**UCSD Grade 8 Math Curriculum**

| Iowa Core Domains (Blue Print)<br>Iowa Core Standards (Red Print) | |
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| **Iowa Core Standards Clusters** | **UCSD I Can Statements for Iowa Core** |
| **The Number System Domain** | |
| **Know that there are numbers that are not rational, and approximate them by rational numbers.** | |
| 1. Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a | I can identify and estimate irrational numbers.<br>I can convert decimals to rational numbers (fractions). |
| 2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations. (8.NS.2) DOK 1,2 | I can estimate the value of an irrational number on a number line. |
| **Expressions and Equations Domain** | |
| **Work with radicals and integer exponents.** | |
| 1. Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3−5 = 3−3 = 1/33 = 1/27. (8.EE.1) DOK 1 | I can differentiate and apply exponential rules to solve problems |
| 2. Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational. (8.EE.2) DOK 1 | I can calculate square roots and cubed root equations.<br>I can distinguish between a rational or irrational square roots. |
| 3. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 × 108 and the population of the world as 7 × 109, and determine that the world population is more than 20 times larger. (8.EE.3) DOK 1,2 | I can transform numbers between standard form and scientific notation.<br>I can calculate relative values of numbers in scientific notation (how many times greater). |
| 4. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology. (8.EE.4) DOK 1,2 | I can solve problems by multiplying and dividing scientific notation<br>I can apply scientific notation to real world math problems. |
| **Understand the connections between proportional relationships, lines, and linear equations.** | |
| 5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed. (8.EE.5) DOK 1,2,3 | I can graph relations using the slope of a line<br>I can compare and interpret two linear equations using a graph |
| 6. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b. (8.EE.6) DOK 1,2,3 | I can compare similar triangles to explain why the slope is the same between any two distinct points on a non-vertical line in a coordinate plan.<br>I can construct the equation for a line using slope. |
| **Analyze and solve linear equations and pairs of simultaneous linear equations.** | |
| 7. Solve linear equations in one variable. (8.EE.7) DOK 1,2 | I can solve equations with one, infinitely many, or no solution<br>I can solve equations with rational coefficients.<br>I can solve equations requiring expansion of expressions through the Distributive property.<br>I can solve equations requiring combining of like terms. |
| 8. Analyze and solve pairs of simultaneous linear equations. (8.EE8) DOK 1,2,3 | I can solve systems of equations by graphing.<br>I can solve systems of equations by substitution. |
| **Functions Domain** | |
| **Define, evaluate, and compare functions.** | |

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| 1. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (8.F.1) DOK 1,2 | I can compare data (numerical or graphical) to determine if it is a function. |
| 2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change. (8.F.2) DOK 1,2 | I can create a function table, write a function rule and graph the function from the same set of data. |
| 3. Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not | I can identify and apply criteria to determine if an equation is a linear function. |
| **Benchmark: Use functions to model relationships between quantities.** | |
| 4. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, | I can create a function rule to represent the graph of a line.<br>I can calculate and interpret the rate of change from a given situation.<br>I can identify and interpret the initial value from a given situation. |
| 5. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. | I can describe qualitatively the relationship of a function displayed by a graph.<br>I can sketch a graph that shows qualitative features of a described function. |
| **Geometry Domain** | |
| **Understand congruence and similarity using physical models, transparencies, or geometry software.** | |
| 1. Verify experimentally the properties of rotations, reflections, and translations. (8.G.1) DOK 2 | I can identify the transformation of a figure and state the coordinates after it has been transformed. |
| 2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, | I can identify the transformation of one congruent figure on to another. |
| 3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. (8.G.3) DOK | I can identify the coordinates of a figure after transformations. |
| 4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, | I can determine the transformations between similar figures. |
| 5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that | I can investigate the relationships between interior and exterior angles of a triangle.<br>I can identify and classify parallel line angle relationships. |
| **Understand and apply the Pythagorean Theorem.** | |
| 6. Explain a proof of the Pythagorean Theorem and its converse. (8.G.6) DOK 2,3 | I can construct a proof of the Pythagorean Theorem and its converse. |
| 7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. (8.G.7) DOK 1,2 | I can calculate the missing side of a right triangle using the Pythagorean Theorem. |
| 8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. (8.G.8) DOK 1,2 | I can use Pythagorean Theorem to solve a problem in a coordinate system. |
| **Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.** | |
| 9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. (8.G.9) DOK 1,2 | I can identify and apply the volume formulas to solve problems. |
| **Statistics and Probability Domain** | |
| **Investigate patterns of association in bivariate data.** | |
| 1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe | I can create and analyze a scatter plot of two data sets.<br>I can analyze correlations in scatter plots. |
| 2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. (8.SP.2) DOK 1,2 | I can construct and interpret a line of best fit between two sets of data. |

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| 3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. (8.SP.3) DOK 1,2 | I can develop linear equations and apply slope to solve real world problems. |
| 4. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. (8.SP.4) DOK 1,2,3 | I can construct and analyze tables summarizing sets of data. |
| **Standards of Mathematical Practice** | |
| Make sense of problems and persevere in solving them.<br>Reason abstractly and quantitatively.<br>Construct viable arguments and critique the reasoning of others.<br>Model with mathematics.<br>Use appropriate tools strategically.<br>Attend to precision.<br>Look for and make use of structure.<br>Look for and express regularity in repeated reasoning. | |