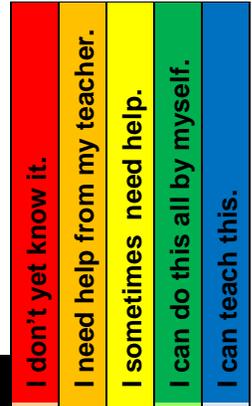# *I Can…* Grade 6 Mathematics

EOY—End of Year Assessment    PBA—Performance-Based Assessment

| | Major Content | | Supporting Content | | Additional Content |
|---|---|---|---|---|---|

**ANNE ARUNDEL**
**COUNTY PUBLIC SCHOOLS**

| | I Can… | Example | I don't yet know it. | I need help from my teacher. | I sometimes need help. | I can do this all by myself. | I can teach this. |
|---|---|---|---|---|---|---|---|
| **Ratios & Proportional Relationships** | **1** I can understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. | The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes. | | | | | |
| | **2** I can understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. | This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger. | | | | | |
| | **3a** I can use ratio and rate reasoning to solve real-world and mathematical problems by making tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. | At Books Unlimited, 3 paperback books cost $18. What would 7 books cost? How many books could be purchased with $54? | | | | | |
| | **3b** I can use ratio and rate reasoning to solve real-world and mathematical problems, solve unit rate problems including those involving unit pricing and constant speed. | If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? | | | | | |
| | **3c-1** I can use ratio and rate reasoning to solve real-world and mathematical problems, find a percent of a quantity as a rate per 100. | What percent is 12 out of 25? | | | | | |

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| | **3c-2**<br>I can use ratio and rate reasoning to solve real-world and mathematical problems, solve problems involving finding the whole, given a part and the percent. | If 30% of the student in Mrs. Rutherford's class like chocolate ice cream, then how many students are in Mrs. Rutherford's class if 6 like chocolate ice cream? | | | | | |
| | **3d**<br>I can use ratio and rate reasoning to solve real-world and mathematical problems, use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. | How many centimeters are in 7 feet, given that 1 inch ≈ 2.54 cm? | | | | | |
| Number Systems | **1**<br>I can solve word problems involving division of fractions by fractions. | How many 3/4-cup servings are in 2/3 of a cup of yogurt? | | | | | |
| | **2**<br>I can fluently divide multi-digit numbers using the standard algorithm. | How many thirty-twos are in 8456? | | | | | |
| | **3-1**<br>I can fluently add multi-digit decimals using the standard algorithm. | 72.63 + 4.875 =? | | | | | |
| | **3-2**<br>I can fluently subtract multi-digit decimals using the standard algorithm. | 177.3 – 72.635 =? | | | | | |
| | **3-3**<br>I can fluently multiply multi-digit decimals using the standard algorithm. | 72.3 x 4.87 =? | | | | | |

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| | **3-4**<br>I can fluently divide multi-digit decimals using the standard algorithm. | *14.28 ÷0.68 =?* | | | | | |
| | **4-1**<br>I can find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. | What is the greatest common factor (GCF) of 18 and 24. | | | | | |
| | **4-2**<br>I can use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. | Express 36 + 8 as 4(9 + 2*).* | | | | | |
| | **5**<br>I can understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. | Use an integer to represent 25 feet below sea level. | | | | | |
| | **6a**<br>I can understand a rational number as a point on the number line.  Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself. | *–(–3) = 3, and that 0 is its own opposite.* | | | | | |

