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.

y

10

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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.



- 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)  $\triangle ABC \sim \triangle DEF$ ,  $\overline{AC} = 5$ ,  $\overline{DF} = 2.5$ ,  $\overline{BC} = 3$ . 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?



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  $\Delta ABC \rightarrow \Delta A'B'C'$ ?
  - (A)  $\frac{1}{3}$ (B) 3 (C)  $\frac{1}{2}$
  - (D) 2



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



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 A L K M

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





- 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  $\Delta DEF$  to form  $\Delta GHJ$ .

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

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

Explain your reasoning.



