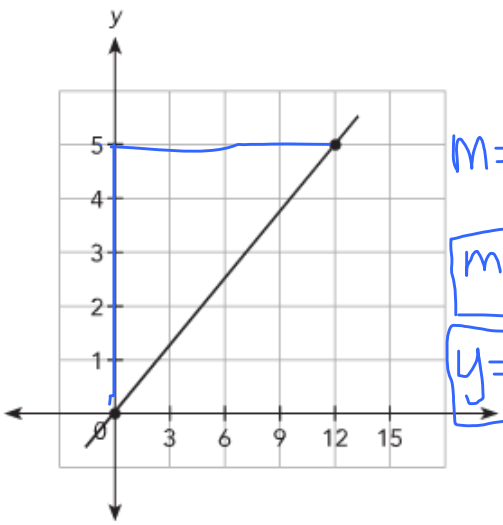
Review for Test #3 - Lines and Linear Equations

Name: _____ Class: _____

Find the slope of each line using the points indicated. Then write an equation for it.

1

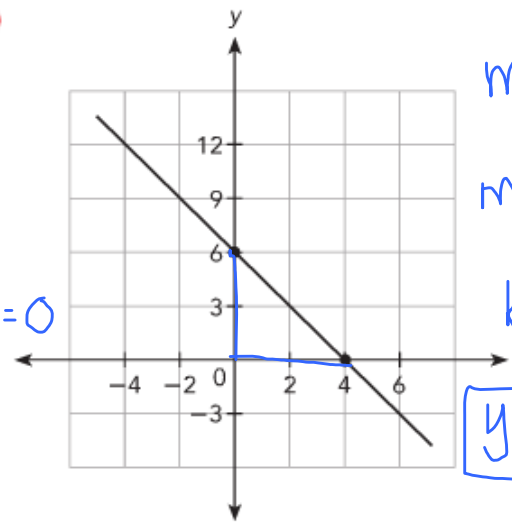


$m = \frac{rise}{run}$

$m = \frac{5}{12}$

$y = \frac{5}{12}x$

2



$m = \frac{rise}{run}$

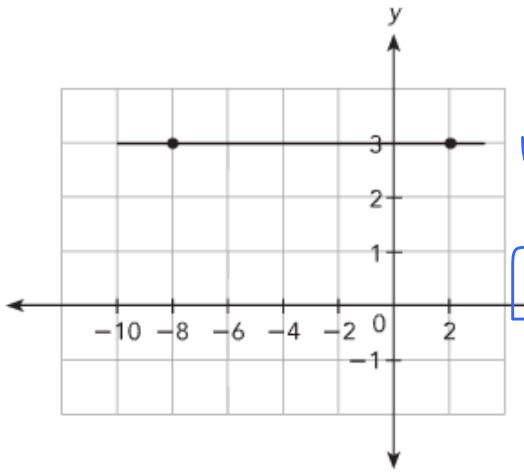
$m = \frac{-6}{4} = \frac{-3}{2}$

$b = 6$

$b = 0$

$y = \frac{-3}{2}x + 6$

3

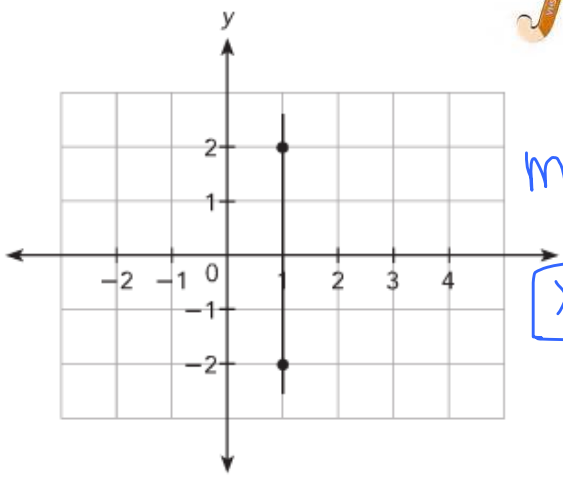


$m = 0$

$b = 3$

$y = 3$

4



$m = \text{und.}$

$x = 1$

5 – 7. Find the slope of the line containing the two indicated points.

5.) (-4,3) and (-6,2)

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

6.) (4,7) and (0,-8)

$m = \frac{-8-7}{0-4} = \frac{-15}{-4}$

$m = \frac{15}{4}$

7.) (3,6) and (3,-6)

$m = \frac{-6-6}{3-3}$

$m = \frac{-12}{0} = \text{und.}$

8 – 10. Find the quadrant in which these points are located.

