1) Write 3×10^5 in standard form. 300,000

8.EE.3

2) Is $\sqrt{23}$ a rational or an irrational number?

does not end or repeat

8.NS.1

3) Is a triangle with sides that measure 6 inches, 8 inches, and 9 inches a right triangle?

3,4,5
6,8,10

$a^2 + b^2 = c^2$
$6^2 + 8^2 = 9^2$
$36 + 64 = 81$
Not a rt. $\triangle$. $100 \neq 81$

8.G.6

4) Tran had $40.00 saved for a new bike. Four weeks later he had saved $68.00. At what rate of change did Tran's savings grow?

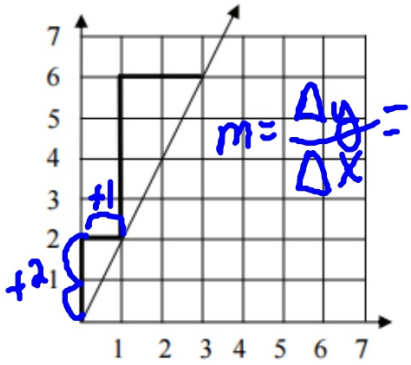
(0,40) (4,68)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{68-40}{4-0} = \frac{28}{4} = 7$

$7 per week

8.F.4

5) What is the slope of the line in the coordinate plane?



$m = \frac{\Delta y}{\Delta x} = \frac{2}{1} = 2$

Similarity

e unit video, you saw examples of scale drawings and prototypes. Why is it important to create a sca
ing and prototype (or scale model) of a bridge, product, or sculpture design? How do you know that
otype will accurately represent the end product?

: about whether a product is the exact same size as or congruent to its prototype. Are there similariti

h of the following properties of a two-dimensional figure are preserved under dilations?

- [ ] **A.** measure of an angle
- [ ] **B.** length of a line segment
- [ ] **C.** perimeter of the figure
- [ ] **D.** location of the figure
- [ ] **E.** horizontal orientation of line segments
- [ ] **F.** vertical orientation of line segments

he Right Moves

e discovered that dilations preserve the shape of a figure in the plane. Rigid transformations
shape. What do you think will happen to a figure if you apply a sequence of transformations
ons, rotations, reflections, or dilations?

ber, when a figure can be expressed as the image of another under a series of rigid transfor
re congruent. When a figure can be expressed as the image of another under a series of rig
mations and *dilations*, the figures are said to be *similar*.

Determine whether each statement is true or false? *Circle true or false.*

A. Two triangles are similar if one triangle can be mapped onto the other throu sequence of transformations, including dilations.

True False

B. Two triangles are similar if two pairs of corresponding angles are equal.

True False

C. Two triangles are similar if they share a common vertex.

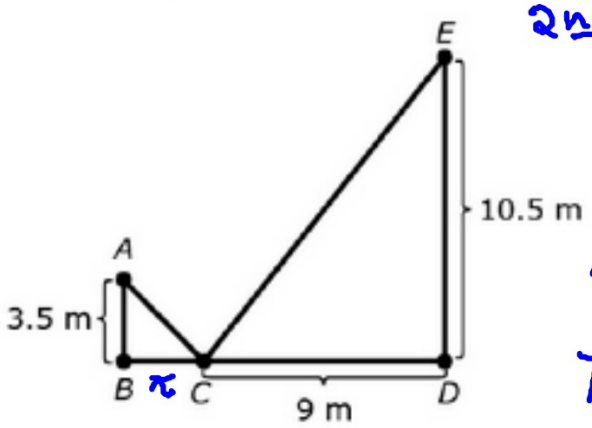
True False

In this figure, $\triangle ABC$ is similar to $\triangle EDC$.

$\frac{AB}{BC} = \frac{ED}{DC}$

$\frac{3.5}{x} \overset{\times 3}{=} \frac{10.5}{9}$ $\div 3$

$x = 3$



2nd way

$\frac{3.5}{x} = \frac{10.5}{9}$

$10.5x = 31.5$

$\frac{10.5x}{10.5} = \frac{31.5}{10.5}$

$x = 3$

What is the length, in meters, of $\overline{BC}$? 3 meters

mary

ons

oncept, you worked with **dilations**, which are transformations that can enlarge or reduce figures i

A **dilation** is a non-rigid transformation in which a figure is enlarged or reduced by a gi
factor around a given center point.

