



Graphing in four quadrants

GRADE 6 MATH

Answer keys for the exit ticket, practice worksheet, and homework, plus notes for the lesson slides. Each answer shows the steps and the most likely wrong answer (“If wrong”), so you can tell what a mistake means, not just that it is one. Questions go from **fluency** to **application** to **reasoning**.

Exit Ticket — answer key

Use: End of the four-quadrant graphing lesson. 5–8 min, independent. Builds on the “Rational numbers on the number line” sheet (Grade 6).

Timing: 5–8 min · independent. Item 4 is the reflection item — the axis named is NOT the coordinate that changes.

1. Quadrant of $(-3, 5)$?

FLUENCY

Answer: **Quadrant II**

1. $x = -3$ is negative → move LEFT.
2. $y = 5$ is positive → move UP.
3. Left and up is Quadrant II.

If wrong: Said Quadrant IV — plotted $(5, -3)$ by reading the numbers in the wrong order.

2. Quadrant of $(2, -6)$?

APPLICATION

Answer: **Quadrant IV**

1. Right 2, down 6. Right and down is Quadrant IV.

If wrong: Said Quadrant II — reversed the coordinates.

3. Quadrant of $(-4, -2)$?

APPLICATION

Answer: **Quadrant III**

1. Left 4, down 2. Both negative is Quadrant III.

If wrong: Said Quadrant II after checking only the first sign. Both signs decide the quadrant.

4. (5, -3) reflected across the x-axis? REASONING

Answer: **(5, 3)** — the y-coordinate flips sign

1. The x-axis is the horizontal line, so reflecting across it flips a point UP or DOWN.
2. The across-value stays: $x = 5$.
3. The up/down value flips: -3 becomes 3. New point (5, 3).

If wrong: Answered $(-5, -3)$ — flipped x instead. Reflecting across the X-axis changes the Y-coordinate, which feels backwards until you picture the fold line.

Quick answers for fast checking:

#	Level	Answer
1	fluency	Quadrant II
2	application	Quadrant IV
3	application	Quadrant III
4	reasoning	(5, 3)

Practice Worksheet — answer key

Use: During the lesson after the mini-lesson/deck. Items 5–6 are the matched reflection pair; item 8 makes the (x, y) order consequential in a real map.

Timing: 15–25 min · pairs or independent · circulate on 7–9. Items 1–3 fluency, 4–6 application, 7–9 reasoning.

1. Quadrant of (4, 7)? FLUENCY

Answer: **Quadrant I**

1. Right 4, up 7 — both positive.

If wrong: Confused the numbering order of the quadrants.

2. Quadrant of (-6, 1)? FLUENCY

Answer: **Quadrant II**

1. Left 6, up 1.

If wrong: Said Quadrant III — checked only the x sign.

3. Quadrant of $(-2, -8)$? **FLUENCY**

Answer: **Quadrant III**

1. Left 2, down 8.

If wrong: Said Quadrant IV — reversed the coordinates.

4. Quadrant of $(3, -5)$? **APPLICATION**

Answer: **Quadrant IV**

1. Right 3, down 5.

If wrong: Said Quadrant II — reversed the coordinates.

5. Reflect $(-4, 6)$ across the y-axis? **APPLICATION**

Answer: **$(4, 6)$ — the x changed**

1. The y-axis is vertical, so reflecting across it flips LEFT/RIGHT.
2. x: -4 becomes 4 . y stays 6 .

If wrong: Answered $(-4, -6)$ — flipped y instead.

6. Reflect $(2, 5)$ across the x-axis? **APPLICATION**

Answer: **$(2, -5)$ — the y changed**

1. The x-axis is horizontal, so reflecting across it flips UP/DOWN.
2. y: 5 becomes -5 . x stays 2 .

If wrong: Answered $(-2, 5)$ — flipped x instead.

7. Where is $(0, -4)$? **REASONING**

Answer: **On the y-axis, 4 units below the origin — not in a quadrant**

1. $x = 0$ means no movement left or right, so the point sits ON the vertical axis.
2. Quadrants are the four regions BETWEEN the axes.
3. A point on an axis belongs to no quadrant.

If wrong: Assigned it to Quadrant III or IV. A zero coordinate puts a point on an axis, not in a region.

8. Gate (3, -7) vs pond (-3, 7) — same spot? REASONING

Answer: **No — the gate is right 3 and down 7 (Quadrant IV); the pond is left 3 and up 7 (Quadrant II)**

1. (3, -7): right 3, down 7 → Quadrant IV.
2. (-3, 7): left 3, up 7 → Quadrant II.
3. Same digits, opposite signs and opposite order — completely different locations.

