Transformations on the Cartesian plane: 10 practice questions

Year 7 · Free practice sheet from Tuterly · tuterly.com.au

Name: _____ Date: _____

Attempt all questions and show your working. Suggested time: 15 to 20 minutes.

Section A: Consolidating (Questions 1-4)

Question 1

Point A(3, 5) is translated 4 units to the right and 2 units down. Write the coordinates of its image A'.

Question 2

Point P(2, -6) is reflected in the x-axis. Write the coordinates of its image P'.

Question 3

Point Q(-4, 1) is reflected in the y-axis. Write the coordinates of its image Q'.

Question 4

In which quadrant of the Cartesian plane does each point lie?

(a) (-3, 7)

(b) (5, -2)

Section B: Standard (Questions 5-10)

Question 5

Triangle ABC has vertices A(1, 2), B(4, 2) and C(1, 6). The triangle is translated 3 units to the left and 5 units up. Write the coordinates of A', B' and C'.

Question 6

A point moves from (2, -3) to (7, 1) by a single translation. Describe the translation in words.

Question 7

Point R(5, 2) is rotated 180° about the origin. Write the coordinates of its image R'.

Question 8

Point S(3, 4) is rotated about the origin.

(a) Write the coordinates of the image after a rotation of 90° anticlockwise.

(b) Write the coordinates of the image after a rotation of 90° clockwise.

Question 9

Copy and complete the table.

Point	Image after reflection in the x-axis	Image after reflection in the y-axis
(2, 5)		
(-1, 3)		
(0, -4)		
(6, 0)		

Question 10

A rectangle has vertices (1, 1), (5, 1), (5, 3) and (1, 3).

(a) Write the coordinates of the vertices after the rectangle is reflected in the y-axis.

(b) Find the area of the original rectangle and the area of its image.

(c) Explain why the areas are the same.

Transformations on the Cartesian plane: answers

Year 7 · Free practice sheet from Tuterly · tuterly.com.au

Question 1

Answer: A'(7, 3)

Question 2

Answer: P'(2, 6)

Question 3

Answer: Q'(4, 1)

Question 4

Answer: (a) Second quadrant (b) Fourth quadrant

Question 5

Answer: A'(-2, 7), B'(1, 7), C'(-2, 11)

Question 6

Answer: 5 units to the right and 4 units up

Question 7

Answer: R'(-5, -2)

Question 8

Answer: (a) (-4, 3) (b) (4, -3)

Question 9

Answer:

Point	Reflection in x-axis	Reflection in y-axis
(2, 5)	(2, -5)	(-2, 5)
(-1, 3)	(-1, -3)	(1, 3)
(0, -4)	(0, 4)	(0, -4)
(6, 0)	(6, 0)	(-6, 0)

Question 10

Answer: (a) (-1, 1), (-5, 1), (-5, 3), (-1, 3) (b) Both are 8 square units (4 × 2) (c) A reflection does not change lengths, so the shape keeps the same size and its area stays the same.