# _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 congruentand 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.

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

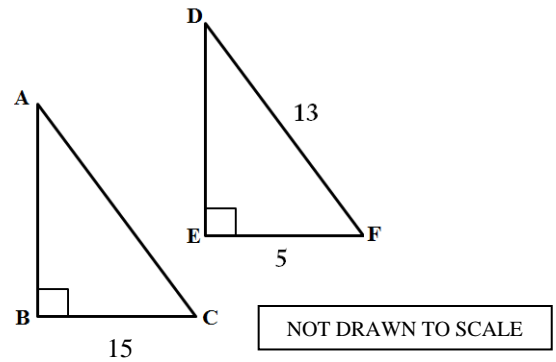   $A\acute{}$_____$B\acute{}$_____$C\acute{}$____$\_D'$_____
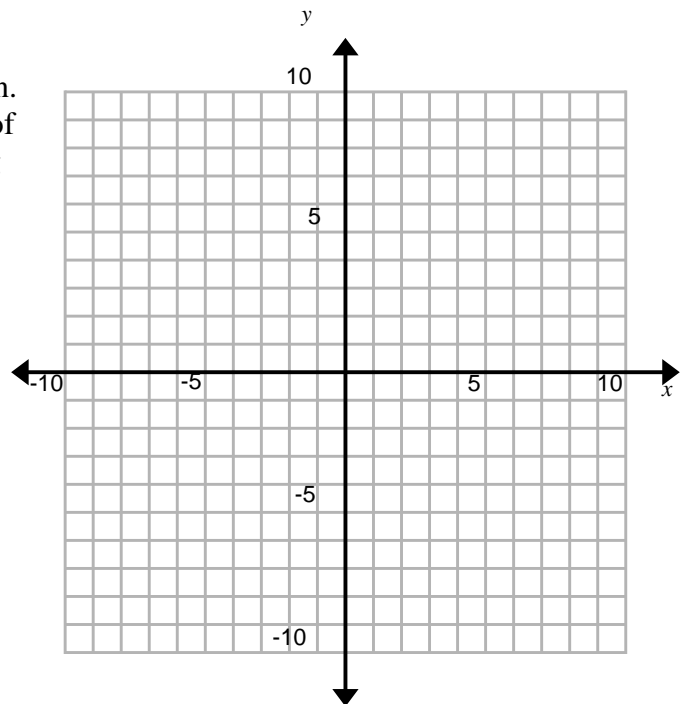


4. (SE) Which series of transformations will create similar—not congruent— figures?
   (A)   Rotation and Translation
   (B)   Reflection and Rotation
   (C)   Reflection and Dilation
   (D)   Reflection and Translation

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 $\triangle ABC = 540$
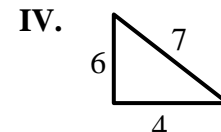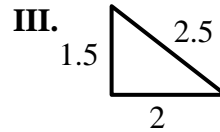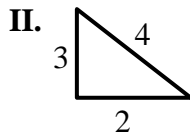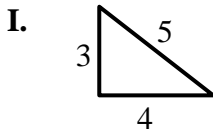
(D) $AC = 39$



13

5

E F

NOT DRAWN TO SCALE

15

6. (SE) $\triangle ABC \sim \triangle DEF$, $\overline{AC} = 5$, $\overline{DF} = 2.5$, $\overline{BC} = 3$.

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?

I.

3  5
   4

II.

3  4
   2

III.

1.5  2.5
     2

IV.

6  7
   4

(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
ΔABC → ΔA′B′C′?

(A) $\dfrac{1}{3}$

(B) 3

(C) $\dfrac{1}{2}$
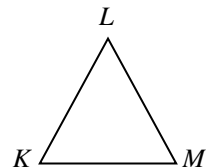
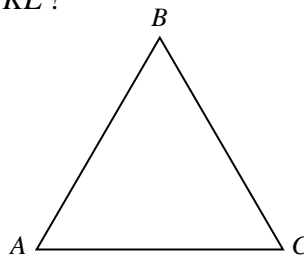(D) 2
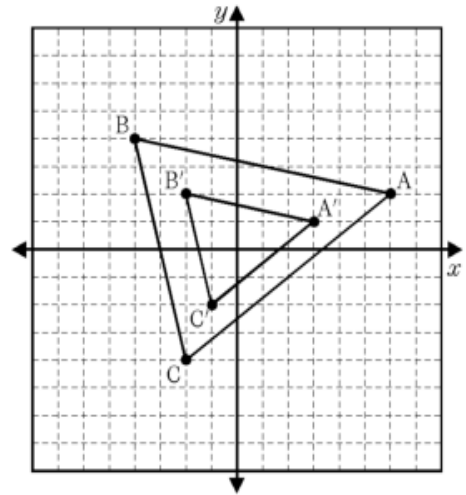


10. Given ΔABC ~ ΔUVW. Name the corresponding sides.
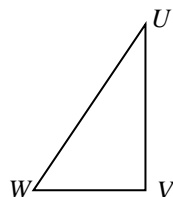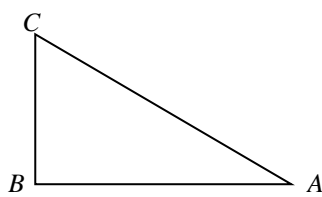


$\overline{AB}$ ~_____
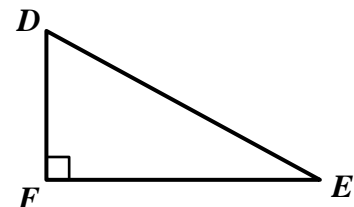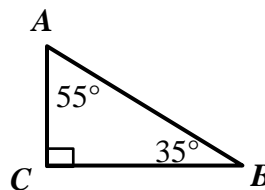
$\overline{BC}$ ~_____

$\overline{CA}$ ~_____

11. (SE) Triangle *ABC* is similar to triangle *KLM* where the ratio of proportionality is $\dfrac{1}{6}$, 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 $\Delta ABC$ to form $\Delta DEF$ (not shown). Then, a transformation is applied to $\Delta DEF$ to form $\Delta GHJ$.

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

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

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

   *Part D Select one statement that applies to the relationship between $\Delta GHJ$ and $\Delta ABC$ .*
   - ☐ ΔGHJ is congruent to ΔABC.
   - ☐ ΔGHJ is similar to ΔABC.
   - ☐ ΔGHJ is neither congruent nor similar to ΔABC

   *Explain your reasoning.*