

Grade 6 - The Coordinate Plane and Polygons - Answer Key

Common Core 6.NS.C.6b, 6.NS.C.6c, 6.NS.C.8, 6.G.A.3 · maths-pdf.fr/en/

Check your coordinate plane work here. Each solution names the signs of the coordinates, shows the distance or reflection rule, and gives the final answer in bold. Graphs are included for the plotting and polygon problems.

Grade 6 · Common Core State Standards: **6.NS.C.6b, 6.NS.C.6c, 6.NS.C.8, 6.G.A.3**

Exercise 1 - Name the quadrant

Look at the signs of x and y.

(a) $(3,5)$ has signs +, +: Quadrant I. (b) $(-4,2)$ has signs -, +: Quadrant II. (c) $(-3,-6)$ has signs -, -: Quadrant III. (d) $(5,-1)$ has signs +, -: Quadrant IV.

I; II; III; IV

Exercise 2 - Points on an axis

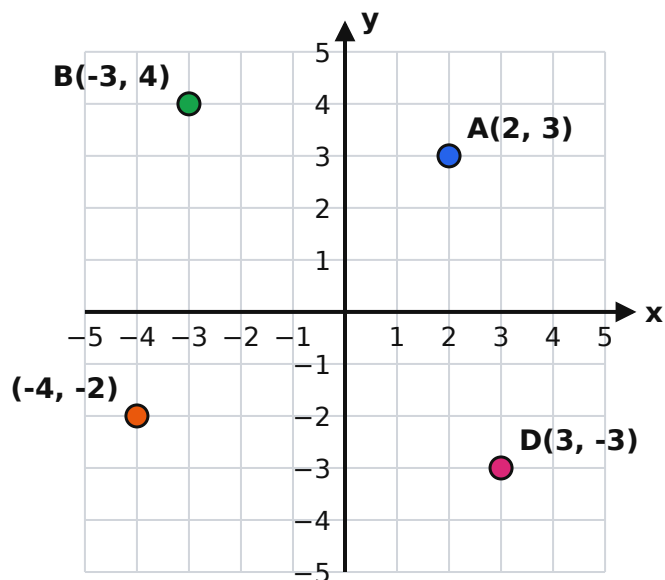
The x-coordinate is 0, so do not move left or right. Move 4 units down.

It lies on the y-axis, 4 units below the origin.

Exercise 3 - Read ordered pairs

A is $(2,3)$, B is $(-3,4)$, C is $(-4,-2)$, and D is $(3,-3)$.

A $(2,3)$, **B** $(-3,4)$, **C** $(-4,-2)$, **D** $(3,-3)$

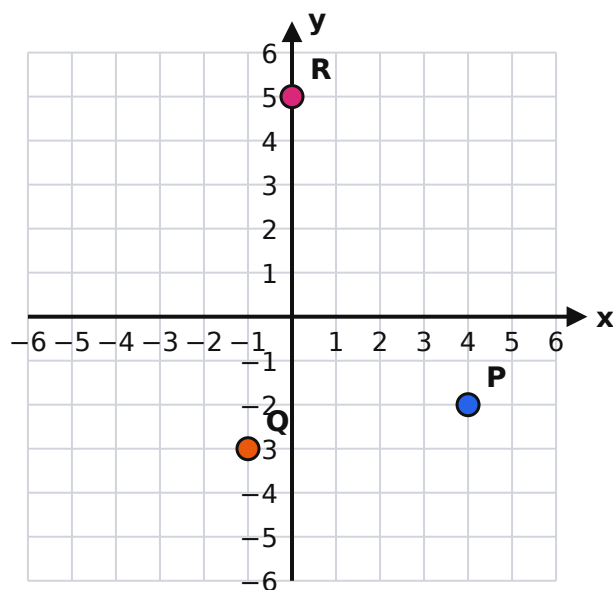


Labeled points.

Exercise 4 - Plot the points

P: right 4, down 2 (Quadrant IV). Q: left 1, down 3 (Quadrant III). R: up 5 on the y-axis.

