5 2.1A Rearranging Equations

Equations of lines generally have two variables (except horizontal and vertical lines). We must often rearrange equations into different forms.

For all of the following, rearrange into the form

$y = \underline{\text{coefficient}}\,x + \underline{\text{constant}}$

BEDMAS

1. $6x + y = 2$ * isolate y

$-6x \quad -6x$

$y = -6x + 2$

2. $-8x + 2y = -4$

$+8x \quad +8x$

$\frac{2y}{2} = \frac{8x}{2} - \frac{4}{2}$

$y = 4x - 2$

3. $2x - 3y = 0$

$+2x \quad +2x$

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

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

4. $5x + 2y = 7$

$-5x \quad -5x$

$\frac{2y}{2} = \frac{-5x}{2} + \frac{7}{2}$

$y = \frac{-5}{2}x + \frac{7}{2}$

5. $2x - y = 7$

$-2x \quad -2x$

$\frac{-y}{-1} = \frac{-2x}{-1} + \frac{7}{-1}$

$y = 2x - 7$

$2x - y = 7$

$2x - 7 = y$

6. $\frac{-2x}{-2} - \frac{2y}{-2} = \frac{-12}{-2}$

$x + y = 6$

$-x \quad -x$

$y = -x + 6$

7. $2x + 3y - 6 = 0$

$-3y \quad -3y$

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

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

Practice Work: w/s (~~38/63~~) Cryptic Quiz

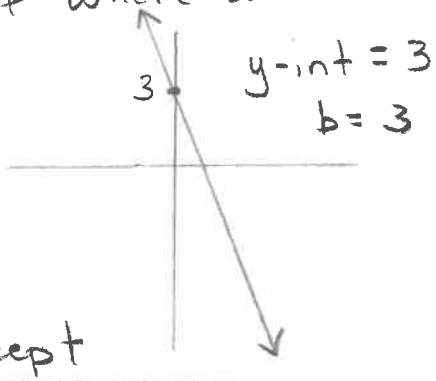
FMP10 Name: _____

Date: _____

5 3.1B Slope-Intercept Form

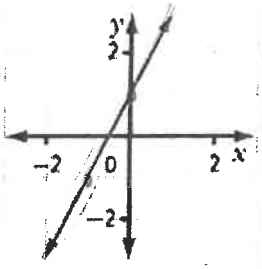
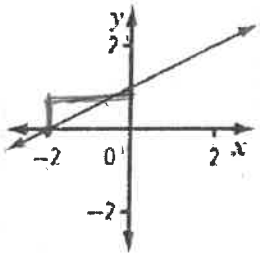
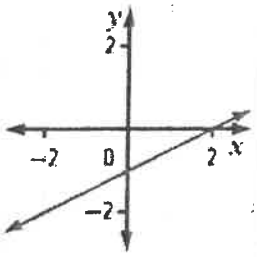
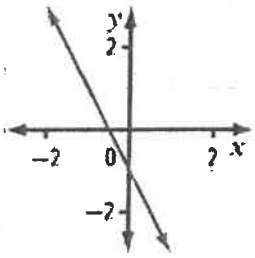
y-intercept: The y-coordinate of the point where a line or curve crosses the y-axis.

The value of y when $x = 0$.

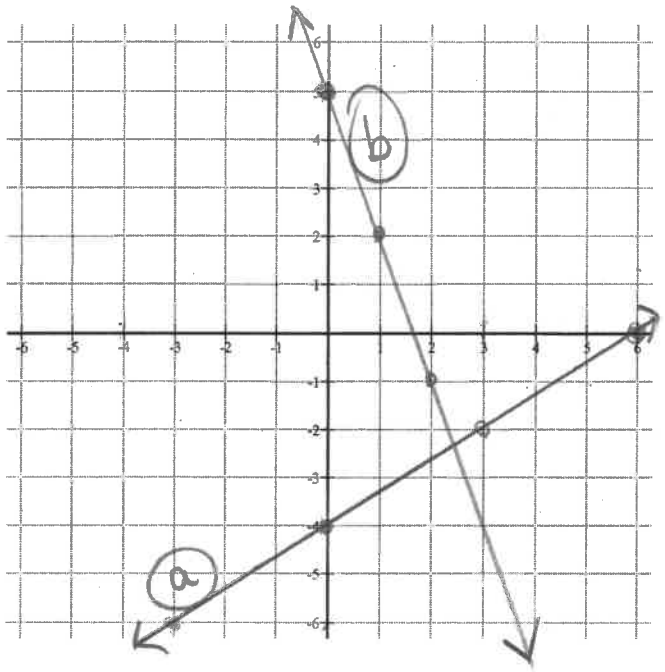


slope-intercept form:

The equation of a line in the form $y = mx + b$ where m = slope (coefficient of x) and b is the y-intercept

Table of Values	Graph	Slope, m	y-intercept, b	Equation, $y = mx + b$
x | y 0 | 1 1 | 3 2 | 5		$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3-1}{1-0} = \frac{2}{1} \rightarrow 2$	1	$y = mx + b$ $y = 2x + 1$
x | y 0 | 1 2 | 2 4 | 3		$\frac{1}{2}$	1	$y = \frac{1}{2}x + 1$
x | y 0 | −1 2 | 0 4 | 1		$\frac{1}{2}$	−1	$y = \frac{1}{2}x - 1$
x | y 0 | −1 1 | −3 2 | −5		−2	−1	$y = -2x - 1$

Ex. Graph each line using the slope and *y*-intercept:



(a) $y = \frac{2}{3}x - 4$

$b = -4 \quad (0, -4)$

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

(b) $y = -3x + 5$

$b = 5$

$m = \frac{-3}{1}$

Aside

$-\frac{1}{3} = \frac{-1}{3}$

Ex. Express each equation in slope-intercept form: $y = mx + b$

$3x + 2y = 6$

$2x - 6y - 4 = 0$

$+6y \quad +6y$

$\frac{2x}{6} - \frac{4}{6} = \frac{6y}{6}$

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

Ex . A students' council rents a portable dunk tank as a fundraising activity. Students pay for the chance to hit a target with a ball and dunk a teacher into a tank of water. The relationship between the number of balls thrown, x, and the profit, y, in dollars, may be represented by the equation 3x – 2y – 600 = 0.

a) Rewrite the equation in slope – intercept form.

