Sample answer: Show your work.

e. $y - 25 = \frac{1}{5}(x - 100)$

Got It? Do this problem to find out.

e. The cost for making spirit buttons is show in the table. Write an equation in point-slope form to represent the cost y of making x buttons.

Number of Buttons	Cost ($)
100	25
150	35

Guided Practice

Check

Write an equation in point-slope form and slope-intercept form for each line. (Examples 1–3)

1. passes through (2, 5), slope = 4

Show your work.

$y - 5 = 4(x - 2)$; $y = 4x - 3$

2. passes through (−3, 1) and (−2, −1)

Sample answer: $y - 1 = -2(x + 3)$;

$y = -2x - 5$

3. Janelle is planning a party. The cost for 20 people is $290. The cost for 45 people is $590. Write an equation in point-slope form to represent the cost y of having a party for x people. (Example 4)

Sample answer: $y - 290 = 12(x - 20)$

4. **Building on the Essential Question** How does using the point-slope form of a linear equation make it easier to write the equation of a line? Sample answer: You can substitute the slope and a point into the equation. You do not need to find the y-intercept of the line.

Rate Yourself!

How confident are you about writing linear equations? Check the box that applies.

For more help, go online to access a Personal Tutor. Tutor

Name _____ My Homework _____

Independent Practice

Go online for Step-by-Step Solutions

Write an equation in point-slope form and slope-intercept form for each line.

(Examples 1–3)

1. passes through (1, 9), slope = 2

Show your work.

$y - 9 = 2(x - 1)$; $y = 2x + 7$

2. passes through (4, −1), slope = −3

$y + 1 = -3(x - 4)$; $y = -3x + 11$

3. passes through (−4, −5), slope = $\frac{3}{4}$

$y + 5 = \frac{3}{4}(x + 4)$; $y = \frac{3}{4}x - 2$

4. passes through (3, −6) and (−1, 2)

Sample answer: $y + 6 = -2(x - 3)$; $y = -2x$

5 passes through (4, −4) and (8, −10)

Sample answer: $y + 4 = -\frac{3}{2}(x - 4)$; $y = -\frac{3}{2}x + 2$

6. passes through (3, 4) and (5, −4)

Sample answer: $y + 4 = -4(x - 5)$; $y = -4x + 16$

7. STEM For a science experiment, Mala measured the height of a plant e… information in the t…

Weeks	Height (in.)
	13

5. passes through (4, −4) and (8, −10)
Sample answer: $y + 4 = -\frac{3}{2}(x - 4)$; $y = -\frac{3}{2}x + 2$

6. passes through (3, 4) and (5, −4)
Sample answer: $y + 4 = -4(x - 5)$; $y = -4x + 16$

7. **STEM** For a science experiment, Mala measured the height of a plant every week. She recorded the information in the table. Assuming the growth is linear, write an equation in point-slope form to represent the height y of the plant after x weeks. (Example 4)

Weeks	Height (in.)
5	13
10	14

Sample answer: $y - 14 = \frac{1}{5}(x - 10)$

8. After 2 seconds on a penalty kick in soccer, the ball travels 160 feet. After 2.75 seconds on the same kick, the ball travels 220 feet. Write an equation in point-slope form to represent the distance y of the ball after x seconds.
(Example 4) **Sample answer:** $y - 160 = 80(x - 2)$

Write each equation in standard form.

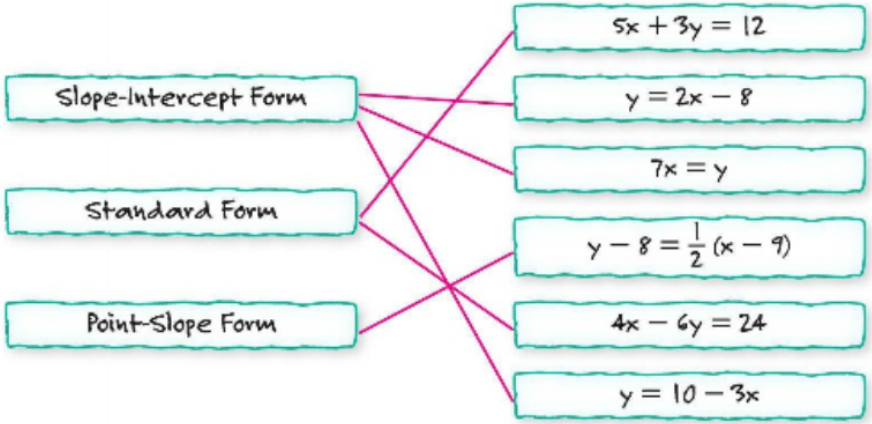
9 $y - 4 = -3(x - 3)$

$3x + y = 13$

10. $y + 9 = 2(x + 5)$

$2x - y = -1$

11. CCSS **Identify Structure** Draw a line connecting the form of the equation to the correct equations.



H.O.T. Problems Higher Order Thinking

12. CCSS **Reason Abstractly** Write a linear equation that is in point-slope form. Identify the slope and name a point on the line.

Sample answer: $y - 3 = 4(x + 2)$; slope: 4, point on line: $(-2, 3)$

13. CCSS **Persevere with Problems**

Point-Slope Form

$4x - 6y = 24$

$y = 10 - 3x$

H.O.T. Problems Higher Order Thinking

12. **Reason Abstractly** Write a linear equation that is in point-slope form. Identify the slope and name a point on the line.

Sample answer: $y - 3 = 4(x + 2)$; slope: 4, point on line: $(-2, 3)$

13. **Persevere with Problems** The equation of a line is $y = -\frac{1}{2}x + 6$. Write an equation in point-slope form for the same line. Explain the steps that you used.

Sample answer: $y - 5 = -\frac{1}{2}(x - 2)$; First, use the equation to find the slope and the coordinates of any point on the line. Then use the slope and coordinates to write an equation in point-slope form.

14. **Persevere with Problems** Order the steps to write a linear equation in slope-intercept form if you know the slope of the line and a point on the line.

4 Simplify the equation.

2 Use the Distributive Property to multiply the slope by x and x_1.

1 Substitute the slope m and the coordinates of the point (x_1, y_1) into the point-slope formula.

3 Use the Addition Property of Equality.