

## **Grade 8 Math Standards and Benchmarks**

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

#### **Benchmarks:**

##### **Grade 8**

- 1.1 Understand that there is no right way to solve mathematical problems but that different methods (e.g., working backward from a solution, using a similar problem type) have different advantages and disadvantages

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

#### **Benchmarks:**

##### **Grade 8**

- 2.1. Understand the relationships among equivalent number representations (e.g., whole numbers, positive and negative integers, fractions, ratios, decimals, percents, scientific notation, exponentials) and the advantages and disadvantages of each type of representation
- 2.2. Understand the characteristics and properties (e.g., order relations, relative magnitude, base ten place values) of the set of rational numbers and its subsets (e.g., whole numbers, fractions, decimals, integers)
- 2.3. Understand the structure of numeration systems that are based on numbers other than 10 (e.g., base 60 for telling time and measuring angles, Roman numerals for dates)

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

#### **Benchmarks:**

##### **Grade 8**

- 3.1. Understands how different algorithms work for arithmetic computations and operations
- 3.2. Select and use appropriate computational methods (e.g., mental, paper and pencil, calculator, computer) for a given situation

## **Grade 8 Math Standards and Benchmarks**

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

#### **Benchmarks: Grade 8**

- 4.1. Understand the relationships among linear dimensions, perimeter, area, surface area, and volume and the corresponding uses of units, square units, and cubic units of measure
- 4.2. Understand the concepts of precision and significant digits as they relate to measurement (e.g., how units indicate precision)
- 4.3. Solve problems involving units of measurement and convert answers to a larger or smaller unit within the same system (i.e., metric or U.S.)

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

#### **Benchmarks: Grade 8**

- 5.1. Understand the defining properties of geometric figures (e.g., a cube has edges with equal lengths, faces with equal areas and congruent shapes, right-angle corners)
- 5.2. Understand geometric transformations of figures e.g., rotations, translations)
- 5.3. Understand the relationships between two and three-dimensional representations of a figure e.g., scale drawing, planar cross section)
- 5.4. Use geometric methods to complete basic geometric comparisons (eg., angles)
- 5.5. Understand the concepts of line and angle properties
- 5.6. Use geometric methods to complete basic constructions

## **Grade 8 Math Standards and Benchmarks**

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

#### **Benchmarks: Grade 8**

- 6.1. Understand the importance of data representation
- 6.2. Understand basic characteristics of measures of central tendency (i.e., mean, mode, median) and distribution (e.g., range, varying rates change, gaps, cluster, outliers)

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

#### **Benchmarks: Grade 8**

- 7.1. Understand the role that probability and statistics play in physical events
- 7.2. Understand how predictions are based on data and probabilities (e.g., the difference between predictions based on theoretical probability and experimental probability)

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

#### **Benchmarks: Grade 8**

- 8.1. Know that an expression is a mathematical statement using numbers and symbols to represent relationships and real world situations (e.g., equations and inequalities with or without variables)
- 8.2. Understand values (e.g., minimum maximum values,  $y$ -intercepts, slope, ratio or difference) patterns, relationships, functions
- 8.3. Use the rectangular coordinate system to and solve problems
- 8.4. Solve simple systems of equations graphically

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