$3x - 2y - 600 = 0$

$+2y \quad +2y$

$\frac{3x}{2} - \frac{600}{2} = \frac{2y}{2}$

$y = \frac{3}{2}x - 300 = y$

b) State the slope of the line. What does the slope represent?

$m = \frac{\$3}{2 \text{ ball}}$

$\$1.50 / \text{ball}$

$y = \frac{3}{2}x - 300$

3x - 2y - 600 = 0

c) Identify the y-intercept. What does it represent?

$y = \frac{3}{2}x - 300$

b = -300

cost to rent dunk tank.

d) The break-even point is the point at which the money raised equals the money spent. How many balls must the students sell to reach the break-even point?

Profit = 0
y = 0

$0 = \frac{3}{2}x - 300$
+300 +300

$300 = \frac{3}{2}x$

600 = 3x → x = 200

200 balls to break even

Ex. An archaeologist simulates a First Nations method of boiling water. If the starting temperature of the water is 10 °C and the equation W = mt + 10 models how the temperature, W, increases over time, t (min).

a) After 5 min the water temperature is 19 °C. Determine the value of the parameter m. What does m represent?

W = mt + 10
~~(5, 19)~~
19 = m(5) + 10
-10 -10

9 = 5m → $m = \frac{9\,°C}{5\,min} = 1.8\,°C/min$

b) How long will it take for the water to boil?

100 = 1.8t + 10 ↳ 100 °C
-10 -10

90 = 1.8t
(÷1.8)

50 = t

50 min to boil

y = 3
y = 0x + 3

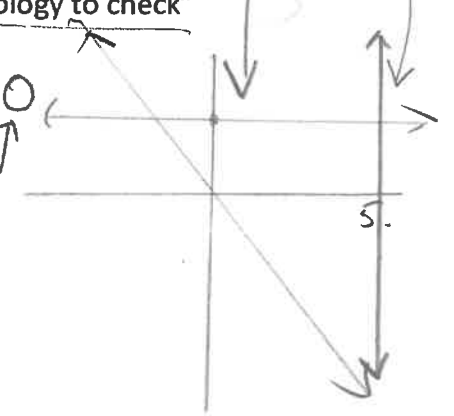
x = 5

Practice: pg. 349 # 1, 3-10, 12, 13, 19-21

*ignore "use graphing technology to check"

y = 3x + b (3, 4)
4 = 3(3) + b (x, y)
4 = 9 + b
-5 = b

y = -x + 0
m = -1
b = 0



5.1C Equations of Lines – Slope Intercept Form

To write an equation of a line, we need two things:

1. slope
2. y-intercept

Slope – Intercept form → $y = mx + b$

Given slope and a point

1. Determine the equation of a line through (-1, 3) with a slope of $\frac{2}{3}$.

$y = mx + b$ x y m

① b = ?

$y = mx + b$

$3 = \frac{2}{3}(-1) + b$

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

$+\frac{2}{3}$ $+\frac{2}{3}$

$3\frac{2}{3} = b$ $b = 11/3$

② write equation

$y = mx + b$

$y = \frac{2}{3}x + \frac{11}{3}$

2. slope of m = $\frac{-1}{2}$, through point (4, -3)

① b = ?

$y = mx + b$

$-3 = -\frac{1}{2}(4) + b$

$-3 = -2 + b$

$+2$ $+2$

$-1 = b$

② write equation

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

Given two points on the line

1. Find the equation of the line through points (1, 4) and (4, -2)

- Two steps
  - Calculate slope
  - Use slope and 1 point to find b.

① $m = ?$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

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

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

$m = -2$

② $b = ?$

$y = mx + b$

$4 = -2(1) + b$

$4 = -2 + b$

$6 = b$

③ write equation

$y = -2x + 6$

2. Find the equation of the line through (-5, -3) with a x-intercept of 1.

① $m = ?$

$m = \frac{0 - -3}{1 - -5}$

$= \frac{3}{6}$

$m = \frac{1}{2}$

② $b = ?$

$-3 = \frac{1}{2}(-5) + b$

$-3 = -2.5 + b$

$+2.5 \quad +2.5$

$-0.5 = b$

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

(1, 0)

② $b = ?$

$0 = \frac{1}{2}(1) + b$

$0 = \frac{1}{2} + b$

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

③ $y = \frac{1}{2}x - \frac{1}{2}$

3. Point (3, 2), m =2

① $b = ?$

$2 = 2(3) + b$

$2 = 6 + b$

$-4 = b$

② $y = 2x - 4$

Practice Work: w/s (159/160)

Gyro

FMP10
Date: _____

Name: slope-intercept form
$y = mx + b$

5.2 General Form

General Form: The equation of a line, in the form $Ax + By + C = 0$ where $A \in W$, B and $C \in I$. (A is positive, no fraction or decimal coefficients)

Ex. Rewrite each equation in general form:

