

Name:

Key

Date:

Hour:

## Algebra 1 WS Unit 3 Test Review

10. Write the equation of the line, in slope intercept form, for each situation.

a. Passing through  $(-2, 5)$  and  $m = 3$

$$5 = 3(-2) + b$$

$$5 = -6 + b$$

$$\begin{array}{r} +6 \\ +6 \\ \hline \end{array}$$

$$11 = b$$

$$\boxed{y = 3x + 11}$$

b. Passing through  $(6, 4)$  and  $m = \frac{2}{3}$

$$4 = \frac{2}{3}(6) + b$$

$$4 = 4 + b$$

$$\begin{array}{r} -4 \\ -4 \\ \hline \end{array}$$

$$\boxed{y = \frac{2}{3}x + 0}$$

c. Passing through  $(1, 2)$  and  $(3, -2)$

x	y
1	2
3	-2

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

$$2 = -2(1) + b$$

$$2 = -2 + b$$

$$\begin{array}{r} +4 \\ +4 \\ \hline \end{array}$$

$$6 = b$$

$$\boxed{y = -2x + 6}$$

d. If  $f(4) = -2$  and  $f(8) = 4$

x	y
4	-2
8	4

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

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

$$-2 = 6 + b$$

$$\begin{array}{r} -6 \\ -6 \\ \hline \end{array}$$

$$-8 = b$$

$$\boxed{f(x) = \frac{3}{2}x - 8}$$

e. If  $g(2) = 3$  and  $g(6) = 5$

x	y
2	3
6	5

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

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

$$3 = 1 + b$$

$$\begin{array}{r} -1 \\ -1 \\ \hline \end{array}$$

$$2 = b$$

$$\boxed{g(x) = \frac{1}{2}x + 2}$$

f. Passing through  $(-1, 3)$  and parallel to  $y = 2x + 2$

$$m = 2$$

$$3 = 2(-1) + b$$

$$3 = -2 + b$$

$$\begin{array}{r} +2 \\ +2 \\ \hline \end{array}$$

$$5 = b$$

$$\boxed{y = 2x + 5}$$

g. Passing through (18, 2) and parallel to  $3y - x = -12$

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

$$2 = \frac{1}{3}(18) + b$$

$$2 = 6 + b$$

$$\frac{-6 \quad -6}{-4 = b}$$

$$y = \frac{1}{3}x - 4$$

$$\frac{3y}{3} = \frac{x}{3} - \frac{12}{3}$$

$$y = \frac{1}{3}x - 4$$

h. Passing through (7, 10) and perpendicular to  $y = \frac{1}{2}x - 9$

$$\perp m = -2$$

$$10 = -2(7) + b$$

$$10 = -14 + b$$

$$\frac{+14 \quad +14}{24 = b}$$

$$24 = b$$

$$y = -2x + 24$$

i. Passing through (-3, 3) and perpendicular to  $\frac{2y}{2} = \frac{8x}{2} - \frac{6}{2}$

$$\perp m = -\frac{1}{4}$$

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

$$\frac{3}{4} = \frac{3}{4} + b$$

$$\frac{-3}{4} \quad \frac{-3}{4} \rightarrow 2\frac{1}{4} = b$$

$$\frac{9}{4} = b$$

$$y = -\frac{1}{4}x + \frac{9}{4}$$

11. Determine which lines are parallel or perpendicular.

Line a:  $y = 4x - 3$   $m = 4$

Line b:  $-2x - 8y = 14$   $m = \frac{1}{4}$

Line c: passing thru (-2, 7) and (-3, 11)  $m = -4$

Line d: passing thru (10, -5) and (12, 3)  $m = 4$

$$\begin{array}{r} b: -2x - 8y = 14 \\ +2x \quad +2x \\ \hline -8y = 2x + 14 \\ \frac{-8}{8} \quad \frac{2}{8} \quad \frac{14}{8} \\ y = \frac{1}{4}x + \frac{7}{4} \end{array}$$

$$\begin{array}{r} c: \begin{array}{c|c} x & y \\ -2 & 7 \\ -3 & 11 \end{array} + 4 \\ m = \frac{4}{-1} = -4 \end{array}$$

$$\begin{array}{r} d: \begin{array}{c|c} x & y \\ 10 & -5 \\ 12 & 3 \end{array} + 8 \\ m = \frac{8}{2} = 4 \end{array}$$

$$a \parallel d$$

$$b \perp c$$

Write a function to represent each table, pattern or sequence.

12. x	0	1	2	3	4
f(x)	10	6	2	-2	-6

$+1$   $+1$   $+1$   $+1$   
 $-4$   $-4$   $-4$   $-4$

$$f(x) = -4x + 10$$

4.  $a_1 = -11, d = 3$

$$-14, -11, -8, -5, -2, \dots$$

3

$$a_n = 3n - 14$$



$-2$   $2$   $6$   $10$   $14$   
 $+4$   $+4$   $+4$   $+4$

$$y = 4x - 2$$

Simplify each.

6.  $x^{-9}$

$$\frac{1}{x^9}$$

7.  $6x^2y^5 \cdot 5x^4y^7$

$$30x^6y^{12}$$

8.  $(4xy^4)^2$

$$4^2 x^2 y^8 = 16x^2 y^8$$

9.  $\frac{x^3y^9}{x^5y^2}$

$$\frac{y^9}{x^2}$$

10. The table below shows relationship between the hours studied by a student and their test score.

Hours, $x$	2	2	3	5	4	1	3	6
Score, $y$	44	50	60	92	88	35	50	95

- Draw a scatter plot.
- Write the equation of your line of best fit.

$$y = 13.6x + 20.2$$

- Describe the correlation.
- Estimate the correlation coefficient.

positive

$$r = 0.95$$

- What is the slope of your line of best fit? Interpret the value.

$$m = 13.6$$

test score increases by 13.6 for each hour studied

- What is the y-intercept of your line of best fit? Interpret the value.

$$y\text{-int} = 20.2$$

you will get a score of 20.2 for 0 hrs studied

- Interpret the point (7, 92) for this situation.

7 hrs of study indicates score of 92

- Find  $x$  if  $y = 85$ . What does this value mean for this situation?

$$\begin{array}{r} 85 = 13.6x + 20.2 \\ -20.2 \quad \quad -20.2 \\ \hline 64.8 = 13.6x \end{array}$$

$$\frac{64.8}{13.6} = \frac{13.6x}{13.6}$$

$$x = 4.8$$

4.8 hrs of study for score of 85

