8th grade SC Ready Checklist

This document contains a list of 8th grade objectives arranged by big topics. The standard is referenced beside each objective. Remember that the SC Ready assessment will also incorporate the SC Mathematical Process Standards; therefore, it is important to also review these topics through processes such as problem solving.

Please double check for accuracy and correct any possible errors.

Rational and Irrational numbers

___ Recognize the difference between a rational and irrational number (8.NS.1a)

___ Understand that all real numbers have a decimal expansion (8.NS.1b)

___ Model the hierarchy of the real number system including natural numbers, whole numbers, integers, rational numbers and irrational numbers (8.NS.1c)

___ Estimate the value of irrational numbers by plotting them on a number line (8.NS.2)

___ Compare the value of irrational numbers by plotting them on a number line (8.NS.2)

___ Translate among fractions, decimals and percents (8.NS.3)

___ Convert repeating decimals to fractions (8.NS.3)

Functions, Proportional Relationships and Data

___ Understand the meaning of a function (8.F.1a)

___ Relate inputs (x – values or domain) to the independent variable (8.F.1b)

___ Relate outputs (y –values or range) to the dependent variable (8.F.1b)

___ Translate among the following forms (8.F.1c)

a. Mapping
b. Table
c. Graph
d. Equation
e. Verbal description

___ Determine if a relation in the following forms is a function (8.F.1d)

a. Mapping
b. Table
c. Graph
d. Equation
e. Verbal description

___ Graph a function from a table of values (8.F.1e)

___ Understand that the graph and the table of a function represent the same set of ordered pairs (8.F.1f)

___ Collect bivariate data (8.DSP.1a)

___ Graph the bivariate data on a scatter plot (8.DSP.1b)

___ Describe patterns observed on a scatter plot (8.DSP.1c)

a. Clustering
b. Outliers
c. Positive correlation
d. Negative correlation
e. No correlation
f. Linear
g. Nonlinear

___ Graph proportional relationships (8.EEI.5a)

___ Compare two functions in the following forms (8.F.2)

a. Mapping
b. Table
c. Graph
d. Equation
e. Verbal description

___ Compare two different proportional relationships in the following forms (8.EEI.5c)

a. Table
b. Graph
c. Equation
d. Diagram
e. Verbal description

___ Know the differences between a linear and non – linear function (8.F.3)

a. Know that equations in y = mx + b are linear functions
b. Recognize that graph of a linear function has a constant rate of change
c. Provide examples of nonlinear functions

___ Explain why the slope, m, is the same between any two distinct points on a non – vertical line using similar triangles (8.EEI.6a)

___ Derive the slope intercept form (y = mx + b) for a non – vertical line (8.EEI.6b)

___ Understand that the slope is the constant rate of change and the y – intercept is the point where x is zero (8.F.4a)

___ Determine the slope and y – intercept of a linear function in the following forms (8.F.4b)

a. Two points
b. Table
c. Graph
d. Equation
e. Verbal description

___ Draw an approximate line of best fit on a scatter plot that appears to have linear association and informally assess the fit of the line (8.DSP.2)

___ Write an equation in slope intercept form to model a linear relationship between two quantities (8.F.4c)

___ Find an approximate equation for the line of best fit using two appropriate data points (8.DSP.3a)

___ Interpret unit rate as the slope of the graph (8.EEI.5b)

___ Interpret the meaning of the slope and y – intercept in the context of a situation (8.F.4d and 8.DSP.3b)

___ Solve problems using the equation from the line of best fit (8.DSP.3c)

___ Relate equations for proportional relationships (y = kx) with the slope – intercept form (y = mx + b) where b = 0 (8.EEI.6c)

___ Understand the relationship between a linear function and an arithmetic sequence (8.F.4e)

___ Apply concepts of linear and nonlinear functions to graph and analyze real world and mathematical situations (8.F.5a)

a. Constant rate
b. Increasing/decreasing
c. Linear/nonlinear
d. Maximum/minimum value
e. Discrete/Continuous data

___ Sketch the graph of a function from a verbal description (8.F.5b)

___ Write a verbal description from the graph of a function with and without scales (8.F.5c)

Exponents and Roots

___ Apply the laws of exponent to numerical expressions that include integer exponents (8.EEI.1)

a. Product rule
b. Quotient rule
c. Power to a power rule
d. Product to a power
e. Quotient to a power
f. Zero Power property
g. Negative exponents

___ Find the exact and approximate value to equations in the form $x^2 = p$ where p is a positive rational number (8.EEI.2a)

___ Find the exact and approximate value to equations in the form $x^3 = p$ where p is a positive rational number (8.EEI.2a)

