

Name KEY!

Chapter 3 Review

m OR $-\frac{A}{B}$ plug 0 in for x plug 0 in for y same opp/rec.

	Equation	Slope	Y-Intercept	X-Intercept	Parallel Slope	Perpendicular Slope
1.	$y = -\frac{4}{3}x + 4$	$-\frac{4}{3}$	4	3	$-\frac{4}{3}$	$\frac{3}{4}$
2.	$y = \frac{5}{3}x - 6$	$\frac{5}{3}$	-6	3.6	$\frac{5}{3}$	$-\frac{3}{5}$
3.	$2x - 7y = 28$	$-\frac{2}{-7} = \frac{2}{7}$	-4	14	$\frac{2}{7}$	$-\frac{7}{2}$
4.	$y - 12 = 5(x + 7)$	5	47	-9.4	5	$-\frac{1}{5}$
5.	$x = 9$ vertical weirdo	undef.	none	9	undef.	0
6.	$y = -17$ horiz. weirdo	0	-17	none	0	undef.
7.	$y = \frac{1}{2}x + 6$	$\frac{1}{2}$	6	-12	$\frac{1}{2}$	-2
8.	$y = 10x + 50$	10	50	-5	10	$-\frac{1}{10}$

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9) Graph the line $y = 3x - 5$

rise 3 / run 1 Start

10) Consider the line $4x - 5y = 12$.

$Ax + By = C$

a. What is the slope?

$-\frac{A}{B} = -\frac{4}{-5} = \frac{4}{5}$

b. What is the x-intercept?

plug 0 in for y

$4x - 5(0) = 12$

$\frac{4x}{4} = \frac{12}{4}$

$x = 3$
or (3, 0)

c. What is the y-intercept?

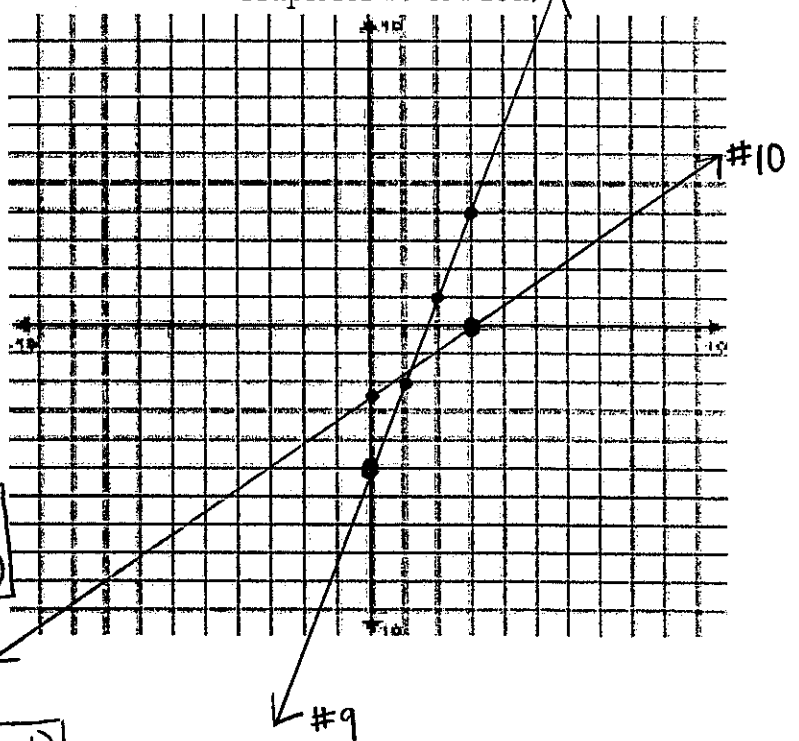
plug 0 in for x

$4(0) - 5y = 12$
 $-5y = 12$
 $y = -\frac{12}{5}$

$y = -2.4$ or (0, -2.4)

d. Graph the line on the coordinate plane.

Graph for #9 & #10d



#11-16 Give an equation for the line using the following information in slope-intercept form.

SHOW YOUR WORK!

11) Line through $(4, 2)$ and $(-5, 3)$.

① Slope

$$\frac{3-2}{-5-4} = \frac{1}{-9}$$

② Point-Slope Form

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

$$y - 2 = -\frac{1}{9}(x - 4)$$

$$y - 2 = -\frac{1}{9}x + \frac{4}{9}$$

$$y = -\frac{1}{9}x + \frac{22}{9}$$

12) Line with slope $-\frac{3}{4}$ and y-intercept of -13 .

$$y = mx + b$$

$$y = -\frac{3}{4}x - 13$$

13) Line that contains $(5, -1)$ and is parallel to $y = \frac{5}{3}x + 4$.

