

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 $m = 3$

$$\begin{aligned} 5 &= 3(-2) + b \\ 5 &= -6 + b \\ +6 \quad +6 \\ \hline 11 &= b \end{aligned} \quad \boxed{y = 3x + 11}$$

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

$$\begin{aligned} 4 &= \frac{2}{3}(6) + b \\ 4 &= 4 + b \\ -4 \quad -4 \\ \hline 0 &= b \end{aligned} \quad \boxed{y = \frac{2}{3}x + 0}$$

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

$\begin{array}{c c} x & y \\ \hline +2 & \left(\begin{array}{c} 1 \\ 3 \end{array} \middle \begin{array}{c} 2 \\ -2 \end{array} \right) - 4 \\ \hline m = \frac{-4}{2} = -2 \end{array}$	$\begin{aligned} 2 &= -2(1) + b \\ 2 &= -2 + b \\ +2 \quad +2 \\ \hline 4 &= b \end{aligned}$	$\boxed{y = -2x + 4}$
--	---	-----------------------

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

$\begin{array}{c c} x & y \\ \hline +4 & \left(\begin{array}{c} 4 \\ 8 \end{array} \middle \begin{array}{c} -2 \\ 4 \end{array} \right) + 6 \\ \hline m = \frac{6}{4} = \frac{3}{2} \end{array}$	$\begin{aligned} -2 &= \frac{3}{2}(4) + b \\ -2 &= 6 + b \\ -6 \quad -6 \\ \hline -8 &= b \end{aligned}$	$\boxed{f(x) = \frac{3}{2}x - 8}$
--	--	-----------------------------------

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

$\begin{array}{c c} x & y \\ \hline +4 & \left(\begin{array}{c} 2 \\ 6 \end{array} \middle \begin{array}{c} 3 \\ 5 \end{array} \right) + 2 \\ \hline m = \frac{2}{4} = \frac{1}{2} \end{array}$	$\begin{aligned} 3 &= \frac{1}{2}(2) + b \\ 3 &= 1 + b \\ -1 \quad -1 \\ \hline 2 &= b \end{aligned}$	$\boxed{g(x) = \frac{1}{2}x + 2}$
---	---	-----------------------------------

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

$$\begin{aligned} m &= 2 \\ 3 &= 2(-1) + b \\ 3 &= -2 + b \\ +2 \quad +2 \\ \hline 5 &= b \end{aligned} \quad \boxed{y = 2x + 5}$$

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

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

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

$$2 = 6 + b$$

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

$$-4 = b$$

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

$$\begin{array}{r} +x \quad +x \\ 3y = x - 12 \\ \frac{3y}{3} = \frac{x}{3} - \frac{12}{3} \end{array}$$

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

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 $\frac{2y}{2} = \frac{8x}{2} - \frac{6}{2}$

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

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

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

$$\frac{-\frac{3}{4}}{-\frac{3}{4}} = \frac{\frac{3}{4}}{-\frac{3}{4}} \rightarrow \frac{2\frac{1}{4}}{\frac{9}{4}} = b$$

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

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

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) $m = 4$

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

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

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

$a \parallel d$
parallel

$a \perp b$
perpendicular

$b \perp d$
perpendicular

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

12.

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

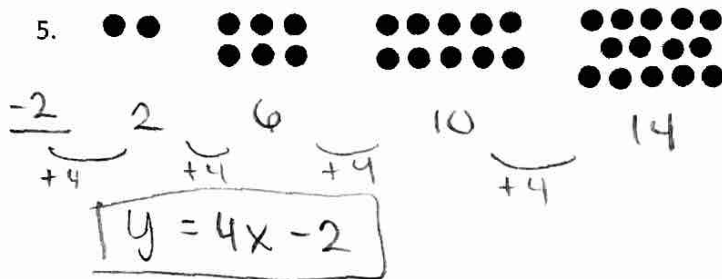
$\overset{+1}{\curvearrowright}$ $\overset{+1}{\curvearrowright}$ $\overset{+1}{\curvearrowright}$ $\overset{+1}{\curvearrowright}$
 $\underbrace{-4}$ $\underbrace{-4}$ $\underbrace{-4}$ $\underbrace{-4}$

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

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

$$\underbrace{-14}_{3}, -11, -8, -5, -2, \dots$$

$$a_n = 3n - 14$$



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

$$\frac{y^7}{x^2}$$

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

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

$$y = 13.6x + 20.2$$

- c. Describe the correlation.

POSITIVE

- d. Estimate the correlation coefficient.

$$r = 0.95$$

- e. 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

- f. 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

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

7 hrs of study indicates score of 92

- h. 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

