

**MASHPEE MIDDLESCHOOL
MATH DEPARTMENT
CURRICULUM REVISION 2012
GRADE LEVEL 7**

COURSE NAME: Math 7

STRANDS: The Number System

THEME/ESSENTIAL Accentuate the Negative/How are the four basic operations (add, subtract, multiply, divide) impacted through the introduction of negative numbers?

FOCUS QUESTIONS: How do positive and negative numbers help in describing a situation?

What will the four basic operations (+, -, x, /) of positive and negative numbers tell about the problem?

What model(s) for positive and negative numbers would help in showing the relationships in the problem situation?

| <u>STATE STANDARD/ COMMON CORE</u> | <u>LEARN EXP 1-6</u> <u>Math PS A-H</u> | <u>MATH CONCEPTS</u> | <u>SKILLS</u> | <u>INSTRUCTIONAL STRATEGIES</u> | <u>ASSESSMENT</u> | <u>RESOURCES/ MATERIALS</u> | <u>PACING GUIDE</u> |
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| 7.NS.1b | 1, 2, 3, 6 | <p>*Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</p> <p>*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.</p> <p>*Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. 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.</p> | <p>*Explore the use of and notation for integers in applied settings.</p> <p>*Interpret and write mathematical sentences.</p> <p>*Locate positive and negative numbers on a number line and compare and order them.</p> <p>*Understand relationship between a positive or negative number and its opposite.</p> <p>*Write number sentences to reflect the actions and results of changes in situations and find missing values.</p> <p>*Develop and use chip model and number line for representing addition and subtraction.</p> <p>*Understand that an integer and its additive inverse are called opposites.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (Investigation 1.1 – 1.3)</p> <p>*"Kuta" software</p> <p>*Number lines</p> <p>*IXL web site</p> | *3 Days |
| 7.EE.3 | | | | | | | |

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| | | <p>*Solve real-world and mathematical problems using numerical and algebraic expressions and equations.</p> <p>*Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.</p> | | | | | |
| 7.NS.1 | 1, 2, 3, 6 | <p>*Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</p> | <p>*Develop and use algorithms for adding and subtracting integers.</p> | <p>*Teacher-directed activities</p> | <p>*Class work</p> | <p>*Connected Math Program Text (Investigation 2)</p> | <p>*6 Days</p> |
| 7.NS.1a | | <p>*Describe situations in which opposite quantities combine to make 0. <i>For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.</i></p> | <p>*Model addition and subtraction of integers using distance/directions on a number line and a chip model.</p> | <p>*Independent/small group work</p> | <p>*Quizzes</p> | <p>*"Kuta" software</p> | |
| 7.NS.1b | | <p>*Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. 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.</p> | <p>*Observe that the Commutative Property holds for addition but not subtraction of rational numbers.</p> | <p>*Activate prior knowledge</p> | <p>*Tests</p> | <p>*Number lines</p> | |
| 7.NS.1c | | <p>*Understand subtraction of</p> | <p>*Recognize and solve problems involving addition and subtraction of integers.</p> | <p>*Review mathematical vocabulary</p> | | <p>*IXL website</p> | |
| | | | <p>*Solve simple equations with missing facts by using unrelated fact families.</p> | <p>*Summarizing</p> | | | |
| | | | <p>*Extend graphing with positive and negative coordinates to all 4 quadrants.</p> | <p>*Applying computational skills</p> | | | |

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| 7.NS.1d | | <p>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 real-world contexts.</p> <p>*Apply properties of operations as strategies to add and subtract rational numbers.</p> | | | | | |
| 7.NS.3 | | *Solve real-world and mathematical problems involving the four operations with rational numbers. ¹ | | | | | |
| 7.EE.3 | | * (See Inv. 1) | | | | | |
| 7.NS.2 | 1, 2, 3, 6 | *Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. | *Use a number line/motion model to develop the relationship between repeated addition and multiplication with integers. | *Teacher-directed activities | *Class work | *Connected Math Program Text (Investigation 4) | *5 Days |
| 7.NS.2a | | *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. | *Develop and use algorithms for multiplying and dividing integers. | *Independent/small group work | *Quizzes | *"Kuta" software | |
| 7.NS.2b | | *Understand that multiplication is extended from | *Examine number patterns to confirm algorithm for multiplication. | *Activate prior knowledge | *Tests | *Number lines | |
| | | | *Explore division of integers using fact families. | *Review mathematical vocabulary | | *IXL website | |
| | | | *Solve problems and develop skill in multiplying and dividing integers. | *Summarizing | | | |
| | | | | *Applying computational skills | | | |

