5-4 Equations in Point-Slope Form

Name _____ Date _____

Write the point-slope form of the line with slope $\frac{6}{5}$ that contains point $(-4, -2)$. Then graph the line.

$y - y_1 = m(x - x_1)$ ← Use the point-slope form, where m is the slope and the point (x_1, y_1) lies on the line.

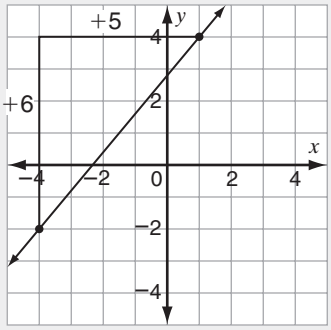
$y - (-2) = \frac{6}{5}[x - (-4)]$ ← Substitute -2 for y_1, $\frac{6}{5}$ for m, and -4 for x_1.

$y + 2 = \frac{6}{5}(x + 4)$ ← Simplify.

Plot the point $(-4, -2)$.

Use the slope to locate point $(-4 + 5, -2 + 6)$, or $(1, 4)$, on the line.

Connect the points.



Write an equation of a line in point-slope form with the given slope that passes through the given point. Then graph the line on a separate sheet of paper.

1. slope: $-\frac{2}{3}$; point: $(8, 12)$

$y - y_1 = m(x - x_1)$

$y_1 = 12, m = -\frac{2}{3}, x_1 = 8$

$y - 12 = -\frac{2}{3}(x - 8)$

2. slope: $-\frac{5}{2}$; point: $(2, 15)$

3. slope: -8; point: $\left(\frac{2}{3}, -\frac{4}{5}\right)$

4. slope: -13; point: $\left(-\frac{7}{2}, \frac{6}{11}\right)$

5. slope: 1.4; point: $(-2.5, 3.5)$

6. slope: 0.7; point: $(4.5, -6.5)$

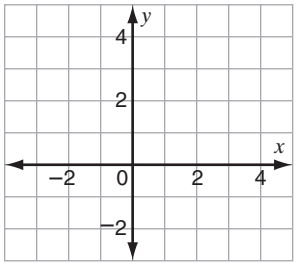
7. slope: 0.5; point: $(-1.25, 2.75)$

8. slope: -0.75; point: $(-1.5, -3)$

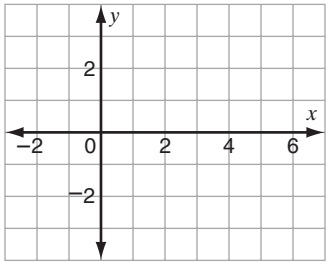
9. slope: 0.125; point: $(-4, -8)$

Graph each equation.

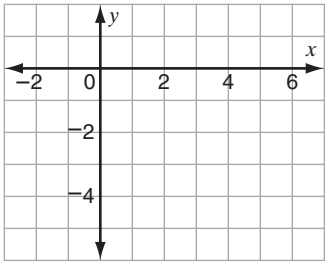
10. $y - 2 = x - 1$



11. $y + 3 = 2(x - 1)$



12. $y + 3 = \frac{2}{3}(x - 3)$



Write an equation in point-slope form of a line that passes through the given points.

13. (2, 8) and (−4, 6)

$m = \frac{6-8}{-4-2} = \frac{-2}{-6} = \frac{1}{3}$

$y - y_1 = m(x - x_1)$

Let $(2, 8) = (x_1, y_1)$

$y - 8 = \frac{1}{3}(x - 2)$

14. (5, 11) and (−6, 3)

15. (−3, 7) and (4, 14)

16. (4, −6) and (5, −4)

17. (6, 2) and (8, −5)

18. (−12, −9) and (13, −10)

19. (5.2, 1.9) and (−3.8, −5.1)

20. $\left(3\frac{1}{2}, 2\frac{2}{3}\right)$ and $\left(6\frac{1}{2}, -1\frac{1}{3}\right)$

21. $\left(4\frac{1}{5}, 6\frac{3}{4}\right)$ and $\left(-2\frac{4}{5}, 8\frac{3}{4}\right)$

Problem Solving

22. Health Insurance Shari's health insurance plan requires that she pay a monthly fee and also pay for each visit (her co-pay). In April, May, and June, Shari went to the doctor's office several times. She recorded the number of times and the amount she paid for health insurance in the table at the right.

Month	Visits	Cost
April	4	$135.75
May	2	$94.75
June	3	$115.25

a. What is her co-pay?

b. If Shari goes to the doctor 7 times in July, how much will she pay for health insurance?

MENTAL MATH

Multiply.

23. −95 • 32

24. $2 \bullet 7\frac{1}{8}$

25. 19.9 • 4.5