

Topic: Translating figures in coordinate space

Question: When a figure is translated in a coordinate plane, the image...

Answer choices:

- A has the same shape as the pre-image.
- B has the same size as the pre-image.
- C has the same orientation as the pre-image.
- D has the same shape, size, and orientation as the pre-image.



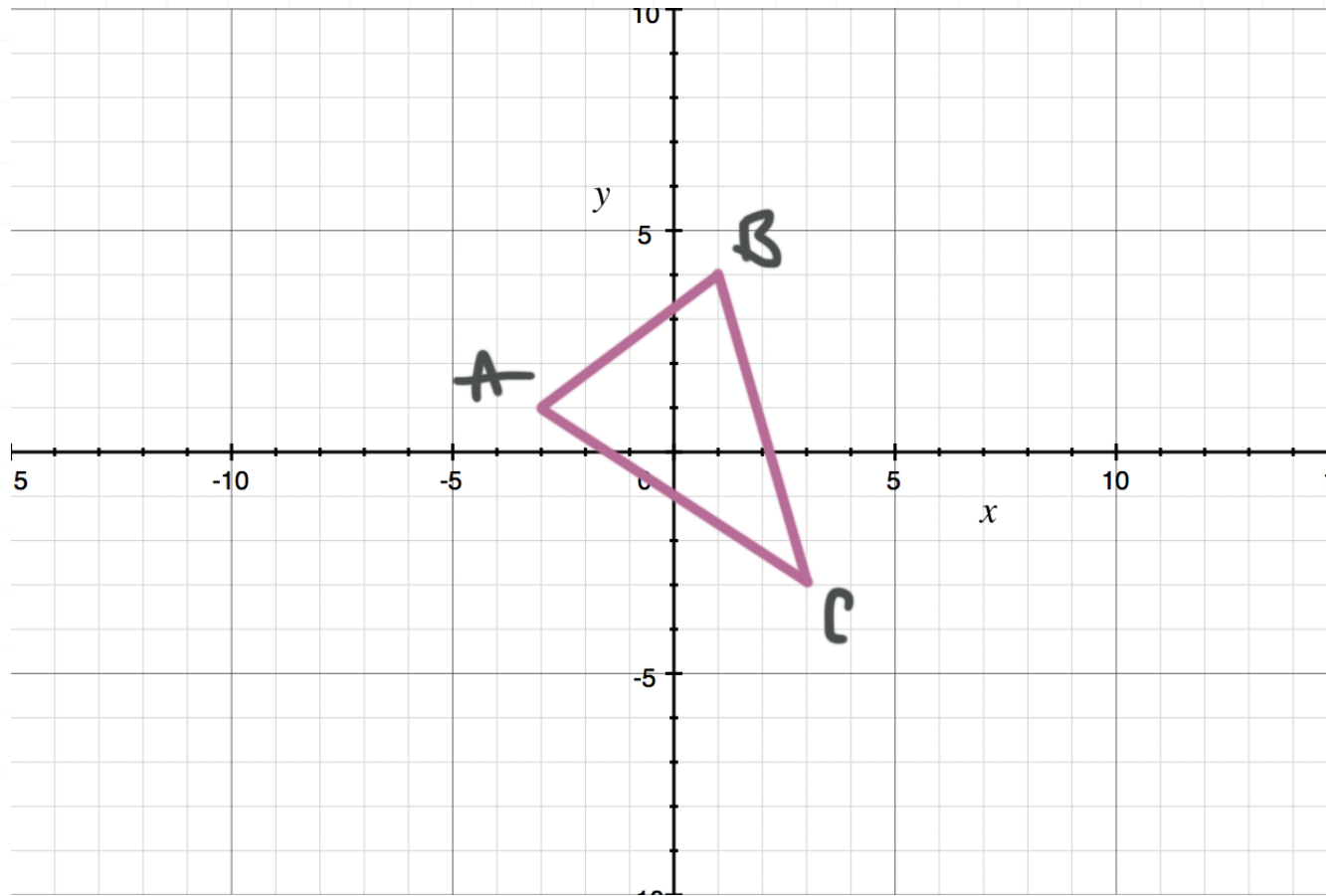
Solution: D

A translation can be thought of as a slide with *no rotation*. The slide won't change the shape or size of the figure, and because there's no rotation, the orientation won't change either.



Topic: Translating figures in coordinate space

Question: If $\triangle ABC$ undergoes the translation described by $T(x, y) = (x + 5, y)$, to what point B' will point B be moved?

**Answer choices:**

- A (6,4)
- B (1,9)
- C (5,4)
- D (-4,4)



Solution: A

The translation is

$$T(x, y) = (x + 5, y)$$

The $x + 5$ tells you that the x -coordinate of any point in the image will be 5 more than the x -coordinate of the corresponding point in the pre-image, and the y tells you that the y -coordinate of any point in the image will be equal to the y -coordinate of the corresponding point in the pre-image.

