Find the Slope-Intercept Equation from a Graphed Line

Original tasks 1, 2, 3, 4 / complete keys

Task 1

A line crosses the y-axis at (0, 1) and passes through (2, 5). Write its slope-intercept equation.

Answer: y = 2x + 1

Reason: b = 1 from the y-intercept. Rise from (0,1) to (2,5) is 4; run is 2; m = 4/2 = 2. Equation: y = 2x + 1. Check (2,5): 2(2)+1 = 5.

Check: Substitute x = 0 to get y = 1, and substitute (2, 5) to confirm 5 = 2(2) + 1.

Task 2

A line crosses the y-axis at (0, -3) and passes through (4, -1). Write its slope-intercept equation.

Answer: y = (1/2)x - 3

Reason: b = -3. Rise from (0,-3) to (4,-1) is 2; run is 4; m = 2/4 = 1/2. Equation: y = (1/2)x - 3. Check (4,-1): (1/2)(4) - 3 = 2 - 3 = -1.

Check: Confirm x = 0 gives y = -3 and that (4, -1) satisfies the equation.

Task 3

A line crosses the y-axis at (0, 4) and passes through (2, 0). Write its slope-intercept equation.

Answer: y = -2x + 4

Reason: b = 4. From (0,4) to (2,0): rise = 0 - 4 = -4; run = 2; m = -4/2 = -2. Equation: y = -2x + 4. Check (2,0): -2(2)+4 = 0.

Check: Substitute x = 0 for y = 4 and (2, 0) for 0 = -2(2) + 4.

Task 4

A horizontal line passes through (0, -5) and (3, -5). Write its slope-intercept equation.

Answer: y = -5

Reason: The line is horizontal, so rise = 0 and m = 0. The y-intercept is -5, so b = -5. Equation: y = 0x - 5, simplified to y = -5. Check: any x gives y = -5.

Check: Confirm both given points have y = -5 and that substituting x = 0 gives y = -5.

Find the Slope-Intercept Equation from a Graphed Line

Source rubric / reflection

- [ ] Correctly identifies b from the y-axis crossing, including its sign.
- [ ] Correctly computes slope as rise/run using two clear points.
- [ ] Simplifies the slope fraction to lowest terms.
- [ ] Writes the equation in y = mx + b form with correct signs.
- [ ] Checks the equation against at least one point from the graph.
- [ ] Explains the slope triangle or counting method used.

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