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

$$y + 1 = \frac{5}{3}x - \frac{25}{3}$$

$$y = \frac{5}{3}x - 9\frac{2}{3}$$

14) Line with a y-intercept of -7 and is perpendicular to $y = -3x + 10$.

$$y - (-7) = \frac{1}{3}(x - 0)$$

$$y + 7 = \frac{1}{3}x$$

$$y = \frac{1}{3}x - 7$$

15) Line with an x-intercept of 8 and a y-intercept of 1 .

① Slope

$$\frac{1-0}{0-8} = \frac{1}{-8}$$

$$② y - 1 = -\frac{1}{8}(x - 8)$$

$$y = -\frac{1}{8}x + 1$$

16) Line through $(6, -3)$ and $(8, 9)$.

① Slope

$$\frac{9 - (-3)}{8 - 6} = \frac{12}{2} = 6$$

$$② y - (-3) = 6(x - 6)$$

$$y + 3 = 6x - 36$$

$$y = 6x - 39$$

17) a. What types of lines have undefined slopes? What do their equations look like?

vertical lines, $x = \#$

b. What types of lines have slopes of zero? What do their equations look like?

horizontal lines, $y = \#$

18) A company makes 36" and 48" shoelaces by cutting off lengths of cord. Let S represent the number of 36" laces and L represent the number of 48" laces. Write an expression that represents the total length of cord that will be used.

$$S \cdot 36 + L \cdot 48 = \text{Total}$$

19) A scuba diver is ^{start} 40 m ^{goes up} below the surface. The diver ascends at a constant rate of 0.8 meters per second.

a. Let d represent the diver's distance from the surface of the water, and s represent the number of seconds the diver has been ascending. Write an equation to represent the diver's distance from the surface.

$$-40 + 0.8 \cdot s = d$$

b. How long will it take before the diver is 10 m from the surface?

$$\begin{array}{r} -40 + 0.8s = 10 \\ +40 \qquad +40 \end{array}$$

$$0.8s = 50$$

$$s = 62.5 \text{ sec}$$

20) Celsius temperature and Reaumur temperature have a linear relationship. $0^\circ \text{C} = 0^\circ \text{R}$, and $100^\circ \text{C} = 80^\circ \text{R}$. Write a linear equation relating C (Celsius) and R (Reaumur) temperatures, and solve it for R.

① Slope $\frac{80-0}{100-0} = \frac{80}{100} = 0.8$

② $y - 0 = 0.8(x - 0)$

$$y = 0.8x$$

21) Jennie gets a job picking up trash in the school hallway. She is paid \$50 per week, but she loses 5 cents for each scrap of paper found in the hallway after she's done. Write an equation that represents her wages each week.

$$50 - 5 \cdot p = W$$

$$y = mx + b$$

In 22 and 23, put the equation in slope-intercept form.

22) ~~-8x~~ + 2y = 12 + 8x

$$\frac{2y}{2} = \frac{12}{2} + \frac{8x}{2}$$

$$y = 6 + 4x$$

OR

$$y = 4x + 6$$

23) 5x - y = 2x + y
~~-5x~~ ~~-5x~~

$$-y = -3x + 4y$$

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

OR

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

24) At her daycare center, Kellie uses one bleach solution to clean the bathrooms, and another bleach solution to clean the classrooms. The bathroom mixture contains 35% bleach, and the classroom mixture contains 20% bleach. She has 8 gallons of bleach total.

c

a. Let b represent the ounces of the bathroom solution, and c represent the ounces of the classroom solution. Write a linear equation to represent the possible combinations that she could make with 8 gallons of bleach.

$$.35b + .20c = 8$$

b. How much of the classroom solution would she have if she makes 17 gallons of the bathroom solution?

$$.35 \cdot 17 + .20c = 8$$

$$5.95 + .20c = 8$$

$$\frac{.20c}{.20} = \frac{2.05}{.20}$$

$$c = 10.25 \text{ gall}$$

25) As a car salesman, Michael earns \$16,000 per year plus 1.5% of all his sales. Write an equation that shows the relationship between his total earnings (E) and his annual sales (s).

$$16,000 + .015 \cdot s = E$$

26) The table below shows the live birthrate in the United States (by year).

YEAR	# OF LIVE BIRTHS (millions)
1910	2.78
1930	2.62
1935	2.38
1945	2.86
1950	3.63
1952	3.91
1958	4.26
1975	3.14
1982	3.68
1987	3.83
1993	4.04
2000	4.06
2009	4.13

Put data into calc!

a. Calculate the line of regression for this data.

a. $y = .016x - 28.03$

b. Calculate the correlation coefficient.

b. $r = .746$

c. Interpret the strength of the linear relationship based on the correlation coefficient.

$r = .746$, so this is a moderately strong, positive relationship

d. Interpret the slope within the problem.

Slope: $.016$, As the year goes up, the # of live births goes up.

e. Estimate what you would expect the live birthrate would be in the US in 1946 plug it in!

$y = .016 \cdot 1946 - 28.03$

= 3.106 live births million