

8th Grade - Mathematics

Reporting Category	Standard	Essential Skills and Knowledge	Related Basic Skill or Concept	Sample Instructional Activities
Number, Number Sense, Computation and Estimation	8M-NSCE 1	The student will a) compose and decompose numbers to three digits.	<ul style="list-style-type: none"> • Understanding of ones, tens, and hundreds place • Understanding value of 3-digit numbers • Writing numbers 	<ul style="list-style-type: none"> • Model and build one, two, and three digit numbers using place value blocks. Ex. Show that 89 is 8 tens and 9 ones. Ex. Distinguish the value of the digits in 253 (e.g. 2=200, 5 = 50, and 3 =3). • Match the numerical value with a pictorial representation or concrete objects. • Look at a model and determine the numeric value. • Use a place value mat to build one, two, and three digit numbers with digit cards. • Compose and decompose numbers to three digits. Ex. $700 + 20 + 6 = \underline{\quad}$. Ex. $38 = \underline{\quad} + \underline{\quad}$.
	8M-NSCE 2	The student will a) subtract fractions with like denominators (halves, thirds, fourths, and tenths) with minuends less than or equal to one.	<ul style="list-style-type: none"> • Name and identify fractional parts from a whole • Recognize that shapes can be cut into equal and/or unequal parts • Understand that equal parts can be added to make a whole 	<ul style="list-style-type: none"> • Students should investigate subtraction with fractions, using a variety of models (e.g. fraction circles, fraction strips, rulers, linking cubes, pattern blocks).
	8M-NSCE 3	The student will a) represent different forms and values of decimal numbers using fractions with numerators that are multiples of five and a denominator of 100.	<ul style="list-style-type: none"> • Understand fractions and decimals are related • Identify a part of a whole in concrete real-world objects 	<ul style="list-style-type: none"> • Match equivalent fractions to the decimal number as well as a pictorial model. • Given a hundreds grid, shade in an approximation to a given decimal or fraction. • Given a hundreds grid with one half shaded, identify the correct decimal representation from choices 25/100, 50/100, or 100/100.

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Measurement and Geometry	8M-MG 1	The student will a) compare measures of angles to a right angle (greater than, less than, or equal to).	<ul style="list-style-type: none"> • Identify right angles • Understand angles are composed of line segments and/or rays 	<ul style="list-style-type: none"> • Identify 3 right angles out of a group of angles. • Identify the angles that are less than right angles (acute). • Identify angles greater than a right angle (obtuse). • Have students draw an angle and identify if it is a right angle, greater than a right angle (obtuse), or less than a right angle (acute). • Build an angle (using paper pieces and a brad). Have student build a right angle, less than a right angle (acute), and an angle greater than a right angle (obtuse).
	8M-MG 2	The student will a) identify volume of common measures (cups, pints, quarts, gallons, etc.).	<ul style="list-style-type: none"> • Understand that things can be measured using various tools • Identify tools to measure capacity 	<ul style="list-style-type: none"> • Have students measure rice, beans, cereal, water, etc. using cups, pints, quarts, and gallons. • Have students measure items using liters and milliliters. • Sort items you would measure using cups, pints, quarts, and gallons.
	8M-MG 3	The student will a) identify similarity and congruence (same) in objects and shapes containing angles without translations; b) identify similar shapes with and without rotation.	<ul style="list-style-type: none"> • Understand congruence means same shape and same size • Understand similarity means same shape, not same size • Recognize and name basic shapes • Experiences with rotating shapes 	<ul style="list-style-type: none"> • Use tracing paper or patty paper to trace shapes and find other shapes that are congruent. • Give students shape cards. They find the congruent matches, and place it next to the congruent shape. Congruent matches may show rotation. The student is able to rotate or lay the cards on top of one another to show they are congruent.