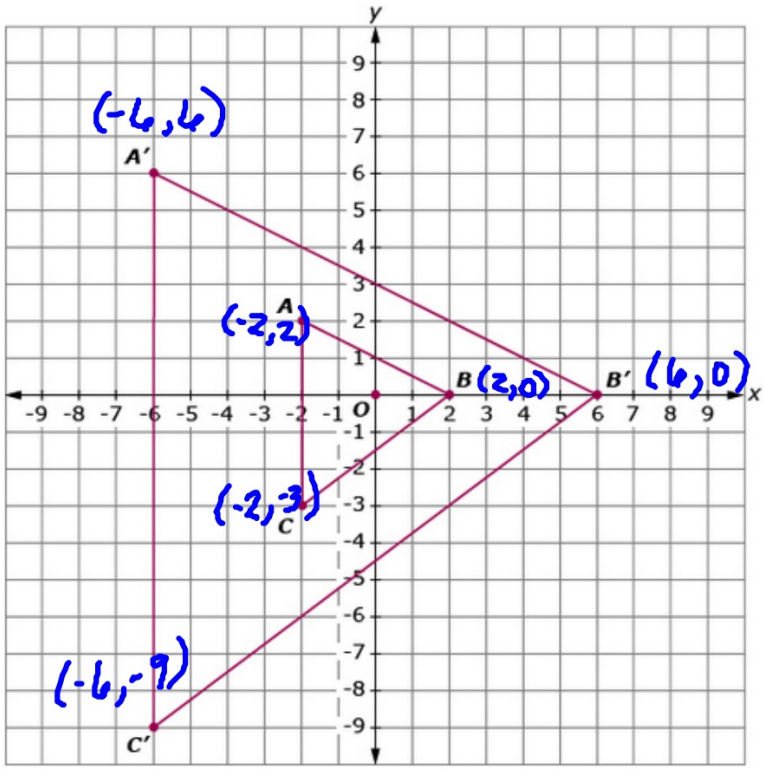
are reductions or enlargements based on a **scale factor** around a center of **dilation**.

The **scale factor** is the ratio used to enlarge or reduce a pre-image to construct an imag
denoted by [redacted] primes.
The center of **dilation** is a fixed point in the plane about which the points in a figure are enlarged or reduced.

To determine the scale factor of a dilation, calculate the ratio of the length of a line segment in the image to the length of the corresponding segment in the pre-image.

Example 1: Dilation

Dilate triangle ABC by a scale factor of 3 around the origin.



Figures

s are **similar** if the ratios of their corresponding sides are equal and corresponding angles hav

Two figures that have the same shape and corresponding sides are proportional to each other are **similar**.

ing Similarity and Congruence in Terms of Transformations

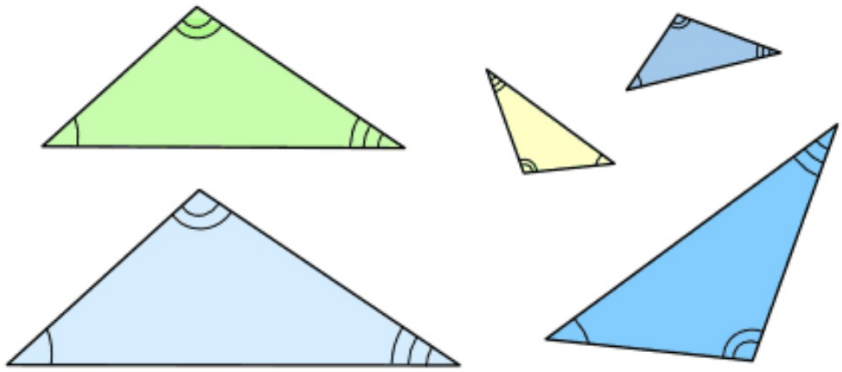
lation has a scale factor $\frac{1}{1}$, the figures are congruent. Two figures are congruent if there is a
motion transformations that maps one to the other. All congruent figures are similar.

ures are similar if there is a sequence of rigid motion transformations and a dilation that maps o

Similar Triangles

triangles are Similar if the only difference is size (and possibly the need to turn or flip one ınd).

These triangles are all similar:



(Equal angles have been marked with the same number of arcs)

ıe of them have different sizes and some of them have been turned or flipped.

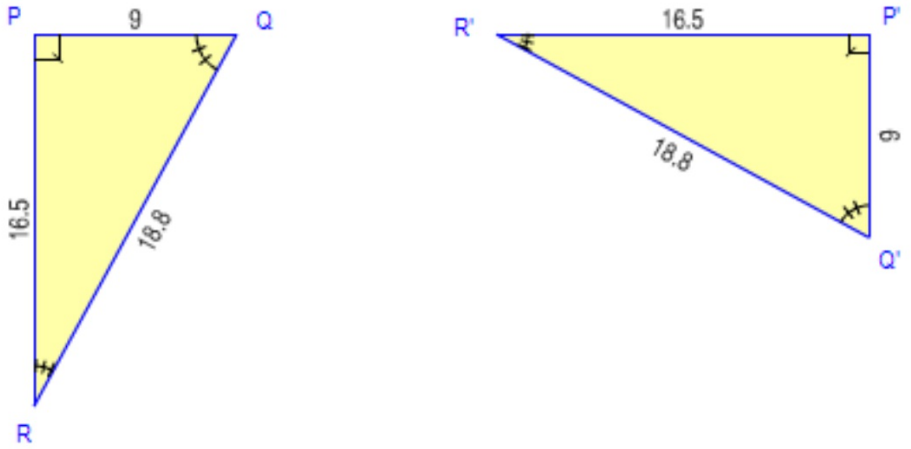
Similar triangles have:

