

Plotting Points and Shapes on the Coordinate Plane

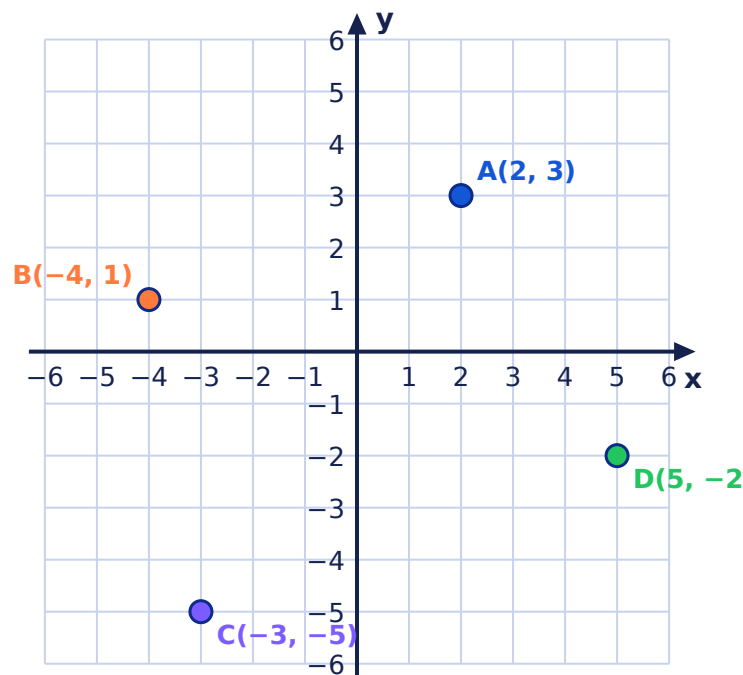
Grade 6 math · Worksheet Answer Key · Standards: 6.NS.C.6b, 6.NS.C.6c, 6.NS.C.8, 6.G.A.3

Each solution names the matching coordinate first, then explains how the distance or reflection follows. Use the sketches to check where each point lands, and confirm distances by counting grid squares whenever the figure is shown.

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

Problem 1 Reading coordinates

Read right or left first, then up or down.



$A(2, 3)$, $B(-4, 1)$, $C(-3, -5)$, $D(5, -2)$.

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Problem 2 Naming quadrants

Check the signs. $(7, -3)$: + and –, Quadrant IV. $(-2, -8)$: – and –, III. $(-6, 4)$: – and +, II. $(1.5, 9)$: + and +, I. **IV, III, II, I.**

Problem 3 Points on the axes

A zero coordinate puts the point on an axis. **$(0, -4)$: y-axis, 4 units below the origin. $(5, 0)$: x-axis, 5 units right. $(-3, 0)$: x-axis, 3 units left. $(0, 6)$: y-axis, 6 units above.**

Problem 4 Reflecting a point

Across the x-axis the y-sign flips: $(8, -3)$. Across the y-axis the x-sign flips: $(-8, 3)$. **$(8, -3)$ and $(-8, 3)$.**

Problem 5 Two reflections

- a. x changes sign: **$(6, 2)$.**
- b. y changes sign: **$(-7, 3)$.**

Problem 6 Horizontal distance

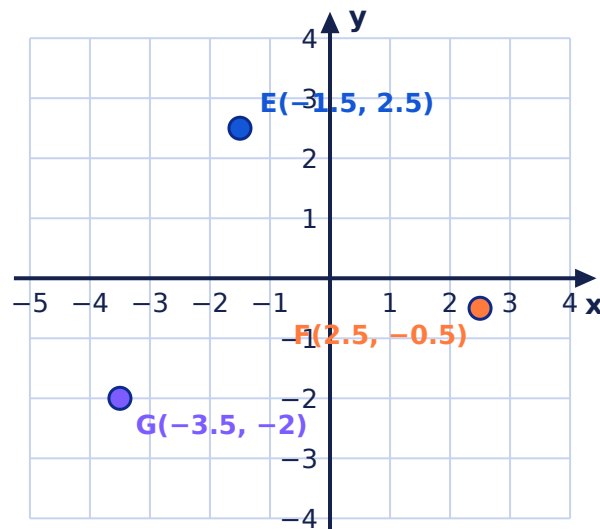
The y-coordinates match. The x-values have different signs, so add absolute values: $9 + 5 =$ **14 units.**

Problem 7 Vertical distance, same signs

The x-coordinates match. Both y-values are negative, so subtract: $9 - 2 =$ **7 units.**

Problem 8 Rational coordinates

Each grid line is 1 unit, and points are at half-units.



