**Math 10C Specific Outcomes and I Can Statements**

**Strand:** Measurement

**General Outcome:** Develop spatial sense and proportional reasoning.

1. **Linear Measurement –** Solve problems that involve linear measurement, using: SI and imperial units of measure, estimation strategies**,** and measurement strategies.
* I can use rulers, calipers, and tape measures to determine the length of an object.
* I can identify and use referents for linear units of measure (mm, cm, m, km, in, ft, yd, mile, etc.)
* I can choose the most appropriate measurement tool and unit for a given situation.
* I can solve problems involving measurement. (Ex. Circumference, perimeter, etc.)
1. **Measurement Conversions** – Apply proportional reasoning to problems that involve conversions between SI and imperial units of measure.
* I can convert measurements from SI (metric) to imperial.
* I can convert measurements from imperial to SI (metric).
1. **Surface Area and Volume** – Solve problems, using SI and imperial units, that involve the surface area and volume of 3D objects, including: right cones, right cylinders, right prisms, right pyramids, spheres.
* I can calculate the surface area of right cones.
* I can calculate the surface area of right cylinders.
* I can calculate the surface area of right prisms.
* I can calculate the surface area of right pyramids.
* I can calculate the surface area of spheres.
* I can calculate the volume of right cones.
* I can calculate the volume of right cylinders.
* I can calculate the volume of right prisms.
* I can calculate the volume of right pyramids.
* I can calculate the volume of spheres.
* I can solve problems involving surface area and volume.
* I can explain the relationship between the volume of right cones and right cylinders.
* I can explain the relationship between the volume of right prisms and right pyramids.
1. **Right Triangle Trigonometry** – Develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles.
* I can identify the hypotenuse and the opposite and adjacent sides of a right triangle.
* I can write the sine, cosine, and tangent ratios of a right triangle.
* I can calculate the measure of a missing side length using Pythagorean Theorem.
* I can calculate the measure of a missing side length using sine, cosine, and tangent.
* I can calculate the measure of a missing angle using sine, cosine, and tangent.
* I can solve problems involving one or more right triangles.

**Strand:** Algebra and Number

**General Outcome:** Develop algebraic reasoning and number sense.

1. **Factors** – Demonstrate an understanding of factors of whole numbers by determining the: prime factors, greatest common factor, least common multiple, square root, and cube root.
* I can explain the difference between factors and multiples.
* I can identify factors and multiples of a number.
* I can write the prime factorization of a whole number.
* I can determine the greatest common factor of a set of numbers.
* I can determine the least common multiple of a set of numbers.
* I can determine if a number is a perfect square or perfect cube.
* I can determine the square root of a whole number.
* I can determine the cube root of a whole number.
* I can solve problems involving factors.
1. **Irrational Numbers** – Demonstrate an understanding of irrational numbers by:representing, identifying, and simplifying irrational numbers, andordering irrational numbers.
* I can explain the difference between rational and irrational numbers.
* I can identify irrational numbers.
* I can order a set of rational and irrational numbers.
* I can express an entire radical as a mixed radical in simplest form.
* I can express a mixed radical as an entire radical.
* I can write an irrational number as an exact value.
1. **Powers and Rational Exponents** – Demonstrate an understanding of powers with integral and rational exponents.
* I can express a power with negative exponent(s) as a power with only positive exponent(s).
* I can express a power with a rational exponent as a radical.
* I can express a radical as a power with a rational exponent.
* I can use exponent laws to simplify expressions.
* I can solve problems involving powers or radicals.
1. **Polynomial Multiplication** – Demonstrate an understanding of the multiplication of polynomial expressions (limited to monomials, binomials, and trinomials) concretely, pictorially, and symbolically.
* I can use algebra tiles to model the multiplication of two binomials.
* I can multiply a monomial by a polynomial.
* I can multiply a binomial by a binomial.
* I can multiply a binomial by a polynomial.
* I can solve problems using multiplication of polynomials.
1. **Factoring** – Demonstrate an understanding of common factors and trinomial factoring, concretely, pictorially, and symbolically.
* I can use algebra tiles to model the factorization of a trinomial.
* I can factor a polynomial by removing the greatest common factor.
* I can factor a trinomial with a leading coefficient of 1. (ex. $x^{2}+bx+c, x^{2}-7x+6)$
* I can factor a trinomial with a leading coefficient not equal to 1. (ex. $ax^{2}+bx+c, 2m^{2}-5m-12$)
* I can factor a difference of squares because it is a special case of trinomial factoring. (ex. $9x^{2}-49=9x^{2}+0x-49$)
* I can factor trinomials with more than one variable. (ex. $ax^{2}+bxy+cy^{2}, 6x^{2}-5xy+y^{2}$)
* I can write a polynomial in factored form.

