

Grade Six
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Correlations with West Virginia
Instructional Math Goals and Objectives

The sixth grade objectives place continued emphasis on the study of whole numbers, decimals, and fractions. However, students need opportunities to apply their computation skills to real life applications. Calculators and computers may be used to solve problems. Decreased attention should be given to tedious paper and pencil computations. Sixth graders will continue to use manipulatives whenever new material is introduced or whenever it is needed to review previously taught material. The areas of probability, statistics, geometry, and pre-algebra will be stressed. Students will use ratios to compare data sets, make geometric constructions of three-dimensional figures, explore thoroughly the algebra strand, and solve problems involving circles, volume, and surface area.

Number Theory and Number Sense

6.1_{7,8} read, write, and identify the place value from billions through millionths using standard and expanded form **Appetizers 1 A; Main Dish Objective 1 (Number Concepts) lesson 1; Applications; Final Tests; Reasonableness Problems**

6.2_{7,8} compare and order the value of whole numbers, fractions, and decimals from billions through ten-thousandths and write and model equivalences **Appetizers 1 A; Main Dish Objective 1 (Number Concepts) lesson 1; Applications; Final Tests; Reasonableness Problems**

6.3₇ identify prime and composite numbers up to 100 using hundred chart, manipulatives, and calculators **Appetizers 1 F; Main Dish Objective 1 (Number Concepts) lesson 6; Applications; Final Tests; Reasonableness Problems**

6.4 identify and represent integers on a number line **Appetizers 1 F; Main Dish Objective 1 (Number Concepts) lesson 6; Applications; Final Tests; Reasonableness Problems**

6.5 identify and use the divisibility rules of 2, 3, 5, and 10

6.6_{7,8} identify pictorial representations of fractions and decimals **Appetizers 1 C and D; Main Dish Objective 1 (Number Concepts) lessons 3 and 4; Applications; Final Tests; Reasonableness Problems**

6.7₅ identify least common multiple or greatest common factor of two numbers **Appetizers 1 D; Main Dish Objective 1 (Number Concepts) lesson 4; Applications; Final Tests; Reasonableness Problems**

Computation and Estimation

6.8_{3, 4, 5, 7, 8} use estimation to solve problems with whole numbers (rounding, compatible numbers, clustering, front-end estimation with adjustments) and decimals, including money **Appetizers 10 A, B, C, and E; Main Dish Objective 10 (Estimation) lessons 1, 2, 3, and 5; Applications; Final Tests; Reasonableness Problems**

6.9_{5, 7, 8} continue to reinforce whole number computation skills, applying them to problem-solving situations using estimation, mental math, calculators, and paper and pencil **Appetizers 6 A; 7 A; 8 A; 9 A; 11 A; 12 A; Main Dish Objective 6 (Addition) lesson 1; Objective 7 (Subtraction) lesson 1; Objective 8 (Multiplication) lesson 1; Objective 9 (Division) lesson 1; Objective 11 (Solution Strategies) lesson 1; Objective 12 (Mathematical Representation) lesson 1; Applications; Final Tests; Reasonableness Problems**

6.10_{5, 7, 8} solve problems in context that involve addition, subtraction, multiplication, and division of fractions and mixed numbers with and without regrouping, including like and unlike denominators, expressing answers in simplest form using estimation, mental math, calculators, and paper and pencil **Appetizers 1 D; 6 C; 7 B; Objective 1 (Number Concepts) lesson 4; Objective 6 (Addition) lesson 3; Objective 7 (Subtraction) lesson 2; Applications; Final Tests; Reasonableness Problems**

6.11_{5, 7, 8} solve problems in context that involve addition, subtraction, and multiplication of decimals through the ten-thousandths and division of decimals or decimal divisors using estimation, mental math, calculators, and paper and pencil **Appetizers 6 D; 7 C and D; 8 D; 9 E; 11 A; Main Dish Objective 6 (Addition) lesson 4; Objective 7 (Subtraction) lessons 3 and 4; Objective 8 (Multiplication) lesson 4; Objective 9 (Division) lesson 5; Objective 11 (Solution Strategies) lesson 1; Applications; Final Tests; Reasonableness Problems**

6.12_{7, 8} use concrete materials, estimation, mental math, calculators, and paper and pencil to find the percent of a number **Appetizers 1 E; 10 E; Main Dish Objective 1 (Number Concepts) lesson 5; Objective 10 (Estimation) lesson 5; Applications; Final Tests; Reasonableness Problems**

6.13 use order of operations to solve multi-step problems **Appetizers 2 A; Main Dish Objective 2 (Mathematical Relations) lesson 1; Applications; Final Tests; Reasonableness Problems**

6.14 identify a number that is 1,000 more or 1,000 less than a given number **Appetizers 1 A; Main Dish Objective 1 (Number Concepts) lesson 1; Applications; Final Tests; Reasonableness Problems**

