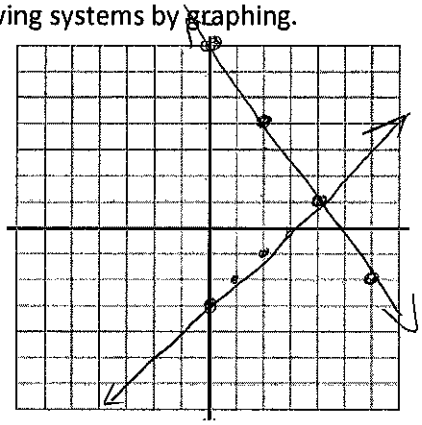
Math 2 Spring Final Review

Name: _____ Per: ___

Unit 5: Systems of Equations

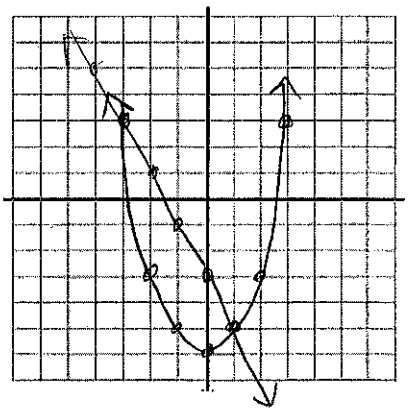
1. Solve each of the following systems by graphing.

a. $\begin{cases} y = x - 3 \\ y = -\frac{3}{2}x + 7 \end{cases}$



(4, 1)

b. $\begin{cases} y = x^2 - 6 \\ y = -2x - 3 \end{cases}$



(-3, 3)
(1, -5)

2. Solve each of the following systems of equations using the method of your choice:

a. $\begin{cases} 3x + 5y = -23 \\ 6x - y = 31 \end{cases}$

$6(4) - y = 31$
$24 - y = 31$
$-24 \quad -24$
$-y = 7$

$3x + 5y = -23$
$30x - 5y = 155$
$33x = 132$
$x = 4$

(4, -7)

b. $\begin{cases} y = 4x + 11 \\ y = 4x - 8 \end{cases}$

$4x + 11 = 4x - 8$
$-4x \quad -4x$
$11 = -8$
not possible
no solution

c. $\begin{cases} y = 3x + 5 \\ 4x - 5y = 8 \end{cases}$

$-3 = 3x + 5$
$-5 \quad -5$
$\frac{-8}{3} = \frac{3x}{3}$ $x = -2\frac{2}{3}$

$3x - y = -5$ → $-15x + 5y = 25$
$4x - 5y = 8$
$-11y = 33$
$y = -3$

$(-2\frac{2}{3}, -3)$

d. $\begin{cases} y = x^2 + 7x - 5 \\ y = 2x + 9 \end{cases}$

$y = 2(-7) + 9$ $y = 2(2) + 9$
$= -14 + 9$ $= 4 + 9$
$= -5$ $= 13$

$x^2 + 7x - 5 = 2x + 9$
$-2x - 9 \quad -2x - 9$
$x^2 + 5x - 14 = 0$
$(x + 7)(x + 2) = 0$

$x + 7 = 0$ $x + 2 = 0$
$x = -7$ $x = -2$

(-7, -5) (-2, 13)

3. A phone company charges $0.06 per minute for local calls and $0.15 per minute for international calls. When your bill comes, it states that you accumulated 852 minutes with a charge of $69.84. Write and solve a system of linear equations to find the number of local and international minutes used.

$0.06l + 0.15i = 69.84$ → $0.06l + 0.15i = 69.84$
$-.06(l + i = 852)$ $-0.06l - 0.06i = -51.12$
$0.09i = 18.72$
$.09 \quad .09$
$i = 208$

$l + 208 = 852$
$-208 \quad -208$
$l = 644$

208 international
644 local

4. Ms. Dill is selling tickets to the spring musical. On the first day of ticket sales the school sold 3 adult tickets and 9 student tickets for a total of $75. The school took in $67 on the second day by selling 8 adult tickets and 5 student tickets. What is the price of one student ticket? What is the price of one adult ticket?

$8(3a + 9s = 75)$ $24a + 72s = 600$
$-3(8a + 5s = 67)$ $-24a - 15s = -201$
$57s = 399$
$s = 7$

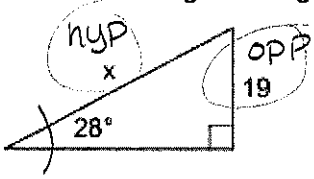
$3a + 9(7) = 75$
$3a + 63 = 75$
$-63 \quad -63$
$\frac{3a}{3} = \frac{12}{3}$
$a = 4$

4 adult tickets
7 student tickets

Unit 6: Trigonometry

5. Find the missing side lengths for each of the following triangles:

a.