If wrong: Said 'same spot, just written differently.' Order and sign both matter; these are diagonal opposites.

9. (3, -7) across x-axis then y-axis? REASONING

Answer: **(-3, 7)**

1. Across the x-axis: y flips → (3, 7).
2. Across the y-axis: x flips → (-3, 7).
3. Both coordinates ended up flipped, moving the point from Quadrant IV to Quadrant II.

If wrong: Flipped the same coordinate twice, landing back at the start; or flipped both at once in a single step.

Quick answers for fast checking:

#	Level	Answer
1	fluency	Quadrant I
2	fluency	Quadrant II
3	fluency	Quadrant III
4	application	Quadrant IV
5	application	(4, 6)
6	application	(2, -5)
7	reasoning	On the y-axis
8	reasoning	Different spots
9	reasoning	(-3, 7)

Homework — answer key

Use: Parallels the practice sheet one-to-one.

Timing: ~15 min at home · independent · review items 5–6 side by side as the next-day warm-up.

1. Quadrant of (6, 2)? **FLUENCY**

Answer: **Quadrant I**

1. Right 6, up 2.

If wrong: Quadrant numbering confusion.

2. Quadrant of $(-1, 9)$? **FLUENCY**

Answer: **Quadrant II**

1. Left 1, up 9.

If wrong: Said III — checked only the x sign.

3. Quadrant of $(-7, -4)$? **FLUENCY**

Answer: **Quadrant III**

1. Left 7, down 4.

If wrong: Said IV — reversed the coordinates.

4. Quadrant of $(8, -1)$? **APPLICATION**

Answer: **Quadrant IV**

1. Right 8, down 1.

If wrong: Said II — reversed the coordinates.

5. Reflect $(-2, -6)$ across the x-axis? **APPLICATION**

Answer: **$(-2, 6)$ — the y changed**

1. Across the x-axis flips up/down.

2. y: -6 becomes 6 ; x stays -2 .

If wrong: Answered $(2, -6)$ — flipped x instead.

6. Reflect (5, 4) across the y-axis? APPLICATION

Answer: **(-5, 4) — the x changed**

1. Across the y-axis flips left/right.
2. x: 5 becomes -5; y stays 4.

If wrong: Answered (5, -4) — flipped y instead.

7. Where is (-3, 0)? REASONING

Answer: **On the x-axis, 3 units left of the origin — not in a quadrant**

1. $y = 0$ means no movement up or down, so the point sits ON the horizontal axis.
2. Quadrants are the regions between the axes, so an axis point is in none of them.

If wrong: Assigned it to Quadrant II or III.

8. Library (2, -9) vs pool (-9, 2) — same place? REASONING

Answer: **No — the library is right 2 and down 9 (Quadrant IV); the pool is left 9 and up 2 (Quadrant II)**

1. (2, -9): right 2, down 9 → Quadrant IV.
2. (-9, 2): left 9, up 2 → Quadrant II.
3. The same two digits in a different order and with different signs give completely different places.

If wrong: Said they are the same because the digits match. On a map that error sends you to the wrong side of town.

Quick answers for fast checking:

#	Level	Answer
1	fluency	Quadrant I
2	fluency	Quadrant II
3	fluency	Quadrant III
4	application	Quadrant IV
5	application	(-2, 6)
6	application	(-5, 4)
7	reasoning	On the x-axis
8	reasoning	Different places

Lesson slides — teaching notes & timing

Mini-lesson deck: ~12–15 min, then launch into the practice sheet. Slide numbers match the deck.

Slide	~Time	Note
1/8	0:00	Frame the skill: locate and name points in every region of the grid.
2/8	1:00	Hook — plot BOTH points live so the difference is visible, then ask what that means for reading coordinates.
3/8	3:00	The order rule. Resolve the hook: different quadrants entirely.
4/8	5:00	WE1 — the four sign patterns. Have students say the sign pair, not just the numeral.
5/8	7:00	WE2 — reflections. This is the counterintuitive one: fold over the x-axis, the y changes. Demonstrate by folding paper if you have it.
6/8	9:00	CFU — all-student response. Answer Quadrant II. Watch for IV.
7/8	11:00	Axis points. Prevents the ‘every point has a quadrant’ assumption.
8/8	13:00	Launch the in-class practice sheet.