

Math 7

General & Specific Outcomes, I Can Statements, and Vocabulary



Strand: Number

General Outcome: Develop number sense.

Specific Outcomes:

1. **Divisibility Rules** – Determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8, 9, or 10, and why a number cannot be divided by zero.
 - ✓ I can use divisibility rules to determine if a number can be divided by 2, 3, 4, 5, 6, 8, 9, 10.
 - ✓ I can explain why a number can not be divided by zero.
 - ✓ I can sort numbers based on their divisibility using various organizers.
 - ✓ I can use divisibility rules to find factors.
 - ✓ I can explain the difference between factors and multiples, prime numbers and composite numbers.
2. **Decimal Operations** – Demonstrate an understanding of the addition, subtraction, multiplication, and division of decimals to solve problems.
 - ✓ I can add, subtract, multiply, and divide decimal numbers, without technology.
 - ✓ I can determine whether to add, subtract, multiply or divide, in a problem situation.
 - ✓ I can use estimation to justify my answer.
 - ✓ I can apply the use of order of operations correctly when evaluating expressions with decimals.
3. **Percents** – Solve problems involving percents from 1% to 100%.
 - ✓ I can calculate a percentage.
 - ✓ I can express percents as fractions and decimals.
 - ✓ I can calculate percent of a number.

- ✓ I can use percent calculations appropriately in problem situations (such as, sales tax, discounts, tips, total costs, percent increase and decrease, etc.)
4. **Fraction Decimal Conversions** – Demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals and positive fractions.
- ✓ I can express fractions as decimals.
 - ✓ I can express terminating decimals as fractions.
 - ✓ I can express repeating decimals as fractions.
 - ✓ I can write a repeating decimals using bar notation.
 - ✓ I can determine when it is appropriate to round, and to what place value.
5. **Addition & Subtraction of Fractions** – Demonstrate an understanding of adding and subtracting positive fractions and mixed numbers, with like and unlike denominators, concretely, pictorially, and symbolically.
- ✓ I can create equivalent fractions.
 - ✓ I can simplify or reduce fractions to their lowest terms.
 - ✓ I can model the addition and subtraction of fractions concretely, pictorially, and symbolically.
 - ✓ I can use equivalent fractions to add and subtract fractions.
 - ✓ I can solve problems involving fractions and determine if the solution is reasonable.
6. **Addition & Subtraction of Integers** – Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially, and symbolically.
- ✓ I can demonstrate concretely and pictorially the zero principle.
 - ✓ I can add and subtract integers concretely and pictorially, and record the process symbolically.
 - ✓ I can solve problems involving the addition and subtraction of integers.
7. **Value Comparison** – Compare and order positive fractions, positive decimals (to thousandths) and whole numbers by using: benchmarks, place value, equivalent fractions and/or decimals.
- ✓ I can compare whole numbers, fractions, and decimals.
 - ✓ I can order whole numbers, fractions, and decimals.

- ✓ I can correctly place whole numbers, fractions, and decimals on a number line.

Vocabulary

Divisible	Reduce
Factor	Simplify
Multiple	Common Denominator
Prime Number	Integer
Composite Number	Positive
Natural Numbers	Negative
Whole Numbers	Zero Principle
Product	Zero Pairs
Quotient	Opposite Integers
Remainder	Number Line
Even	Ascending
Odd	Descending
Dividend	
Divisor	
Undefined	
Sum	
Difference	
Place Value	
Area	
Expression	
Equivalent	
Percent	
Greater Than	
Less Than	
Equal To	
Bar Notation	
Terminating Decimal	
Repeating Decimal	
Round	
Approximation	
Concretely	
Pictorially	
Symbolically	
Equivalent Fraction	
Denominator	
Numerator	
Improper Fraction	
Proper Fraction	
Mixed Number	
Lowest Terms	

Strand: Patterns & Relations

General Outcome: Use patterns to describe the world and to solve problems.