¹ Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

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| <p>7.NS.2c</p> <p>7.NS.2d</p> <p>7.NS.3</p> | | <p>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.</p> <p>*Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>*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</p> <p>*Solve real-world and mathematical problems involving the four operations with rational numbers.</p> <p>*See Inv. 1</p> | | | | | |
| <p>7.NS.1</p> <p>7.NS.1d</p> <p>7.NS.2</p> <p>7.NS.2.c</p> <p>7.NS.3</p> | <p>1, 2, 3, 6</p> | <p>*Apply/extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</p> <p>*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.</p> <p>*(See preceding investigations for the rest)</p> | <p>*Explore the use of the order of Operations to order computation in problems.</p> <p>*Model the Distributive Property with areas of rectangles that have edges subdivided.</p> <p>*Develop and use the Distributive Property of multiplication over addition and subtraction.</p> <p>*Use the Distributive Property to solve problems.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (Investigation 4)</p> <p>*"Kuta" software</p> <p>*Number lines</p> <p>*IXL website</p> | <p>*4 Days</p> <p>*2 Days Reflect and</p> |

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| 7.EE.3 | | | | | | | Assess January – February 2013 |
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| | | | | <ul style="list-style-type: none"> *Review mathematical vocabulary *Summarizing *Applying computational skills | | | |
| <p>7.RP.2</p> <p>7.RP.2b</p> <p>7.RP.2c</p> <p>7.RP.2d (ACE 9,10)</p> <p>7.RP.3</p> | <p>1, 2, 3, 6</p> | <p>*(See Inv. 1)</p> <p>*Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p> <p>*Represent proportional relationships by equations. <i>For example, 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 $t = pn$.</i></p> <p>*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.</p> <p>*(See Inv. 1)</p> | <p>*Examine and collect data of unit rates with ratios and linear measurement.</p> <p>*Compute and interpret unit rates.</p> <p>*Work with application of rates to miles per hour.</p> <p>*Introduce “steady” or “average” rate of progress.</p> <p>*Formalize meaning of unit rate and computation strategies for computing unit rates.</p> <p>*Relate unit rate to slope of line. Examine meaning of dividing in rate situations.</p> | <ul style="list-style-type: none"> *Teacher-directed activities *Independent/small group work *Activate prior knowledge *Review mathematical vocabulary *Summarizing *Applying computational skills | <ul style="list-style-type: none"> *Class work *Quizzes *Tests | <ul style="list-style-type: none"> *Connected Math Program Text (Investigation 3) *“Kuta” software | <p>*5 Days</p> |
| <p>7.RP.2</p> <p>7.RP.2a</p> | <p>1, 2, 3, 6</p> | <p>*Analyze proportional relationships and use them to solve real-world and mathematical problems.</p> <p>*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.</p> | <p>*Apply proportional reasoning to solve for the unknown part of 2 equal ratios is unknown.</p> <p>*Set up and solve proportions in applications.</p> <p>*Use ratios and scaling up and down to find missing value in a proportion.</p> | <ul style="list-style-type: none"> *Teacher-directed activities *Independent/small group work *Activate prior knowledge *Review mathematical | <ul style="list-style-type: none"> *Class work *Quizzes *Tests | <ul style="list-style-type: none"> *Connected Math Program Text (Investigation 4) *“Kuta” software | <p>*3 Days</p> |

