Mapleton Public Schools

Math
Power Standards: 8th Grade

The Number System

- **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.,π^2). (CCSS: 8.NS.A.2)**

Expressions & Equations

8.EE.A Work with radicals and integer exponents.

- Use square root and cube root symbols to represent solutions to equations of the form $x^2=p$ and $x^3= p$, where p is a positive rational number. Evaluate square roots of small perfect squares (up to 100) and cube roots of small perfect cubes (up to 64). Know that v2 is irrational. (CCSS:8. EE.A.2)

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

- Analyze and solve pairs of simultaneous linear equations. (CCSS: 8. EE.C.8)
  - a. Explain that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. (CCSS:8. EE.C.8. a)
  - b. Solve systems of two linear equations in two variables algebraically and estimate solutions by graphing the equations. Solve simple cases by inspection.

Functions:

8.F.A Define, evaluate, and compare functions.

- Define a function as a rule that assigns to each input exactly one output. Show that the graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required for Grade 8.) (CCSS: 8.F.A.1)
- 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. (CCSS: 8.F.A.2)
- Interpret the equation y=mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A= s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1,) (2,4) and (3,9), which are not on a straight line. (CCSS: 8.F.A.3)

8.F.B 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, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. (CCSS: 8.F.B.4)

Geometry:

8.G.A Understand congruence and similarity using physical models, transparencies, or geometry software

- **Demonstrate 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. (CCSS: 8.G.A.2)**
- **Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. (CCSS: 8.G.A.3)**
- **Demonstrate 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; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. (CCSS: 8.G.A.4)**

8.G.B Understand and apply the Pythagorean Theorem.

- **Explain a proof of the Pythagorean Theorem and its converse. (CCSS:8. G.B.6)**
- **Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. (CCSS: 8.G.B.7)**
- **Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. (CCSS: 8.G.B.8)**