In other words, after the translation the figure will be located 5 units to the right of its original location.

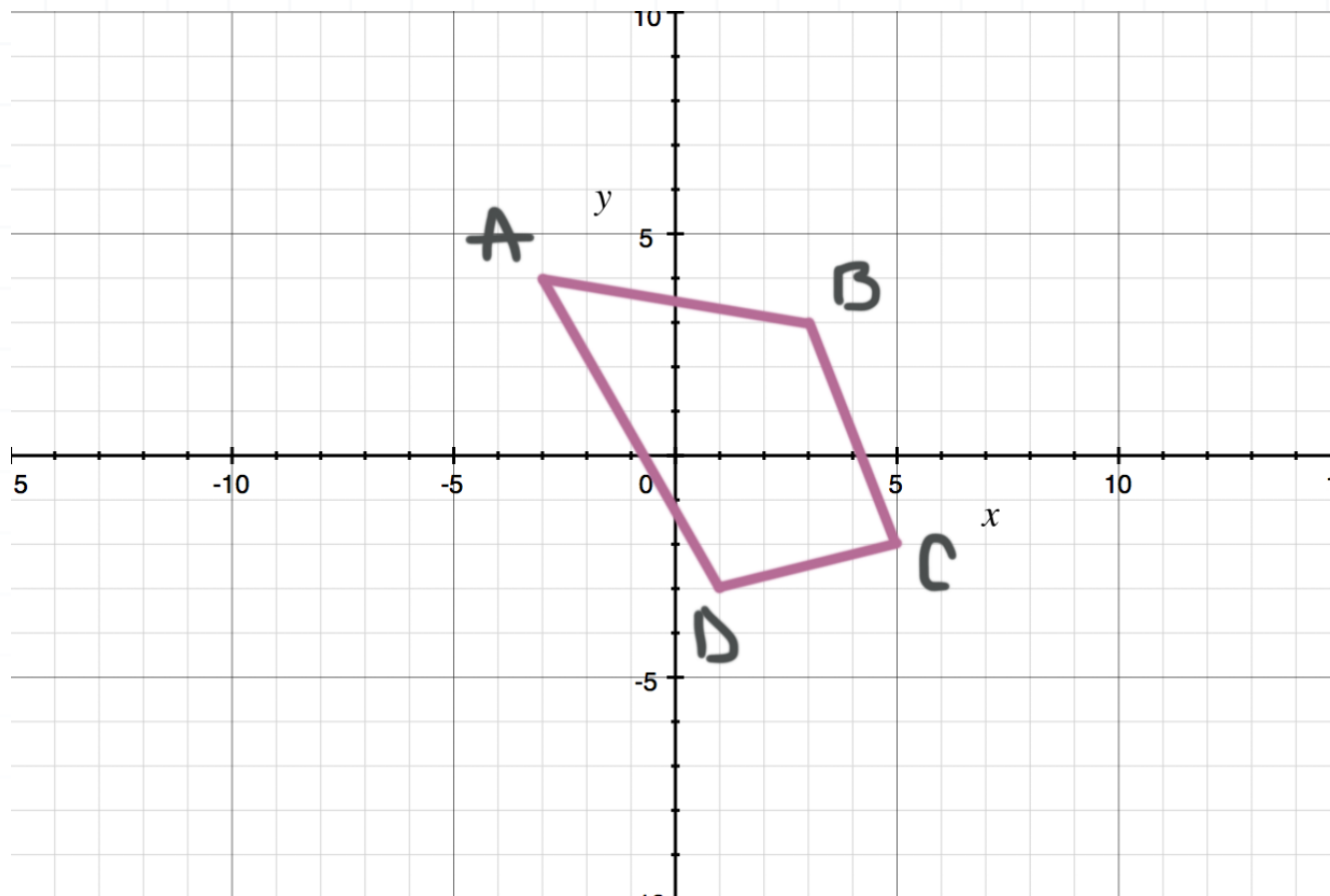
The coordinates of point B are $(1, 4)$, so the coordinates of point B' are given by

$$T(1, 4) = (1 + 5, 4) = (6, 4)$$



Topic: Translating figures in coordinate space

Question: If quadrilateral $ABCD$ undergoes the translation described by $T(x, y) = (x, y - 3)$, to what point C' will point C be moved?

**Answer choices:**

- A $(8, -2)$
- B $(2, -2)$
- C $(5, 1)$
- D $(5, -5)$



Solution: D

The translation is

$$T(x, y) = (x, y - 3)$$

The $y - 3$ tells you that the y -coordinate of any point in the image will be 3 less than the y -coordinate of the corresponding point in the pre-image, and the x tells you that the x -coordinate of any point in the image will be equal to the x -coordinate of the corresponding point in the pre-image.

In other words, after the translation the figure will be located 3 units below its original location.

The coordinates of point C are $(5, -2)$, so the coordinates of point C' are given by

$$T(5, -2) = (5, -2 - 3) = (5, -5)$$