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| <p>7.RP.2b</p> <p>7.RP.3</p> <p>7.G.1</p> | | <p>*(See Inv. 3)</p> <p>*(See Inv. 1)</p> <p>*Draw, construct, and describe geometrical figures and describe the relationships between them.</p> <p>*Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</p> | <p>*Choose strategy for solving problems involving proportional reasoning.</p> | <p>vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | | | <p>2 Days (Reflect and Assess)</p> <p>October – November 2012</p> |
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| 7.SP.1 | 3, 6 | <p>inferences about a population.</p> <p>*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.</p> | <p>can be gained about a population by examining statistics of a representative sample of the population, where random sampling tends to produce representative samples.</p> <p>*Draw inferences about a population based on data from a random sample.</p> | <p>activities</p> <p>*Independent and small group work</p> <p>*Activate prior knowledge</p> <p>*Model/prompt fading</p> | <p>*Quizzes</p> <p>*Tests</p> <p>*Homework</p> <p>*"Quick check"</p> | <p>Program Text (CC 5)</p> <p>*Graph paper</p> <p>*Kuta Software</p> <p>*IXL web site</p> <p>*Calculators</p> | |
| 7.SP.2, | | <p>*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. <i>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.</i></p> | <p>*Generate or simulate multiple samples of the same size to gauge the variation in estimates or predictions.</p> <p>*Informally assess the degree of visual overlap of two data distributions with similar variability and express the difference between centers of the distributions as a multiple of a measure of variability.</p> | <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | | | |
| 7.SP.3 | | <p>*Draw informal comparative inferences about two populations.</p> <p>*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. <i>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</i></p> | | | | | |

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| | | <i>distributions of heights is noticeable.</i> | | | | | |
| 7.SP.3 7.SP.4 | 1, 2, 3, 6 | *(See Inv. CC5) *Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. <i>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.</i> | *Use the shape of a distribution to estimate the location of the mean and the median. *Determine whether to use the mean or median to describe a distribution. *Use a variety of representations, including . | *Teacher-directed activities *Independent and small group work *Activate prior knowledge *Model/prompt fading *Review mathematical vocabulary *Summarizing *Applying computational skills | *Class work *Quizzes *Tests *Homework *"Quick check" | *Connected Math Program Text (Investigation 2) *Graph paper *Kuta Software *IXL web site *Calculators | *4 Days |
| 7.SP.4 | 1, 2, 3, 6 | *(See Inv 2) | *Compare the distributions of data sets using their related centers, variability, and shapes. | *Teacher-directed activities *Independent and small group work *Activate prior knowledge *Model/prompt fading *Review mathematical vocabulary *Summarizing *Applying computational skills | *Class work *Quizzes *Tests *Homework *"Quick check" | *Connected Math Program Text (Investigation 3) *Graph paper *Kuta Software *IXL web site *Calculators | *4 Days |
| 7.SP.4 | 1, 2, 3, 6 | *(See Inv 2) | *Compare the distributions of data sets using their related centers, variability, and shapes. *Develop strategies. | *Teacher-directed activities *Independent and small group work | *Class work *Quizzes *Tests | *Connected Math Program Text (Investigation 4) *Graph paper | *2 Days |

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| | | | | <ul style="list-style-type: none">*Activate prior knowledge*Model/prompt fading*Review mathematical vocabulary*Summarizing*Applying computational skills | <ul style="list-style-type: none">*Homework*"Quick check" | <ul style="list-style-type: none">*Kuta Software*IXL web site*Calculators | June 2013 |
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| | | | <p>*Predict which rectangular prism with common volume will have the smallest area.</p> <p>*Refine strategy to find surface area of rectangular prism.</p> <p>*Understand that filling layers leads to formula for volumes.</p> <p>*Develop formula for finding volume of a rectangular prism.</p> | <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | | *IXL website | |
| 7.G.4 | 1, 2, 3, 6 | <p>*Solve real-world and mathematical problems involving angle measure, area, surface area, and volume.</p> <p>*Know the formulas for the area and circumference of a circle and solve problems; give an informal derivation of the relationship between the circumference and area of a circle (ACE 14).</p> <p>*See Inv. 1</p> | <p>*Develop understanding of volume and surface area of prisms.</p> <p>*Develop a strategy for finding the volume of a rectangular prism using its dimensions.</p> <p>*Connect strategy to idea of layers in prisms.</p> <p>*Develop strategy for finding the surface area of a cylinder.</p> <p>*Understand that a variety of 3-dimensional figures may have the same volume but different surface areas.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (Investigation 3)</p> <p>*"Kuta" software</p> <p>*IXL website</p> | *5 Days |
| 7.G.6 | | | | | | | |

