SEMESTER 2 FINAL EXAM REVIEW #2 Name_____

1. The equation of line *m* is $2x \quad 3y = 6$ What is:

$-3y = -2x + 6$ $y = \frac{2}{3}x - 2$

a) the slope ? $\frac{2}{3}$

b) the y-intercept ? -2

c) the x-intercept? 3

$2x - 3(0) = 6$
$2x = 6$
$x = 3$

2. How many solutions does the linear system have?

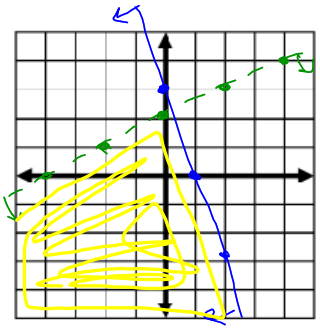
$$\begin{cases} y = \frac{2}{3}x - 1 \\ 6x - 9y = 9 \end{cases}$$

$-9y = -6x + 9$
$y = \frac{2}{3}x - 1$

Infinitely many solutions!

3. Graph the solutions:

$$\begin{cases} y < \frac{1}{2}x + 2 \\ y \le -3x + 3 \end{cases}$$



4. Write the set of equations that best represents the following problem (Do **NOT** solve):

"Nine pickles and two carrots cost $7.12. Four Pickles and five carrots cost $5.64. Find the cost of a pickle and the cost of a carrot."

$9p + 2c = 7.12$
$4p + 5c = 5.64$

5. Simplify:

$(3x^2 - 4x^3 + 2) - (2x^3 + 3x^2 - 8)$

$3x^2 - 4x^3 + 2 \quad -2x^3 - 3x^2 + 8$

$= -6x^3 + 10$

6. Simplify: $\frac{12x^8y^2}{-14x^2y^7}$

$= \frac{2 \cdot 2 \cdot 3 \cdot x^2 \cdot x^6 \cdot y^2}{-1 \cdot 2 \cdot 7 \cdot x^2 \cdot y^2 \cdot y^5}$

$= \frac{6x^6}{-7y^5}$

$= -\frac{6x^6}{7y^5}$

7. Multiply and simplify:

$(a-8)(a-4)$

	a	-4
a	a^2	$-4a$
-8	$-8a$	32

$= a^2 - 12a + 32$

8. Factor completely: $x^2 - x - 12$

-12, -4, 3, -1

$(x-4)(x+3)$

9. Factor completely:

$10y^2 - 5y - 15$

$5(2y^2 - y - 3)$

-6, -3, 2, -1

	y	1
$2y$	$2y^2$	$2y$
-3	$-3y$	-3

$= 5(2y-3)(y+1)$

10. Solve $(3x-4)(x+5)=0$

$3x-4=0$ or $x+5=0$

$3x=4$

$x=\frac{4}{3}$ or $x=-5$

11. What would you add to both sides to complete the square?

$x^2-6x=15$

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

Add 9

12. Solve $x^2+18=9x$

$x^2-9x+18=0$

18, -6, -3, -9

$(x-6)(x-3)=0$

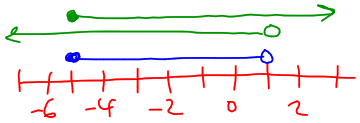
$x-6=0$ or $x-3=0$

$x=6$ or $x=3$

13. Solve the following compound inequality:

$7 \le x+12$ *and* $x-2<-1$

$-5 \le x$ and $x<1$



$-5 \le x < 1$

14. Use the quadratic formula to solve: $x^2+6x+2=0$

$a=1$ $b=6$ $c=2$

$x=\frac{-6\pm\sqrt{(6)^2-4(1)(2)}}{2(1)}$

$=\frac{-6\pm\sqrt{36-8}}{2}$

$=\frac{-6\pm\sqrt{28}}{2}$ $\sqrt{4}\sqrt{7}$ $2\sqrt{7}$

$=\frac{-6\pm2\sqrt{7}}{2}$

$=-3\pm\sqrt{7}$

15. A student has scores of 81, 87, 94, and 62. What score must the student earn on the fifth test in order to have an average score of 83?

$\frac{81+87+94+62+x}{5}=83$

$\frac{324+x}{5}=83$

$324+x=415$

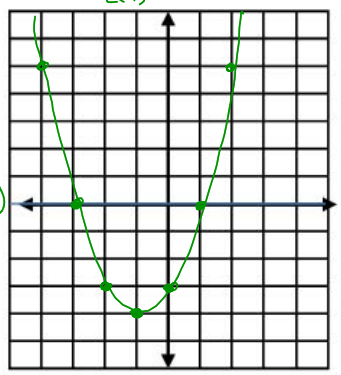
$x=91$

The student must earn a score of 91.

16. Graph $y=x^2+2x-3$

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

x	y
-4	5
-3	0
-2	-3
V(-1)	-4
0	-3
1	0
2	5



17. How many times does the graph of $y=4x^2+2x+3$ intersect the x-axis?

$b^2-4ac=(2)^2-4(4)(3)$

$=4-48$

$=-44$

There are no solutions, so the graph never crosses the x-axis!

18. The height of a rectangle is three more than twice the base. The area is 119 sq in. What is the height? let b = base of △, h = height of △

$h=2b+3$

$A=b\cdot h$

$119=b(2b+3)$

$119=2b^2+3b$

$2b^2+3b-119=0$

b -7

-238, 17, -14, 3, $2b$, 17

$2b^2$	$-14b$
$17b$	-119

$(2b+17)(b-7)=0$

$2b+17=0$ or $b-7=0$

$2b=-17$

$b=-8.5$ or $b=7$

$h=2(7)+3=17$ in