Specific Outcomes:

1. **Patterns & Rules** – Demonstrate an understanding of oral and written patterns and their equivalent linear relations.
 - ✓ I can identify and predict the next stage in a pattern.
 - ✓ I can describe the relationship between the stage number and the output of the pattern.
 - ✓ I can create an algebraic expression to represent a pattern.
 - ✓ I can create a pattern from a given algebraic expression.
2. **Table of Values** – Create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.
 - ✓ I can substitute into an equation to create a table of values.
 - ✓ I can graph a table of values.
 - ✓ I can use a graph to solve problems.

General Outcome: Represent algebraic expressions in multiple ways.

Specific Outcomes:

3. **Preservation of Equality** – Demonstrate an understanding of preservation of equality by: modelling preservation of equality, concretely, pictorially, and symbolically, applying preservation of equality to solve equations.
 - ✓ I can model preservation of equality concretely, pictorially, and symbolically.
 - ✓ I can solve equations using preservation of equality.
4. **Expressions & Equations** – Explain the difference between an expression and an equation.
 - ✓ I can explain the difference between an expression and an equation.
 - ✓ I can identify and provide examples of constant terms, numerical coefficients, and variables.

- ✓ I can explain how constant terms, numerical coefficients, and variables are used to create an algebraic expression.

5. **Evaluating Expressions** – Evaluate an expression, given the value of the variable(s).

- ✓ I can use substitution to evaluate an expression.

6. **Solving Equations I** – Model and solve, concretely, pictorially, and symbolically, problems that can be represented by one-step linear equations of the form $x + a = b$, where a and b are integers.

- ✓ I can represent a given problem with an algebraic equation and solve concretely, pictorially, and symbolically.
- ✓ I can verify the solution to an algebraic equation.

7. **Solving Equations II** – Model and solve, concretely, pictorially, and symbolically, problems that can be represented by linear equations of the form:

$$ax + b = c, \quad ax = b, \quad \frac{x}{a} = b, \quad a \neq 0$$

, where a , b , and c are whole numbers.

- ✓ I can represent a given problem with an algebraic equation and solve concretely, pictorially, and symbolically.
- ✓ I can verify the solution to an algebraic equation.

Vocabulary

Constant	Equation	Substitute
Variable	T-Chart	Equality
Algebraic Expression	Pattern	Preservation of Equality
Numerical Coefficient	Stage Number	

Strand: Shape & Space

General Outcome: Use direct and indirect measurement to solve problems.

Specific Outcomes:

1. **Circle Properties** – Demonstrate an understanding of circles by: describing the relationships among radius, diameter and circumference, relating circumference to pi, determining the sum of the central angles, constructing circles with a given radius or diameter, solving problems involving the radii, diameters, and circumference of circles.
 - ✓ I can illustrate and explain the relationship between radius and diameter.
 - ✓ I can illustrate and explain the relationship between diameter, pi, and circumference.
 - ✓ I can construct circles with a given radius or diameter.
 - ✓ I can demonstrate that the sum of the central angles in any circle is 360° .
 - ✓ I can use the properties of circles to solve problems.
2. **Area** – Develop and apply a formula for determining the area of: triangles, parallelograms, circles.
 - ✓ I can use the formula for the area of a rectangle, to develop formulas for the areas of triangles and parallelograms.
 - ✓ I can demonstrate and explain how to estimate the area of a circle.
 - ✓ I can apply formulas to calculate the area of triangles, parallelograms, and circles.

- ✓ I can solve problems involving the area of triangles, parallelograms, and circles.

General Outcome: Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.

Specific Outcomes:

3. **Geometric Constructions** – Perform geometric constructions including: perpendicular line segments, parallel line segments, perpendicular bisectors, angle bisectors.
 - ✓ I can find examples of parallel line segments, perpendicular line segments, perpendicular bisectors, and angle bisectors in the environment.
 - ✓ I can construct perpendicular lines and verify that they are perpendicular.
 - ✓ I can construct parallel lines and verify that they are parallel.
 - ✓ I can construct the bisector of an angle and verify that the resulting angles are equal.
 - ✓ I can construct a perpendicular bisector and verify that the line segments are equal.