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| 7.G.6 | 1, 2, 3, 6 | *See Inv. 1 | <p>*Explore volume relationship among cylinders, cones, and spheres.</p> <p>*Extend understanding of volume as layering to other ways of filling a 3 dimensional figure.</p> <p>*Explore volume relationship between pyramids and prisms.</p> <p>*Use relationship among cylinders, cones, and spheres to develop strategy for finding volume of a cone or sphere.</p> <p>*Use relationship among prisms and pyramids to develop strategy for finding volume of a pyramid.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (Investigation 4)</p> <p>*"Kuta" software</p> <p>*IXL website</p> | *4 Days |
| 7.G.6 | 1, 2, 3, 6 | *See Inv. 1 | <p>*Understand how changes in one or more dimensions of a rectangular prism affects the prisms.</p> <p>*Design rectangular prisms with given volume.</p> <p>*Extend understanding of similarity to 3-dimensional figures.</p> <p>*Understand effect on surface and volume of applying a scale factor to a rectangular prism.</p> <p>*Apply students' understanding of scale factor and its relationship to changes in 1-, 2-, and 3-dimensional measures.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (Investigation 5)</p> <p>*"Kuta" software</p> <p>*IXL website</p> | *4 Days |
| 7.G. 2, 3, 4, and 5 | 1, 2, 3, 6 | *Draw, construct, and describe geometrical figures and describe the | *Draw possible triangles when given three measures of their | *Teacher-directed activities | *Class work | *Connected Math Program | *5 Days |

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| | <p>relationships between them.</p> <p>*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.</p> <p>*Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.</p> <p>*Solve real-world and mathematical problems involving angle measure, area, surface area, and volume.</p> <p>*Know the formulas for the area and circumference of a circle and solve problems; give an informal derivation of the relationship between the circumference and area of a circle.</p> <p>*Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and use them to solve simple equations for an unknown angle in a figure.</p> | <p>angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.</p> <p>*Describe two-dimensional cross sections of three dimensional figures.</p> <p>*Use the formulas for the area and circumference of a circle to solve problems.</p> <p>*Give an informal derivation of the relationship between a circle's area and its circumference.</p> <p>*Use facts about complementary, vertical, and adjacent angles to write and solve simple equations for an unknown angle in a figure.</p> | <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Quizzes</p> <p>*Tests</p> | <p>Text (CC 4 Geometry Topics)</p> <p>*"Kuta" software</p> <p>*IXL website</p> <p>*Pre-Algebra Text Sections 13.1 & 13.2</p> | <p>2 Days (Reflect and Assess)</p> <p>November 2012 – January 2013</p> |
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**MASHPEE MIDDLESCHOOL
MATH DEPARTMENT
CURRICULUM REVISION 2012
GRADE LEVEL 7**

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| COURSE NAME: Math 7 |
| STRANDS: Expressions and Equations Ratio and Proportional Relationships The Number System |
| THEME/ESSENTIAL Moving Straight Ahead/How can we recognize and represent linear relationships? |
| FOCUS QUESTIONS: What are the variables in the problem? Do the variables have a linear relationship to each other? What patterns in the problem suggest this? How can the linear pattern be represented in a problem, in a table, in a graph, or with an equation? How do changes in one variable affect changes in a related variable? How are these changes captured in a table, graph, or equation? How can tables, graphs, and equations of linear relationships be used to express and answer questions? |

