Grade 8 Mathematics Alignment Checklist

Lesson	ACOS #	Standard
1.01	1	Define the real number system as composed of rational and irrational numbers.
1.01	1a	Explain that every number has a decimal expansion; for rational numbers, the decimal expansion repeats or terminates.
1.01	1b	Convert a decimal expansion that repeats into a rational number.
2.04	2	Locate rational approximations of irrational numbers on a number line, compare their sizes, and estimate the values of the irrational numbers.
2.01, 2.02, 2.03	3	Develop and apply properties of integer exponents to generate equivalent numerical and algebraic expressions.
2.04	4	Use square root and cube root symbols to represent solutions to equations.
2.04	4a	Evaluate square roots of perfect squares (less than or equal to 225) and cube roots of perfect cubes (less than or equal to 1000).
2.04	4b	Explain that the square root of a non-perfect square is irrational.
2.05	5	Estimate and compare very large or very small numbers in scientific notation.
2.05	6	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.
2.05	6a	Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities.
2.05	6b	Interpret scientific notation that has been generated by technology.
5.02, 5.03	7	Determine whether a relationship between two variables is proportional or non-proportional.
5.02, 5.03	8	Graph proportional relationships.
5.03,	8a	Interpret the unit rate of a proportional relationship, describing the constant of proportionality as the slope of the graph which goes through the origin and has the equation y = mx where m is the slope.
5.06, 5.07	9	Interpret y = mx + b as defining a linear equation whose graph is a line with m as the slope and b as the y-intercept.
5.07	9a	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in a coordinate plane.
5.06	9b	Given two distinct points in a coordinate plane, find the slope of the line containing the two points and explain why it will be the same for any two distinct points on the line.
5.05, 5.07, 5.08, 5.09	9c	Graph linear relationships, interpreting the slope as the rate of change of the graph and the y-intercept as the initial value.

Lesson	ACOS #	Standard
5.06	9d	Given that the slopes for two different sets of points are equal, demonstrate that the linear equations that include those two sets of points may have different y-intercepts.
5.03	10	Compare proportional and non-proportional linear relationships represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions) to solve real-world problems.
3.07, 3.08, 3.09, 4.02, 4.03, 4.04,	11	Solve multi-step linear equations in one variable, including rational number coefficients, and equations that require using the distributive property and combining like terms.
3.08	11a	Determine whether linear equations in one variable have one solution, no solution, or infinitely many solutions of the form x = a, a = a, or a = b (where a and b are different numbers).
3.04, 3.05, 3.06, 3.07, 3.08, 4.01, 4.02, 4.03, 4.04	11b	Represent and solve real-world and mathematical problems with equations and interpret each solution in the context of the problem.
5.08, 5.09	12	Solve systems of two linear equations in two variables by graphing and substitution.
5.08, 5.09	12a	Explain that the solution(s) of systems of two linear equations in two variables corresponds to points of intersection on their graphs because points of intersection satisfy both equations simultaneously.
5.08	12b	Interpret and justify the results of systems of two linear equations in two variables (one solution, no solution, or infinitely many solutions) when applied to real-world and mathematical problems.
5.02	13	Determine whether a relation is a function, defining a function as a rule that assigns to each input (independent value) exactly one output (dependent value), and given a graph, table, mapping, or set of ordered pairs.
5.02, 5.04, 5.05	14	Evaluate functions defined by a rule or an equation, given values for the independent variable.
5.02	15	Compare properties of functions represented algebraically, graphically, numerically in tables, or by verbal descriptions.
5.02	15a	Distinguish between linear and non-linear functions. Example: Rearrange the formula for the area of a trapezoid to highlight one of the bases.
5.04, 5.05	16	Construct a function to model a linear relationship between two variables.
5.06, 5.07	16a	Interpret the rate of change (slope) and initial value of the linear function from a description of a relationship or from two points in a table or graph.
5.02	17	Analyze the relationship (increasing or decreasing, linear or non-linear) between two quantities represented in a graph.
9.01, 9.02, 9.03, 9.04	18	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities, describing patterns in terms of positive, negative, or no association, linear and non-linear association, clustering, and outliers.

Lesson	ACOS #	Standard
9.01, 9.02, 9.03, 9.04	19	Given a scatter plot that suggests a linear association, informally draw a line to fit the data, and assess the model fit by judging the closeness of the data points to the line.
9.01, 9.03, 9.04	20	Use a linear model of a real-world situation to solve problems and make predictions.
9.03, 9.04	20a	Describe the rate of change and y-intercept in the context of a problem using a linear model of a real-world situation. Example: Estimate the typical age at which a lung cancer patient is diagnosed and estimate how the typical age differs depending on the number of cigarettes smoked per day.
9.01	21	Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects, using relative frequencies calculated for rows or columns to describe possible associations between the two variables.
7.01, 7.02, 7.03, 7.04	22	Verify experimentally the properties of rigid motions (rotations, reflections, and translations): lines are taken to lines, and line segments are taken to line segments of the same length; angles are taken to angles of the same measure; and parallel lines are taken to parallel lines.
7.01, 7.02, 7.03, 7.04	22a	Given a pair of two-dimensional figures, determine if a series of rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are congruent; describe the transformation sequence that verifies a congruence relationship.
7.01, 7.02, 7.03, 7.04	23	Use coordinates to describe the effect of transformations (dilations, translations, rotations, and reflections) on two-dimensional figures.
7.04	24	Given a pair of two-dimensional figures, determine if a series of dilations and rigid motions maps one figure onto the other, recognizing that if such a sequence exists the figures are similar; describe the transformation sequence that exhibits the similarity between them.
6.02	25	Analyze and apply properties of parallel lines cut by a transversal to determine missing angle measures.
6.04, 6.05	25a	Use informal arguments to establish that the sum of the interior angles of a triangle is 180 degrees.
6.06, 6.07	26	Informally justify the Pythagorean Theorem and its converse.
6.06	27	Apply the Pythagorean Theorem to find the distance between two points in a coordinate plane.
6.06	28	Apply the Pythagorean Theorem to determine unknown side lengths of right triangles, including real-world applications
8.05, 8.06	29	Informally derive the formulas for the volume of cones and spheres by experimentally comparing the volumes of cones and spheres with the same radius and height to a cylinder with the same dimensions.
8.04, 8.05, 8.06	30	Use formulas to calculate the volumes of three-dimensional figures (cylinders, cones, and spheres) to solve real-world problems.