

y6maths2 Hard Answers

Answer Key

Question 1:

A point is located 4 units right and 3 units up from the origin. What are its coordinates? If it moves 2 units left and 5 units down, what are its new coordinates?

Answer: (4,3). After moving: (2,-2).

Question 2:

Plot the points A(2,3), B(5,3), C(5,6), D(2,6) and connect them in order. What shape is formed? Calculate its perimeter if each unit is 1 cm.

Answer: Square. Side = 3 units. Perimeter = $4 \times 3 = 12$ cm.

Question 3:

A triangle has vertices at P(1,2), Q(7,2), and R(4,6). What is the area of this triangle? Show your method using the Cartesian plane.

Answer: Base = 6, height = 4. Area = $\frac{1}{2} \times 6 \times 4 = 12$ square units.

Question 4:

A square has one corner at (3,4) and side length 5 units. If the square is axis-aligned, list all four vertices. Then translate it 3 units left and 2 units up.

Answer: (3,4), (8,4), (8,9), (3,9). After translation: (0,6), (5,6), (5,11), (0,11).

Question 5:

Point M is at (-3,5) and Point N is at (4,-2). How many units does it take to travel from M to N if you can only move in horizontal and vertical directions?

Answer: Horizontal: $4 - (-3) = 7$ units. Vertical: $5 - (-2) = 7$ units. Total: 14 units.

Question 6:

A rectangle has vertices at (2,1), (2,7), (10,1), and (10,7). What is its area? If you reflect it over the y-axis, what are the new coordinates of each vertex?

Answer: Area = $8 \times 6 = 48$ sq units. Reflection over y-axis: (-2,1), (-2,7), (-10,1), (-10,7).

Question 7:

A point has coordinates (-5,-3). Name the quadrant it is in. If the point is reflected over the x-axis, where does it land? Then reflect over the y-axis.

Answer: Quadrant III. Over x-axis: (-5,3). Over y-axis: (5,3).

Question 8:

Two points A(3,8) and B(3,2) are plotted. What is the distance between them? If point C is exactly halfway, what are its coordinates?

Answer: Distance = $8 - 2 = 6$ units. Midpoint C = (3,5).

Question 9:

A line segment has endpoints (0,0) and (8,6). What is the length of the segment? Use the Cartesian plane to explain your working.

Answer: Length = $\sqrt{8^2 + 6^2} = \sqrt{64 + 36} = \sqrt{100} = 10$ units.

Question 10:

An irregular shape has vertices at (2,2), (2,8), (6,8), (10,8), (10,2) and back to (2,2). Name the shape and calculate its total area.

Answer: L-shape. Area = $(4 \times 6) + (6 \times 6) = 24 + 36 = 60$ sq units.

Question 11:

A point at (6,9) is rotated 90° clockwise around the origin. What are its new coordinates? If it is then rotated another 90° clockwise, where does it go?

Answer: 90° clockwise: (9,-6). Another 90° clockwise: (6,-9).

Question 12:

A parallelogram has vertices at (1,1), (4,3), (7,1), and (10,3). What is the length of its base and its height? Calculate its area.

Answer: Base = 3 units (from (1,1) to (4,3) horizontally), height = 2 units.

Area = 6 sq units.

Question 13:

A map uses a scale where each unit represents 2 km. A journey goes from (2,3) to (8,15). How far is the actual journey in kilometres assuming the path is the straight-line distance? Round to 1 d.p.

Answer: Distance = $\sqrt{(8-2)^2 + (15-3)^2} = \sqrt{36 + 144} = \sqrt{180} \approx 13.4$ units. Actual = $13.4 \times 2 = 26.8$ km.

Question 14:

Plot the points: (-2,3), (0,7), (2,11), (4,15). Describe the pattern. If the pattern continues, what will be the coordinates of the 10th point?

Answer: Pattern: x increases by 2, y increases by 4 each time. 10th point: $(-2+18, 3+36) = (16,39)$.

Question 15:

Point X is at (-2, -6), Point Y is at (4, -1). Find the midpoint. If a third point Z is added to make an isosceles triangle with XY as the base, give a possible coordinate for Z.

Answer: Midpoint: $((-2+4)/2, (-6+(-1))/2) = (1, -3.5)$. Possible Z: (4, -6) to form equal sides.