8.) (2,-7)

IV

II | I

III | IV

9.) (4,4)

I

10.) (-7,2)

II

11 – 13. Write the following in $y = mx + b$ form.

11.) $-3y = 2x - 9$

$y = -\frac{2}{3}x + 3$

12.) $-3x = 2y + 10$

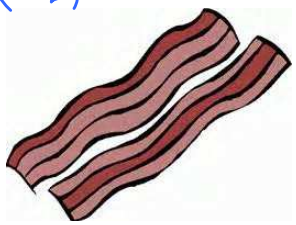
$-3x - 10 = 2y$

$y = -\frac{3}{2}x - 5$

13.) $x - y = 4$

$x = y + 4$

$y = x - 4$



14 – 15. Given the following line and a point on that line. Solve for *k.*

14.) $y = -\frac{1}{2}x + 5$ and (k, 3)

$3 = -\frac{1}{2}k + 5$

$-2 = -\frac{1}{2}k$

$k = 4$

15.) $y = -\frac{1}{2}x + 5$ and (-4, k)

$k = -\frac{1}{2}(-4) + 5$

$k = 2 + 5$

$k = 7$

16 – 17. Given the following slope and a point on the line. Write the equation of the line.

16.) m = -3 containing (2,3)

$y = -3x + b$

$3 = -3(2) + b$

$3 = -6 + b$

$9 = b$

$y = -3x + 9$

17.) $m = \frac{2}{3}$ containing (-3,-3)

$-3 = \frac{2}{3}(-3) + b$

$-3 = -2 + b$

$-1 = b$

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

18 – 21. Solve. Show your work. Graph each line.

18.) Write an equation of the line parallel to $5y = 3x + 12$ that has a y-intercept of 2.

$y = \frac{3}{5}x + \frac{12}{5}$

$m_{\parallel} = \frac{3}{5}$

$b_{\parallel} = 2$

$y = \frac{3}{5}x + 2$

19.) Write an equation of the line that slope –½ and passes through the point (-4,5).

$5 = -\frac{1}{2}x + b$

$5 = -\frac{1}{2}(-4) + b$

$5 = 2 + b$

$3 = b$

$y = -\frac{1}{2}x + 3$

20.) Write an equation of the line that passes through the point (-4,-4) and is parallel to $2y - x = -6$.

$2y = x - 6$

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

$m_{\parallel} = \frac{1}{2}$

$b_{\parallel} = ?$

$y = \frac{1}{2}x + b$

$-4 = \frac{1}{2}(-4) + b$

$-4 = -2 + b$

$-2 = b$

$y = \frac{1}{2}x - 2$

21.) Write an equation of the line that passes through the point (-4,-3) and is parallel to $4y - x = -16$.

$4y = x - 16$

$y = \frac{1}{4}x - 4$

$m_{\parallel} = \frac{1}{4}$

$b_{\parallel} = ?$

$-3 = \frac{1}{4}(-4) + b$

$-3 = -1 + b$

$-2 = b$

$y = \frac{1}{4}x - 2$

22 – 24. Write an equation of the line that passes through each pair of points. Graph each line.

22.) (3,5) and (3,-8)

$m = \frac{-8-5}{3-3} = \frac{-13}{0}$ = undefined → vertical line

$x = 3$

23.) (1,2) and (4,8)

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

$y = 2x + b$

$8 = 2(4) + b$

$8 = 8 + b$

$0 = b$

$y = 2x$

24.) (4,4) and (-2,1)

