

Geometry

1.6 Translations

1. Triangle PQR is the translated image of triangle ABC with vertices $A(-2,5)$, $B(3,3)$, and $C(0,-1)$. Which one of the following set of vertices could triangle PQR have?

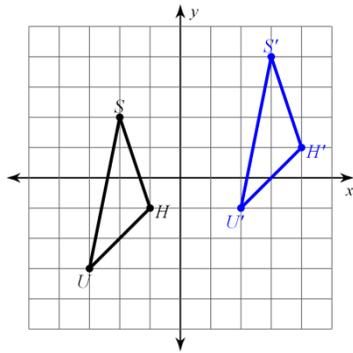
- a. $P(0,5)$, $Q(0,3)$, and $R(0,-1)$
- b. $P(-2,0)$, $Q(3,-2)$, and $R(0,4)$
- c. $P(5,7)$, $Q(-4,5)$, and $R(7,1)$
- d. $P(-4,1)$, $Q(1,-1)$, and $R(-2,-5)$

2. A point P is translated 5 units right and x units down to the point P' . If the length of the line segment from P to P' is 13 units, what is the value of x ?

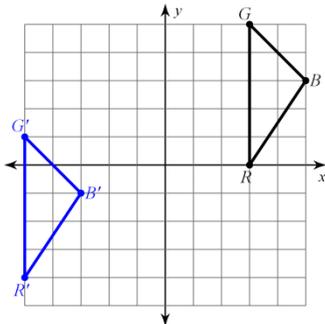
3. Which of the following is the composed translation of the following two individual translations: 4 units left and 2 units down, and 1 unit right and 9 units up?

- a. 3 units right and 7 units down
- b. 3 units left and 7 units up
- c. 5 units right and 11 units down
- d. 5 units left and 11 units up

4. $\triangle SUH$ is translated as shown. What was the translation?



5. $\triangle GBR$ is translated as shown. What was the translation?



6. A point is translated down 7, down 4, 6 to the left, and 7 to the right. What was the translation from its original to its final position?

The arrow notation represents movement of point P to point P' on a translated figure in the xy -coordinate plane. Describe the movement of the point in words.

7. $P(-4, -9) \rightarrow P'(-14, -16)$

8. $P(-9, -9) \rightarrow P'(-5, -9)$

9. $P(-5, 4) \rightarrow P'(-8, 13)$

10. You want to move a figure 3 units to the left and up 6. What constant do you add to the x -coordinate?

11. A figure moves up 9 and right 13. What constants do you add to the coordinates of each point to translate it?

12. You want to translate a figure 3 units horizontally and -4 units vertically. What constants do you add to the x - and y -coordinates for this translation?

Find the length of the translation from A to A' .

13. Point A is translated -5 units horizontally and -6 units vertically to the point A' .

14. Point A is translated 2 units horizontally and 9 units vertically to the point A' .

Sketch the following composition of translation starting at the point P . Then determine the coordinates of the translated point.

15. $P(1, 4)$ translated first 5 units right and 2 units down, then 3 units left and 6 units up.

16. $P(-8, 8)$ translated first 2 units right and 4 units up, then 8 units right and 9 units down.

17. In the triangle formed by the points $A(-3, 4)$, $B(1, 5)$, and $C(0, 3)$, the distance from the origin is 5 units to the point A and 3 units to the point C . Kylie shifts the triangle down 2 units. Then she states that since translations are distance-preserving, the distance from the origin to C' is 1 unit and the distance from the origin to A' is 3 units. Is she correct? Explain.