Slope Graph Maker: Build Lines from m and b

Complete worked example / separate answer key

Plot y = 2x + 1 on a grid where each square is 1 unit. Predict the intercept, direction, and one extra point before drawing.

Answer: The intercept is (0, 1). The slope 2 is positive, so the line rises. From (0, 1), move 1 right and 2 up to reach (1, 3). A check point at x = 2 gives y = 2(2) + 1 = 5, so (2, 5) lies on the line. The line passes through (0, 1), (1, 3), and (2, 5).

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Original tasks 1, 2, 3 / complete keys

Task 1

Plot y = 3x - 2 on a grid with 1 unit per square. State the intercept, direction, and one extra point.

Answer: Intercept (0, -2); slope 3 is positive so the line rises; extra point at x = 1 gives y = 1, so (1, 1) is on the line.

Reason: b = -2 places the intercept below the origin. m = 3 means up 3 for every 1 right. Substituting x = 1 gives y = 3(1) - 2 = 1.

Check: Substitute x = 2: y = 3(2) - 2 = 4, so (2, 4) should also lie on the drawn line.

Task 2

Plot y = -1x + 4 on a grid with 1 unit per square. State the intercept, direction, and one extra point.

Answer: Intercept (0, 4); slope -1 is negative so the line falls; extra point at x = 2 gives y = 2, so (2, 2) is on the line.

Reason: b = 4 places the intercept above the origin. m = -1 means down 1 for every 1 right. Substituting x = 2 gives y = -2 + 4 = 2.

Check: Substitute x = 1: y = -1 + 4 = 3, so (1, 3) should lie on the line.

Task 3

Plot y = 0x + 3 on a grid with 1 unit per square. Describe the line and give two points on it.

Answer: The line is horizontal through (0, 3). Points include (0, 3) and (2, 3).

Reason: m = 0 means no vertical change as x increases, so y stays at 3 for every x.

Check: Substitute x = 5: y = 0(5) + 3 = 3, so (5, 3) should lie on the line.

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Original tasks 4 / complete keys

Task 4

A grid uses 2 units per square on both axes. Plot y = 1x + 2. State how many squares right and up to move from the intercept, and give one extra point in grid units.

Answer: Intercept at (0, 2), which is 1 square up. Slope 1 means 1 unit up per 1 unit right, which is half a square up per half a square right; equivalently, move 1 square right and 1 square up to reach (2, 4). Extra point (2, 4).

Reason: Because each square is 2 units, a slope of 1 corresponds to equal vertical and horizontal unit changes. Moving 1 square right changes x by 2 and y by 2, matching slope 1.

Check: Substitute x = 4: y = 4 + 2 = 6, so (4, 6) is 2 squares right and 3 squares up from the origin; confirm it lies on the line.

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Task 1, Task 2, Task 3, Task 4 / Separate answer key: intercept, direction, extra point, check substitution

Answer key for all four worksheet items.

Exercise	Intercept	Direction	Extra point / grid move
1: y = 3x - 2	(0, -2)	rises	(1, 1)
2: y = -1x + 4	(0, 4)	falls	(2, 2)
3: y = 0x + 3	(0, 3)	horizontal	(2, 3)
4: y = 1x + 2 (2 units/square)	(0, 2)	rises	(2, 4); 1 square right and 1 square up

