

## Grade 6: Process and Standards

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### Process

To begin, each member of the Grade 6 team took a state document, focusing on one strand. As a group, the team discussed each item (i.e., learning expectation) on the template for that strand to ensure a common understanding among the team members. Then the team began searching within state documents for learning expectations noted on the template. As expectations were located, they were read aloud so that a group decision could be made as to whether the expectation matched a template item. This group coding was done for 12 states until the team was in general agreement on the task for the strand.

After the group review, team members began individually summarizing state documents, asking for assistance as needed to clarify particular expectations found in the state documents. When all state documents were coded in one strand, another strand was chosen to review.

On review of the limited number of “process” standards for states, the team determined that few states had process standards unique to Grade 6. As a result, the process standards were not coded for Grade 6.

### Reader Reliability

The reader reliability rating for the Grade 6 team showed agreement on 15 out of 16 items tested (94%).

### Trends in the Grade 6 Standards

The Grade 6 team suggested the following trends from their review of the 41 state documents. The trends are summarized by strand. The number of states specifying a given standard is listed in parentheses.

### Number and Operation

The largest set of learning expectations for Grade 6 is in this strand. Common learning expectations include the following:

- Compute with fractions and decimals (39)
- Compare and order fractions and decimals (34)
- Locate numbers on a number line (26)
- Identify least common multiple and greatest common factor (25)
- Express a number in its prime factorization (24)
- Determine the equivalency among fractions, decimals, and percents (23)
- Use order of operations (22)

### **Algebra**

Learning expectations represent introductory experiences with simple equations. Common learning expectations include the following:

- Solve linear equations in 1 unknown (31)
- Create function tables and graphs (22)
- Continue patterns (25)

### **Geometry**

Common learning expectations include the following:

- Classify and compare quadrilaterals based on attributes (28)
- Classify and compare triangles based on attributes (24)
- Identify and use congruent, similar, and symmetrical geometric figures (23)

### **Measurement**

Common learning expectations include the following:

- Convert units within a system (30)
- Select appropriate units and tools of measure (29)
- Measure perimeter and area (27)
- Develop and use formulas for perimeter and area (22)
- Measure area of triangles and quadrilaterals (21)

### **Data Analysis**

Common learning expectations include the following:

- Find and use the mean, median, and range of a set of data (33)
- Interpret information from bar graphs, line graphs, and circle graphs (32)
- Construct different kinds of graphs (e.g., line, double bar, circle) (28)

### **Probability**

Common learning expectations include the following:

- Find the probability of a single event (24)

### **Comparison of Sixth-Grade Standards**

The set of standards for which at least 25 percent of the 41 states agreed follows:

#### **Number**

- Compare and order integers, fractions, decimals, and mixed numbers (35) 85%
- Locate numbers (whole, fractions, integers, or decimals) on a number line (26) 63%
- Use greatest common factor (divisor) (26) 63%
- Express a number in its prime factorization (25) 61%
- Use least common multiple (25) 61%
- Determine equivalency among fractions, decimals, mixed numbers, and percents (22) 54%
- Use exponential powers (18) 44%
- Use and understand decimals (18) 44%
- Identify primes and composite numbers (17) 41%
- Understand and use integers (16) 39%
- Use different forms to symbolize ratios or rates (15) 37%

- Convert among fractions and decimals (14) 34%
- Use percent to represent a part of a whole (14) 34%
- Use integers to describe real-world phenomena (13) 32%
- Understand fractions as ratios (13) 32%
- Understand and apply the concept of negative numbers (12) 29%
- Simplify fractions to lowest terms (12) 29%
- Convert among fractions and percents (11) 27%
- Convert among decimals and percents (11) 27%

**Number Operations**

- Compute with fractions (39) 95%
- Compute with decimals (34) 83%
- Estimate the reasonableness of results (25) 61%
- Use order of operations (22) 54%
- Estimate results of computations (22) 54%
- Estimate with fractions and decimals (18) 44%
- Meaning of operations, modeling of operations (18) 44%
- Describe and illustrate commutative, associative, inverse, and identity properties for addition and multiplication (16) 39%
- Find percent of number (16) 39%
- Round numbers using a variety of techniques (15) 37%
- Understand relations among basic operations (13) 32%
- Compute with positive and negative numbers (12) 29%

**Measurement**

- Convert units of length, weight, capacity within a system (30) 73%
- Select appropriate unit of measure or tool (29) 71%
- Estimate or measure perimeter of figures (27) 66%
- Develop and use formulas for perimeter and area (22) 54%
- Estimate or measure area of triangles or quadrilaterals (20) 49%
- Find the circumference of a circle (19) 46%
- Find angle measure (17) 41%
- Create a new figure by increasing or decreasing original measures (scale drawing) (17) 41%
- Measure to the nearest X unit (16) 39%
- Find the volume of selected 3-dimensional figures (15) 37%
- Determine distance between two points on a scale drawing (12) 29%

**Geometry**

- Classify or compare quadrilaterals based on attributes (28) 68%
- Classify triangles by angles (24) 59%
- Identify and use congruent, similar, or symmetrical geometric figures (23) 56%
- Classify angles by measure (20) 49%
- Find or draw the results of transformations on a figure (20) 49%
- Identify spheres, cones, cylinders, prisms, and pyramids (18) 44%
- Identify or draw 2-dimensional views of 3-dimensional figures (15) 37%
- Identify rotational symmetries (15) 37%
- Identify and use parts of a circle (13) 32%
- Identify line symmetries (13) 32%

**Probability**

- Find the probability of a simple event (24) 59%
- Express probabilities as ratios, percents, and decimals (18) 44%
- Name all possible outcomes from an experiment (16) 39%
- Determine the theoretical probability of a given event (13) 32%
- Make predictions using probability (13) 32%

**Data Analysis**

- Find and use mean, median, mode, range (33) 80%
- Interpret information from bar graphs, line graphs, and circle graphs (32) 78%
- Construct histogram, line graph, scatter plot, stem-and-leaf plot, double bar graphs, tally charts, frequency tables, circle graphs, line graphs, box-and-whisker plots (28) 68%
- Choose appropriate representations (18) 44%
- Design an investigation; collect, organize, and display data (16) 39%
- Formulate questions from contextual data (12) 29%

**Algebra**

- Solve an equation for an unknown; linear equation, one unknown (30) 73%
- Continue a pattern (25) 61%
- Create functions tables and graphs (22) 54%
- Use variables in contexts (20) 49%
- Plot coordinates (20) 49%
- Determine a verbal rule for a function given input and output (19) 46%
- Identify coordinates in Cartesian plane (17) 41%
- Express rules with and without variables (15) 37%
- Translate between words and symbols (14) 34%
- Explain how change in one variable relates to another variable (14) 34%
- Simplify expressions using order of operations (11) 27%
- Evaluate an expression by substitution (11) 27%