

Grade 8 - Translations, Reflections and Rotations

- Answer Key

Common Core 8.G.A.1, 8.G.A.2, 8.G.A.3 · maths-pdf.fr/en/

This answer key gives a full worked solution for each of the 20 problems on the translations, reflections and rotations worksheet (Common Core 8.G.A.1, 8.G.A.2 and 8.G.A.3). Compare each step with your own work, not only the final answer, and note any step where your method differed.

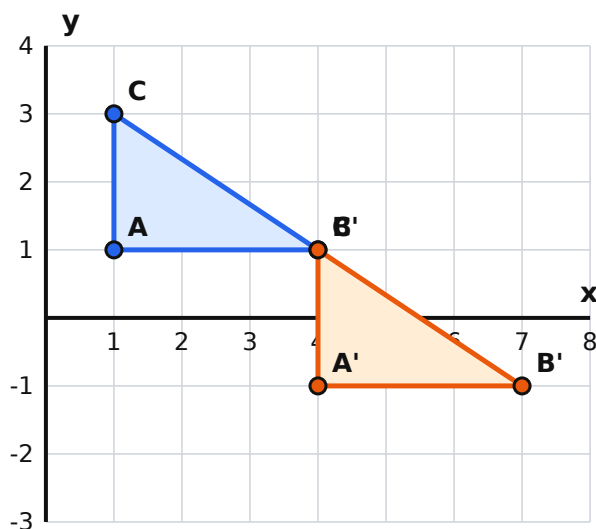
Grade 8 · Common Core State Standards: **8.G.A.1, 8.G.A.2, 8.G.A.3**

Exercise 1 - Translate a point

Add 6 to x and -7 to y: $(-5+6, 4-7)$.

$(1, -3)$

Exercise 2 - Translate a triangle



The image is 3 right and 2 down.

$(x, y) \rightarrow (x+3, y-2)$.

$A'(4, -1)$, $B'(7, -1)$, $C'(4, 1)$

Exercise 3 - Reflect across the x-axis

The x-coordinate stays the same and the y-coordinate changes sign.

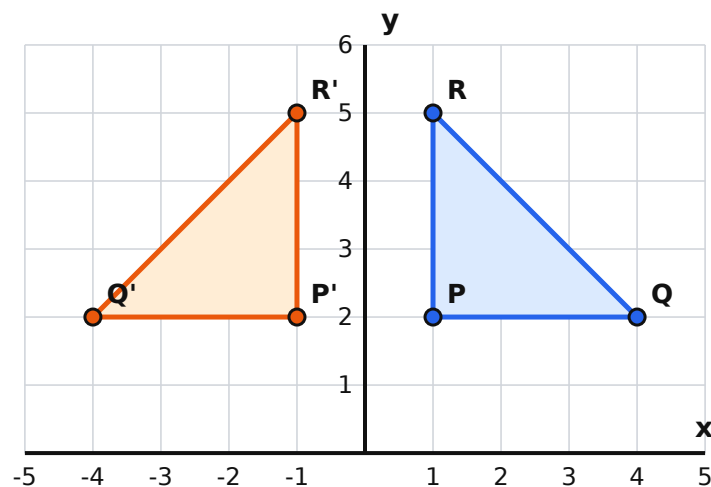
(4,3)

Exercise 4 - Reflect across the y-axis

The y-coordinate stays the same and the x-coordinate changes sign.

(5,2)

Exercise 5 - Reflect a triangle



Mirror image across the y-axis.

$$(x,y) \rightarrow (-x,y).$$

$$P'(-1,2), Q'(-4,2), R'(-1,5)$$

Exercise 6 - Rotate 90 degrees counterclockwise

$$(x,y) \rightarrow (-y,x), \text{ so } (4,-3) \rightarrow (3,4).$$

(3,4)

