

## **Middle School Mathematics II Essential Curriculum**

### **UNIT I:**

#### **Standard 6.0 Knowledge of Number Relationships and Computation/Arithmetic**

##### **Goal 1. The student will apply knowledge of rational numbers and place value.**

Objectives - The student be able to:

1. Compare, order, and describe rational numbers with or without relational symbols ( $<$ ,  $>$ ,  $=$ ).
2. Express decimals using expanded form.
3. Express whole numbers and decimals in scientific notation.
4. Read, write, and represent whole numbers.
5. Determine equivalent forms of rational numbers expressed as fractions, decimal, percents, and ratios.
6. Determine equivalent forms of rational numbers expressed as fractions, decimal, percents, and ratios.

##### **Goal 2. The student will analyze number relations and compute.**

Objectives - The student be able to:

1. Add, subtract, and multiply positive fractions and mixed numbers.
2. Identify and use the properties of addition and multiplication to simplify expressions.
3. Divide fractions and mixed numbers.

##### **Goal 3. The student will estimate.**

Objectives - The student be able to:

1. Determine approximate sums, differences, products, and quotients.

#### **Standard 1.0 Knowledge of Algebra, Patterns, or Functions**

##### **Goal 2. The student will identify and extend a geometric sequence.**

Objectives - The student be able to:

1. Identify and extend a geometric sequence.

## **UNIT II:**

### **Standard 6.0 Knowledge of Number Relationships and Computation/Arithmetic**

#### **Goal 1. The student will apply knowledge of rational numbers and place value.**

Objectives - The student be able to:

1. Compare, order, and describe rational numbers with or without relational symbols ( $<$ ,  $>$ ,  $=$ ).

#### **Goal 2. The student will analyze number relations and compute.**

Objectives - The student be able to:

1. Add, subtract, multiply, and divide integers.

### **Standard 1.0 Knowledge of Algebra, Patterns, or Functions**

#### **Goal 1. The student will locate points on a number line and in a coordinate plane.**

Objectives - The student be able to:

1. Represent rational numbers on a number line.
2. Graph ordered pairs on a coordinate plane.

### **Standard 2.0 Knowledge of Geometry**

#### **Goal 1. The student will analyze a transformation on a coordinate plane.**

Objectives - The student be able to:

1. Identify, describe, and plot the results of one transformation on a coordinate plane.
2. Identify and describe transformations that result in rotational and reflectional symmetry.

## **UNIT III:**

### **Standard 1.0 Knowledge of Algebra, Patterns, or Functions**

#### **Goal 1. The student will write and evaluate expressions.**

Objectives - The student be able to:

1. Calculate powers of integers and square roots of perfect square whole numbers.
2. Use the law of exponents to simplify expressions.
3. Evaluate numeric expressions using the order of operations.
4. Evaluate algebraic expressions.
5. Write an algebraic expression to represent unknown quantities.
6. Simplify algebraic expressions represented as physical models by combining like terms.

#### **Goal 2. The student will identify, write, solve, and apply equations and inequalities.**

Objectives - The student be able to:

1. Determine the unknown in a linear equation.
2. Write equations and inequalities to represent relationships.
3. Solve for the unknown in an inequality.
4. Identify or graph solutions of inequalities on a number line.
5. Apply given formulas to a problem solving situation.

## **UNIT IV:**

### **Standard 1.0 Knowledge of Algebra, Patterns, or Functions**

#### **Goal 3. The student will identify, describe, extend, and create linear patterns and functions.**

Objectives - The student be able to:

1. Complete a function table with a given two-operation rule.
2. Describe how a change in one variable in a linear function affects the other variable in a table of values.

#### **Goal 4. The student will analyze linear relationships.**

Objectives - The student be able to:

1. Identify and describe the change represented in a table of values.
2. Describe the rate of change of a linear relationship by a table of values and a graph.

#### **Goal 5. The student will locate points on a number line and in a coordinate plane.**

Objectives - The student be able to:

1. Graph linear equations with one operation in a coordinate plane.

## **UNIT V:**

### **Standard 2.0 Knowledge of Geometry**

#### **Goal 1. The student will analyze the properties of plane geometric figures.**

Objectives - The student be able to:

1. Identify and describe angles formed by intersecting lines, line segments, and rays.
2. Identify angles formed when two parallel lines are cut by a transversal.
3. Identify the parts of right triangles.

#### **Goal 2. The student will analyze geometric relationships.**

Objectives - The student be able to:

1. Determine the measurements of angles formed by intersecting lines, line segments, and rays.
2. Determine a missing angle measurement using the sum of the interior angles of a polygon.
3. Describe the relationship between the legs and hypotenuse of right triangles.

**Goal 3. The student will represent plane geometric figures.**

Objectives - The student be able to:

1. Determine the congruent parts of polygons.
2. Identify and describe similar polygons and their corresponding parts.
3. Construct geometric figures using a variety of construction tools.

**UNIT VI:**

**Standard 3.0 Knowledge of Measurement**

**Goal 1. The student will estimate and apply measurement formulas.**

Objectives - The student be able to:

1. Estimate and determine the area of quadrilaterals.
2. Determine the surface area of geometric solids.
3. Estimate pi using physical models.
4. Estimate and determine the volume of a triangular prism.

**UNIT VII:**

**Standard 3.0 Knowledge of Measurement**

**Goal 2. The student will analyze measurement relationships.**

Objectives - The student be able to:

1. Determine a missing dimension for a figure using a scale.
2. Determine the distance between 2 points using a drawing and a scale.

**Standard 6.0 Knowledge of Number Relationships and Computation/Arithmetic**

**Goal 1. The student will analyze ratios, proportions, or percents.**

Objectives - The student be able to:

1. Determine equivalent ratios.
2. Determine and use rates, unit rates, and percents as ratios in the context of a problem.
3. Write and solve proportions.
4. Determine percent of a number.
5. Determine rate of increase and decrease, discounts, simple interest, commission, and sales tax.

## **UNIT VIII:**

### **Standard 4.0 Knowledge of Statistics**

#### **Goal 1. The student will organize and display data.**

Objectives - The student be able to:

1. Organize and display data to make circle graphs.
2. Organize and display data to make box-and-whisker plots.
3. Organize and display data to make a scatter plot.

#### **Goal 2. The student will analyze data.**

Objectives - The student be able to:

1. Interpret tables.
2. Interpret circle graphs.
3. Interpret box-and-whisker plots.
4. Analyze multiple box-and-whisker plots using the same scale.
5. Interpret scatter plots.

## **UNIT IX:**

### **Standard 5.0 Knowledge of Probability**

#### **Goal 1. The student will identify a sample space.**

Objectives - The student be able to:

1. Determine the number of outcomes.
2. Describe the difference between theoretical and experimental probability.

#### **Goal 2. The student will determine the probability of an event comprised of no more than 2 independent events.**

Objectives - The student be able to:

1. Express the probability of an event comprised of no more than two independent events as a fraction, a decimal, or a percent.

#### **Goal 3. The student will determine the probability of a second event that is dependent on a first event of equally likely outcomes.**

Objectives - The student be able to:

1. Express the probability of a second event that is dependent on a first event of equally likely outcomes as a fraction, a decimal, or a percent.

#### **Goal 4. The student will analyze the results of a survey or simulation.**

Objectives - The student be able to:

1. Describe the difference between independent and dependent events.
2. Make predictions and express the probability of the results of a fraction, a decimal with no more than 2 decimal places, or a percent.
3. Conduct a probability experiment.
4. Compare outcomes of theoretical probability with the results of experimental

probability.