

Pre-Algebra, Unit 12 Practice Test: Transformations & Similarity

Name: _____

Date: _____

1. Define the terms below. Sketch an example for (a).

a. dilation

b. scale factor

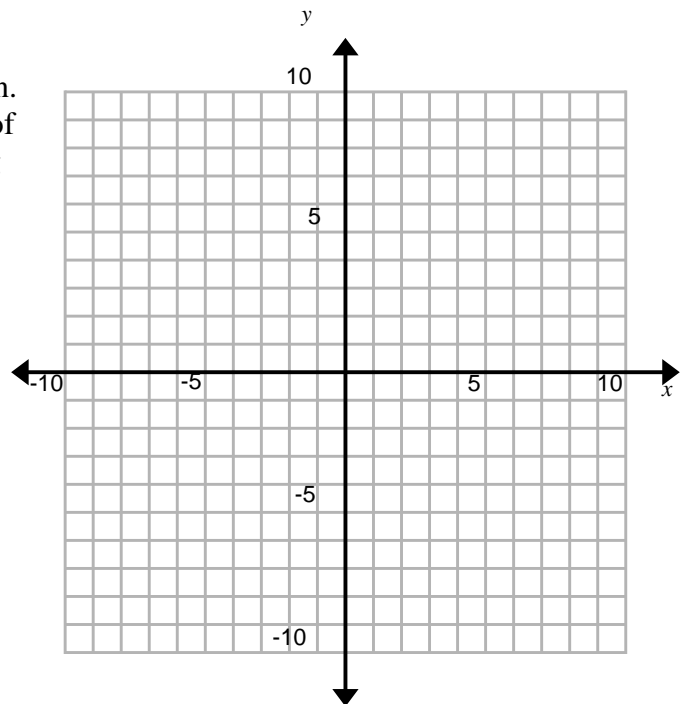
2. a) Two figures that have the same shape but different sizes are called _____.

b) Two figures are similar if and only if they have all their corresponding _____ are congruent and all their corresponding _____ are proportional.

3. (SE/SBAC) The vertices of a polygon are given. Draw the polygon. Then find the coordinates of the vertices of the image after a dilation having the scale factor of 3. Draw the image.

$A(-1, 1)$, $B(2, 1)$, $C(3, -2)$, $D(-3, -3)$

A' _____ B' _____ C' _____ D' _____

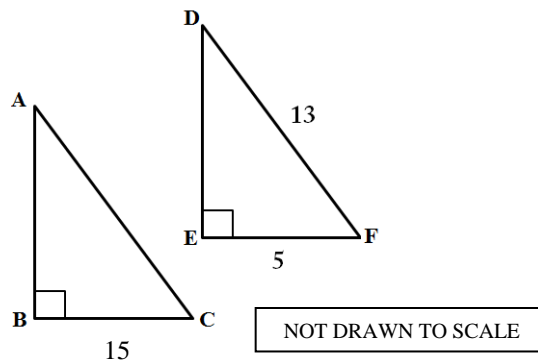


4. (SE) Which series of transformations will create similar—not congruent—figures?

- (A) Rotation and Translation
- (B) Reflection and Rotation
- (C) Reflection and Dilation
- (D) Reflection and Translation

5. (SE) $\triangle ABC$ is similar to $\triangle DEF$. Which statement(s) is (are) true?

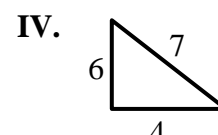
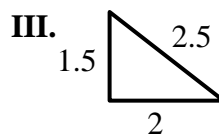
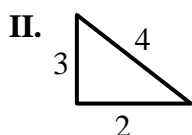
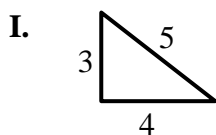
- (A) The perimeter of $\triangle ABC = 90$
- (B) $AB = 12$
- (C) The area of $\triangle ABC = 540$
- (D) $AC = 39$



6. (SE) $\triangle ABC \sim \triangle DEF$, $AC = 5$, $DF = 2.5$, $BC = 3$.
What is the length of \overline{EF} ?

- (A) 1 unit
- (B) 1.5 units
- (C) 2.5 units
- (D) 3 units

7. (SE) The four triangles below are *not* drawn to scale. Based on the given information, which pair of triangles are similar?