Patterns, Functions, and Algebra

6.15 identify missing elements in numeric and geometric patterns and explore a variety of patterns, including perfect squares, square roots, exponents, and scientific notation **Appetizers 1 D; Main Dish Objective 1 (Number Concepts) lesson 4; Applications; Final Tests; Reasonableness Problems**

6.16_{5, 7, 8} use input/output models for functions (number machines)

6.17 solve equations using identity property of addition ($8+n=8$) and the identity property of multiplication ($8 \times n=8$) **Appetizers 2 D; Main Dish Objective 2 (Mathematical Relations) lesson 4; Applications; Final Tests; Reasonableness Problems**

6.18 write the cross product of a proportion and solve the resulting equation

6.19 represent and solve real world-problems by choosing the appropriate strategy, such as guess and check, make a table, write a proportion, find a pattern, work backwards, use a formula, write an equation, or make a scale drawing **Appetizers 2 D; 11 A; 12; Main Dish Objective 2 (Mathematical Relations) lesson 4; Objective 11 (Solution Strategies) lesson 1; Objective 12 (Mathematical Representation); Applications; Final Tests; Reasonableness Problems**

6.20 write algebraic expressions for word expressions and evaluate them by replacing the variable with a given value **Appetizers 2 D; 12 A, B, and C; Main Dish Objective 2 (Mathematical Relations) lesson 4; Objective 12 (Mathematical Representation) lessons 1, 2, and 3; Applications; Final Tests; Reasonableness Problems**

6.21_{5, 7} solve equations with addition, subtraction, multiplication, and division of whole numbers, fractions, decimals, and integers using inverse operations, guess and check, and/or physical models **Appetizers 2 A and B; 6; 7; 8; 9; 12 B; Main Dish Objective 2 (Mathematical Relations) lessons 1 and 2; Objective 6 (Addition); Objective 7 (Subtraction); Objective 8 (Multiplication); Objective 9 (Division); Objective 12 (Mathematical Representation) lesson 2; Applications; Final Tests; Reasonableness Problems**

6.22 solve inequalities by using a number line **Appetizers 2 F; Main Dish Objective 2 (Mathematical Relations) lesson 6; Applications; Final Tests; Reasonableness Problems**

6.23 graph one-step linear equations in one variable in the first quadrant **Appetizers 3 B; Main Dish Objective 3 (Geometry) lesson 2; Applications; Final Tests; Reasonableness Problems**

Probability and Statistics

6.24_{5, 7, 8} collect, organize, display, and interpret data using line graphs, circle graphs, bar graphs, histograms, stem-and-leaf plots, tables, and charts **Appetizers 5 A and B; 12 C; Main Dish Objective 5 (Probability/Statistics) lessons 1 and 2; Objective 12 (Mathematical Representation) lesson 3; Applications; Final Tests; Reasonableness Problems**

6.25_{5, 7, 8} create and solve problems involving the mean, median, mode, and range of a set of data **Appetizers 5 D; Main Dish Objective 5 (Probability/Statistics) lesson 4; Applications; Final Tests; Reasonableness Problems**

6.26 model practical problem-solving situations by constructing a sample space to determine probability **Appetizers 5 A; 11 D; Main Dish Objective 5 (Probability/Statistics) lesson 1; Objective 11 (Solution Strategies) lesson 4; Applications; Final Tests; Reasonableness Problems**

6.27 determine the probability of a given event and express that probability as a ratio, decimal, or percent **Appetizers 1 E; 2 C; 5 D; Main Dish Objective 1 (Number Concepts) lesson 5; Objective 2 (Mathematical Relations) lesson 3; Objective 5 (Probability/Statistics) lesson 4; Applications; Final Tests; Reasonableness Problems**

6.28 test the expected probability of an event against the actual outcome by carrying out an experiment using technology whenever appropriate **Appetizers 5 A and C; 11 D; Main Dish Objective 5 (Probability/Statistics) lessons 1 and 3; Objective 11 (Solution Strategies) lesson 4; Applications; Final Tests; Reasonableness Problems**

6.29_{5, 7, 8} determine combinations and permutations (tree diagrams, probability experiments with and without replacement) **Appetizers 5 C; Main Dish Objective 5 (Probability/Statistics) lesson 3; Applications; Final Tests; Reasonableness Problems**

Geometry

6.30_{7, 8} classify lines as parallel, intersecting, perpendicular, or skew **Appetizers 3 A; Main Dish Objective 3 (Geometry) lesson 1; Applications; Final Tests; Reasonableness Problems**

6.31 draw, compare, and contrast the following quadrilaterals: parallelogram, rectangle, square, rhombus, and trapezoid along with the following polygons: pentagon, hexagon, octagon, decagon, and dodecagon **Appetizers 3 A; Main Dish Objective 3 (Geometry) lesson 1; Applications; Final Tests; Reasonableness Problems**

