Linear Graph Questions for Class 8: Slope, Intercept, and Plotting Practice

Original tasks 1, 2, 3 / complete keys

Task 1

A line crosses the vertical axis at 5 and passes through the point (3, 14). Find the slope and write the equation.

Answer: Slope = 3, equation y = 3x + 5.

Reason: The intercept is 5 because the line crosses the vertical axis there. Using (0, 5) and (3, 14), vertical change is 14 minus 5 equals 9, horizontal change is 3 minus 0 equals 3, so slope is 9 divided by 3 equals 3. The equation is y = 3x + 5.

Check: Substitute x = 3: 3 times 3 plus 5 equals 14, which matches the given point.

Task 2

Plot the line y = negative 2x + 4. State three points you would plot and the direction of the line.

Answer: Points (0, 4), (1, 2), and (2, 0); the line falls from left to right.

Reason: The intercept is 4, so plot (0, 4). The slope is negative 2, meaning down 2 for every 1 right, giving (1, 2). Substituting x = 2 gives y = negative 4 plus 4 equals 0, giving (2, 0). A negative slope means the line falls to the right.

Check: Confirm each point satisfies y = negative 2x + 4: for x = 1, negative 2 plus 4 equals 2; for x = 2, negative 4 plus 4 equals 0.

Task 3

A taxi charges a fixed start fee of 3 dollars plus 2 dollars per kilometer. Sketch a linear graph of cost against kilometers. State the intercept, slope, and one point on the line.

Answer: Intercept = 3 dollars, slope = 2 dollars per kilometer, point (4, 11).

Reason: Cost depends on kilometers, so kilometers go on the horizontal axis and cost on the vertical axis. The start fee is the intercept, 3. The rate is the slope, 2. At 4 km, cost is 3 plus 2 times 4 equals 11, so (4, 11) is on the line.

Check: Read the point (4, 11) back into the story: 3 plus 2 times 4 equals 11, which matches the fee rule.

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Original tasks 4 / complete keys

Task 4

A line has slope one half and passes through (0, 1). Find the y value when x = 6, and state a second point on the line.

Answer: When x = 6, y = 4; a second point is (2, 2).

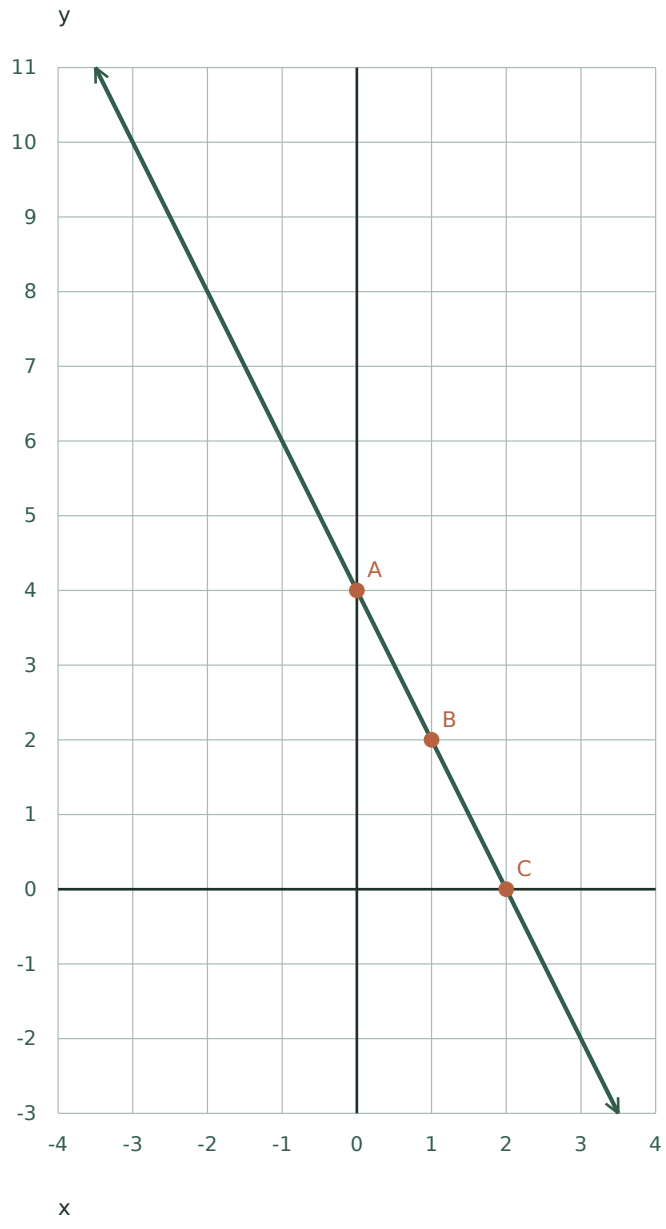
Reason: The equation is y = one half x plus 1. Substituting x = 6 gives y = 3 plus 1 equals 4. Using the slope as a step, from (0, 1) move up 1 and right 2 to reach (2, 2).