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

$3y = -2x + 18$
$+2x \quad +2x$

$2x + 3y = 18$
$-18 \quad -18$

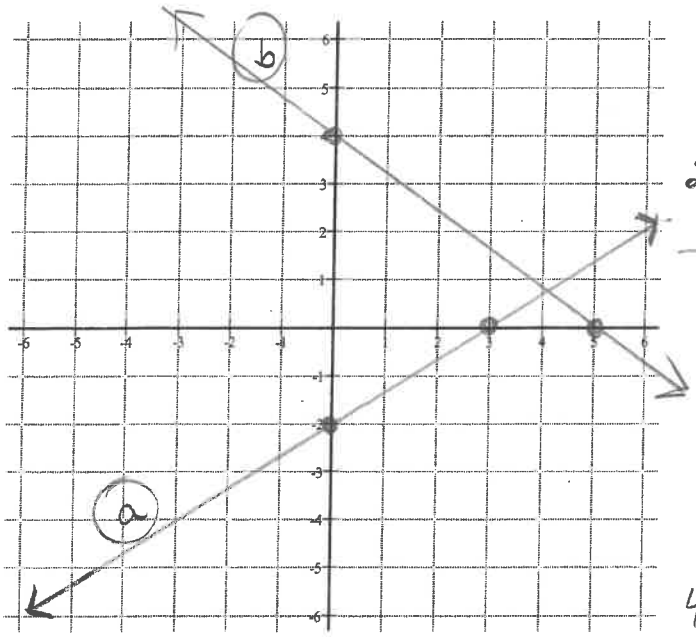
$2x + 3y - 18 = 0$

$y = \frac{3}{4}x - 2$

$4y = 3x - 8$
$-4y \quad -4y$

$0 = 3x - 4y - 8$

Ex. For each linear equation determine the x-intercept, determine the y-intercept, and graph the line using the intercepts:



(a) $2x - 3y - 6 = 0$

x-int ($y = 0$)

$2x - 3(0) - 6 = 0$
$+6 \quad +6$

$2x = 6$
$x = 3$

$(3, 0)$

y-int ($x = 0$)

$2(0) - 3y - 6 = 0$
$+3y \quad +3y$

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

$-2 = y$

$(0, -2)$

(b) $4x + 5y - 20 = 0$

x-int ($y = 0$)

$4x + 5(0) - 20 = 0$
$+20 \quad +20$

$4x = 20$

$x = 5$

$(5, 0)$

y-int ($x = 0$)

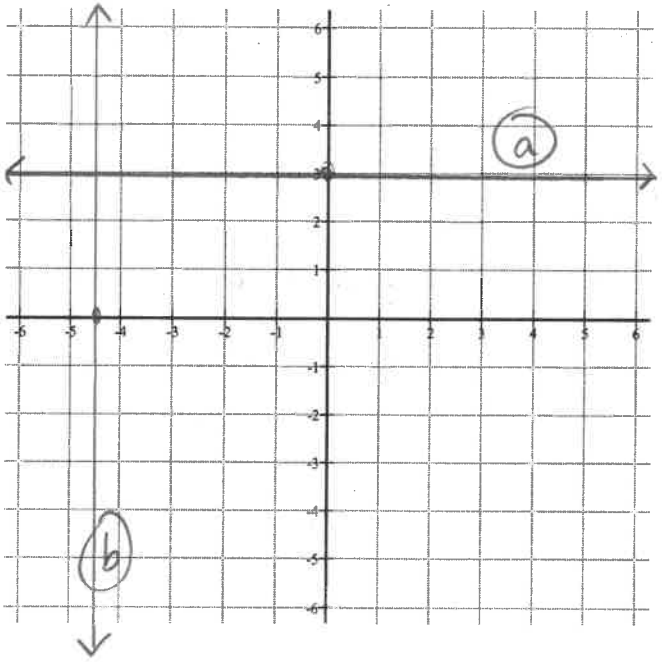
$4(0) + 5y - 20 = 0$

$5y = 20$

$y = 4$

$(0, 4)$

Ex. Sketch each linear relation and identify the intercepts. Then state the domain & range.



(a) $y - 3 = 0$

$+3 \quad +3$

$y = 3$

$y = 0x + 3$

y-int = 3

x-int = none

$x \in \mathbb{R}$

$\{y \mid y = 3, y \in \mathbb{R}\}$

(b) $x + 4.5 = 0$

$x = -4.5$

x-int = -4.5

y-int = none

$\{x \mid x = -4.5, x \in \mathbb{R}\}$

$\{y \mid y \in \mathbb{R}\}$

Ex. Spencer has 66 GB of disk space left on his laptop to fill with television shows and movies that he purchases on-line.

a. Suppose a one-hour show uses 1.1 GB of disk space and a movie uses 4.4 GB. Write a linear equation that represents the number of television shows, T, and movies, M, that Spencer can store on his laptop.

$1.1T + 4.4M = 66$

$11T + 44M = 660$

$11T + 44M - 660 = 0$

$T + 4M - 60 = 0$

b. Determine the T-intercept of a graph of the linear equation. What does the T-intercept represent?

$(M = 0)$ $T + 4(0) - 60 = 0$

$T = 60$

T-int = 60

60 tv shows

0 movies

c. What would the M-intercept be? What does the M-intercept represent?

$T = 0$ $(0) + 4M - 60 = 0$

$4M = 60$

$M = 15$

M-int = 15

15 movies

0 shows

d. If Spencer stores 16 television shows, how many movies does he have space for?

$t = 16$ $m = ?$

$16 + 4M - 60 = 0$

$4M - 44 = 0$

$4M = 44$

$M = 11$

16 tv shows

11 movies

Practice: pg. 365/ #1 - 8, 10, 11, 14, 15

FMP10 Name: _____

Date: _____

5 7.3 Point- Slope Form

Recall:

Slope-Intercept Form: $y = mx + b$ $y = 2x + 4$

General Form: $Ax + By + C = 0$

Point - Slope Form: The equation of a non-vertical line

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

(x_1, y_1) is a coordinate on the line.

Ex. Use point - slope form to write an equation of the line through (-2, 5) with slope -3, then express the equation in slope intercept form. x_1 y_1 m

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

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

$y - 5 = -3(x + 2)$

$+5 \quad +5$

$y = -3(x+2) + 5$

$y = -3x - 6 + 5$

$y = -3x - 1$

Ex. Determine the slope and a point on the line: $y - 5 = -2(x + 3)$.

* $m = -2$ $(-3, 5)$

Ex. Use the point - slope form to write an equation of the line through (3, -4) and (5, -1), then rewrite the equation in general form.