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<p>Probability, Statistics, Patterns, Functions, and Algebra</p>	<p>8M-PSPFA 1</p>	<p>The student will</p> <p>a) determine the values or rule of a function using a graph or a table;</p> <p>b) describe how a graph represents relationship between two quantities.</p>	<ul style="list-style-type: none"> • Understand repeating, growing, and number patterns • Read bar, line, picture, bar, and circle graphs • Identify parts of a graph • Answer questions about data from a graph 	<ul style="list-style-type: none"> • Given the input values and a rule, complete the output. Ex. Complete the table by adding five to each input value. <div style="text-align: center;"> <p>$y = x + 5$</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td align="center">1</td> <td></td> </tr> <tr> <td align="center">2</td> <td></td> </tr> <tr> <td align="center">3</td> <td></td> </tr> <tr> <td align="center">4</td> <td></td> </tr> </tbody> </table> </div> <ul style="list-style-type: none"> • Given a table, determine the rule applied. <table border="1"> <thead> <tr> <th>x</th> <th>What's the rule?</th> <th>y</th> </tr> </thead> <tbody> <tr> <td align="center">1</td> <td align="center">1 + ___ =</td> <td align="center">6</td> </tr> <tr> <td align="center">2</td> <td align="center">2 + ___ =</td> <td align="center">7</td> </tr> <tr> <td align="center">3</td> <td align="center">3 + ___ =</td> <td align="center">8</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Given a line graph showing the temperature of a glass with melting ice cubes, show how the graph relates the temperature of the water to how much time has passed. • Collect data and create a scatterplot based on students' age (x-axis and independent variable) and their shoe size (y-axis and dependent variable). • Given data about the age of students (x-axis and independent variable) and how many text messages 	x	y	1		2		3		4		x	What's the rule?	y	1	1 + ___ =	6	2	2 + ___ =	7	3	3 + ___ =	8
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				they send a day (y-axis and dependent variable) to create a scatterplot.										
	8M-PSPFA 2	The student will a) solve algebraic expressions using simple addition and subtraction.	<ul style="list-style-type: none"> Understand an expression is a name for a number Understand an equation is a mathematical sentence that states that two expressions are equal. 	<ul style="list-style-type: none"> Solve algebraic expressions using two-digit addition and subtraction. Ex. Solve $30 + x$, when $x = 15$ Ex. Solve $20 - x$, When $x = 7$ Students need to experience real world situations in which they can use algebraic expressions to find the unknown. Ex. Sarah has 12 dollars and needs 20. How many more dollars does she need? 										
	8M-PSPFA 3	The student will a) graph a simple ratio using the x and y axis points when given the ratio in standard form (2:1) and convert to 2/1.	<ul style="list-style-type: none"> Understand rate of change Read and plot coordinates on a graph 	<ul style="list-style-type: none"> Given a ratio 2:1 (there are two cookies for every child), graph the linear equation on a graph labeled x axis and the y axis. This equation would have a slope of 2. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">children x</th> <th style="text-align: center;">cookies y</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">1</td><td></td></tr> <tr><td style="text-align: center;">2</td><td></td></tr> <tr><td style="text-align: center;">3</td><td></td></tr> <tr><td style="text-align: center;">4</td><td></td></tr> </tbody> </table> <ul style="list-style-type: none"> Given there is one dog for every one cat, graph points for the ratio of 1:1 (this linear equation will have a slope of 1). Make a table of values, x + y axis. 	children x	cookies y	1		2		3		4	
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	8M-PSPFA 4	The student will a) given a function table, identify the missing number.	<ul style="list-style-type: none"> • Identify and name patterns • Understanding of a variable • Understanding of a "stage" in a pattern 	<ul style="list-style-type: none"> • Show students first four stages of a pattern. Have the students extend the pattern by drawing or building (with tiles) the next stage of the pattern. Record each stage of the pattern in a function table. • Given a function table, identify the rule and express the rule for the missing variable (e.g. p times 3). • Given a function table, identify the rule to find the missing number. <table border="1" data-bbox="1409 643 1850 721" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td align="center">1</td> <td align="center">2</td> <td align="center">3</td> <td align="center">4</td> <td align="center">5</td> </tr> <tr> <td align="center">2</td> <td align="center">4</td> <td align="center">6</td> <td align="center">8</td> <td align="center">?</td> </tr> </tbody> </table>	1	2	3	4	5	2	4	6	8	?
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