Algebra 1: Chapter 3 Test Review **Name** _____ **Period** _____

Find the x-intercept and y-intercept for each equation. Write the intercepts as an ordered pair (x, y). Do **not** round your answer.

1. $5x + 10y = 25$

x-int: (5 , 0)

y-int: (0 , 2.5)

$x=0$ $\quad y=0$

$5(0)+10y=25$ $\quad 5x+10(0)=25$

$10y=25$ $\quad 5x=25$

$y=2.5$ $\quad x=5$

2. $x - y = 1.5$

x-int: (1.5 , 0)

y-int: (0 , -1.5)

$x=0$ $\quad y=0$

$0-y=1.5$ $\quad x-0=1.5$

$\frac{-y}{-1}=\frac{1.5}{-1}$ $\quad x=1.5$

$y=-1.5$

3. $y = 4x + 8$

x-int: (-2 , 0)

y-int: (0 , 8)

$x=0$ $\quad y=0$

$y=4(0)+8$ $\quad 0=4x+8$

$y=8$ $\quad \frac{-8}{} \quad \frac{-8}{}$

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

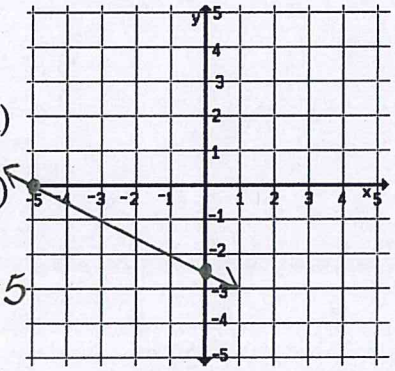
$-2=x$

Find the x-intercept and y-intercept for each equation. Then, graph each equation.

4. $x + 2y = -5$

x-int: (-5 , 0)

y-int: (0 , $\frac{-5}{2}$)



$x=0$ $\quad y=0$

$0+2y=-5$ $\quad x+2(0)=-5$

$2y=-5$ $\quad x=-5$

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

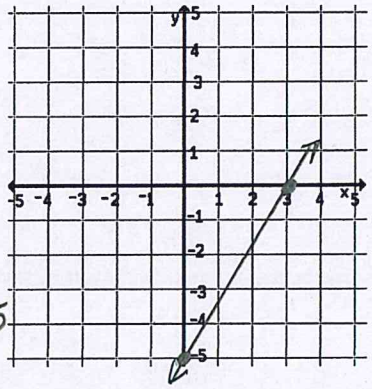
or

$y=-2.5$

5. $5x - 3y = 15$

x-int: (3 , 0)

y-int: (0 , -5)



$x=0$ $\quad y=0$

$5(0)-3y=15$ $\quad 5x-3(0)=15$

$\frac{-3y}{-3}=\frac{15}{-3}$ $\quad \frac{5x}{5}=\frac{15}{5}$

$y=-5$ $\quad x=3$

Convert each equation from standard form to slope-intercept form ($y = mx + b$).

6. $2x - 6y = 12$

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

$2x-6y=12$

$\frac{-2x}{} \quad \frac{-2x}{}$

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

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

7. $-4x - 5y = 25$

Slope-int: $y=-\frac{4}{5}x-5$

$-4x-5y=25$

$\frac{+4x}{} \quad \frac{+4x}{}$

$\frac{-5y}{-5}=\frac{4x}{-5}+\frac{25}{-5}$

$y=-\frac{4}{5}x-5$

Convert each equation from slope-intercept to standard form $Ax + By = C$.

8. $y = 4x + 12$

Standard: $4x - y = -12$

$y = 4x + 12$

$-4x \quad -4x$

$-4x + y = 12$

or

$4x - y = -12$

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

Standard: $2x + 3y = 12$

$\left[y = -\frac{2}{3}x + 4\right] \times 3$

$3y = -2x + 12$

$+2x \quad +2x$

$2x + 3y = 12$

Convert between degrees Fahrenheit and degrees Celsius using the literal equation given. If necessary, round to the nearest 100th. $C = \frac{5}{9}(F - 32)$ $F = \frac{9}{5}C + 32$

10. 44°F

$C = \frac{5}{9}(44 - 32)$

$C = \frac{5}{9}(12)$

$C = 6.\overline{6} \approx 6.67°C$

11. 56°C

$F = \frac{9}{5}(56) + 32$

$F = 100.8 + 32$

$F = 132.8°F$

12. -15°F

$C = \frac{5}{9}(-15 - 32)$

$C = \frac{5}{9}(-47)$

$C = 26.\overline{1} \approx 26.11°C$

13. -12°C

$F = \frac{9}{5}(-12) + 32$

$F = -21.6 + 32$

$F = 10.4°F$

Solve each literal equation for the indicated variable.