| <u>STATE STANDARD/ COMMON CORE</u> | <u>LEARN EXP 1-6</u> <u>Math PS A-H</u> | <u>MATH CONCEPTS</u> | <u>SKILLS</u> | <u>INSTRUCTIONAL STRATEGIES</u> | <u>ASSESSMENT</u> | <u>RESOURCES/ MATERIALS</u> | <u>PACING GUIDE</u> |
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| 7.EE.3 | 1, 2, 3, 6 | <p>*Solve real-world and mathematical problems using numerical and algebraic expressions and equations.</p> <p>*Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. <i>For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ 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.</i></p> <p>*Use variables to represent quantities in a</p> | <p>*Describe patterns of change between dependent and independent variables for linear relationships.</p> <p>*Construct tables, graphs, and equations to represent linear patterns of change and translate information from one form to another.</p> <p>*Explore the y –intercept.</p> <p>*Understand negative rates of change and how they are represented in equations, tables, and graphs.</p> <p>*Describe what the variables and numbers in an equation represent.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (Investigation 1)</p> <p>*"Kuta" software</p> <p>*IXL web site</p> | *6 Days |
| 7.EE.4 | | | | | | | |

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| 7.EE.4a | | <p>real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.</p> <p>*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. <i>For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</i></p> | | | | | |
| 7.EE.3 7.EE.4 7.EE.4a 7.EE.4b (ACE 44) MA.4c. | 1, 2, 3, 6 | <p>*(See Inv. 1)</p> <p>*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. <i>For example: 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.</i></p> <p>*Extend analysis of patterns to include analyzing, extending, and determining an expression for simple arithmetic and geometric sequences (e.g., compounding, increasing area), using tables, graphs, words, and expressions.</p> | <p>*Find solutions to a problem using a table or graph.</p> <p>*Understand connections and translate information about linear relations given in a table, graph, or an equation to one of the other forms.</p> <p>*Connect solutions in graphs and tables to solutions of equations.</p> <p>*Understand how the y-intercept appears in equations and table.</p> <p>*Write equations for linear relationships and describe what information the variable and numbers represent.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> <p>*ACE #44</p> | <p>*Connected Math Program Text (Investigation 2)</p> <p>*"Kuta" software</p> <p>*IXL web site</p> | *4 Days |
| 7.EE.1 | 1, 2, 3, 6 | <p>*Use properties of operations to generate equivalent expressions.</p> <p>*Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> | <p>*Continue to describe what information the variable and numbers represent.</p> <p>*Solve linear equations in one variable using tables, graphs, and</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (Investigation 3)</p> <p>*"Kuta" software</p> | *6 Days |

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| <p>7.EE.3 7.EE.4 7.EE.4a</p> | | <p>*(See Inv. 1)</p> | <p>symbols.</p> <p>*Continue to connect solutions to equations in a table or graph to the equation.</p> <p>*Develop an understanding of equality.</p> <p>*Use the properties of equality to solve equations.</p> <p>*Check solutions to equations.</p> <p>*Continue to interpret equations in an applied setting.</p> <p>*Find a point of intersection of 2 lines.</p> | <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | | <p>*IXL web site</p> | |
| <p>7.EE.1 7.EE.3 7.EE.4 7.EE.4a</p> | <p>1, 2, 3, 6</p> | <p>*(See Inv. 1)</p> | <p>*Introduce students to the concept of slope as ratio of vertical to horizontal change.</p> <p>*Make connection between slope and rate of change.</p> <p>*Use slope to sketch a line.</p> <p>*Find y-intercept of a line from data in table, graph or equation.</p> <p>*Use slope and y-intercept to write equation in form of $y = m x + b$.</p> <p>*Find the slope of a line from data in table, graph or equation.</p> <p>*Write equation for an application given two data points.</p> <p>*Explore patterns among lines that have the same slope (parallel) or slopes that are negative reciprocals of each</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (Investigation 4)</p> <p>*"Kuta" software</p> <p>*IXL web site</p> | <p>*Optional for Enrichment *7 Days</p> |