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

$y = \frac{1}{2}x + b$

$4 = \frac{1}{2}(4) + b$

$4 = 2 + b$

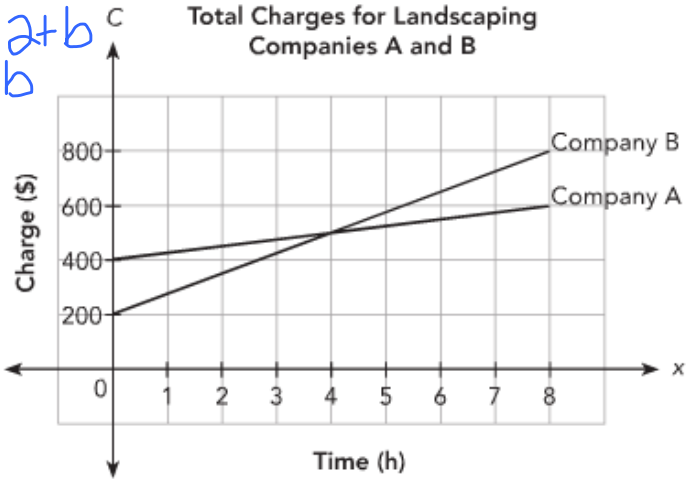
$2 = b$

$y = \frac{1}{2}x + 2$

25.) Landscaping Company A and Company B each charges a certain amount, C dollars, as consultation fee, plus a fixed hourly charge.

a) Find the amount each landscaping company charges as its consultation fee. Explain how you know.

b) Which company charges a greater amount per hour? Explain your answer.



a) A: $400 B: $200

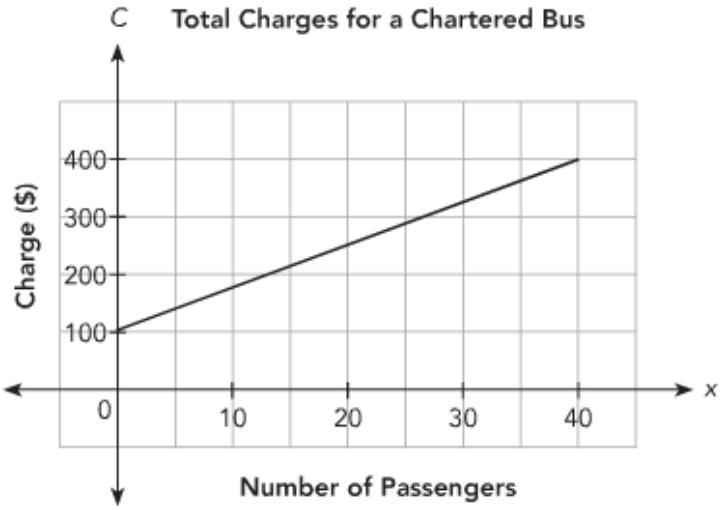
They're y-intercepts

b) Company B – they have a steeper slope

26.) The operator of a charter bus service charges a certain amount for a bus, plus per-passenger charge. The graph shows the total charges, C dollars, for carrying x passengers.

a) Find the vertical intercept and explain what information it gives about the situation.

b) Find the slope of the graph and explain what information it gives about the situation.



a) $100 - It costs $100 for the initial charge of the bus.

b) $\frac{\$300}{40\text{ p}} = \$7.50/\text{passenger}$ - the cost per passenger.

27.) Which equation represents the equation of a line that is parallel to the line $4y + x = 28$?

(A) $8y = -2x + 56$ (C) $4x - y = 12$

(B) $24 - 8y = 2x$ (D) $y = 4x + 2$

★ Isolate y in each equation

$4y = -x + 28$

$y = -\frac{1}{4}x + 7$

A: $y = -\frac{1}{4}x + 7$ (same line)

B: $y = -\frac{1}{4}x + 3$ (same slope)

C: $y = 4x - 12$ (diff. slope)

D: $y = 4x + 2$ (diff. slope)

Answers

1.) $\frac{5}{12}; y = \frac{5}{12}x$ 2.) $-\frac{3}{2}; y = -\frac{3}{2}x + 6$ 3.) $0; y = 3$ 4.) undefined; $x = 1$

5.) $\frac{1}{2}$ 6.) $\frac{15}{4}$ 7.) undefined 8.) IV

9.) I 10.) II 11.) $y = -\frac{2}{3}x + 3$ 12.) $y = -\frac{3}{2}x - 5$

13.) $y = x - 4$ 14.) 4 15.) 7 16.) $y = -3x + 9$

17.) $y = \frac{2}{3}x - 1$ 18.) $y = \frac{3}{5}x + 2$ 19.) $y = -\frac{1}{2}x + 3$ 20.) $y = \frac{1}{2}x - 2$

21.) $y = \frac{1}{4}x - 2$ 22.) x = 3 23.) $y = 2x$ 24.) $y = \frac{1}{2}x + 3$

25.) a.) Landscaping Company A: $400 Landscaping Company B: $200; They're the y-intercepts.

b.) Company B (has a steeper slope)

26.) a.) $100; initial charge for bus b.) $7.50 per passenger (Charge per passenger) 27.) B