

## 7<sup>th</sup> grade SC Ready Checklist

This document contains a list of 7<sup>th</sup> 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 Numbers

\_\_\_ Understand the meaning of the additive inverse (7.NS.1a)

\_\_\_ Understand that the sum of a number and its additive inverse is zero (7.NS.1a)

\_\_\_ Understand that  $p + q$  means that we start at  $p$  on the numbers and move  $q$  spaces left or right based on the sign of  $q$  (7.NS.1b)

\_\_\_ Translate  $p - q = p + (-q)$ ; understand that subtraction is “add the opposite” (7.NS.1c)

\_\_\_ Understand that the distance between two rational numbers on a number line is the absolute value of their difference (7.NS.1d)

\_\_\_ Use the mathematical properties to add rational numbers (7.NS.1e)

\_\_\_ Use the mathematical properties to subtract rational numbers (7.NS.1e)

\_\_\_ Understand the meaning of the multiplicative inverse (7.NS.2a)

\_\_\_ Understand that the product of a number and its reciprocal is equal to one (7.NS.2a)

\_\_\_ Understand the sign rules for multiplying rational numbers (7.NS.2b)

\_\_\_ Understand the sign rules for dividing rational numbers (7.NS.2c)

\_\_\_ Understand that a quotient of integers with a non – zero divisor is a rational number (7.NS.2c)

\_\_\_ Use mathematical properties to multiply rational numbers (7.NS.2d)

\_\_\_ Use mathematical properties to divide rational numbers (7.NS.2d)

\_\_\_ Understand that some rational numbers can be written as integers (7.NS.2e)

\_\_\_ Understand that all rational numbers can be written as a decimal or fraction that terminates or repeats (7.NS.2e)

\_\_\_ Solve real world problems and mathematical problems involving all four operations (7.NS.3)

\_\_\_ Use  $<$ ,  $>$ ,  $\leq$ ,  $\geq$  or  $=$  to interpret statements related to the position of rational numbers on a number line (7.NS.4a)

\_\_\_ Use an equation to write and to explain real world and mathematical situations (7.NS.4b)

\_\_\_ Use an inequality to write and to explain real world and mathematical situations (7.NS.4b)

\_\_\_ Translate among fractions, decimals and percents; exclude conversion of repeating decimals to fractions (7.NS.5)

### Ratios and Proportional Relationships

\_\_\_ Compute unit rates (7.RP.1)

- a. Involving complex fractions
- b. Involving like units
- c. Involving different units

\_\_\_ Determine when two quantities are in a proportional relationship (7.RP.2a)

- a. Table
- b. Graph
- c. Equation
- d. Diagram
- e. Verbal description
- f. Real world situations

*Ratios and Proportional Relationships continued*

\_\_\_ Recognize and compute the constant of proportionality (7.RP.2b)

- a. Table
- b. Graph
- c. Equation
- d. Diagram
- e. Verbal description
- f. Real world situations

\_\_\_ Understand that the constant of proportionality is the unit rate (7.RP.2c)

\_\_\_ Use equations to model proportional relationships (7.RP.2d)

\_\_\_ Investigate the graph of a proportional relationship and explain the meaning of specific points such as the origin and unit rate in the context of the situation (7.RP.2e)

\_\_\_ Solve real world and mathematical problems involving ratios and percentages using proportional reasoning (7.RP.3) For example,

- a. Multi – step dimensional analysis
- b. Percent increase
- c. Percent decrease
- d. Tax

**Expressions, Equations and Inequalities**

\_\_\_ Simplify linear algebraic expressions with rational coefficients (7.EE.1)

\_\_\_ Factor linear algebraic expressions with rational coefficients (7.EE.1)

\_\_\_ Understand equivalent expressions can have many different forms (7.EE.2)

\_\_\_ Determine an appropriate equivalent form for a given situation (7.EE.2)

\_\_\_ Use the Order of Operations to solve multi – step real world and mathematical problems; include fractions bars as a grouping symbols (7.EE.3)

\_\_\_ Write linear equations in the form  $ax + b = c$  and  $a(x + b) = c$  to represent real world and mathematical situations; a, b and c are rational numbers (7.EE.4a)

\_\_\_ Fluently solve linear equations in the form  $ax + b = c$  and  $a(x + b) = c$  to represent real world and mathematical situations; a, b and c are rational numbers (7.EE.4a)

\_\_\_ Write multi – step linear equations involving (7.EE.4b)

- a. Distributive property
  - b. Combining like terms
- \*Exclude problems with variables on both sides

\_\_\_ Solve multi – step linear equations involving (7.EE.4b)

- a. Distributive property
  - b. Combining like terms
- \*Exclude problems with variables on both sides

\_\_\_ Write a two – step linear inequality (7.EE.4c)

\_\_\_ Solve a two – step linear inequality (7.EE.4c)

\_\_\_ Graph the solution set to a linear inequality on a number line and interpret its meaning (7.EE.4c)

\_\_\_ Identify and justify the steps for solving multi – step linear equations (7.EE.4d)

\_\_\_ Identify and justify the steps for solving a two – step linear inequality (7.EE.4d)

\_\_\_ Apply the laws of exponents to simplify expressions involving whole number exponents

- 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

**Geometry and Measurement**

\_\_\_ Determine the scale factor (7.GM.1)