① $m = ?$

$m = \frac{-1 - -4}{5 - 3}$

$m = \frac{3}{2}$

② slope - point

$y - -1 = \frac{3}{2}(x - 5)$

$y + 1 = \frac{3}{2}(x - 5)$

$2y + 2 = 3(x - 5)$

$2y + 2 = 3x - 15$

$-2y \quad -2y$

$2 = 3x - 2y - 15$

$-2 \quad -2$

$0 = 3x - 2y - 17$

Ex. You are an avid coin collector. You decide to start keeping better track of your coin collection: After 15 days you count and find out you have 155 coins. After 22 days you have a total of 218 coins.

a. Write an equation in POINT-SLOPE form that represents this situation (define your variables)

Let x = # of days
y = # of coins

(days, coins)

(15, 155)
(22, 218)

① $m = ?$

$m = \frac{218 - 155}{22 - 15}$

$= \frac{63}{7}$

$m = 9$

② $y - 155 = 9(x - 15)$

b. Convert your equation to Slope-Intercept form

$y - 155 = 9x - 135$
$+155 \quad +155$

$y = 9x + 20$

c. What does your Slope represent?

How many coins added each day.

d. How many coins did you start with?

20 coins

e. After how many days would you have 425 coins?

$425 = 9x + 20$
$-20 \quad -20$

$405 = 9x$

$45 = x$

45 days to have 425 coins.

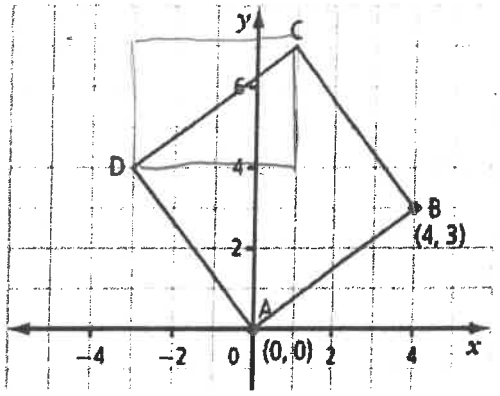
FMP10
Date: _____

Name: _____

5.4 ~~3.3~~ Parallel & Perpendicular Lines

ABCD is a square. Calculate the slope of each line segment.

$m_{AB} = \frac{3}{4}$ $m_{BC} = \frac{-4}{3}$ $m_{CD} = \frac{3}{4}$ $m_{AD} = \frac{-4}{3}$



Compare the slopes of pairs of parallel line segments. What do you notice?

slopes are equal ↑ parallel $m_{AB} \parallel m_{CD}$

Compare the slopes of pairs of perpendicular line segments. What do you notice?

Slopes are negative reciprocals. $m_{AB} \perp m_{AD}$

Parallel lines: Lines that do not intersect. Always equidistant apart. Lines have the same slope but different y-intercepts. ∥

Perpendicular lines: ⊥

Two lines that intersect at 90°

Slopes are negative reciprocals.

*Special case $m = 0 \perp$ $m =$ undefined

Ex. State whether the lines in each pair are parallel, perpendicular, or neither.

a) $y = 3x - 6$ $m = 3$
$y = -\frac{1}{3}x + 4$ $m = \frac{-1}{3}$
⊥

b) $y = 4x + 3$ $m = 4$
$y = 4x - 5$ $m = 4$
∥

c) $y = 2x + 6$ $m = 2$
$6x + 3y + 3 = 0$
neither
$-3y \quad -3y$
$\frac{6x}{-3} + \frac{3}{-3} = \frac{-3y}{-3}$
$m = -2$
$-2x - 1 = y$

d) $y - 4 = 0$ $y = 4$ $m = 0$
$x + 1 = 0$ $y = 0x + 4$
$x = -1$
$m =$ undefined
⊥

e) $y = \frac{2}{5}x - 6$ $m = \frac{2}{5}$
$5x + 2y = 8$
$-5x \quad -5x$
$\frac{2y}{2} = \frac{-5x}{2} + \frac{8}{2}$
$m = \frac{-5}{2}$ $y = \frac{-5}{2}x + 4$
⊥

f) $y = 3x - 4$
$y = 3x + \frac{1}{4}$
∥

m=

Ex. Write the equation of a line that is parallel to $2x - y + 4 = 0$ and through $(1, -6)$. Express the equation in slope – intercept form and in general form.

① $m = ?$

$2x - y + 4 = 0$

$+y \quad +y$

$2x + 4 = y$

$m = 2$ $\quad \boxed{m_{\parallel} = 2}$

② $b = ?$

$y = mx + b$

$-6 = 2(1) + b$

$-6 = 2 + b$

$-2 \quad -2$

$\boxed{-8 = b}$

③ $y = mx + b$

$\boxed{y = 2x - 8}$ slope intercept form

$-y \quad -y$

$\boxed{0 = 2x - y - 8}$ general form

Ex. Write the equation of a line perpendicular to $3x + 2y - 6 = 0$ with an x-intercept of 9. Express the equation in slope – intercept form and in general form.

① $m = ?$

$3x + 2y - 6 = 0$

$-2y \quad -2y$

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

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

$m = -\frac{3}{2}$ $\quad \boxed{m_{\perp} = \frac{2}{3}}$

② $b = ?$ (9,0)

$0 = \frac{2}{3}(9) + b$

$0 = 6 + b$

$\boxed{-6 = b}$

③ $\boxed{y = \frac{2}{3}x - 6}$

$-y$

$3 \quad 0 = \frac{2}{3}x - y - 6 \quad 3 \quad 3$

$\boxed{0 = 2x - 3y - 18}$

Ex. For the pair of slopes $-\frac{2}{n}$ and $\frac{5}{2}$, what is the value of n if the lines are parallel? What is the value of n if the lines are perpendicular?

