Eighth Grade First Semester Math Curriculum Guide

First Nine Weeks

Module 1 & Module 2

Exponents and Scientific Notation/ Congruence

8.EE.A.1 Know and apply the properties of *integer exponents* to generate equivalent numerical *expressions* using product, quotient, power to a power, or expanded form

8.EE.A.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

8.EE.A.4 Perform operations with numbers expressed in scientific notation, including problems where both standard form 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.G.A.1 Verify experimentally the properties of rotations, reflections, and translations

8.G.A.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, reflections, and translations
Given two congruent figures, describe a sequence that exhibits the congruence between them

8.G.A.5 Use informal arguments to establish facts about:
- The angle sum and exterior angle of triangles

8.G.B.6 Model or explain an informal proof of the Pythagorean Theorem and its converse

8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions

Second Nine Weeks

Module 3 & Module 4
Similarity & Linear Equations

8.G.A.3 Given a two-dimensional figure on a *coordinate plane*, identify and describe the effect (rule or new coordinates) of a transformation (dilation, translation, rotation, and reflection)

8.G.A.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, reflections, translations, and dilations

8.G.A.5 Use informal arguments to establish facts about:
- The angle sum and exterior angle of triangles

8.G.A.6 Model or explain an informal proof of the Pythagorean Theorem and its converse

8.G.A.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.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph.
- Compare two different proportional relationships represented in different ways (graphs, tables, equations)

8.EE.6 Using a non-vertical or non-horizontal line, show why the slope m is the same between any two distinct points by creating similar triangles
- Write the equation $y=mx+b$ for a line through the origin

8.EE.7 Solve linear equations in one variable:

8.EE.8 Analyze and solve pairs of simultaneous linear equations