Name: KEY! Hour: _____

Chapter 3 Exam Review

Algebra 1B

1. Rewrite the equation $y = 2x + 1$ in standard form.

$Ax+By=C$

$-2x \quad -2x$

$-2x + 1y = 1$

2. Rewrite the equation $y - 5 = -3x + 2$ in standard form.

$Ax+By=C$

$+5 \quad +5$

$y = -3x + 7$

$+3x \quad +3x$

$3x + 1y = 7$

3. Find the x- and y-intercepts $y = 2x - 8$.

x-int *plug 0 in for y*

$0 = 2x - 8$

$+8 \quad +8$

$\frac{8}{2} = \frac{2x}{2}$

$4 = x$ or (4,0)

y-int *plug 0 in for x*

$y = 2 \cdot 0 - 8$

$y = -8$ or (0,-8)

4. Find the x- and y-intercepts of $2x - 4y = 10$.

x-int

$2x - 4(0) = 10$

$\frac{2x}{2} = \frac{10}{2}$

$x = 5$ or (5,0)

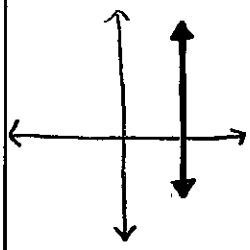
y-int

$2(0) - 4y = 10$

$\frac{-4y}{-4} = \frac{10}{-4}$

$y = -2.5$ or (0,-2.5)

5. Fill out the following information for **vertical lines**.

Picture	Equation	Slope	x-intercept	y-intercept
	x = #	undefined	x = #	none

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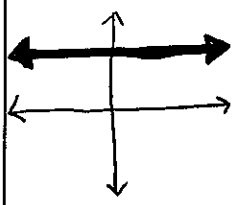
6. Fill out the following information for **horizontal lines.**

Picture	Equation	Slope	x-intercept	y-intercept
	y=#	0	none	y=#

(#, 0)

7. At an x-intercept, what is the y-value?

zero!

(0, #)

8. At a y-intercept, what is the x-value?

zero!

9. Consider the line $y = -3x + 1$. What is the slope of a line parallel to this one? What is the slope of a line perpendicular to this one?

slope

same slope

opp/rec. slope

Parallel Lines: -3

Perpendicular Lines: 1/3

10. Consider the line $y = 4/7x - 8$. What is the slope of a line parallel to this one? What is the slope of a line perpendicular to this one?

slope

Parallel Lines: 4/7

Perpendicular Lines: -7/4

11. Write an equation for a line that has a slope of 2 and a *y*-intercept of -3. Write your answer in slope-intercept form.

y=mx+b

y= 2x-3

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12. Write an equation for a line that has a slope of 3/2 and a *y*-intercept of 0. Write your answer in slope-intercept form.