$\parallel$

$\frac{-2}{n} = \frac{5}{2}$

$n = \frac{-2(2)}{5}$

$\boxed{n = -\frac{4}{5}}$

$\perp$

$\frac{-2}{n} = \frac{-2}{5}$

$n = \frac{-2(5)}{-2}$

$\boxed{n = 5}$

Practice: pg. 290 #1esl, 2esl, 3-5, 6esl, 7esl, 9-11, 13-16, 19, 20, 21

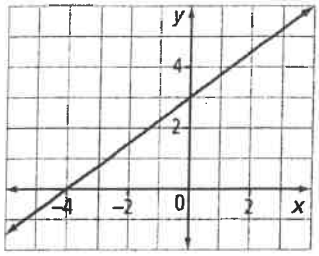
*esl = every second letter starting with "a"

-2.5

Multiple Choice

For #1 to 5, select the best answer.

1. Which of the statements is true for the graph shown?



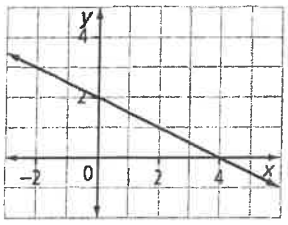
A The slope is $-\frac{3}{4}$.

B The intercepts are at –4 and 3.

C The x-intercept is at (–4, 0).

D The y-intercept is at (3, 0).

2. Which of the statements is true for the graph shown?



A The domain is $\{x \mid x \geq 4, x \in \mathrm{R}\}$.

B The range is $\{y \mid y \leq 4, y \in \mathrm{R}\}$.

C The domain and range are both [2, 4].

D The domain and range are both (∞, ∞).

3. To rewrite the equation $-2x + 2y = 5$ in the form $y = mx + b$, a possible approach could be

A subtract $2x$ from both sides and then divide both sides by 2

B add $2x$ to both sides and then divide both sides by 2

C add $-2x$ to both sides and then multiply both sides by 2

D subtract $2x$ from both sides and then multiply both sides by 2

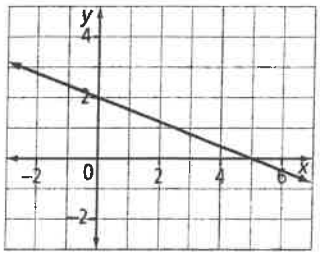
4. Which equation represents a linear relation that has an infinite number of intercepts?

A $y = x$ **B** $y = 2$

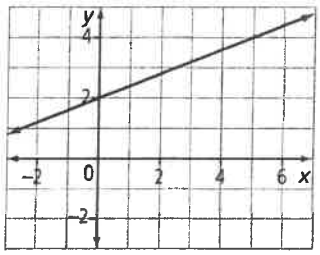
C $y = 0$ **D** $y = x - 1$

5. Which graph shows a line with a slope of $-\frac{2}{5}$ and a y-intercept of 2?

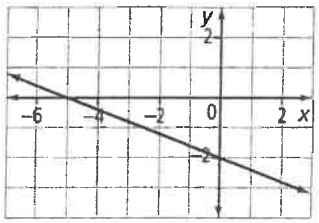
A



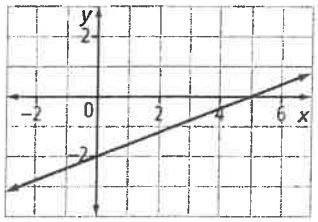
B



C



D



Short Answer

Complete the statements in #6 to #8.

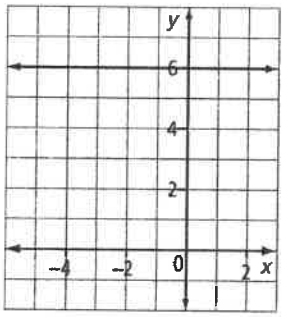
6. The x-intercept of the graph of $5x - 3y - 15 = 0$ is ☐.

7. The slope of the graph of the relation $x = \frac{1}{5}y + 2$ is ☐.

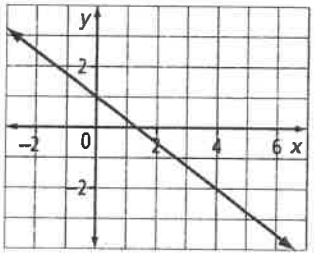
8. The y-intercept of the graph of the line $y - 3 = \frac{1}{2}(x + 10)$ is $\square$.

9. Identify the slope and y-intercept of each line.

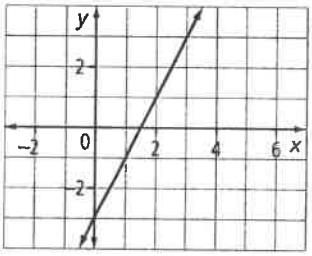
a)



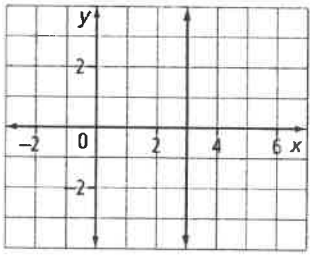
b)



c)



d)



10. Identify the slope of a line parallel to each given line.

a) $y = \frac{11}{3}x + 9$

b) $4x + 6y = 20$

11. Identify the slope of a line perpendicular to each given line.

a) $y = 2x - 4$

b) $3x + 5y = 35$

Extended Response

12. A hot-air balloon is rising at a constant rate of 0.75 m/s. The equation that represents the height of the balloon, h, in metres, as a function of time, t, in seconds, is $h = 0.75t + 3$.

a) What does the h-intercept of the graph of the relation represent?

b) State a suitable domain for this situation. Explain what the domain means.

c) How high will the balloon be after 20 s?

d) How long will it take the balloon to reach a height of 15 m?

KEY

1. C **2.** D **3.** B **4.** C **5.** A **6.** 3 **7.** 5 **8.** 8

9. a) $m = 0$, y-intercept: (0, 6) **b)** $m = -\frac{3}{4}$, y-intercept: (0, 1) **c)** $m = 2$, y-intercept: (0, –3) **d)** slope is undefined, no y-intercept

10. a) $\frac{11}{3}$ **b)** $-\frac{2}{3}$

11. a) $-\frac{1}{2}$ **b)** $\frac{5}{3}$

12. a) It represents the balloon's height of 3 m above ground before it begins rising, at time 0 s.

b) $\{t \mid t \geq 0, t \in \mathrm{R}\}$; Example: Since time is positive, this results in a restriction on the height of the balloon.

c) 18 m **d)** 16 s

CRYPTIC QUIZ

Why did the little girl paint spots on the staircase?