___ Evaluate the square roots of perfect squares (8.EEI.2b)

___ Evaluate the cube roots of perfect cubes (8.EEI.2c)

___ Recognize that the square roots of non - perfect squares are irrational (8.EEI.2d)

Scientific Notation

___ Express very large and very small quantities using scientific notation in the form $a \times 10^b$ where $1 \leq a < 10$ and b is an integer (8.EEI.3a)

___ Translate between decimal notation and scientific notation (8.EEI.3b)

___ Estimate and compare the relative size of two quantities in scientific notation (8.EEI.3c)

___ Multiply and divide numbers in decimal notation (8.EEI.4a)

___ Multiply and divide numbers in scientific notation (8.EEI.4a)

___ Select appropriate units of measure when representing answers in scientific notation (8.EEI.4b)

___ Translate answers from technological devices displaying numbers in scientific notation (8.EEI.4c)

Linear Equations

___ Solve linear equations with rational coefficients (8.EEI.7a)

a. Distributive property
b. Combining like terms
c. Variables on both sides

___ Solve linear inequalities with rational coefficients (8.EEI.7a)

a. Distributive property
b. Combining like terms
c. Variables on both sides

___ Recognize the three types of solutions to linear equations (8.EEI.7b)

a. One Solution x = a
b. Infinitely many solution a = a
c. No solution a = b

___ Generate linear equations with the three types of solutions (8.EEI.7c)

___ Justify why linear equations have a specific type of solution (8.EEI.7d)

Systems of linear equations

___ Graph systems of linear equations and estimate their point of intersection (8.EEI.8a)

___ Understand that the point of intersection is the solution to a system (8.EEI.8b)

___ Verify that the point of intersection is the solution to a linear system (8.EEI.8b)

___ Solve systems of linear equation algebraically (8.EEI.8c)

a. Substitution method
b. Elimination method
c. Inspection

___ Understand that a linear system can have one solution, no solution or infinitely many solutions (8.EEI.8d)

Geometry and Measurement

___ Investigate the properties of rigid transformation (rotations, reflections, translations) (8.GM.1)

a. Verify that lines are mapped to lines, including parallel lines
b. Verify that corresponding angles are congruent
c. Verify that corresponding line segments are congruent Recons

___ Rotate a geometric figure (8.GM.2a)

a. 90^o Clockwise, counterclockwise and about the origin
b. 180^o Clockwise, counterclockwise and about the origin
c. 270^o Clockwise, counterclockwise and about the origin

___ Reflect geometric figures across the x axis and the y axis (8.GM.2b)

___ Translate a geometric figure vertically and horizontally (8.GM.2c)

___ Recognize that two dimensional shapes are only congruent if a series of rigid motions map the pre – image to the image (8.GM.2d)

___ Given two congruent figures, describe the series of rigid transformations that justifies their congruence (8.GM.2e)

____ Use coordinate geometry to describe the effects of transformations on two dimensional figures (8.GM.3a)

___ Relate scale drawings to dilations (8.GM.3b)

___ Dilate geometric figure using scale factors that are positive rational numbers (8.GM.4a)

___ Recognize that two dimensional shapes are only similar if a series of rigid motions map the pre – image to the image (8.GM.4b)

___ Given two similar figures, describe the series of transformations that justifies their similarity (8.GM.4c)

___ Use proportional reasoning to find the missing side lengths of two similar figures (8.GM.4d)

___ Discover that the sum of three angles in a triangles is and 180^o (8.GM.5a)

___ Discover and use the relationships between interior and exterior angles of triangle (8.GM.5b)

___ Identify congruent and supplementary pairs of angles when two parallel lines are cut by a transversal (8.GM.5c)

___ Recognize that two similar figures have congruent corresponding angles (8.GM.5d)

___ Use models to demonstrate a proof of the Pythagorean Theorem and its converse (8.GM.6)

___ Apply the Pythagorean Theorem to model and solve real world problems involving (8.GM.7)

a. Two dimensional shapes involving right angles
b. Three dimensional shapes involving right angles

___ Find the distance between two points using the Pythagorean Theorem (8.GM.8)

___ Solve real world and mathematical problems involving volumes of the following (8.GM.9)

a. Cones
b. Cylinders
c. Spheres

___ Solve real world and mathematical problems involving surface area of cylinders (8.GM.9)

Bivariate data

___ Organize bivariate categorical data in a two way table (8.DSP.4a)

___ Interpret data in two way tables using relative frequencies (8.DSP.4b)

___ Explore patterns of possible association between the two categorical variables (8.DSP.4c)

Matrices

___ Understand that a matrix is a way to organize data (8.DSP.5a)

___ Recognize that a m x n matrix has m rows and n columns (8.DSP.5b)

___ Add and subtract matrices of the same size (8.DSP.5c)

___ Multiply a matrix by a scalar (8.DSP.5d)