

## CHECK LIST FOR SEVENTH GRADE MATHEMATICS CHECKS FOR UNDERSTANDING

| ✓ | date | Checks for Understanding   |
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|   |      | <b>Standard 1 – Mathematical Processes</b>   |
|   |      | 0706.1.1 Recognize common abbreviations (such as gcd/gcf and lcm).   |
|   |      | 0706.1.2 Recognize round-off error and the inaccuracies it introduces.   |
|   |      | 0706.1.3 Check answers both by estimation and by appropriate independent calculations, using calculators or computers judiciously.                                       |
|   |      | 0706.1.4 Recognize quantities that are inversely proportional (such as the relationship between the lengths of the base and the side of a rectangle with fixed area).    |
|   |      | 0706.1.5 Understand that a linear function in which $f(0) = 0$ is called a directly proportional relationship.   |
|   |      | 0706.1.6 Develop meaning of intercept and rate of change in contextual problems.   |
|   |      | 0706.1.7 Explain and demonstrate how scale in maps and drawings shows relative size and distance.  |
|   |      | 0706.1.8 Recognize the applications of scale factor by exploring blueprints, shadow measuring, and scale models.   |
|   |      | 0706.1.9 Use age-appropriate books, stories, and videos to convey ideas of mathematics.  |
|   |      | 0706.1.10 Model algebraic equations with manipulatives, technology, and pencil and paper.  |
|   |      | 0706.1.11 Translate from calculator notation to scientific/standard notation.  |
|   |      | 0706.1.12 Use dynamic geometry software to explore scale factor and similarity.  |
|   |      | <b>Standard 2 – Number &amp; Operations</b>  |
|   |      | 0706.2.1 Understand that the set of rational numbers includes any number that can be written as a ratio of two integers in which the denominator is not zero.            |
|   |      | 0706.2.2 Develop and analyze algorithms and compute efficiently with integers and rational numbers.  |
|   |      | 0706.2.3 Recognize that rational numbers satisfy the commutative and associative laws of addition and multiplication and the distributive property.                      |
|   |      | 0706.2.4 Understand that $a$ and $-a$ are additive inverses and are located the same distance from zero on the number line; relate distance from zero to absolute value. |
|   |      | 0706.2.5 Understand that $-(-a) = a$ for any number $a$ .  |
|   |      | 0706.2.6 Use the number line to demonstrate addition and subtraction with integers.  |
|   |      | 0706.2.7 Write number sentences to solve contextual problems involving ratio and percent.  |
|   |      | 0706.2.8 Apply ratios, rates, proportions and percents (such as discounts, interest, taxes, tips, distance/rate/time, and percent increase or decrease).                 |
|   |      | 0706.2.9 Efficiently compare and order rational numbers and roots of perfect squares/cubes; determine their approximate locations on a number line.                      |
|   |      | 0706.2.10 Recognize that when a whole number is not a perfect square, then its square root is not rational and cannot be written as the ratio of two integers.           |
|   |      | 0706.2.11 Estimate square/cube roots and use calculators to find approximations.   |
|   |      | 0706.2.12 Recognize $\sqrt{mn} = \sqrt{m} \cdot \sqrt{n}$ and $(\sqrt{m})^2 = m$ .   |

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|  | 0706.2.13 Use the meaning of negative exponents to represent small numbers; translate between scientific and standard notation.  |
|  | 0706.2.14 Express numbers in scientific notation and recognize its importance in representing the magnitude of a number.   |
|  | 0706.2.15 Report results of calculations appropriately in a given context (i.e. using rules of rounding, degree of accuracy, and/or significant digits).   |
|  | <b>Standard 3 – Algebra</b>  |
|  | 0706.3.1 Perform basic operations on linear expressions (including grouping, order of operations, exponents, simplifying and expanding   |
|  | 0706.3.2 Represent and analyze mathematical situations using algebraic symbols.  |
|  | 0706.3.3 Identify a function from a written description, table, graph, rule, set of ordered pairs, and/or mapping.   |
|  | 0706.3.4 Make tables of inputs $x$ and outputs $f(x)$ for a variety of rules that include rational numbers (including negative numbers) as in  |
|  | 0706.3.5 Plot points to represent tables of linear function values.  |
|  | 0706.3.6 Understand that the graph of a linear function $f$ is the set of points on a line representing the ordered pairs $(x, f(x))$ .  |
|  | 0706.3.7 Distinguish proportional relationships ( $y/x = k$ , or $y = kx$ ) from other relationships, including inverse proportionality ( $xy = k$ , o   |
|  | 0706.3.8 Understand slope as the ratio of vertical change to horizontal change.  |
|  | 0706.3.9 Identify a function exhibiting a constant rate of change as a linear function and identify the slope as a unit rate.  |
|  | 0706.3.10 Solve problems involving unit rates (e.g., miles per hour, words per minute).  |
|  | 0706.3.11 Relate the features of a linear equation to a table and/or graph of the equation.  |
|  | 0706.3.12 Use linear equations to solve problems and interpret the meaning of slope, $m$ , and the $y$ -intercept, $b$ , in $f(x) = mx + b$ in terms of the context.   |
|  | 0706.3.13 Given a graph that exhibits the intersection of a line and the $y$ -axis, write a linear function in slope-intercept form: $y = mx + b$  |
|  | 0706.3.14 Understand that when solving linear inequalities, multiplication or division by a negative reverses the inequality symbol.   |
|  | <b>Standard 4 – Geometry &amp; Measurement</b>   |
|  | 0706.4.1 Solve problems involving indirect measurement such as finding the height of a building by comparing its shadow with the height and shadow of a known object.  |
|  | 0706.4.2 Use similar triangles and proportionality to find the lengths of unknown line segments in a triangle.   |
|  | 0706.4.3 Understand that if a scale factor describes how corresponding lengths in two similar objects are related, then the square of the scale factor describes how corresponding areas are related, and the cube of the scale factor describes how corresponding volumes are related.                |
|  | 0706.4.4 Compare angles, side lengths, perimeters and areas of similar shapes.   |
|  | 0706.4.5 Solve problems using ratio quantities: velocity (measured in units such as miles per hour), density (measured in units such as kilograms per liter), pressure (measured in units such as pounds per square foot), and population density (measured in units such as persons per square mile). |
|  | <b>Standard 5 – Data Analysis, Statistics, &amp; Probability</b>   |
|  | 0706.5.1 Create and interpret box-and-whisker plots and stem-and-leaf plots.   |
|  | 0706.5.2 Interpret and solve problems using information presented in various visual forms  |

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|  |  | 0706.5.3 Predict and compare the characteristics of two populations based on the analysis of sample data.            |
|  |  | 0706.5.4 Use proportional reasoning to make predictions about results of experiments and simulations.                |
|  |  | 0706.5.5 Evaluate the design of an experiment.   |
|  |  | 0706.5.5 Apply percentages to make and interpret histograms and circle graphs.                                       |
|  |  | 0706.5.6 Use a tree diagram or organized list to determine all possible outcomes of a simple probability experiment. |
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i).

inputs.

r  $y = k/x$ ).

b.