Answer: _____

14	7	4	3	11	14	11	14	15	4	1	9	2	15	15	4	12

2. What do you call a thirty-six-inch two-by-four?

Answer: _____

11	10	6	13	8	4	12	5	11	12	9

Solve each equation for y in terms of x. Find your answer below and notice the letter next to it. Each time the exercise number appears in the code, write this letter above it.

(1) $x + y = 5$

(2) $-3x + y = -2$

(3) $x - y = 7$

(4) $-4x - y = 1$

$3x - y = -10$

Answers:

(E) $y = -4x - 1$

(F) $y = 3x - 1$

(P) $y = -x + 5$

(W) $y = x - 7$

(Y) $y = 3x + 10$

(O) $y = 3x - 2$

(6) $-x + 2y = 6$

(7) $x - 2y = 2$

(8) $-2x + 3y = -12$

(9) $5x + 2y = 1$

(10) $4x - 3y = -2$

Answers:

(D) $y = -\frac{5}{2}x + \frac{1}{2}$

(U) $y = \frac{1}{2}x + 3$

(L) $y = \frac{4}{3}x + \frac{2}{3}$

(G) $y = \frac{3}{4}x - 4$

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

(B) $y = \frac{2}{3}x - 4$

(11) $3x + 2y - 6 = 0$

(12) $x - 4y + 2 = 0$

(13) $-2x - 6y = 0$

(14) $8y - 3x = -6$

(15) $7x = 2y$

Answers:

(N) $y = \frac{4}{3}x + \frac{1}{4}$

(S) $y = \frac{3}{8}x - \frac{3}{4}$

(R) $y = \frac{1}{4}x + \frac{1}{2}$

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

(T) $y = \frac{7}{2}x$

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

OBJECTIVE 5–d: To solve an equation for y in terms of x.

Why Didn't The Circus Managers Want Their Human Cannonball To Quit?

For any exercise below, solve the equation for y in terms of x. Find your answer in the answer columns and notice the number to the left of it. Each time this number appears in the code, write the letter of that exercise above it. Keep working and you will discover the answer to the title question.

(L) $x + y = 2$

(F) $^{-}2x + y = 5$

(A) $5x + y = {}^{-}1$

(U) $^{-}3x + y = {}^{-}4$

(T) $x - y = 6$

(E) $^{-}4x - y = 3$

(S) $2x - y = {}^{-}2$

(Y) $x + 2y = 0$

(D) $x + 2y = 5$

(R) $^{-}3x + 2y = 0$

(V) $^{-}3x + 2y = 4$

(O) $6x + 3y = 1$

(M) $5x - 2y = 0$

(H) $4x - 2y = 3$

(B) $^{-}3x - 5y = 10$

(I) $x + 4y = {}^{-}2$

(N) $^{-}6x - 2y = 5$

(C) $x - 3y = {}^{-}4$

ANSWERS

① $y = \frac{^{-}x}{2}$

② $y = \frac{^{-}3}{5}x - 2$

③ $y = 3x - 4$

④ $y = \frac{x}{3} + \frac{4}{3}$

⑤ $y = \frac{3}{2}x + 2$

⑥ $y = {}^{-}x + 2$

⑦ $y = \frac{5}{2}x$

⑧ $y = 2x + 2$

⑨ $y = \frac{^{-}x}{2} + \frac{5}{2}$

⑩ $y = {}^{-}5x - 1$

⑪ $y = {}^{-}3x - \frac{5}{2}$

⑫ $y = x - 6$

⑬ $y = \frac{3}{2}x$

⑭ $y = \frac{^{-}x}{4} - \frac{1}{2}$

⑮ $y = 2x + 5$

⑯ $y = {}^{-}2x + \frac{1}{3}$

⑰ $y = 2x - \frac{3}{2}$

⑱ $y = {}^{-}4x - 3$

CODED ANSWER:

12 – 17 – 18 – 1 – 4 – 16 – 3 – 6 – 9 – 11 – 18 – 5 – 18 – 13 – 15 – 14 – 11 – 9

10 – 11 – 16 – 12 – 17 – 18 – 13 – 7 – 10 – 11 – 16 – 15 – 17 – 14 – 8

4 – 10 – 6 – 14 – 2 – 13 – 18

Why Did Gyro Go Into a Bakery?

For each exercise below, find the equation of the line that has the given slope and passes through the given point. Circle the letter next to the correct equation. Then write this letter in each box at the bottom of the page that contains the number of that exercise.

(1) $m = 2$; (3, 2)	G	$y = 2x + 1$	R	$y = 2x - 4$
(2) $m = -3$; (1, 4)	O	$y = -3x + 7$	P	$y = -3x + 2$
(3) $m = -5$; (−1, 3)	M	$y = -5x - 2$	D	$y = -5x + 6$
(4) $m = 3$; (−4, −7)	V	$y = 3x + 1$	E	$y = 3x + 5$
(5) $m = -1$; (5, −2)	U	$y = -x + 3$	C	$y = -x - 1$
(6) $m = \frac{1}{2}$; (6, 1)	W	$y = \frac{1}{2}x - 5$	H	$y = \frac{1}{2}x - 2$
(7) $m = -\frac{2}{3}$; (3, 4)	A	$y = -\frac{2}{3}x - 7$	I	$y = -\frac{2}{3}x + 6$
(8) $m = \frac{4}{3}$; (−2, 0)	K	$y = \frac{4}{3}x + \frac{5}{2}$	F	$y = \frac{4}{3}x + \frac{8}{3}$
(9) $m = -\frac{1}{4}$; (2, 1)	J	$y = -\frac{1}{4}x + \frac{3}{2}$	D	$y = -\frac{1}{4}x - \frac{3}{8}$
(10) $m = 4; \left(-1, \frac{1}{2}\right)$	A	$y = 4x - \frac{2}{3}$	T	$y = 4x + \frac{9}{2}$
(11) $m = -2$; (0, 0)	L	$y = -2x$	B	$y = -2x - 2$
(12) $m = 0; \left(-5, \frac{3}{4}\right)$	S	$y = \frac{3}{4}$	N	$y = -5x$

9	5	12	10	8	2	1	10	6	4	12	3	4	11	11	2	8	7	10

OBJECTIVE 5–n: To find an equation of a line given the slope and one point on the line.