- all their corresponding angles equal
- corresponding sides have the same ratio

Rotation

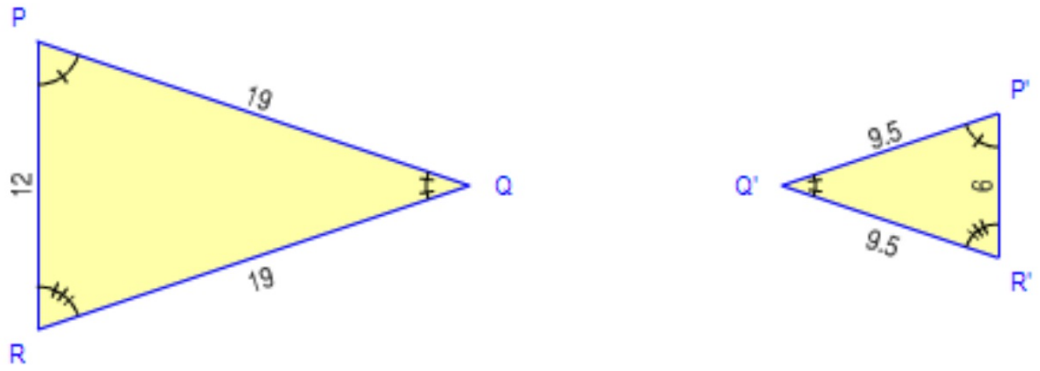
One triangle can be rotated, but as long as they are the same shape, the triangles are still similar. In the figure below, the triangle PQR is similar to P'Q'R' even though the latter is rotated clockwise 90°.

In this particular example, the triangles are the same size, so they are also congruent.



lection

triangle can be a mirror image of the other, but as long as they are the same shape, the gles are still similar. It can be reflected in any direction, up down, left, right. In the figure v, triangle PQR is a mirror image of P'Q'R', but is still considered similar to it.



present Similarity with Proportions: Investigation 1

Determine whether each statement is true or false? *Circle true or false.*

A. Side lengths of a figure are increased or decreased in proportion to the scale factor under a dilation.

True False

B. The measure of angles of a figure does not change under a dilation.

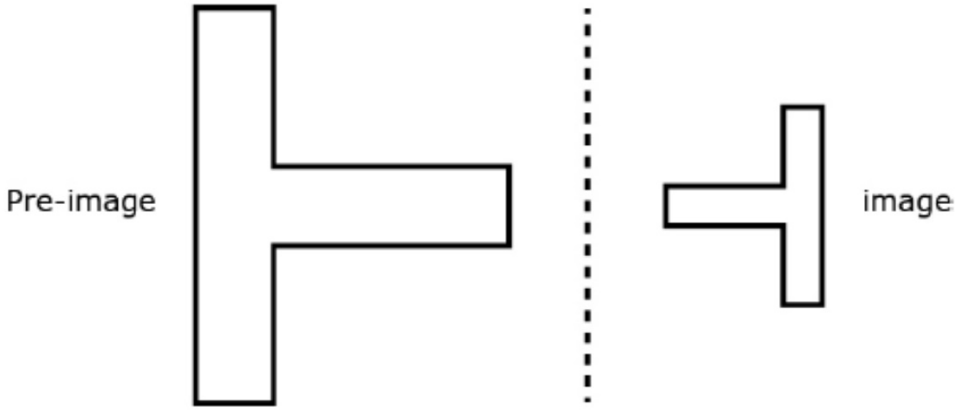
True False

reduction

C. A scale factor less than 1 for a dilation can be used to create an enlargement.

True False

2. Two similar figures are shown.



Which describes the sequence of transformations that maps the pre-image to the image?

A. translation then dilation

B. reflection then dilation

C. translation then rotation

D. reflection then rotation

rectangle with a length of 12 centimeters is dilated to form a rectangle with a length of centimeters. Which scale factor gives the ratio of the image to the pre-image?

A. 4 **B.** 3 **C.** $\frac{1}{3}$ **D.** $\frac{1}{4}$

(plain the difference between dilations and the other transformations that you have udied.

Dilations are non-rigid transformations that change the size of the original shape by a scale factor.

Homework:
Check for Understanding Worksheet