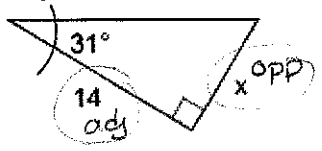


$x \cdot \sin(28) = \frac{19}{x} \cdot x$

$\frac{x\sin(28)}{\sin(28)} = \frac{19}{\sin(28)}$

$x = 40.47$

b.

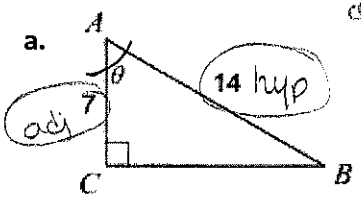


$14 \cdot \tan(31) = \frac{x}{14} \cdot 14$

$8.412 = x$

6. Find the missing angle measures (θ) for each of the following triangles:

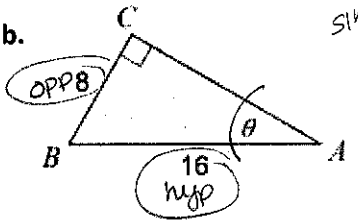
a.



$\cos^{-1}(\cos\theta) = \cos^{-1}\left(\frac{7}{14}\right)$

$\theta = 60°$

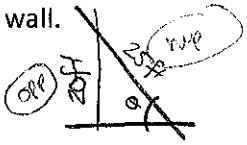
b.



$\sin^{-1}(\sin\theta) = \sin^{-1}\left(\frac{8}{16}\right)$

$\theta = 30°$

7. A 25-foot ladder is leaning against a 20ft wall. Find the angle of elevation from the base of the ladder to the top of the wall.



$\sin^{-1}(\sin\theta) = \sin^{-1}\left(\frac{20}{25}\right)$

$\theta = 53.13°$

Unit 7: Probability

8. A survey of 25 juniors asked whether or not they had been or Mexico and Canada. The results are in the table below.

	Have Been to Canada	Have Not Been to Canada	Total
Have Been to Mexico	6	3	9
Have Not Been to Mexico	5	11	16
Total	11	14	25

a. P(has been to Mexico) $\frac{9}{25}$

b. P(has been to Mexico and Canada) $\frac{6}{25}$

c. P(has been to Mexico or Canada)

$\frac{9}{25} + \frac{11}{25} - \frac{6}{25} = \frac{14}{25}$

d. P(has been to Mexico | has not been to Canada) $\frac{3}{14}$

e. P(has been to Canada | has not been to Mexico) $\frac{5}{16}$

f. Is going to Mexico and going to Canada independent? Use math to explain your answer.

$P(M) \stackrel{?}{=} P(M|C)$

$\frac{9}{25} \stackrel{?}{=} \frac{6}{11}$ not equal not independent

OR

$P(C) \stackrel{?}{=} P(C|M)$

$\frac{11}{25} \stackrel{?}{=} \frac{6}{9}$ not equal not independent

9. Determine whether each of the following scenarios are independent or dependent, then calculate the probability of happening.

a. One tossed coin landing heads and the next landing tails. $\left(\frac{1}{2}\right)\left(\frac{1}{2}\right) = \frac{1}{4}$ ***Independent*** or ***Dependent***

b. Rolling two sixes in a row on a number cube. $\left(\frac{1}{6}\right)\left(\frac{1}{6}\right) = \frac{1}{36}$ ***Independent*** or ***Dependent***

c. Drawing a red tile from a bag and then drawing a green tile after replacing the first tile. ? ***Independent*** or ***Dependent***

d. Drawing a blue tile from a bag and then drawing a red tile without replacing the first. ? ***Independent*** or ***Dependent***

Don't know how many - cannot calculate ∴

10. Determine whether the following outcomes are mutually exclusive:

a. Rolling a 6-sided die and getting both a 4 and an even number ***Mutually Exclusive*** or ***Not Mutually Exclusive***

b. Flipping two coins and landing on one heads and one tails ***Mutually Exclusive*** or ***Not Mutually Exclusive***

c. Drawing both a jack and a 7 from a deck of cards ***Mutually Exclusive*** or ***Not Mutually Exclusive***

d. Being born in the months of April and July ***Mutually Exclusive*** or ***Not Mutually Exclusive***