What Happened When Two Fruit Companies Merged?

For each exercise below, find the equation of the line passing through the given points. Circle the two letters next to the correct equation. Then write these letters in the two boxes at the bottom of the page that contain the number of that exercise.

Answers:

(1)	(1, 5) (2, 7)	(IS) $y=\frac{2}{3}x+3$	(TH) $y=\frac{1}{2}x-4$
(2)	(0, 1) (3, −8)	(AP) $y=-\frac{3}{2}x+8$	(UI) $y=-3x+5$
(3)	(2, −3) (4, −2)	(ST) $y=\frac{1}{2}x-7$	(DE) $y=2x+3$
(4)	(2, 5) (4, 2)	(CT) $y=-3x+1$	(EY) $y=4x+7$
(5)	(−3, −5) (−1, 3)	(LO) $y=-\frac{3}{2}x-4$	(IL) $y=2x+1$

Answers:

(6)	(3, −1) (−6, −4)	(HA) $y=\frac{1}{2}x-1$	(ER) $y=-\frac{3}{4}x+4$
(7)	(4, 1) (−4, 7)	(IS) $y=\frac{1}{3}x+\frac{8}{3}$	(EL) $y=-2x-1$
(8)	(−1, 2) (3, 4)	(PE) $y=-x+2$	(EA) $y=-\frac{3}{4}x+2$
(9)	(−1, −4) (2, 0)	(SO) $y=\frac{4}{3}x-2$	(AR) $y=\frac{1}{3}x-2$
(10)	(3, −1) (−3, 5)	(MA) $y=\frac{1}{2}x+\frac{5}{2}$	(FE) $y=\frac{4}{3}x-\frac{8}{3}$

3	3	5	5	8	8	1	1	4	4	7	7	9	9	2	2	10	10	6	6

OBJECTIVE 5–o: To find an equation of a line given two points on that line (not using the graph).

FMP10
Due: Friday May 13th

Assignment Unit 7 #1
Formal #1

Name_____

/30

1. What are the slope and *y*-intercept of each line? (2 marks each)

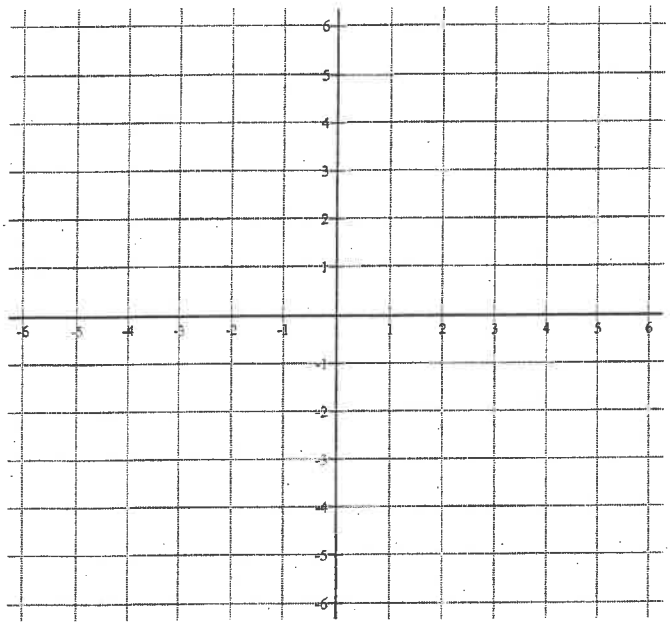
a) $y = 5x - 3$ **b)** $y = -x$ **c)** $y = \frac{x}{3} + 4$ **d)** $y = -2$

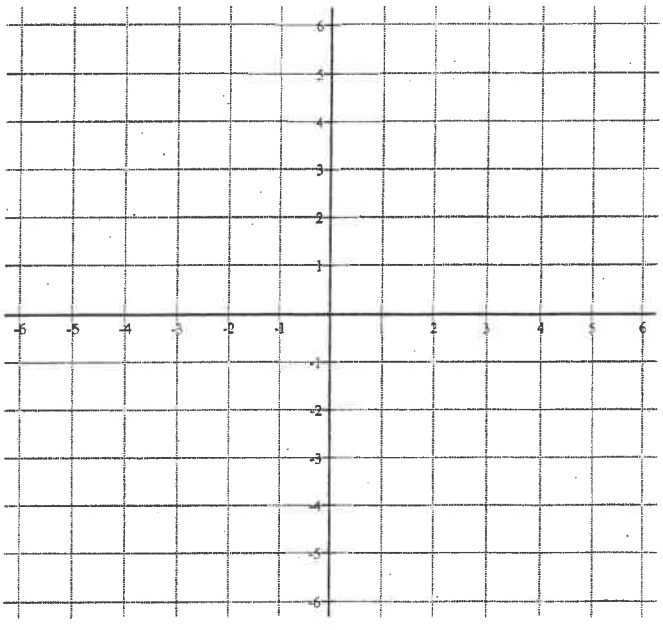
2. Express each equation in slope-intercept form. (2 marks each)

a) $4x + 5y - 20 = 0$ **b)** $2x - 3y = 6$

3. Sketch the graph of each line using the slope and *y*-intercept. (2 marks each)

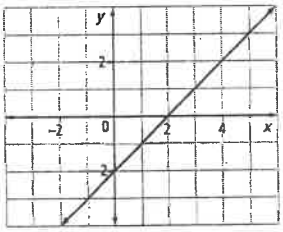
a) $y = -2x + 3$ **b)** $y = \frac{1}{2}x - 4$