$E(-1.5, 2.5)$, $F(2.5, -0.5)$, $G(-3.5, -2)$.

$E(-1.5, 2.5)$ in Quadrant II; $F(2.5, -0.5)$ in Quadrant IV; $G(-3.5, -2)$ in Quadrant III.

Problem 9 Two reflections in a row

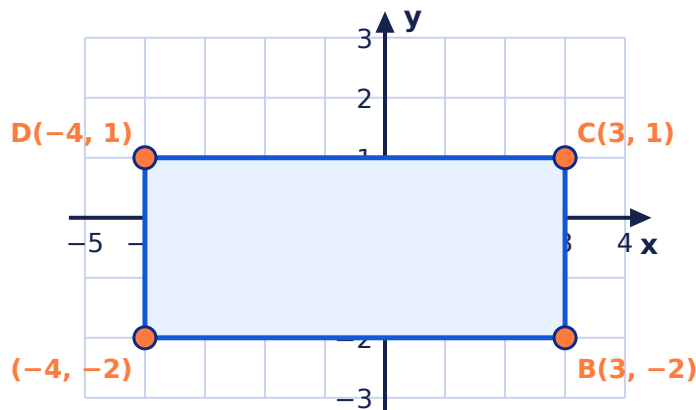
First: $(-3, 4)$ becomes $(-3, -4)$. Second: the x-sign flips, giving $(3, -4)$. **$(3, -4)$.**

Problem 10 Finding missing coordinates

- a. The y-coordinate changes sign: **$y = 8$.**
- b. The x-coordinate changes sign: **$x = 5$.**

Problem 11 Rectangle side lengths

AB: x from -4 to 3 at $y = -2$, so $4 + 3 = 7$. BC: y from -2 to 1 at $x = 3$, so $2 + 1 = 3$.



Width 7, height 3: perimeter 20.

Opposite sides match, so the sides are 7, 3, 7, 3. Perimeter = $7 + 3 + 7 + 3 = 20$ units.

Problem 12 Right triangle legs

Vertical side: from $(1, 1)$ to $(1, 6)$, so $6 - 1 = 5$. Horizontal side: from $(1, 1)$ to $(5, 1)$, so $5 - 1 = 4$. **Vertical 5 units, horizontal 4 units.**

Problem 13 Trail map

The y-coordinates match, so use the x-values: $5 + 3 = 8$. **8 miles.**

Problem 14 Reflections across the y-axis

A y-axis reflection keeps y and flips the sign of x. (a) yes. (b) no, y also flips. (c) yes. **(a) and (c).**

Problem 15 Park walk

Library to pool: same $x = -6$, so $3 + 4 = 7$ blocks. Pool to cafe: same $y = -4$, so $6 + 5 = 11$ blocks. $7 + 11 = 18$ blocks.

Problem 16 Rectangle perimeter and area

AB: $5 + 2 = 7$. BC: $1 + 4 = 5$. The sides are 7 and 5. Perimeter = $2(7 + 5) = 24$. Area = $7 \times 5 = 35$. **Sides 7 and 5, perimeter 24 units, area 35 square units.**

Problem 17 Square garden

Side: from $x = -2$ to 4 gives $2 + 4 = 6$. The fourth vertex is above $(-2, -2)$ at $(-2, 4)$. Reflect across the y-axis by flipping each x: $(2, -2)$, $(-4, -2)$, $(-4, 4)$, $(2, 4)$. **Fourth vertex $(-2, 4)$; side 6; reflection $(2, -2)$, $(-4, -2)$, $(-4, 4)$, $(2, 4)$.**

Problem 18 Parallelogram heights

Top: from $x = -6$ to -1 , so $6 - 1 = 5$. Bottom: from $x = -4$ to 1 , so $4 + 1 = 5$. Vertical gap: $y =$

2 to $y = -2$, so $2 + 2 = 4$. **Horizontal sides 5 and 5; vertical distance 4.**

Problem 19 Reflecting a triangle

Flip each x : $P'(-1, 2)$, $Q'(-4, 2)$, $R'(-4, 6)$. PQ is $4 - 1 = 3$ and $P'Q'$ is $4 - 1 = 3$; QR and $Q'R'$ are both $6 - 2 = 4$. **New vertices $(-1, 2)$, $(-4, 2)$, $(-4, 6)$; side lengths stay the same because a reflection only flips the figure.**

Problem 20 Explain the error

The y -coordinate is 0, so the point is on the x -axis, 4 units left of the origin, and axes belong to no quadrant. Quadrant II needs a negative x and a positive y . **$(-4, 0)$ is on the x -axis; for example $(-2, 7)$ is in Quadrant II.**