



Waste Reduction & Recycling

Numbers Sense

- 1.0 Students know the properties of, and compute with, rational numbers expressed in a variety of forms:
 - 1.6 Calculate the percentage of increases and decreases of a quantity.
 - 1.7 Solve problems that involve discounts, markups, commissions, and profit and compute simple and compound interest.

Algebra and Functions

- 1.0 Students express quantitative relationships by using algebraic terminology, expressions, equations, inequalities, and graphs:
 - 1.5 Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation represented by the graph.

Measurement and Geometry

- 1.0 Students choose appropriate units of measure and use ratios to convert within and between measurement systems to solve problems:
 - 1.1 Compare weights, capacities, geometric measures, times, and temperatures within and between measurement systems (e.g., miles per hour and feet per second, cubic inches to cubic centimeters).
 - 1.2 Construct and read drawings and models made to scale.
 - 1.3 Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.
- 2.0 Students compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less common objects. They know how perimeter, area, and volume are affected by changes of scale:
 - 2.4 Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units (1 square foot = 144 square inches or [1 ft²] = [144 in²], 1 cubic inch is approximately 16.38 cubic centimeters or [1 in³] = [16.38 cm³]).



California Science Standards linked with Generation Earth Service Learning Projects: 7th Grade Math

Statistics, Data Analysis, and Probability

- 1.0 Students collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program:
 - 1.1 Know various forms of display for data sets, including a stem-and-leaf plot or box-and-whisker plot; use the forms to display a single set of data or to compare two sets of data.
 - 1.2 Represent two numerical variables on a scatter plot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (e.g., between time spent on homework and grade level).
 - 1.3 Understand the meaning of, and be able to compute, the minimum, the lower quartile, the median, the upper quartile, and the maximum of a data set.

Mathematical Reasoning

- 1.0 Students make decisions about how to approach problems:
 - 1.1 Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.
 - 1.2 Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.
 - 1.3 Determine when and how to break a problem into simpler parts.
- 2.0 Students use strategies, skills, and concepts in finding solutions:
 - 2.1 Use estimation to verify the reasonableness of calculated results.
 - 2.2 Apply strategies and results from simpler problems to more complex problems.
 - 2.4 Make and test conjectures by using both inductive and deductive reasoning.
 - 2.5 Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.
 - 2.6 Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work.
 - 2.7 Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.



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- 2.8 Make precise calculations and check the validity of the results from the context of the problem.
- 3.0 Students determine a solution is complete and move beyond a particular problem by generalizing to other situations:
 - 3.1 Evaluate the reasonableness of the solution in the context of the original situation.
 - 3.2 Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems.
 - 3.3 Develop generalizations of the results obtained and the strategies used and apply them to new problem situations.



Stormwater Urban Runoff

Algebra and Functions

- 4.0 Students solve simple linear equations and inequalities over the rational numbers:
- 4.1 Solve two-step linear equations and inequalities in one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.
 - 4.2 Solve multi step problems involving rate, average speed, distance, and time or a direct variation.

Measurement and Geometry

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 - 1.3 Determine when and how to break a problem into simpler parts.

- 2.0 Students use strategies, skills, and concepts in finding solutions:
 - 2.1 Use estimation to verify the reasonableness of calculated results.
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Illegal Dumping

Algebra and Functions

- 3.0 Students graph and interpret linear and some nonlinear functions:
 - 3.4 Plot the values of quantities whose ratios are always the same (e.g., cost to the number of an item, feet to inches, circumference to diameter of a circle). Fit a line to the plot and understand that the slope of the line equals the quantities.

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- 3.0 Students know the Pythagorean theorem and deepen their understanding of plane and solid geometric shapes by constructing figures that meet given conditions and by identifying attributes of figures:
 - 3.1 Identify and construct basic elements of geometric figures (e.g., altitudes, mid-points, diagonals, angle bisectors, and perpendicular bisectors; central angles, radii, diameters, and chords of circles) by using a compass and straightedge.
 - 3.2 Understand and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine their image under translations and reflections.

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Household Hazardous Waste

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