6.32_{5, 4, 7} classify and compare line segments, angles, and polygons **Appetizers 3 D; Main Dish Objective 3 (Geometry) lesson 4; Applications; Final Tests; Reasonableness Problems**

6.33 describe, identify, and build models of three dimensional figures, including prisms, pyramids, cylinders, and cones; locate, count, and record the faces, edges, and vertices of the prisms and pyramids **Appetizers 3 A; 4 E; Main Dish Objective 3 (Geometry) lesson 1; Objective 4 (Measurement) lesson 5; Applications; Final Tests; Reasonableness Problems**

6.34 bisect a line segment and construct congruent angles using a compass and straightedge

6.35_{7, 8} identify the ordered pair for a point and locate the point in all four quadrants of the coordinate plane **Appetizers 2 E; 3 B; Main Dish Objective 2 (Mathematical Relations) lesson 5; Objective 3 (Geometry) lesson 2; Applications; Final Tests; Reasonableness Problems**

6.36 recognize line symmetry and rotational symmetry **Appetizers 3 B and C; Main Dish Objective 3 (Geometry) lesson 2 and 3; Applications; Final Tests; Reasonableness Problems**

6.37 demonstrate flips, slides, and turns using congruent geometric figures **Appetizers 3 B; Main Dish Objective 3 (Geometry) lesson 2; Applications; Final Tests; Reasonableness Problems**

6.38_{7, 8} identify the radius and diameter of a circle **Appetizers 4 D and E; Main Dish Objective 4 (Measurement) lessons 4 and 5; Applications; Final Tests; Reasonableness Problems**

Measurement

6.39 use concrete materials to derive approximation for pi from actual measurements of circumference and diameter of a circle **Appetizers 4 D; Main Dish Objective 4 (Measurement) lesson 4; Applications; Final Tests; Reasonableness Problems**

6.40₇ create and solve problems by finding the circumference and area of a circle when given the radius or diameter **Appetizers 4 D; 11 B; Main Dish Objective 4 (Measurement) lesson 4; Objective 11 (Solution Strategies) lesson 2; Applications; Final Tests; Reasonableness Problems**

6.41_{7, 8} measure real objects in order to develop the formulas for perimeter and area; determine the perimeter and area of a triangle, square, rectangle, parallelogram, and irregular figures given the appropriate measures **Appetizers 4 E; Main Dish Objective 4 (Measurement) lesson 5; Applications; Final Tests; Reasonableness Problems**

6.42 investigate and solve problems involving the volume and surface area of rectangular prisms using real objects and practical situations **Appetizers 4 E; 11 B; Main Dish Objective 4 (Measurement) lesson 5; Objective 11 (Solution Strategies) lesson 2; Applications; Final Tests; Reasonableness Problems**

6.43_{7, 8} use prior knowledge of customary and metric measures of length, mass/weight, and capacity/volume to solve problems **Appetizers 4 A, B, and E; Main Dish Objective 4 (Measurement) lessons 1, 2, and 5; Applications; Final Tests; Reasonableness Problems**

6.44_{2, 3, 4, 5, 7, 8} solve application problems using measurement including elapsed time **Appetizers 4 A, B, C, and D; Main Dish Objective 4 (Measurement) lessons 1, 2, 3, and 4; Applications; Final Tests; Reasonableness Problems**

6.45_{5, 7, 8} convert between units within the same system **Appetizers 4 B and C; Main Dish Objective 4 (Measurement) lessons 2 and 3; Applications; Final Tests; Reasonableness Problems**

6.46_{2, 3, 4, 5} select appropriate units to determine length, weight, temperature, or volume using customary and metric units **Appetizers 4 C; Main Dish Objective 4 (Measurement) lesson 3; Applications; Final Tests; Reasonableness Problems**

6.47_{7, 8} determine measurements indirectly from scale drawings

Computer and Technology

6.48 use appropriate software to practice and master sixth grade instructional objectives in mathematics **Appetizers, Main Dish, Applications; Final Tests; Reasonableness Problems; Doggie Bag CD Rom**

6.49 use a calculator to do computations in problem-solving situations

6.50 use a calculator to solve problems with fractions and mixed numbers

6.51 use a calculator to add, subtract, and multiply problems with decimal through ten-thousandths and division of decimals by decimals

6.52 use a calculator to find the percent of a number

6.53 use a calculator to solve multi-step problems involving order of operations

6.54 use a calculator to find mean, median, mode, and range from a set of data

6.55 use graphing software to create line, circle, and bar graphs, histograms, tables and charts

6.56 identify spreadsheet terms (e.g, column, row, cell, formula, etc.)

- 6.57 compare the difference between a paper spreadsheet and a computer spreadsheet (e.g., grade book, budget, sports statistics)
- 6.58 use a spreadsheet software template to enter and edit data
- 6.59 practice inputting data using correct keying, editing, and formatting techniques
- 6.60 identify examples of copyright law violations and possible penalties