14. $V = \frac{2}{3}lwh$ Solve for l.

$\frac{3}{2}V = \frac{3}{2} \cdot \left(\frac{2}{3}\right) Lwh$

$\frac{3}{2}\frac{V}{wh} = \frac{Lwh}{wh}$

$\frac{3}{2}\frac{V}{wh} = L$

15. $A = \frac{1}{2}bh$ Solve for b.

$2A = 2\left(\frac{1}{2}\right)bh$

$\frac{2A}{h} = \frac{bh}{h}$

$\frac{2A}{h} = b$

16. $A = \pi r^2$ Solve for r.

$\frac{A}{\pi} = \frac{\pi r^2}{\pi}$ $\quad \sqrt{\frac{A}{\pi}} = r$

$\sqrt{\frac{A}{\pi}} = \sqrt{r^2}$

17. $D = rt^3$ Solve for t.

$\frac{D}{r} = \frac{rt^3}{r}$ $\quad \sqrt[3]{\frac{D}{r}} = t$

$\sqrt[3]{\frac{D}{r}} = \sqrt[3]{t^3}$

18. $V = \frac{1}{3}\pi r^2 h$ Solve for r.

$3V = 3\left(\frac{1}{3}\right)\pi r^2 h$ $\quad \sqrt{\frac{3V}{\pi h}} = \sqrt{r^2}$

$\frac{3V}{\pi h} = \frac{\pi r^2 h}{\pi h}$ $\quad \sqrt{\frac{3V}{\pi h}} = r$

19. $A = \frac{1}{2}h(b_1 + b_2)$ Solve for h.

$2A = 2\left(\frac{1}{2}\right)h(b_1 + b_2)$

$\frac{2A}{b_1 + b_2} = \frac{h(b_1 + b_2)}{b_1 + b_2}$

$\frac{2A}{b_1 + b_2} = h$

20. The table shows the number of miles Kata traveled for work each year.

Year	2006	2007	2008	2009	2010	2011
Miles Traveled	8300	7550	8005	7600	6935	6405

Year x_1	Miles Traveled y_1
2006 → 6	8300
7	7550
8	8005
9	7600
10	6935
11	6405

$y_1 \sim mx_1 + b$

STATISTICS

$r^2 = 0.812$

$r = -0.901$ ← correlation coefficient

RESIDUALS

e_1 plot

PARAMETERS

$m = -335$ = slope

$b = 10313$ = y-intercept

A. Write the linear regression equation for the data. Round the slope and y-intercept to a whole number.
Hint: $y = mx + b$

$y = -335x + 10313$

B. Identify the correlation coefficient, or *r*-value. What does this *r*-value tell you about the line of best fit?

$r = -0.901$

The r-value is close to -1 so there is a strong negative correlation between years and miles traveled.

C. Use the linear regression equation to predict the number of miles Kata will travel in 2014. Use "14" for x.

$y = -335(14) + 10313$

$y = -4690 + 10313$

$y = 5623$

Kata will travel 5623 miles in 2014.

D. Use the linear regression equation to predict approximately what year will Kata reach 5000 miles? $y = 5000$

$5000 = -335x + 10313$

$-10313 \quad -10313$

$\frac{-5313}{-335} = \frac{-335x}{-335}$

$x = 15.86 \approx 16$ Round up!

Kata will reach 5000 miles in 2016.

21. Darla has $75 to spend at the bookstore. Books cost $16 and magazines cost $8.

A. Define your variables and write an equation to represent this situation.

b = # of books

m = # of magazines

$16b + 8m = 75$

B. Use the equation to determine how many magazines Darla can buy if she buys 3 books. Round to a whole number if necessary.

$b = 3$ $\quad 16(3) + 8m = 75$

$48 + 8m = 75$

$-48 \quad -48$

$8m = 27$

$m = 27/8$

$m = 3.375$

$m \approx 3$

Darla can buy 3 magazines.

C. Use the equation to determine the number of books Darla can buy if she buys 5 magazines. Round to a whole number if necessary.

$m = 5$ $\quad 16b + 8(5) = 75$

$16b + 40 = 75$

$-40 \quad -40$

$\frac{16b}{16} = \frac{35}{16}$

$b = 2.1875$

$b \approx 2$

Darla can buy 2 books.