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| | **6b-1**<br>**I** can understand a rational number as a point on the number line.  Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane. | *What is the opposite of $2\frac{1}{2}$? Explain your answer?* | | | | | |
| | **6b-2**<br>**I** can understand a rational number as a point on the number line.  Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. | If the point $(\frac{1}{2}, -3\frac{1}{2})$ is reflected across the x-axis, what is the coordinate of the reflected point? | | | | | |
| | **6c-1**<br>**I** can understand a rational number as a point on the number line.  Find and position integers and other rational numbers on a horizontal or vertical number line diagram. | *Place the following numbers on a number line* $-4.5, 2, 3.2, -3\frac{3}{5}, 0.2, -2, \frac{11}{2}.$ | | | | | |
| | **6c-2**<br>**I** can understand a rational number as a point on the number line.  Find and position pairs of integers and other rational numbers on a coordinate plane. | *Plot the ordered pair (-3, 2.5).* | | | | | |
| | **7a**<br>**I** can understand ordering and absolute value of rational numbers.  Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. | Interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right. | | | | | |
| | **7b**<br>**I** can understand ordering and absolute value of rational numbers.  Write, interpret, and explain statements of order for rational numbers in real-world contexts. | Write $-3^0\,C > -7^0\,C$ to express the fact that $-3^0\,C$ is warmer than $-7^0\,C$. | | | | | |

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| Unit | I Can… | *Example* | | | | | |
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| | **7c-1**<br>**I** can understand ordering and absolute value of rational numbers. Understand the absolute value of a rational number as its distance from 0 on the number line. | For an account balance of –30 dollars, write \|–30\| = 30 to describe the size of the debt in dollars. | | | | | |
| | **7c-2**<br>**I** can understand ordering and absolute value of rational numbers. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. | For an ocean depth of 900 feet, write \| –900\| = 900 to describe the distance below sea level. | | | | | |
| | **7d**<br>**I** can understand ordering and absolute value of rational numbers. Distinguish comparisons of absolute value from statements about order. | Recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars. | | | | | |
| | **8**<br>**I** can solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. | What is the distance between (–5, 2) and (–9, 2)? | | | | | |
| **Expressions & Equations** | **1-1**<br>I can write numerical expressions involving whole-number exponents. | Expressing b-fold products $a \cdot a \cdot ... \cdot a$ in the form $a^b$, where a and b are non-zero whole numbers. | | | | | |
| | **1-2**<br>I can evaluate numerical expressions involving whole-number exponents. | $(1/2)^3$, $(2/3)^2$ | | | | | |

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| Unit | I Can… | Example | | | | | |
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| | **2a**<br>I can write expressions that record operations with numbers and with letters standing for numbers. | Express the calculation "Subtract y from 5" as 5 – y. | | | | | |
| | **2b**<br>I can Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, and coefficient); view one or more parts of an expression as a single entity. | Describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms. | | | | | |
| | **2c-1**<br>I can evaluate expressions at specific values of their variables. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). | Evaluate the expression $3x + 2y$ when x is equal to 4 and y is equal to 2.4. | | | | | |
| | **2c-2**<br>I can evaluate expressions that arise from formulas used in real-world problems at specific values of their variables. | Use the formulas $V = s^3$ and $A = 6\ s^2$ to find the volume and surface area of a cube with sides of length s = 1/2. | | | | | |
| | **4**<br>I can identify when two expressions are equivalent. | The expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for. | | | | | |
| | **5-1**<br>I can understand solving an equation as a process of answering a question: which values from a specified set, if any, make the equation true? | Joey had 26 papers in his desk. His teacher gave him some more and now he has 100. How many papers did his teacher give him? Explain and justify. | | | | | |

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| Unit | I Can… | *Example* | | | | | |
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| | **5-2**<br>I can use substitution to determine whether a given number in a specified set makes an inequality true. | Twelve is less than 3 times another number can be shown by the inequality 12 < 3n. What numbers could possibly make this a true statement? | | | | | |
| | **6**<br>I can use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. | The skating rink charges $100 to reserve the place and then $5 per person. Write an expression to represent the cost for any number of people. | | | | | |
| | **7**<br>I can solve real-world and mathematical problems by writing and solving equations of the form x +p = q and px = q for cases in which p, q and x are all nonnegative rational numbers. | Meagan spent $56.58 on three pairs of jeans. If each pair of jeans costs the same amount, write an algebraic equation that represents this situation and solve to determine how much one pair of jeans cost. | | | | | |
| | **8**<br>I can write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. | Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams. | | | | | |
| | **9**<br>I can use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. | In a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time. | | | | | |

