DESK DAVIS ESSENTIAL SKILLS AND KNOWLEDGE

8th Grade Mathematics

Essential Skills and Knowledge
Refer to the Utah State Mathematics Standards for more detail

Mathematical Practice Standards

Students will be able to:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Number System

Students will be able to:

1. Demonstrate that every rational number can be written as a decimal.
2. Use, compare, estimate, and locate irrational numbers on a number line.
3. Use addition, subtraction, multiplication, and division to simplify radicals—including square roots.

Expressions and Equations

Students will be able to:

1. Understand and apply integer exponent rules.
2. Use square root and cube root operations and symbols.
3. Compare and perform operations with numbers written in scientific notation.
4. Graph proportional relationships, interpreting the unit rate as the slope.
5. Use similar triangles to understand slope in order to write an equation.
6. Solve linear equations in one variable.
7. Analyze and solve systems (pairs) of linear equations using graphs.

Functions

Students will be able to:

1. Understand that a function assigns each input with exactly one output.
2. Compare functions represented in different ways—including graphs, equations, tables, etc.
3. Understand that not all functions are linear.
4. Determine the rate of change and initial value of a function.
5. Understand and graph functions.

Geometry

Students will be able to:

1. Verify the properties of rotations, reflections, and translations.
2. Show that transformations can create congruent figures.
3. Describe the effect of transformations on 2-dimensional figures using coordinates.
4. Identify the similarity between 2-dimensional figures created by the dilation transformation.
5. Explore and explain the relationship between angles created by parallel lines and transversals.
6. Explain and apply the Pythagorean Theorem.
7. Know and use the formulas for the volumes of cones, cylinders, and spheres.

Statistics and Probability

Students will be able to:

1. Construct and interpret scatter plots.
2. Estimate and write an equation for a line of best fit in a scatter plot.
3. Interpret the slope and y-intercept of a line using two sets of data.
4. Make comparisons using scatter plots, lines, and two-way frequency tables.

Literacy Standards

Students will be able to:

1. Acquire, interpret, and accurately use grade level appropriate mathematical words and terms.
2. Engage in collaborative discussions with diverse partners on grade level concepts.

Honors

Students will be able to:

1. Explore 3-dimensional graphing and graph theory.
2. Understand the concepts and applications of fair division and apportionment.
3. Use sets and set notation to communicate mathematics.
4. Examine different methods of voting.