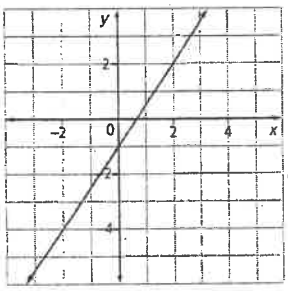


4. Write the equation of each line in the slope-intercept form. (2 marks each)

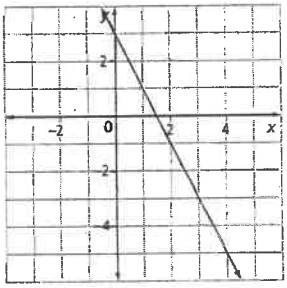
a)



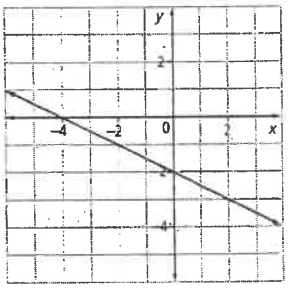
b)



c)



d)



5. Write the equation of each line in the slope-intercept form. (2 marks each)

a) The slope is 2. The line passes through the point (1, 4).

b) The y-intercept is -3. The line passes through the point $(-2, 6)$.

c) The line passes through the points (0, 4) and (2, 6).

FMP10
Due: Wed May 18th

Assignment Unit 7 #2

Name_____

/26

1. Rewrite each linear equation into general form? (2 marks each)

   a) $y = 5x - 3$

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

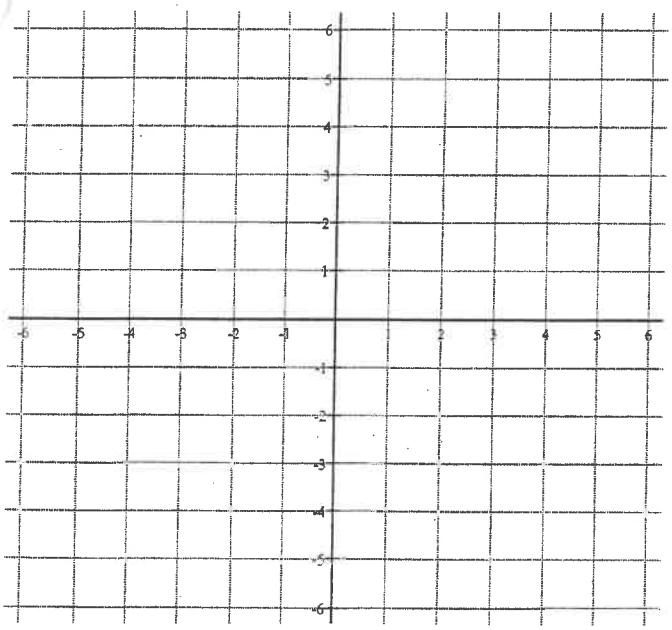
2. Write the equation with given information in slope-point form. (2 marks each)

   a) $m = -2$; point $(3, 5)$

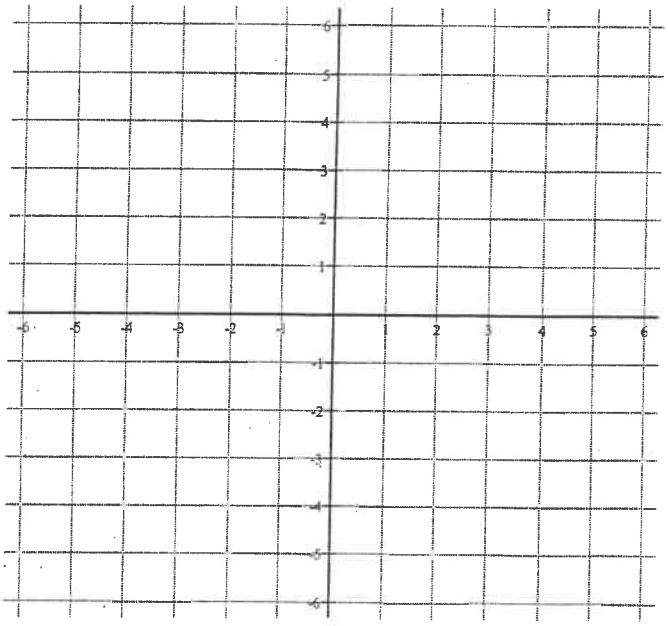
   b) $m = \frac{3}{5}$; point $(1, -2)$

3. Sketch the graph of each line. (1 mark each)

a) $y + 3 = 0$

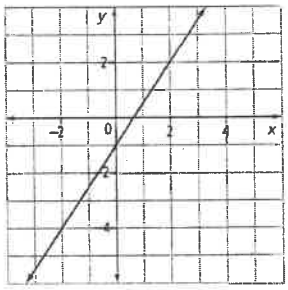


b) $x - 2 = 0$

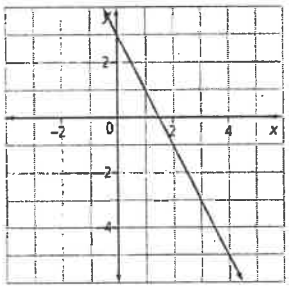


4. Write the equation of each line in the slope-point form. Then convert to general form. (3 marks each)

a)



b)



5. Determine, algebraically, the *x*-intercept and *y*-intercept of each line. (2 marks each)

a) $3x - 4y = 12$

b) $2x + 5y + 9 = 0$

6. Write an equation, in general form, for each line described. (1 mark each)

a) a vertical line passing through the point (–1, 5)

b) a horizontal line passing through the point (–4, 2)

7. What is the equation of each line in slope-point form? (2 marks each)

a) same *x*-intercept as the line $y = 3x - 4$ and through (0, 5)

b) *x*-intercept of –5 and *y*-intercept of 4