

# Slope-Intercept Form

## Algebra 1 •Section 5.2

Name: _____	Date: _____	Score: _____ / 12
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**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.

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|---|--|
| <p>1. Write the slope and intercept of <math>y = 3x - 7</math>.<br/>_____</p> <p>2. Write an equation with slope 5 and intercept -2.<br/>_____</p> <p>3. Write <math>2x + y = 9</math> in slope-intercept form.<br/>_____</p> <p>4. Write <math>4x - 2y = 10</math> in slope-intercept form.<br/>_____</p> <p>5. Find the <math>y</math>-intercept of <math>y = -\frac{1}{2}x + 6</math>.<br/>_____</p> | <p>6. Find the slope of <math>y = 7 - 3x</math>.<br/>_____</p> <p>7. Write the equation with slope -4 through (0, 8).<br/>_____</p> <p>8. Does (2, 1) lie on <math>y = 3x - 5</math>?<br/>_____</p> <p>9. Find the zero of <math>y = 2x - 10</math>.<br/>_____</p> <p>10. Find <math>y</math> when <math>x = -1</math> for <math>y = -6x + 4</math>.<br/>_____</p> |
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◆ **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.  $m = 3, b = -7$

2.  $y = 5x - 2$

3.  $y = -2x + 9$

4.  $y = 2x - 5$

5.  $6$

6.  $-3$

7.  $y = -4x + 8$

8.  $\text{Yes}$

9.  $x = 5$

10.  $10$

11.  $y = 6x + 14$

12.  $y = -5x + 80$

### 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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