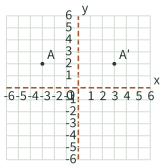
Reflecting whole figures and coordinates — Teacher answers

Year 8, upper volume • text pp. 35–38 • foundation lessons 18–19

Use the worked model and guided attempt selectively, then the eight core questions. Keep further practice and extensions optional. Ask for a reason and an original-equation or expansion check.

Worked example 1

Find the reflection of A=(-3,2) in the y-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

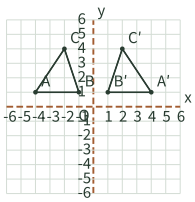
A′=(3,2).

1. Reflection in the y-axis negates x and keeps y.
2. Apply the rule to (-3,2) to obtain (3,2).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Guided attempt 2

Construct the reflection of the whole triangle ABC in the y-axis. Reflect every vertex, then join the images in the same order.



Use the labelled axes and unit grid.

Reference answer

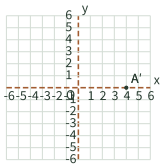
A′=(4,1); B′=(1,1); C′=(2,4).

1. For each vertex, draw the perpendicular to the given axis and preserve its distance on the opposite side.
2. The image vertices are A′=(4,1), B′=(1,1), C′=(2,4).
3. Join A′B′, B′C′ and C′A′. A reflection preserves lengths and angles.

- Reflect all vertices and preserve their order.
- Show a complete reflected figure, not only one image point.

Prerequisite 3

Find the reflection of A=(4,0) in the x-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

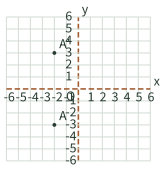
A′=(4,0).

1. Reflection in the x-axis keeps x and negates y.
2. Apply the rule to (4,0) to obtain (4,0).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Prerequisite 4

Find the reflection of A=(-2,-3) in the x-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

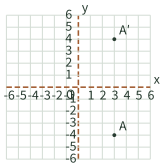
A′=(-2,3).

1. Reflection in the x-axis keeps x and negates y.
2. Apply the rule to (-2,-3) to obtain (-2,3).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Independent practice 5

Find the reflection of A=(3,-4) in the x-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

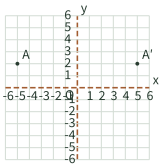
A′=(3,4).

1. Reflection in the x-axis keeps x and negates y.
2. Apply the rule to (3,-4) to obtain (3,4).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Independent practice 6

Find the reflection of A=(-5,2) in the y-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

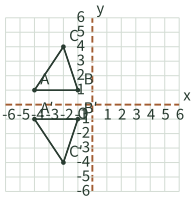
A′=(5,2).

1. Reflection in the y-axis negates x and keeps y.
2. Apply the rule to (-5,2) to obtain (5,2).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Independent practice 7

Construct the reflection of the whole triangle ABC in the x-axis. Reflect every vertex, then join the images in the same order.



Use the labelled axes and unit grid.

Reference answer

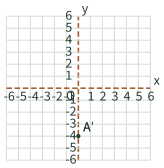
A′=(-4,-1); B′=(-1,-1); C′=(-2,-4).

1. For each vertex, draw the perpendicular to the given axis and preserve its distance on the opposite side.
2. The image vertices are A′=(-4,-1), B′=(-1,-1), C′=(-2,-4).
3. Join A′B′, B′C′ and C′A′. A reflection preserves lengths and angles.

- Reflect all vertices and preserve their order.
- Show a complete reflected figure, not only one image point.

Independent practice 8

Find the reflection of A=(0,-4) in the y-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

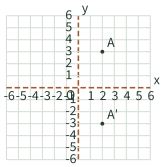
A′=(0,-4).

1. Reflection in the y-axis negates x and keeps y.
2. Apply the rule to (0,-4) to obtain (0,-4).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Exit question 9

Find the reflection of A=(2,3) in the x-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

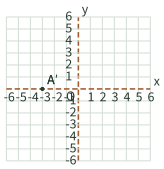
A′=(2,-3).

1. Reflection in the x-axis keeps x and negates y.
2. Apply the rule to (2,3) to obtain (2,-3).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Exit question 10

Find the reflection of A=(-3,0) in the x-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

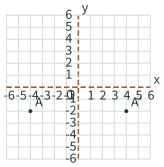
A′=(-3,0).

1. Reflection in the x-axis keeps x and negates y.
2. Apply the rule to (-3,0) to obtain (-3,0).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Further practice 11

Find the reflection of A=(-4,-2) in the y-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

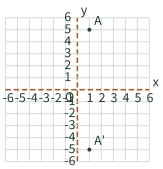
A′=(4,-2).

1. Reflection in the y-axis negates x and keeps y.
2. Apply the rule to (-4,-2) to obtain (4,-2).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Further practice 12

Find the reflection of A=(1,5) in the x-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

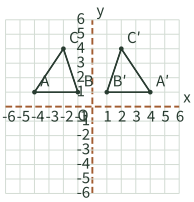
A′=(1,-5).

1. Reflection in the x-axis keeps x and negates y.
2. Apply the rule to (1,5) to obtain (1,-5).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Further practice 13

Construct the reflection of the whole triangle ABC in the y-axis. Reflect every vertex, then join the images in the same order.



Use the labelled axes and unit grid.

Reference answer

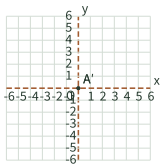
A′=(4,1); B′=(1,1); C′=(2,4).

1. For each vertex, draw the perpendicular to the given axis and preserve its distance on the opposite side.
2. The image vertices are A′=(4,1), B′=(1,1), C′=(2,4).
3. Join A′B′, B′C′ and C′A′. A reflection preserves lengths and angles.

- Reflect all vertices and preserve their order.
- Show a complete reflected figure, not only one image point.

Further practice 14

Find the reflection of A=(0,0) in the y-axis. Explain which coordinate changes.



Use the labelled axes and unit grid.

Reference answer

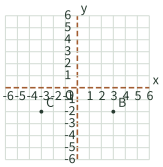
A′=(0,0).

1. Reflection in the y-axis negates x and keeps y.
2. Apply the rule to (0,0) to obtain (0,0).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Extension 15

First reflect A=(3,2) in the x-axis, obtaining B=(3,−2). Now reflect B in the y-axis. Find the final point C.



Use the labelled axes and unit grid.

Reference answer

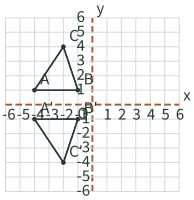
C=(−3,−2).

1. Reflection in the y-axis negates x and keeps y.
2. Apply the rule to (3,-2) to obtain (-3,-2).
3. The original point and its image are equally far from the axis on opposite sides, unless they lie on it.

- Keep the coordinate parallel to the axis and change the perpendicular one.
- Give an ordered pair in the original x,y order.

Extension 16

Construct the reflection of the whole triangle ABC in the x-axis. Reflect every vertex, then join the images in the same order.



Use the labelled axes and unit grid.

Reference answer

A′=(-4,-1); B′=(-1,-1); C′=(-2,-4).

1. For each vertex, draw the perpendicular to the given axis and preserve its distance on the opposite side.
2. The image vertices are A′=(-4,-1), B′=(-1,-1), C′=(-2,-4).
3. Join A′B′, B′C′ and C′A′. A reflection preserves lengths and angles.

- Reflect all vertices and preserve their order.
- Show a complete reflected figure, not only one image point.