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| Unit | I Can… | Example | | | | | |
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| **Geometry** | **1**<br>I can find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. | The lengths of the sides of a bulletin board are 4 feet by 3 feet. How many index cards measuring 4 inches by 6 inches would be needed to cover the board? | | | | | |
| | **2-1**<br>I can find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. | A right rectangular prism has edges of $1\frac{1}{4}$", 1" and $1\frac{1}{2}$". How many cubes with side lengths of $\frac{1}{4}$" would be needed to fill the prism? | | | | | |
| | **2-2**<br>I can apply the formulas V = l w h and V = B h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. | A right rectangular prism has edges of $1\frac{1}{4}$", 1" and $1\frac{1}{2}$". What is the volume of the prism? | | | | | |
| | **3**<br>I can draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. | If point A(-4,2), B(2,2), C(-4,3) and D(2,-3) are plotted on the coordinate plane, what polygon is formed? Determine the perimeter of the polygon. | | | | | |
| | **4**<br>I can represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. | Describe the shapes of the faces needed to construct a rectangular pyramid. Cut out the shapes and create a model. Did your faces work? Why or why not? | | | | | |

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| Unit | I Can… | Example | | | | | |
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| **Statistics & Probability** | **1** <br> **I** can recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. | "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages. | | | | | |
| | **2** <br> I can understand that a set of data collected to answer a statistical question has a distribution, which can be described by its center, spread, and overall shape. | The dot plot shows the writing scores for a group of students on organization. Describe the data. <br><br> 6-Trait Writing Rubric <br> Scores for Organization <br> x <br> x <br> x <br> x  x <br> x  x  x <br> x  x  x  x <br> x  x  x  x  x  x  x <br> 0  1  2  3  4  5  6 | | | | | |
| | **3** <br> I can recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. | True/False/Not Enough Information: The average height of trees in Watson Park is 65 feet.  Are there any trees in Watson Park taller than 65 feet? | | | | | |
| | **4** <br> **I** can display numerical data in plots on a number line, including dot plots, histograms, and box plots. | Nineteen students completed a writing sample that was scored on organization. The scores for organization were 0,1, 2, 2, 3, 3, 3, 3, 3, 3, 4, 4, 4, 4, 5, 5, 5, 6, 6. Create a data display. <br> What are some observations that can be made from the data display? | | | | | |

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| Unit | I Can… | Example | | | | | |
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| | **5a**<br><br>I can summarize numerical data sets in relation to their context, such as by: reporting the number of observations. | The chart shows data that were collected from a group of fourth graders. Draw conclusions about two characteristics of children that might be related. Make a graph or chart to test your conjecture. Explain whether or not the data supports your conclusions.<br><br>6-Trait Writing Rubric<br>Scores for Organization<br>0 1 2 3 4 5 6 | | | | | |
| | **5b**<br>I can summarize numerical data sets in relation to their context, such as by:  Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. | Estimate the amount of time you spend each weekday doing the following activities:<br>1.  Playing<br>2.  Attending school<br>3.  Doing homework<br>4.  Using technology<br><br>What is the most appropriate units to measure each of these activities?  Make a display to represent your data. | | | | | |
| | **5c**<br>I can summarize numerical data sets in relation to their context, such as by:  Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. | True or False: About half of the values are greater than the average; if this point were deleted from the data set, the median would not change. | | | | | |

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| Unit | I Can… | Example | | | | | |
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| | **5d**<br>**I** can summarize numerical data sets in relation to their context, such as by: Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered. | *The adults of a certain type of insect have a mean length of 0.6 inch. The students in a science class measured 10 insects of this type. The lengths are shown in the line plot.*<br><br>**Insect Lengths**<br><br>*How many of the insects have a length that is greater than 0.6 inch?*<br>*The mean of the insects is _____ and is <u>greater than</u> or <u>less than</u> the mean of adult insects.* | | | | | |