See the graph.



Plotted points.

Exercise 5 - Reflect across the x-axis

A reflection across the x-axis changes the sign of the y-coordinate.

$(3, -4)$

Exercise 6 - Reflect across the y-axis

A reflection across the y-axis changes the sign of the x-coordinate.

$(5, 2)$

Exercise 7 - Reflect across both axes

Across the x-axis: $(2, 6)$.

Then across the y-axis: $(-2, 6)$.

$(-2, 6)$, **Quadrant II**

Exercise 8 - Distance with the same x

The x-coordinates are the same, so the points are in a vertical line.

$$\text{Distance} = |2| + |-5| = 2 + 5 = 7.$$

7 units

Exercise 9 - Distance with the same y

The y-coordinates match, so the points are in a horizontal line.

$$|-4| + |2| = 4 + 2 = 6$$

6 units

Exercise 10 - Distance in Quadrant III and II

The x-coordinates match. The y-coordinates have opposite signs, so add the absolute values.

$$|-2|+|5|=2+5=7$$

7 units

Exercise 11 - Rectangle on the plane

Length: $5-1=4$. Width: $4-1=3$.

Perimeter: $2(4+3)=14$. Area: $4\times 3=12$.

perimeter 14 units; area 12 square units

Exercise 12 - Right triangle

Horizontal side: $|-2|+|4|=6$. Vertical side: $5-1=4$.

Area: $\frac{1}{2}\times 6\times 4=12$.

6 units, 4 units, area 12 square units

Exercise 13 - Rectangle across quadrants

Length: $3+3=6$. Width: $2+2=4$.

Perimeter: $2(6+4)=20$.

6, 4, perimeter 20 units

Exercise 14 - Missing vertex

The fourth vertex has the x-coordinate of (2, 1) and the y-coordinate of (6, 5).

(2,5)

Exercise 15 - Walking blocks

East-west blocks: $|3-(-2)|=5$.

North-south blocks: $|4-(-3)|=7$.

$$5+7=12$$

12 blocks

Exercise 16 - Parallelogram area

Base on the x-axis: 4 units. Height: 3 units.

Area: $4 \times 3 = 12$.

base 4, height 3, area 12 square units

Exercise 17 - Square on the plane

Side: $|-5 - (-1)| = 4$.

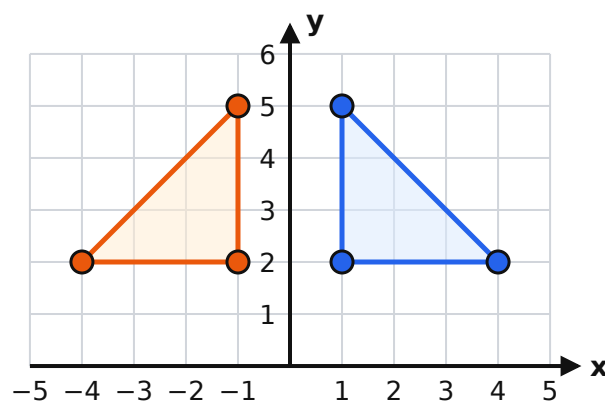
Perimeter $4 \times 4 = 16$; area $4 \times 4 = 16$.

4 units; 16 units; 16 square units

Exercise 18 - Reflect a triangle

Change the sign of each x-coordinate.

$(-1, 2)$, $(-4, 2)$, $(-1, 5)$



The reflection is on the other side of the y-axis.

Exercise 19 - Dog park fence

Length: $|-3| + |5| = 8$ units. Width: $|-1| + |3| = 4$ units.

Perimeter: $2(8+4) = 24$ units, so $24 \times 10 = 240$ feet.

240 feet

Exercise 20 - Triangle in three quadrants
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A is in Quadrant II, B is in Quadrant I, and C is in Quadrant IV.

AB: $|-4| + |2| = 6$. BC: $|3| + |-2| = 5$.

Area: $\frac{1}{2} \times 6 \times 5 = 15$.

II, I, IV; AB = 6; BC = 5; area 15 square units