\_\_\_ Translate between a scale model and actual measurements using proportional reasoning (7.GM.1)

\_\_\_ Construct triangles given all measurement of the angles and sides (7.GM.2a)

*Geometry and measurement continued*

\_\_\_ Decide if the given measurements determine (7.GM.2b)

- a. A unique triangle
- b. More than one triangle
- c. No triangle

\_\_\_ Construct special quadrilaterals given specific parameters about the angles and sides (7.GM.2c)

- a. Kite
- b. Trapezoid
- c. Isosceles trapezoid
- d. Rhombus
- e. Parallelogram
- f. Rectangle

\_\_\_ Determine the two dimensional cross section of a right rectangular prism (7.GM.3)

\_\_\_ Determine the two dimensional cross section of a right rectangular pyramid (7.GM.3)

\_\_\_ Understand the proportional relationship between the diameter, radius and circumference of a circle (7.GM.4a)

\_\_\_ Understand that  $\pi$  is the constant of proportionality between the circumference and diameter;  $C = 3.14 d$  is a linear equation so  $\pi$  is the slope (7.GM.4b)

\_\_\_ Understand how the circumference of a circle can be used to find the area of a circle (7.GM.4c)

\_\_\_ Use the circumference formula to solve real world and mathematical problems (7.GM.4d)

\_\_\_ Use the area formula of a circle to solve real world and mathematical problems (7.GM.4d)

\_\_\_ Write equations to solve problems involving the angles formed by two intersecting lines (7.GM.5)

- a. Supplementary
- b. Complementary
- c. Vertical
- d. Adjacent

\_\_\_ Understand that area applied to two dimensional shapes such as triangles, quadrilaterals and polygons (7.GM.6a)

\_\_\_ Understand that volume applies to three dimensional shapes such as cubes, right rectangular prisms and right triangular prisms (7.GM.6b)

\_\_\_ Decompose cubes, right rectangular prisms and right triangular prisms to derive the formulas for volume and surface area (7.GM.6c)

\_\_\_ Solve real world and mathematical problems using (7.GM.6d)

- a. Area
- b. Volume
- c. Surface area

### **Data Analysis, Statistics and Probability**

\_\_\_ Understand that a sampling is a subset of a population and both must possess the same characteristics (7.DSP.1a)

\_\_\_ Differentiate between a random sampling and non – random sampling (7.DSP.1b)

\_\_\_ Understand that generalizations about a sample are only valid if the sample is a representative of the population (7.DSP.1c)

\_\_\_ Understand that random sampling is used to gather a representative sample and supports valid inferences about the population (7.DSP.1d)

\_\_\_ Draw inferences from multiple random samples of the same size that investigate a characteristic of interest (7.DSP.2)

\_\_\_ Create the following displays for data (7.DSP.3)

- a. Dot plot
- b. Histogram
- c. Box plot

\* I think that students need to make these before they can interpret and compare them ☺

\_\_\_ Visually compare the following measures for two sets of data that are displayed graphically as either a dot plot, histogram or box plot; graphed on the same scale; draw inferences about the population (7.DSP.3)

- a. Mean
- b. Median
- c. Mode

*Data Analysis, Statistics and Probability cont'd*

- d. Range
- e. Interquartile range
- f. Mean absolute deviation
- g. Overlap

\_\_\_ Compare the following measures for two sets of data that are displayed in numerical form; draw inferences about population (7.DSP.4)

- a. Mean
- b. Median
- c. Mode
- d. Range
- e. Interquartile range
- f. Mean absolute deviation
- g. Overlap

\_\_\_ Determine the probability of simple events (7.DSP.5a)

\_\_\_ Understand that probability is the likelihood of an event occurring (7.DSP.5b)

\_\_\_ Understand that the probability of an event is between 0 and 1 (7.DSP.5c)

\_\_\_ Understand that if the probability of an event is close to 1 then it is a likely event (7.DSP.5d)

\_\_\_ Understand that if the probability of an event is close to  $\frac{1}{2}$  then the event is neither likely nor unlikely (7.DSP.5e)

\_\_\_ Understand that if the probability of an event is close to 0 then the event is unlikely (7.DSP.5f)

\_\_\_ Determine approximate outcomes using theoretical probability (7.DSP.6a)

\_\_\_ Perform experiments that model theoretical probability; interpret data from theoretical experiments (7.DSP.6b)

\_\_\_ Compare theoretical and experimental probability (7.DSP.6c)

\_\_\_ Differentiate between uniform and non – uniform probability models (7.DSP.7a)

\_\_\_ Develop uniform probability models (7.DSP.7b)

\_\_\_ Develop non – uniform probability models (7.DSP.7b)

\_\_\_ Perform experiment to test the validity of probability models (7.DSP.7c)

\_\_\_ Understand that the probability of a compound event is between 0 and 1 (7.DSP.8a)

\_\_\_ Identify the outcomes of a compound event that is presented as a (7.DSP.8b)

- a. Organized list
- b. Table
- c. Tree diagram

\_\_\_ Determine probabilities of compound event that is presented as a (7.DSP.8c)

- a. Organized list
- b. Table
- c. Tree diagram

\_\_\_ Design and use a simulation to collect data and determine probabilities (7.DSP.8d)

\_\_\_ Compare the theoretical and experimental probability for compound events (7.DSP.8e)