$y = mx + b$

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

13. What is the slope of the line $y = 2$?

horizontal line

$\boxed{\text{Slope: } 0}$

14. What is the slope of the line $x = -4$?

vertical line

$\boxed{\text{slope: undefined}}$

15. Find the *y*-intercept of the line $2x + 3y = 12$.

plug in 0 for x $\quad 2(0) + 3y = 12$

$\frac{3y}{3} = \frac{12}{3} \rightarrow \boxed{y = 4}$ or $(0, 4)$

16. Find the *x*-intercept of the line $-4x - y = 8$.

plug in 0 for y $\quad -4x - 0 = 8$

$\frac{-4x}{-4} = \frac{8}{-4} \rightarrow \boxed{x = -2}$ or $(-2, 0)$

17. Graph the equation $x + 2y = 8$.

① Slope-Int Form

$x + 2y = 8$

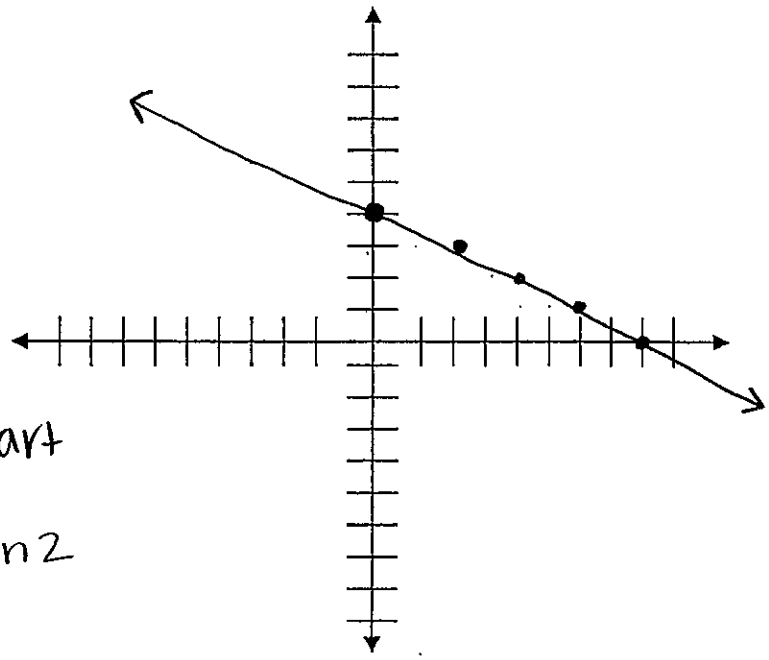
$-x \quad -x$

$\frac{2y}{2} = \frac{8}{2} - \frac{1x}{2}$

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

$y = -\frac{1}{2}x + 4$ ← start

↑ rise −1 (down), run 2



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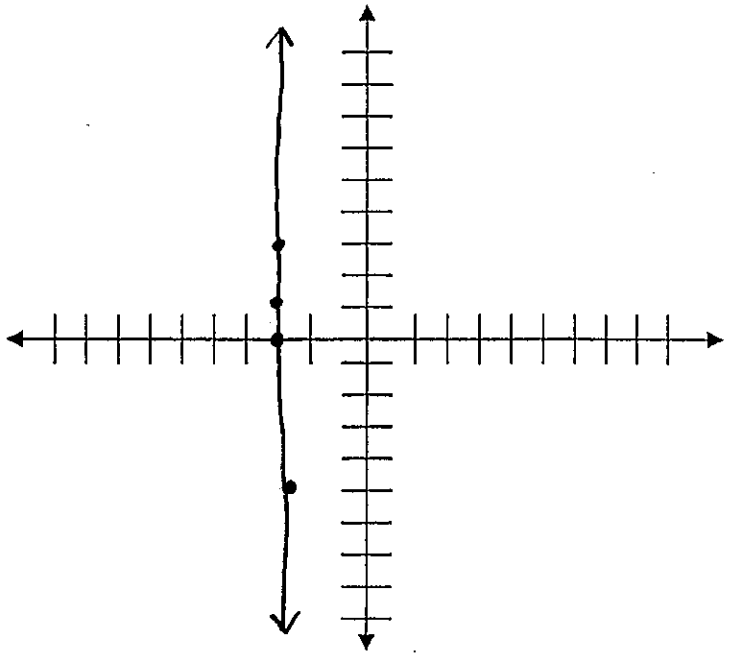
18. Graph the equation $\frac{-3x}{-3} = \frac{6}{-3}$.

$x = -2$

vertical line

x	y
-2	-5
-2	0
-2	1
-2	3



19. Write an equation for the line passing through (2, 5) and (8, -7). Write your answer in slope-intercept form.

x_1, y_1 x_2, y_2

① Find slope

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{-7-5}{8-2} = \frac{-12}{6} = \underbrace{-2}_{m}$$

② Use Point-Slope Form (since you have a point & a slope!)

$$y - y_1 = m(x - x_1) \rightarrow y - 5 = -2(x-2)$$

$$y - 5 = -2x + 4$$

$$+5 \quad +5$$

$$y = -2x + 9$$

20. Write an equation for the line passing through (0, -3) and (4, 9). Write your answer in slope-intercept form.

x_1, y_1 x_2, y_2

① Find slope

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{9--3}{4-0} = \frac{12}{4} = \underbrace{3}_{m}$$

② Use Point-Slope Form (since you have a point & a slope!)