General Outcome: Describe and analyze position and motion of objects and shapes.

Specific Outcomes:

4. **Graphing on a Cartesian Plane** – Identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs.
 - ✓ I can identify the origin and label the axes of a 4-Quadrant Cartesian Plane.
 - ✓ I can plot ordered pairs in all four quadrants.
 - ✓ I can write the ordered pair of a point in any quadrant on a Cartesian Plane.
5. **Transformations** – Perform and describe transformations (translations, reflections, or rotations) of a 2-D shape in all four quadrants of a Cartesian plane. (It is intended that the original shape and its image have vertices with integral coordinates.)
 - ✓ I can identify and describe a transformation.

- ✓ I can perform a given transformation.
- ✓ I can identify and perform combinations of transformations.

Vocabulary

Radius	Parallel	Transformation
Diameter	Perpendicular	Translation
Circumference	Bisector	Reflection
Pi	Line	Rotation
Central Angle	Line Segment	Image
Compass	Cartesian Plane	Horizontal
Protractor	Axes	Vertical
Degree	Ordered Pair	Consecutive
Parallelogram	Coordinates	Clockwise
Formula	Quadrant	Counter-Clockwise
Area	Vertices	

Strand: Statistics & Probability

General Outcome: Collect, display and analyze data to solve problems.

Specific Outcomes:

1. **Mean, Median, Mode, & Range** – Demonstrate an understanding of central tendency and range by: determining the measures of central tendency and range, determining the most appropriate measures of central tendency to report findings.
 - ✓ I can define central tendency, mean, median, mode, and range.
 - ✓ I can calculate mean, median, mode, and range.
 - ✓ I can determine which measure of central tendency is most appropriate (which to use and when.)
 - ✓ I can compare the measures of central tendency to each other.

- ✓ I can solve problems involving measures of central tendency.
- 2. **Outliers** – Determine the effect on the mean, median, and mode when an outlier is included in a data set.
 - ✓ I can identify outliers in a set of data.
 - ✓ I can explain the effect of outliers on the measures of central tendency.
 - ✓ I can explain when to include or exclude an outlier.
- 3. **Circle Graphs** – Construct, label, and interpret circle graphs to solve problems.
 - ✓ I can convert raw data into percents and portions of 360°.
 - ✓ I can construct and label (title, legend, percents, categories, etc.) a circle graph without technology.
 - ✓ I can construct and label (title, legend, percents, categories, etc.) a circle graph with technology.
 - ✓ I can interpret circle graphs to answer questions.

General Outcome: Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.

Specific Outcomes:

- 4. **Probability** – Express probabilities as ratios, fractions, and percents.
 - ✓ I can determine the probability of a given outcome.
 - ✓ I can express probabilities as ratios, fractions, (*decimals*.) and percents.
 - ✓ I can explain the meaning of probabilities equal to 0 (0%) or 1 (100%).
- 5. **Sample Spaces** – Identify the sample space for a probability experiment involving two independent events.
 - ✓ I can define and provide examples of independent and dependent events.
 - ✓ I can display the sample space for two independent events.
- 6. **Experimental & Theoretical Probability** – Conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table, or other graphic organizer) and experimental probability of two independent events.
 - ✓ I can define theoretical and experimental probability for two independent events.

- ✓ I can find theoretical probability for two independent events.
- ✓ I can conduct a probability experiment, with and without technology, to determine the experimental probability of two independent events.
- ✓ I can compare the theoretical and experimental probabilities of two independent events.
- ✓ I can solve probability problems involving two independent events.

Vocabulary

Central Tendency
Mean
Median
Mode
Range
Data
Outlier
Compass
Protractor
Proportion

Degrees
Circle Graph
Angle
Circle
Portion
Legend
Probability
Ratio
Manipulate
Chance

Likelihood
Event
Sample Space
Independent Events
Dependent Events
Theoretical Probability
Experimental
Probability
Experiment