Check: Substitute x = 2 into y = one half x plus 1: one half times 2 plus 1 equals 2, matching the second point.

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Task 2 / completed coordinate key

Plot the line y = negative 2x + 4. State three points you would plot and the direction of the line.



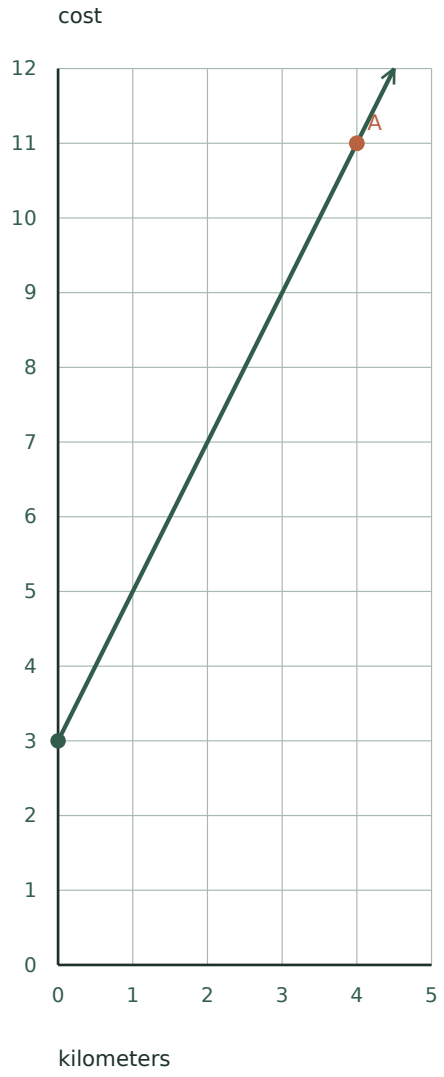
Each horizontal interval = 1; each vertical interval = 1. The axes show a display window, not a newly imposed domain.

A = (0, 4); B = (1, 2); C = (2, 0)

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Task 3 / completed coordinate key

A taxi charges a fixed start fee of 3 dollars plus 2 dollars per kilometer. Sketch a linear graph of cost against kilometers. State the intercept, slope, and one point on the line.



Each horizontal interval = 1; each vertical interval = 1. The axes show a display window, not a newly imposed domain.

A = (4, 11)

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Original rubric / reflection

- [ ] Intercept is read correctly from the vertical axis and stated as a single value.
- [ ] Slope is computed as vertical change divided by horizontal change with the correct sign.
- [ ] Equation is written in y = m x + b form with m and b matching the graph.
- [ ] Plotted line passes through at least three correct grid-intersection points.
- [ ] Axes are labeled and the line is labeled with its equation.
- [ ] Word-problem sketch identifies independent and dependent quantities correctly.
- [ ] Check point is stated and verified by substitution or by reading the graph.
- [ ] Valid alternative conventions are accepted if coordinates, direction, and labels are correct.

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