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

$$y - -3 = 3(x - 0)$$

$$y + 3 = 3x$$

$$-3 \quad -3$$

$$y = 3x - 3$$

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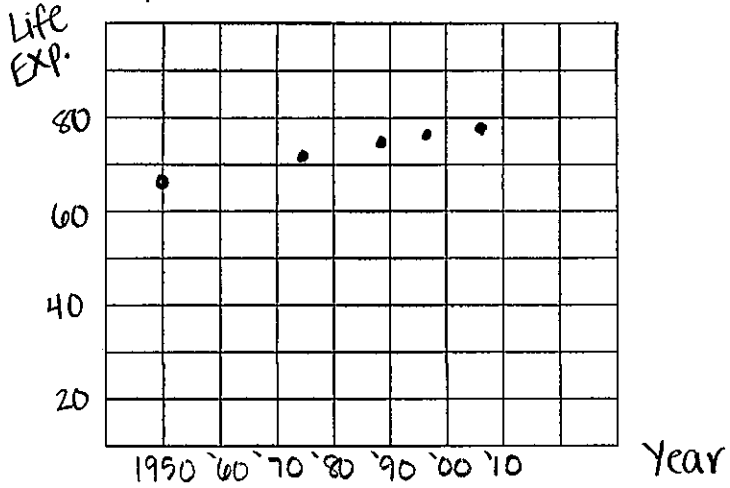
21. Use the data below to complete the following:

YEAR	LIFE EXPECTANCY
1950	68.2
1975	73.7
1989	75.1
1996	76.1
2007	77.9

a) Make a scatterplot of the data.



b) Calculate the line of regression.

↳ use calc!

$$y = .166x - 255$$

c) Identify the slope and explain what it means in regards to this situation.

Slope: 0.166 ← positive means as the year goes up so does life expectancy.

d) Find the correlation coefficient. Explain what it means.

$r = .99$

There is a strong, positive relationship between the year & life expectancy.

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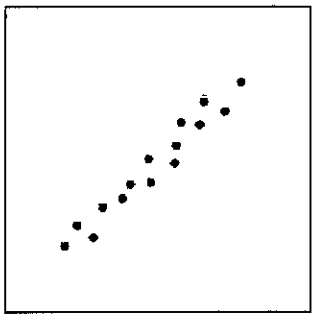
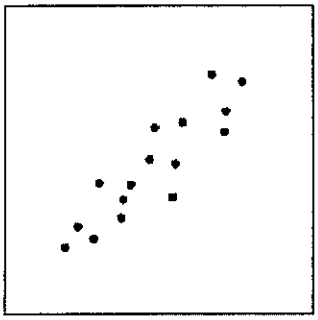
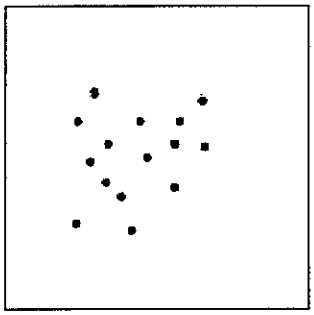
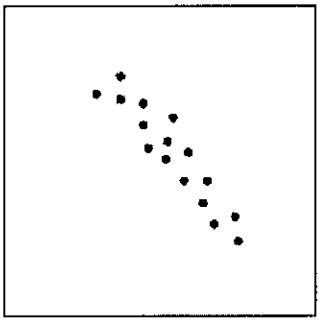
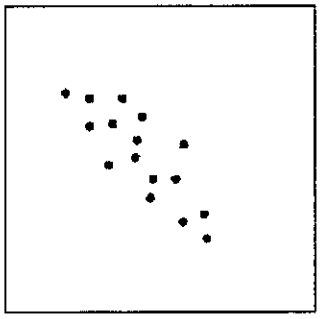
22. Match each scatterplot to its approximate correlation coefficient.

(1)  E

(2)  C

(3)  B

(4)  A

(5)  D

~~(A)~~ r = -0.8

~~(B)~~ r = 0

~~(C)~~ r = 0.3

~~(D)~~ r = -0.5

~~(E)~~ r = 0.9