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| | | | other. | | | | |
| 7.RP.1 and 7.RP.2a | 1, 2, 3, 6 | <p>*Analyze proportional relationships and use them to solve real-world and mathematical problems.</p> <p>*Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>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.</i></p> <p>*Recognize and represent proportional relationships between quantities.</p> <p>*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.</p> | <p>*Compute unit rates associated with ratios of fractions, including quantities measured in like or different units.</p> <p>*Decide whether two quantities are in a proportional relationship.</p> <p>*Explain what any point (s,y), including $(0,0)$ and $(1,r)$ where r is as a unit rate.</p> <p>*On a graph of a proportional relationship means in terms of the situation.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (CC Inv. 1)</p> <p>*"Kuta" software</p> <p>*IXL web site</p> | *5 Days |
| 7.RP.2d | | <p>*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.</p> | | | | | |
| 7.EE.1 7.EE.2 | 1, 2, 3, 6 | <p>*(See Inv. 1)</p> | <p>*Apply the properties of operations to add, subtract, factor and expand algebraic expressions.</p> <p>*Understand that writing an equivalent expression in a problem context can shed light on how quantities in the problem are related.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (CC Inv. 2)</p> <p>*"Kuta" software</p> <p>*IXL web site</p> | *5 Days |

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| 7.NS.3 | 1, 2, 3, 6 | *Solve real-world and mathematical problems involving the four operations with rational numbers. | *Solve word problems leading to one-and two-step equations. | *Teacher-directed activities | *Class work | *Connected Math Program Text (CC Inv. 3) | *4 Days |
| 7.EE.4b | | *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. <i>For example: 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.</i> | *Graph the solutions to one-and two-step inequalities and interpret the solution set in the context of the problem. | *Independent/small group work *Activate prior knowledge *Review mathematical vocabulary *Summarizing *Applying computational skills | *Quizzes *Tests | *"Kuta" software *IXL web site | |
| MA.4c. | | *Extend analysis of patterns to include analyzing, extending, and determining an expression for simple arithmetic and geometric sequences (e.g., compounding, increasing area), using tables, graphs, words, and expressions. | | | | | *2 Days Reflect and Assess March – April 2013 |

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| 7.G.6 | | *(See Inv. 2) | <p>*Subdivide a figure into smaller, similar figures.</p> <p>*Use scale factors to make similar shapes.</p> <p>*Find missing measures in similar figures using scale factor.</p> | *Applying computational skills | | | |
| 7.RP.2c | 1, 2, 3, 6 | <p>*Analyze proportional relationships and use them to solve real-world and mathematical problems.</p> <p>*Recognize and represent proportional relationships between quantities.</p> <p>*Represent proportional relationships by equations. <i>For example, 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 $t = pn$.</i></p> <p>*Use proportional relationships to solve multi-step ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</p> | <p>*Use ratios of corresponding sides within a figure to determine whether two figures are similar.</p> <p>*Use ratios to identify similar triangles.</p> <p>*Use ratios of corresponding sides or scale factors to find missing lengths in similar figures.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarize</p> <p>*Apply computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Texts (Investigation 4)</p> <p>*Graph paper</p> <p>*"Kuta" software (for teacher use)</p> | *5 Days |
| 7.RP.3 | | | | | | | |
| 7.G.1 | | *(See Inv. 1) | | | | | |
| 7.RP.2c | 1, 2, 3, 6 | *(See Inv. 4) | *Apply knowledge of similar triangles and similar quadrilaterals. | *Teacher-directed activities | *Class work | *Connected Math Program Texts (Investigation 5) | *3 Days |
| 7.RP.3 | | *(See Inv. 4) | | *Independent/small group work | *Quizzes | | |
| 7.G.1 | | *(See Inv. 1) | *Develop a technique for indirect measurement. | *Activate prior knowledge | *Tests | *Graph paper | |
| | | | *Practice measuring lengths | | | *"Kuta" software (for teacher use) | 2 Days - Reflect |

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| | | | to solve problems. | *Review mathematical vocabulary *Summarizing *Applying computational skills | | *Mirrors *Yard sticks *Rulers | and Assess (September - October 2012) |
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| | | <p>construct simple equations and inequalities to solve problems by reasoning about the quantities.</p> <p>*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.</p> | <p>questions.</p> | <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | | | <p>*2 Days Reflect & Assess</p> <p>(September 2012)</p> |
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**MASHPEE MIDDLESCHOOL
MATH DEPARTMENT
CURRICULUM REVISION 2012
GRADE LEVEL 7**

