: |
| Course Topic | Activities Title |
| 8.NR. 2 Exponent rules | Exponent Notation |
|  | Exponent Notation and Algebra |
|  | Properties of Exponents |
|  | Exponent Laws with Brackets |
|  | The Zero Exponent |
|  | Negative Exponents |
|  | Integer Exponents |
|  | Multiplication with Exponents |
|  | Simplifying with Exponent Laws 1 |


|  | Exponent Laws and Algebra |
| :--- | :--- |
|  | Exponent Form to Numbers |

## 8.NR.2.2

Use square root and cube root symbols to represent solutions to equations. Recognize that $x 2=p$ (where $p$ is a positive rational number and $|x| \leq 25$ ) has two solutions and $x 3=p$ (where $p$ is a negative or positive rational number and $|x| \leq 10$ ) has one solution.

Evaluate square roots of perfect squares $\leq 625$ and cube roots of perfect cubes $\geq$ 1000 and $\leq 1000$.

## Course Topic

8.NR. 2 Square/cube roots \& scientific notation

Activities Title
Square Roots
Square Roots 1
Square and Cube Roots

## 8.NR.2.3

Use numbers expressed in scientific notation to estimate very large or very small quantities, and to express how many times as much one is than the other.

Course Topic
8.NR. 2 Square/cube roots \& scientific notation

Activities Title

| Scientific Notation |
| :--- |
| Scientific Notation 1 |
| Scientific Notation 2 |
| Scientific Notation to Decimal |
| Ordering Scientific Notation |

Scientific Notation
Scientific Notation 1
Scientific Notation 2
Scientific Notation to Decimal
Ordering Scientific Notation
8.NR.2.4

Add, subtract, multiply and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Interpret scientific notation that has been generated by technology (e.g., calculators or online technology tools).

Activities Title

## 2 Patterning \& Algebraic Reasoning

| Course Topic | Activities Title |
| :--- | :--- |
| REVIEW 8.PAR.3 Equations <br> \& inequalities | Solve Multi-Step Equations |
|  | Solving Simple Equations |
|  | Graphing Inequalities 2 |
|  | Solve One-Step Inequalities 1 |
|  | Solve One-Step Inequalities 2 |

2.1 Create and interpret expressions within relevant situations. Create, interpret, and solve linear equations and linear inequalities in one variable to model and explain real phenomena.

| 8.PAR.3.1 <br> Interpret expressions and parts of an expression, in context, by utilizing formulas or <br> expressions with multiple terms and/or factors. |  |  |
| :--- | :--- | :---: |
| Activities Title |  |  |
| Course Topic | Teacher directed |  |
| Teacher directed |  |  |

8.PAR.3.2

Describe and solve linear equations in one variable with one solution ( $x=a$ ), infinitely many solutions $(a=a)$, or no solutions $(a=b)$. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x=a, a=a$, or $a=b$ results (where $a$ and $b$ are different numbers).

| Course Topic | Activities Title |
| :---: | :--- |
| Teacher directed | Teacher directed |

## 8.PAR.3.3

Create and solve linear equations and inequalities in one variable within a relevant application.

Course Topic
8.PAR. 3 Equations \& inequalities

Activities Title
Equations with Grouping Symbols
Equations with Fractions
Equations with Decimals
Equations to Solve Problems
Equations: Variables, Both Sides
Solving More Equations

## 8.PAR.3.4

Using algebraic properties and the properties of real numbers, justify the steps of a one-solution equation or inequality.

| Course Topic |  |
| :---: | :--- |
| Teacher directed | Teacher directed |

## 8.PAR.3.5

Solve linear equations and inequalities in one variable with coefficients represented by letters and explain the solution based on the contextual, mathematical situation.

Course Topic
8.PAR. 3 Equations \& inequalities

Activities Title
Solve Two-Step Inequalities
Solving Inequalities 3
Graphing Inequalities 3

## 8.PAR.3.6

Use algebraic reasoning to fluently manipulate linear and literal equations expressed in various forms to solve relevant, mathematical problems.

## Course Topic

Activities Title

## 8.PAR. 3 Equations \&

 inequalities| Course Topic | Activities Title |
| :--- | :--- |
| REVIEW 8.PAR.4 Linear <br> relationships | $\mathrm{y}=\mathrm{ax}$ |
|  | Slope of a Line |
|  | Equation of a Line 1 |

2.2 Show and explain the connections between proportional and nonproportional relationships, lines, and linear equations; create and interpret graphical mathematical models and use the graphical, mathematical model to explain real phenomena represented in the graph.

| 8.PAR.4.1 |  |  |  |
| :---: | :---: | :---: | :---: |
| Use the equation $y=m x$ <br> equation $y=m x+b$ <br> (non-proportional) for a line through the origin to derive the |  |  |  |
| Course Topic a line intersecting the vertical axis at $b$. |  |  |  |
| 8.PAR.4 Linear relationships | Determining a Rule for a Line |  |  |

## 8.PAR.4.2

Show and explain that the graph of an equation representing an applicable situation in two variables is the set of all its solutions plotted in the coordinate plane.

