Slope-Intercept Form

Algebra 1 •Section 5.2

Name: _____	Date: _____	Score: _____ / 12

Quick Review and Helpful Hints

Linear relationships have a constant rate of change. Use slope, intercepts, points, and context to move between equations, tables, graphs, and real-world meanings.

▷ **Example:** Write the line with slope 2 through $(3, 11)$.
Work: Use $y = 2x + b$. Substitute the point: $11 = 2(3) + b$, so $b = 5$.

★ **Answer:** $y = 2x + 5$

Practice Problems

Solve each problem. Show enough work that another student could follow your thinking.

1. Write the slope and intercept of $y = 3x - 7$.

2. Write an equation with slope 5 and intercept -2.

3. Write $2x + y = 9$ in slope-intercept form.

4. Write $4x - 2y = 10$ in slope-intercept form.

5. Find the y-intercept of $y = -\frac{1}{2}x + 6$.

6. Find the slope of $y = 7 - 3x$.

7. Write the equation with slope -4 through $(0, 8)$.

8. Does $(2, 1)$ lie on $y = 3x - 5$?

9. Find the zero of $y = 2x - 10$.

10. Find y when $x = -1$ for $y = -6x + 4$.

Word Problems

11. A subscription costs $\$14$ plus $\$6$ per month. Write the model.

12. A line starts at 80 and drops 5 each week. Write the model.

Answer Keys

1. $\boxed{m = 3, b = -7}$
2. $\boxed{y = 5x - 2}$
3. $\boxed{y = -2x + 9}$
4. $\boxed{y = 2x - 5}$
5. $\boxed{6}$
6. $\boxed{-3}$
7. $\boxed{y = -4x + 8}$
8. $\boxed{\text{Yes}}$
9. $\boxed{x = 5}$
10. $\boxed{10}$
11. $\boxed{y = 6x + 14}$
12. $\boxed{y = -5x + 80}$

Step-by-Step Explanations

1. Match it to $y = mx + b$: the x-coefficient is the slope, and the lone number is where it crosses.
2. Just drop your two ingredients into the $y = mx + b$ recipe and you're done.
3. You only need to free y, so peel off the $2x$ by subtracting it from both sides.
4. Shift $4x$ over, then divide everything by -2 — watch how the signs flip as you go.
5. The intercept is wherever $x = 0$, which leaves just the constant sitting there: 6.
6. Mentally swap the order to $y = -3x + 7$, and the slope is clearly the -3.
7. Lucky you — the point has $x = 0$, so 8 is the intercept and you can write it straight away.
8. Test it by plugging in $x = 2$: you get $3(2) - 5 = 1$, which matches, so the point is on the line.
9. The zero is where the line hits the x-axis, so set $y = 0$ and solve $0 = 2x - 10$.
10. Substitute and mind the double negative: $-6(-1) + 4 = 6 + 4 = 10$.
11. The $\$6$ repeats every month so it's your slope; the one-time $\$14$ is the starting intercept.
12. Begin at 80, and since it's dropping, the weekly change is a negative slope of -5.

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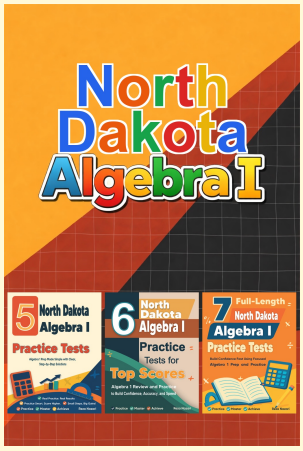

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