- (A) I and II
- (B) II and IV
- (C) I and III
- (D) I, III, and IV

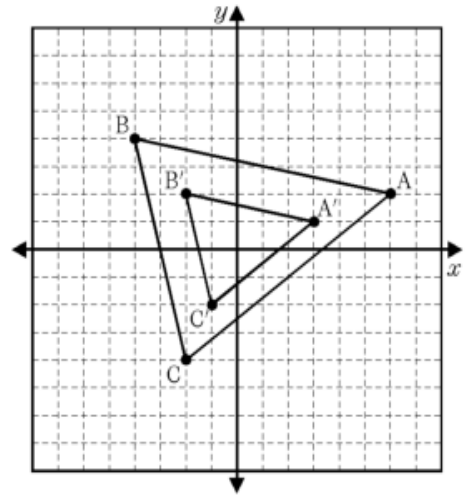
8. (SE) The same figure is transformed using two different transformations. Which of the statements that follow are true?

Transformation 1: $(x, y) \rightarrow (x - 2, y - 2)$ Transformation 2: $(x, y) \rightarrow (4x, 4y)$

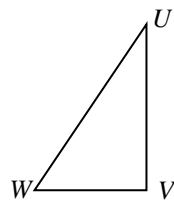
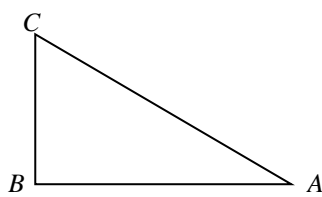
- (A) The image in Transformation 2 has a perimeter that is 4 times greater than the perimeter of the image in Transformation 1.
- (B) The image in Transformation 1 has an area that is 16 times greater than the image in Transformation 2.
- (C) The image in Transformation 2 moves the original image 2 units in each direction.
- (D) All but one of the vertices in the image of Transformation 1 is different from the original.

9. (SE) What is the scale factor of the dilation that maps $\triangle ABC \rightarrow \triangle A'B'C'$?

- (A) $\frac{1}{3}$
- (B) 3
- (C) $\frac{1}{2}$
- (D) 2



10. Given $\triangle ABC \sim \triangle UVW$. Name the corresponding sides.



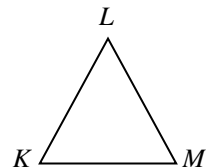
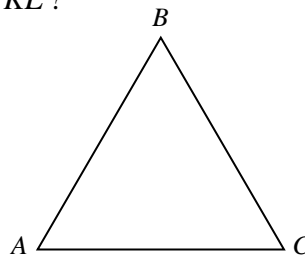
$\overline{AB} \sim$ _____

$\overline{BC} \sim$ _____

$\overline{CA} \sim$ _____

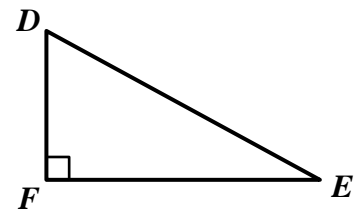
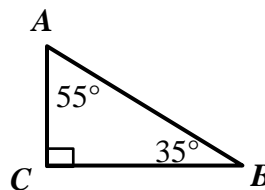
11. (SE) Triangle ABC is similar to triangle KLM where the ratio of proportionality is $\frac{1}{6}$, and $AB = 24$ centimeters. What is the measurement of \overline{KL} ?

- (A) 4 cm
- (B) 48 cm
- (C) 8 cm
- (D) 144 cm



12. (SE) Triangles ABC and DEF are similar. What is the measure of angle E ?

- (A) 35°
- (B) 55°
- (C) 65°
- (D) 180°



13. (SBAC) A sequence of transformations is applied to a polygon. Identify each sequence of transformations where the resulting polygon has a greater area than the original polygon.

- A) Reflect over the x -axis, dilate about the origin by a scale factor of $\frac{1}{2}$, translate up 5 units
- B) Rotate 90° counterclockwise around the origin, dilate about the origin by a scale factor of $\frac{3}{2}$
- C) Dilate about the origin by a scale factor of $\frac{2}{3}$, rotate 180° clockwise around the origin, translate down 2 units
- D) Dilate about the origin by a scale factor of 2, reflect over the y -axis, dilate about the origin by a scale factor of $\frac{2}{3}$

14. A transformation is applied to $\triangle ABC$ to form $\triangle DEF$ (not shown). Then, a transformation is applied to $\triangle DEF$ to form $\triangle GHJ$.

Part A Graph $\triangle DEF$ on the xy -coordinate plane.

Part B Describe the transformation applied to $\triangle ABC$ to form $\triangle DEF$.

Part C Describe the transformation applied to $\triangle DEF$ to form $\triangle GHJ$.

Part D Select one statement that applies to the relationship between $\triangle GHJ$ and $\triangle ABC$.

- $\triangle GHJ$ is congruent to $\triangle ABC$.
- $\triangle GHJ$ is similar to $\triangle ABC$.
- $\triangle GHJ$ is neither congruent nor similar to $\triangle ABC$

Explain your reasoning.