Course Topic
8.PAR. 4 Linear relationships

Activities Title
Which Straight Line?
Equation from Point and Gradient
Modeling Linear Relationships

## 3 Functional \& Graphical Reasoning

3.1 Describe the properties of functions to define, evaluate, and compare relationships, and use functions and graphs of functions to model and explain real phenomena.

| 8.FGR.5.1 <br> Show and explain that a function is a rule that assigns to each input exactly one <br> output. |  |
| :---: | :---: |
| Course Topic | Activities Title |
| 8.FGR.5 Functions \& graphs | Function Rules and Tables |

## 8.FGR.5.2

Within realistic situations, identify and describe examples of functions that are linear or nonlinear. Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

| Course Topic | Activities Title |
| :---: | :--- |
| 8.FGR.5 Functions \& graphs | Travel Graphs |
|  | Identifying Graphs |
|  | Vertical Line Test |

## 8.FGR.5.3

Relate the domain of a linear function to its graph and where applicable to the quantitative relationship it describes.
Course Topic
Activities Title

| 8.FGR. 5 Functions \& graphs | Domain |
| :--- | :--- |

## 8.FGR.5.4

Compare properties (rate of change and initial value) of two functions used to model an authentic situation each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
Course Topic
Activities Title
8.FGR. 5 Functions \& graphs Intercepts

## 8.FGR.5.5

Write and explain the equations $y=m x+b$ (slope-intercept form), $A x+B y=C$ (standard form), and $(y-y 1)=m(x-x 1)$ (point-slope form) as defining a linear function whose graph is a straight line to reveal and explain different properties of the function.

| Course Topic |  |
| :--- | :--- |
| Teacher directed | Teacher directed Activities Title |

## 8.FGR.5.6

Write a linear function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
Course Topic
Activities Title
Teacher directed

## 8.FGR.5.7

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 ( $x, y$ ) values, including reading these from a table or from a graph.

Course Topic
Teacher directed
Teacher directed

Activities Title
8.FGR.5.8

Explain the meaning of 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
Course Topic
Teacher directed

## 8.FGR.5.9

Graph and analyze linear functions expressed in various algebraic forms and show key characteristics of the graph to describe applicable situations.

| Course Topic |  |
| :--- | :--- |
| Teacher directed | Teacher directed |

3.2 Solve practical, linear problems involving situations using bivariate quantitative data.

| 8.FGR.6.1 <br> Show that straight lines are widely used to model relationships between two <br> quantitative variables. For scatter plots that suggest a linear association, visually fit a <br> straight line, and informally assess the model fit by judging the closeness of the data <br> points to the line of best fit. |  |  |  |
| :--- | :--- | :---: | :---: |
| Course Topic |  |  |  |
| 8.FGR.6 Bivariate data | Scatter Plots $\quad$ Activities Title |  |  |

## 8.FGR.6.2

Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercepts.

## Course Topic

Activities Title
Teacher directed
Teacher directed

## 8.FGR.6.3

Explain the meaning of the predicted slope (rate of change) and the predicted intercept (constant term) of a linear model in the context of the data

| Course Topic |  |
| :---: | :--- |
| Teacher directed | Teacher directed |

8.FGR.6.4

Use appropriate graphical displays from data distributions involving lines of best fit to draw informal inferences and answer the statistical investigative question posed in an unbiased statistical study."

| Course Topic |  |
| :--- | :--- |
| Teacher directed | Teacher directed |

### 3.3 Justify and use various strategies to solve systems of linear equations to model and explain realistic phenomena.

| 8.FGR.7.1 <br> Interpret and solve relevant <br> mathematical problems leading to two linear equations in <br> two variables. <br> Activities Title <br> 8.FGR.7 Simultaneous <br> equationsSolve Systems by GraphingSimultaneous Linear EquationsLinear Modeling |  |
| :--- | :--- |

## 8.FGR.7.2

Show and explain that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because the points of intersection satisfy both equations simultaneously.
Course Topic
Activities Title
Teacher directed Teacher directed

## 8.FGR.7.3

Approximate solutions of two linear equations in two variables by graphing the equations and solving simple cases by inspection.

| Course Topic |  |
| :---: | :--- |
| Teacher directed | Teacher directed |

## 8.FGR.7.4

Analyze and solve systems of two linear equations in two variables algebraically to find exact solutions.
Course Topic Activities Title
8.FGR. 7 Simultaneous

Simultaneous Equations 1 Simultaneous Equations 2

## 8.FGR.7.5

Create and compare the equations of two lines that are either parallel to each other, perpendicular to each other, or neither parallel nor perpendicular.
Course Topic
Activities Title
8.FGR. 7 Simultaneous

Are they Parallel? equations

## 4 Geometric \& Spatial Reasoning

4.1 Solve geometric problems involving the Pythagorean Theorem and the volume of geometric figures to explain real phenomena.

| 8.GSR.8.1 |  |  |
| :---: | :---: | :---: |
| Explain a proof of the Pythagorean Theorem and its converse using visual models. |  |  |
| Course Topic | Activities Title |  |
| 8.GSR.8 Pythagoras | Pythagorean Triads |  |

## 8.GSR.8.2

Apply the Pythagorean Theorem to determine unknown side lengths in right triangles within authentic, mathematical problems in two and three dimensions Course Topic $\quad$ Activities Title
8.GSR. 8 Pythagoras

Pythagorean Theorem
Pythagoras: Find a Short Side (integers only)
Pythagoras: Find a Short Side (decimal values)
Pythagoras: Find a Short Side (rounding needed)
Pythagoras' Theorem
Find Slant Height

| 8.GSR.8.3 |  |
| :--- | :--- |
| Apply the Pythagorean Theorem to find the distance between two points in a |  |
| coordinate system in practical, mathematical problems. |  |

Course Topic $\quad$ Activities Title

| REVIEW 8.GSR. 8 Volume |  |
| :--- | :--- |
|  | Volume: Rectangular Prisms 2 |
|  | Volume of Triangular prisms |
|  | Volume: Prisms |

## 8.GSR.8.4

Apply the formulas for the volume of cones, cylinders, and spheres and use them to solve in relevant problems.

| Course Topic | Activities Title |
| :--- | :--- |
| 8.GSR.8 Volume | Volume: Cylinders |
|  | Volume: Cones |
|  | Volume: Spheres |

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