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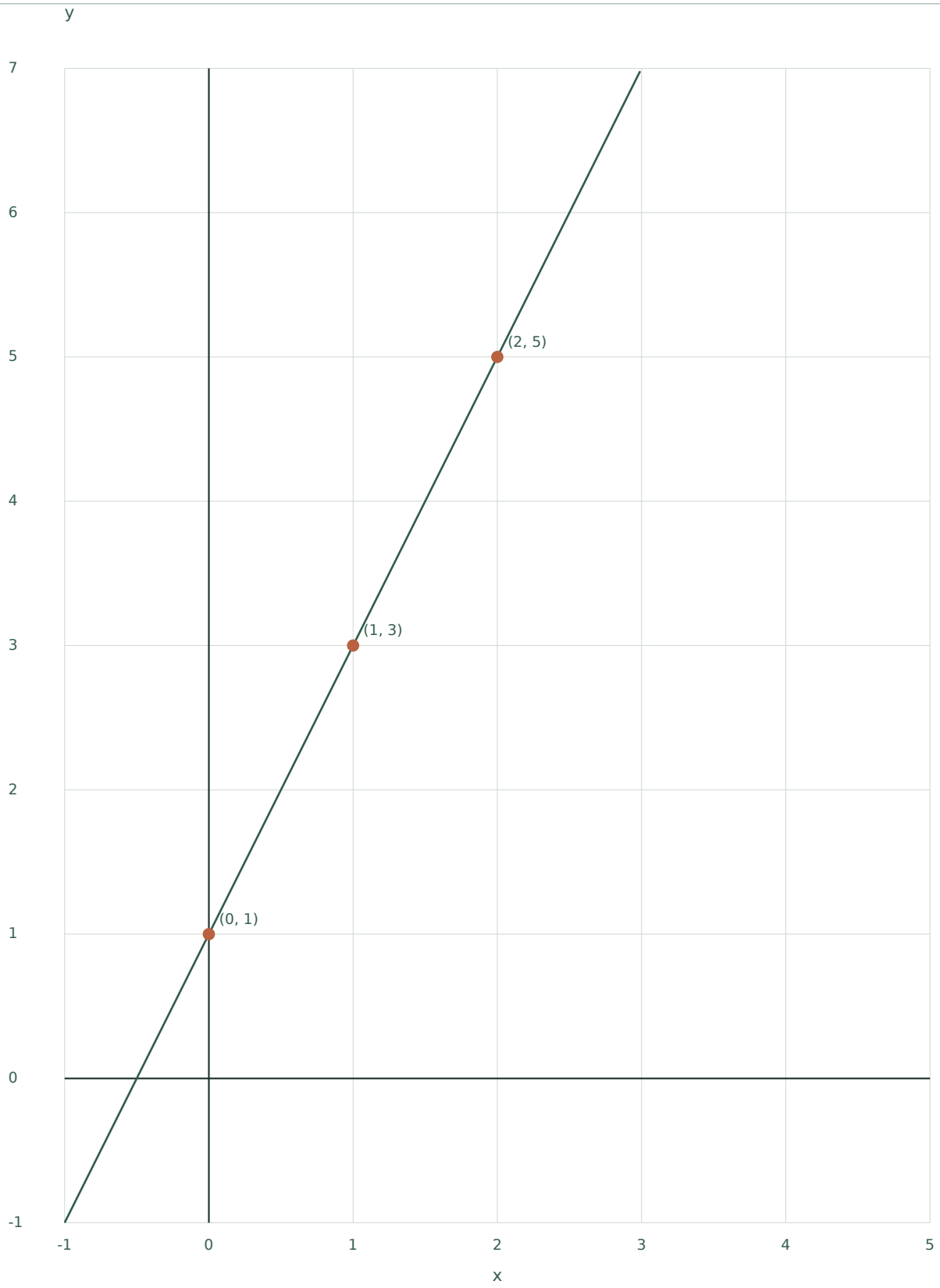
Task 1, Task 2, Task 3, Task 4 / Answer key: check substitutions

Check substitutions for each worksheet item.

Exercise	Check substitution	Resulting point
1: y = 3x - 2	x = 2: y = 3(2) - 2 = 4	(2, 4)
2: y = -1x + 4	x = 1: y = -1 + 4 = 3	(1, 3)
3: y = 0x + 3	x = 5: y = 0(5) + 3 = 3	(5, 3)
4: y = 1x + 2	x = 4: y = 4 + 2 = 6	(4, 6)

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Worked example / Printable coordinate grid: 1 unit per square



Worked example y = 2x + 1 on 1-unit grid.

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Source rubric / reflection

- [ ] Correctly identifies m and b from the equation.
- [ ] Plots the y-intercept at (0, b).
- [ ] Uses rise over run consistently to locate a second point.
- [ ] Draws a straight line through the plotted points.
- [ ] Checks at least one extra point by substitution.
- [ ] Records three observations: direction, intercept, and test point.
- [ ] States the grid scale and keeps units consistent.

Reflection: What did you check, what did you change, and what will you try next?