**Strand:** Relations and Functions

**General Outcome:** Develop algebraic and graphical reasoning through the study of relations.

1. **Graphs** – Interpret and explain the relationships among data, graphs, and situations.
* I can determine the domain and range of a graph, set of ordered pairs, or table of values.
* I can determine if a set of data is continuous or discrete.
* I can interpret graphs.
* I can sketch a possible graph for a given situation.
1. **Relations and Functions** – Demonstrate an understanding of relations and functions.
* I can determine if a relation is a function.
* I can explain why all functions are relations, but not all relations are also functions.
1. **Slope** – Demonstrate an understanding of slope with respect to:rise and run**,** line segments and lines**,** rate of change**,** parallel lines**,** and perpendicular lines**.**
* I can determine the slope of a line given a graph.
* I can determine the slope of a line given coordinates.
* I can explain when the slope of a line is positive, negative, zero, or undefined.
* I can draw a line, given its slope.
* I can use slope to determine if two lines are parallel or perpendicular.
* I can explain how slope is related to rate of change.
1. **Representing Linear Relations** – Describe and represent linear relations, using:words**,** ordered pairs**,** tables of values**,** graphs**,** equations.
* I can distinguish between the independent and dependent variables.
* I can determine if a set of data is linear or non-linear.
* I can represent a linear relation using words.
* I can represent a linear relation using a set of ordered pairs.
* I can represent a linear relation using a table of values.
* I can represent a linear relation using a graph.
* I can represent a linear relation using an equation.
1. **Graphs of Linear Relations** – Determine the characteristics of the graphs of linear relations, including the:intercepts**,** slope**,** domain**,** and range**.**
* I can determine the *y*-intercept of a linear relation.
* I can determine the *x*-intercept of a linear relation.
* I can write the *x* and *y*-intercepts as values and ordered pairs.
* I can determine the slope of a linear relation.
* I can determine the domain and range of a linear relation.
* I can sketch a graph given characteristics of the linear relation.
1. **Forms of Equations** – Relate linear relations expressed in the following forms to their graphs:slope-intercept form ($y=mx+b$)**,** general form ($Ax+By+C=0$)**,** slope-point form ($y-y\_{1}=m(x-x\_{1})$).
* I can change equations from slope-intercept form to general form.
* I can change equations from general form to slope-intercept form.
* I can graph a linear relation without technology.
* I can graph a linear relation using technology.
* I can identify equivalent linear relations that have been written in different forms.
* I can match a linear relation to its graph.
1. **Equations of Linear Relations** – Determine the equation of a linear relation to solve problems, given:a graph**,** a point and the slope**,** two points**,** a point and the equation of a parallel or perpendicular line.
* I can determine the equation of a linear relation given a graph.
* I can determine the equation of a linear relation given a point and the slope.
* I can determine the equation of a linear relation given two points.
* I can determine the equation of a linear relation given a point and the equation of a parallel or perpendicular line.
1. **Function Notation** – Represent a linear function, using function notation.
* I can express an equation in *y=* form using function notation and vice versa.
* I can evaluate a function given inputs.
* I can determine the input of a function given the output.
* I can determine the range of a function given the domain, and vice versa.
* I can represent linear functions using words, ordered pairs, tables of values, and graphs.
1. **Solving Systems of Equations** – Solve problems that involve linear equations in two variables, graphically and algebraically.
* I can model a situation using a system of linear equations.
* I can determine the solution to a system of equations graphically, with and without technology.
* I can explain what the point of intersection of a system of linear equations means.
* I can determine the solution to a system of equations algebraically.
* I can verify the solution to a system of equations graphically or algebraically.
* I can explain why a system of equation may have no solution, one solution, or an infinite number of solutions.
* I can choose an appropriate strategy and then solve a problem that involves a system of linear equations.