Exercise 7 - Rotate 180 degrees

$$(x,y) \rightarrow (-x,-y).$$

$$(3,-4)$$

Exercise 8 - Rotate clockwise

$$(x,y) \rightarrow (y,-x), \text{ so } (3,1) \rightarrow (1,-3).$$

$$(1,-3)$$

Exercise 9 - Rotate a triangle

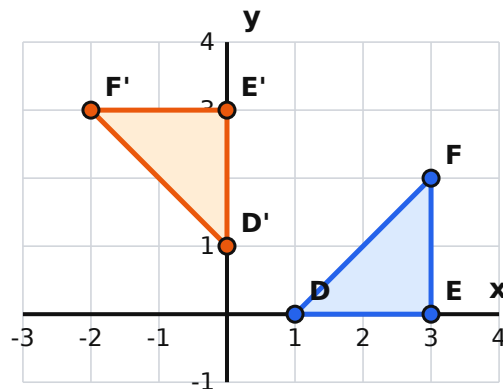


Image after the rotation.

$$(x,y) \rightarrow (-y,x).$$

$$D'(0,1), E'(0,3), F'(-2,3)$$

Exercise 10 - Identify the transformation

The x-coordinate is unchanged and the y-coordinate changes sign.

A reflection across the x-axis

Exercise 11 - Lengths are preserved

$AB = 3$. The image has endpoints $(4,-1)$ and $(7,-1)$, so its length is $7-4=3$.

3 units, the same length

Exercise 12 - Properties preserved

A reflection is a rigid transformation, so angle measures are preserved.

40° , 60° and 80°

Exercise 13 - Translation then reflection

Translate: $(6,3)$. Reflect: $(6,-3)$.

$(6,-3)$

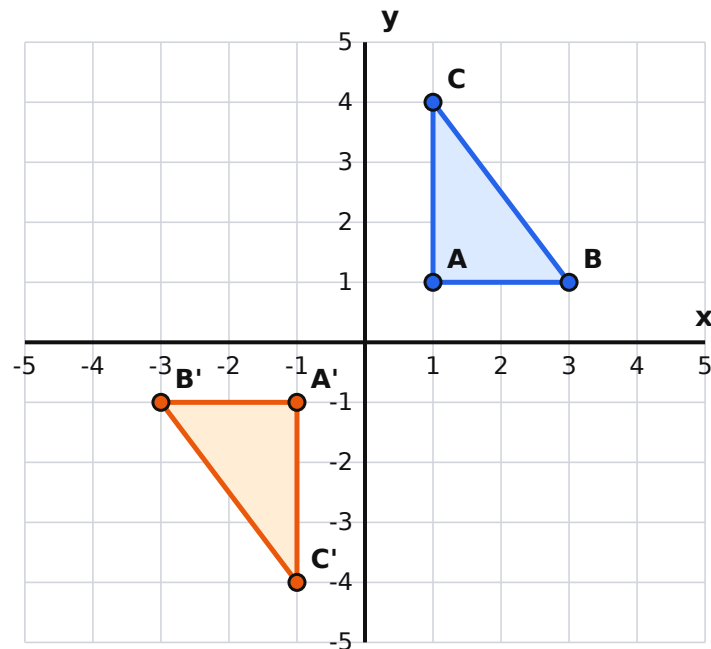
Exercise 14 - Reflection then translation

Reflect: $(2,1)$. Translate: $(2,4)$.

$(2,4)$

Exercise 15 - Describe the sequence

Each vertex (x,y) goes to $(-x,-y)$.



A 180 degree rotation about the origin.

A rotation of 180° about the origin

Exercise 16 - Show congruence

Compare: $(0,0) \rightarrow (5,1)$, $(2,0) \rightarrow (7,1)$, $(0,3) \rightarrow (5,4)$. Every point moves 5 right and 1 up.

A translation 5 right and 1 up maps one onto the other, so they are congruent

Exercise 17 - Park statue

Reflect across the y-axis: change the sign of the x-coordinate.

$(4,3)$

Exercise 18 - Robot vacuum

$(2-5, 3-4) = (-3, -1)$.

$(-3, -1)$; **a translation**

Exercise 19 - Logo rotation

$(x,y) \rightarrow (-y,x)$, so $(4,2) \rightarrow (-2,4)$.

$(-2,4)$

Exercise 20 - Which changes orientation

A reflection flips the figure like a mirror, reversing the order of the vertices. Translations and rotations keep the order.

Only reflections