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| COURSE NAME: Math 7 |
| STRANDS: Statistics and Probability |
| THEME/ESSENTIAL What Do You Expect?/How do you find the probability and expected value in real-life situations? |
| FOCUS QUESTIONS: What are the possible outcomes for this situation? Are the outcomes equally likely? Is this a fair or unfair situation? Can I compute the theoretical probability or do I need to conduct an experiment? How can I determine the probability of a two-event situation? How can I use expected value to help me make decisions? |

| <u>STATE STANDARD/ COMMON CORE</u> | <u>LEARN EXP 1-6</u> <u>Math PS A-H</u> | <u>MATH CONCEPTS</u> | <u>SKILLS</u> | <u>INSTRUCTIONAL STRATEGIES</u> | <u>ASSESSMENT</u> | <u>RESOURCES/ MATERIALS</u> | <u>PACING GUIDE</u> |
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| 7.SP.5 | 1, 2, 3, 6 | <p>*Investigate chance processes and develop, use, and evaluate probability models.</p> <p>*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 unlikely nor likely, and a probability near 1 indicates a likely event.</p> | <p>*Review basic probability concepts, such as fair game, experimental probability, theoretical probability, and fraction notation for expression probabilities.</p> <p>*Include a payoff in consideration of the fairness of a game.</p> <p>*Use probability and payoff to calculate long-term average result of games of chance figures.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> <p>*ACE #14</p> | <p>*Connected Math Program Text (Investigation 1)</p> <p>*"Kuta" software</p> <p>*IXL web site</p> <p>*Spinners</p> <p>*Games of chance</p> | *5 Days |
| 7.SP.6. | | <p>*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. <i>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.</i></p> | | | | | |
| 7.SP.7 | | | | | | | |

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| 7.SP.8 | <p>*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.</p> <p>a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. <i>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.</i></p> <p>b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. <i>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?</i></p> <p>*Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>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.</p> <p>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.</p> <p>c. Design and use a simulation to</p> | | | | | |
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| | | generate frequencies for compound events. <i>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?</i> | | | | | |
| 7.SP.6; 7.SP.7, 7.a, 7.b, 7.SP.8, 8.a, 8.b | 1, 2, 3, 6 | *(See Inv. 1) | <p>*Use an area model to analyze the theoretical probabilities for 2-stage outcomes.</p> <p>*Simulate and analyze probability situations involving 2-stage outcomes.</p> <p>*Distinguish between equally likely and non-likely outcomes by collecting data and analyzing experimental probabilities.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (Investigation 2)</p> <p>*"Kuta" software</p> <p>*IXL web site</p> <p>*Spinners</p> <p>*Games of chance</p> | *5 Days |
| 7.SP.6; 7.SP.7, 7.a, 7.b, 7.SP.8, 8.a, 8.b | 1, 2, 3, 6 | *(See Inv. 1) | <p>*Understand the difference between probability of an outcome and long-term average of many trials in a situation with a payoff.</p> <p>*Determine the expected value in a probability situation.</p> <p>*Use probability to make decisions.</p> | <p>*Teacher-directed activities</p> <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Class work</p> <p>*Quizzes</p> <p>*Tests</p> | <p>*Connected Math Program Text (Investigation 3)</p> <p>*"Kuta" software</p> <p>*IXL web site</p> <p>*Spinners</p> <p>*Games of chance</p> | *6 Days |
| 7.SP.6; 7.SP.7, | 1, 2, 3, 6 | *(See Inv. 1) | *Analyze a binomial situation. | *Teacher-directed activities | *Class work | *Connected Math Program | *6 Days |

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| <p>7.a, 7.b, 7.SP.8, 8.a, 8.b</p> | | | <p>*Practice finding expected value in a multiple-stage probability situation.</p> <p>*Analyze a binomial situation with multiple-stage outcomes.</p> | <p>*Independent/small group work</p> <p>*Activate prior knowledge</p> <p>*Review mathematical vocabulary</p> <p>*Summarizing</p> <p>*Applying computational skills</p> | <p>*Quizzes</p> <p>*Tests</p> | <p>Text (Investigation 4)</p> <p>*"Kuta" software</p> <p>*IXL web site</p> <p>*Spinners</p> <p>*Games of chance</p> | <p>*2 Days Reflect and Assess</p> <p>May 2013</p> |
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