Module 3, Topic A, Vocabulary

Angle-preserving: Maintaining the original measure of an angle (e.g., 45 degrees) when a transformation is performed.

Center of dilation: The point from which the dilation was magnified or shrunk.

Coordinates: The location of a point on the coordinate plane, written as (x, y). The first number is always the x-value of the point (left/right), and the second number is always the y-value of the point (up/down).

Definition of dilation: The precise definition used to solve for an unknown segment length or scale factor. The definition is written as $|A'B'| = r|AB|$, meaning that the length of the new, dilated segment is equal to the scale factor times the length of the original segment.

Dilate/Dilation: A type of transformation that moves every point in the original object closer to or farther from a point, called the center of dilation. Dilations are often referred to as enlargements or reductions. When describing a dilation, a student should write the following: *The original object was dilated by a scale factor of [insert number] about (or using) center point* P.

Effect of dilation on coordinates: When the center of dilation is the origin and the scale factor is r, an original point (x, y) becomes (rx, ry). For example, multiply the original coordinates (2, 5) by a scale factor of 4 to find the new (dilated) coordinates (8, 20).

Fundamental theorem of similarity: If you dilate points A and B from the same center point C using the same scale factor, corresponding side $\overline{DE}$ of the magnified/reduced shape will have the following properties:

a. It will be parallel to side $\overline{AB}$ of the original shape.
b. Its length will be equal to the scale factor times the length of side $\overline{AB}$.

Magnification/Enlargement: A dilation that lengthens each side of the original shape by a given scale factor. The object's image will also be farther from the center of dilation. Every enlargement has a scale factor with a value greater than 1.

Scale factor: A number associated with the size of the dilation. This number can be multiplied by the original lengths to obtain the new lengths. We often use the variable r to represent the scale factor.

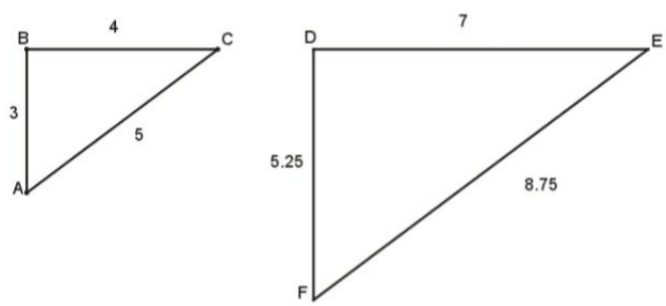
Shrinking/Reduction: A dilation that shortens each side of the original shape by the given scale factor. The object's image will also be closer to the center of dilation. Every reduction has a scale factor with a value between, but not equal to, 0 and 1.

Module 3, Topic B, Vocabulary

Angle-angle criterion: Two triangles are similar if two angles of one triangle are congruent (equal in measure) to two angles from the other triangle.

Proportional: Two quantities (such as lengths or widths of objects) are proportional when they have the same relative size in relation to each other. Here is an example of the notation you could use to show that the side lengths of two shapes are proportional. If triangle ABC is similar to triangle FDE, then we can write the following:

$$\frac{|AB|}{|BC|} = \frac{|FD|}{|DE|}$$



Similar/Similarity: Two objects are similar if there is a dilation followed by a sequence of rigid motions that would map one object onto another. Similar shapes preserve angle measures, and the lengths of their sides are proportional. We use the symbol ~ to represent similarity.

Symmetric property: Similar in reasoning to the commutative properties of addition and multiplication, the symmetric property says that if $A \sim B$ (A is similar to B), then $B \sim A$ (B is similar to A).

Transitive property of similarity: This property states that one similar figure can be substituted for another similar figure. If $A \sim B$ (A is similar to B) and $B \sim C$ (B is similar to C), then $A \sim C$ (A is similar to C).

Module 3, Topic C, Vocabulary

Perfect square: A number that is the result of squaring an integer base. The first fifteen perfect squares are 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, and 225.

Hypotenuse of a right triangle: The side of the right triangle that is opposite the right angle. This is also the longest side of the right triangle.

Legs of a right triangle: The two sides of the right triangle that form the right angle.

Pythagorean theorem: If the triangle is a right triangle, then $leg_1^2 + leg_2^2 = hypotenuse^2$, or $a^2 + b^2 = c^2$.

Converse of the Pythagorean theorem: If $leg_1^2 + leg_2^2 = hypotenuse^2$, or $a^2 + b^2 = c^2$, then the triangle is a right triangle.