

## Grade 5 Math Standards and Benchmarks

### **Standard 1: Use a variety of strategies in the problem-solving process** **Benchmarks:**

- 1.1. Use a variety of strategies to understand problem situations
- 1.2. Represent problem situations in a variety of forms
- 1.3. Understand that some ways of representing a problem are more efficient than others
- 1.4. Use the process of elimination to solve problems
- 1.5. Know the difference between relevant and irrelevant information when solving
- 1.6. Understand the basic language of logic in mathematical situations
- 1.7. Use explanations and reasoning of the methods behind a problem solution to verify results with respect to the original problem

### **Standard 2: Understand and apply basic and advanced properties of the concepts of numbers** **Benchmarks:**

- 2.1. Understand basic number theory concepts
- 2.2. Understand equivalent forms of basic percents, fractions and decimal, and when one form of a number might be more useful than another
- 2.3. Understand the basic difference between odd and even numbers
- 2.4. Understand the basic meaning of place value
- 2.5. Understand the relative magnitude and relationships among whole numbers, fractions, decimals and mixed numbers
- 2.6. Use models to identify, order, and compare numbers

### **Standard 3: Use basic and advanced procedures while performing the processes of computation** **Benchmarks:**

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- 3.1. Add, subtract, multiply, and divide whole numbers and decimals
- 3.2. Add and subtract simple fractions
- 3.3. Use specific strategies to compute and to check the reasonableness of computational results
- 3.4. Perform basic mental computations
- 3.5. Determine the effects of addition, subtraction, multiplication and division on size and order of numbers
- 3.6. Understand the properties of and the relationships among addition, subtraction, multiplication and division
- 3.7. Solve real-world problems involving number operations
- 3.8. Know the language of basic operations

### **Standard 4: Understand and apply basic and advanced properties of the concepts of measurement**

#### **Benchmarks:**

- 4.1. Understand basic measures perimeter, area, volume, capacity, mass, angle, and circumference
- 4.2. Select and use appropriate tools for given measurement situations
- 4.3. Know approximate size of basic standard units and relationships between them
- 4.4. Understand relationships between measures
- 4.5. Understand that measurement is not exact
- 4.6. Use specific strategies to estimate quantities and measurements
- 4.7. Select and use appropriate units of measurement according to type and size of unit

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### **Standard 5: Understand and apply basic and advanced properties of the concepts of geometry**

#### **Benchmarks:**

- 5.1. Know age-appropriate language to discuss geometric concepts
- 5.2. Understand basic properties of figures
- 5.3. Predict and verify the effect of combining subdividing and changing basic two-dimensional shapes
- 5.4. Understand that shapes can be congruent and similar
- 5.5. Use motion geometry to understand geometric relationships
- 5.6. Understand characteristics of angles and lines
- 5.7. Understand basic concepts of scale

### **Standard 6: Understand and apply basic and advanced concepts of statistics and data analysis**

#### **Benchmarks:**

- 6.1. Understand that data represent specific pieces of information about real-world objects or activities
- 6.2. Understand that spreading data out on a plot line helps to see where the extremes are, where the data points pile up, and where the gaps are
- 6.3. Understand that a summary of data should include where the middle is and how much spread there is around it
- 6.4. Organize and display data in graphs, charts, and diagrams
- 6.5. Read and interpret simple bar graphs, pie charts, and line graphs
- 6.6. Understand that data comes in many different forms and that collecting, organizing, and displaying data can be done in many ways
- 6.7. Understand the basic concept of a sample

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### **Standard 7: Understand and apply basic and advanced concepts of probability**

#### **Benchmarks:**

- 7.1. Understand that the word "chance" refers to the likelihood of an event
- 7.2. Recognize events that are sure to happen, events that are sure not to happen, and events that may or may not happen
- 7.3. Understand that when predictions are based on what is known about the past, one must assume that conditions stay the same from the past event to the predicted future event
- 7.4. Understand that statistical predictions are better for describing what proportion of a group will experience something rather than which individuals within the group will experience something, and how many events will occur rather than exactly when they will occur
- 7.5. Use basic sample spaces to describe and predict events

### **Standard 8: Understand and apply basic and advanced properties of functions and algebra**

#### **Benchmarks:**

- 8.1. Recognize a wide variety of patterns and the rules that explain them
- 8.2. Understand that the same pattern can be represented in different ways
- 8.3. Know that a variable is a letter or symbol that stands for one or more numbers
- 8.4. Understand the basic concept of an equality relationship
- 8.5. Solve simple open sentences involving operations on whole numbers
- 8.6.1. Know basic characteristics and features of the rectangular coordinate system

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### **Standard 9: Understand the general nature and uses of mathematics** **Benchmarks:**

- 9.1. Understand that numbers and the operations performed on them can be used to describe things in the real world and predict what might occur
- 9.2. Understand that mathematical ideas and concepts can be represented concretely, graphically, and symbolically