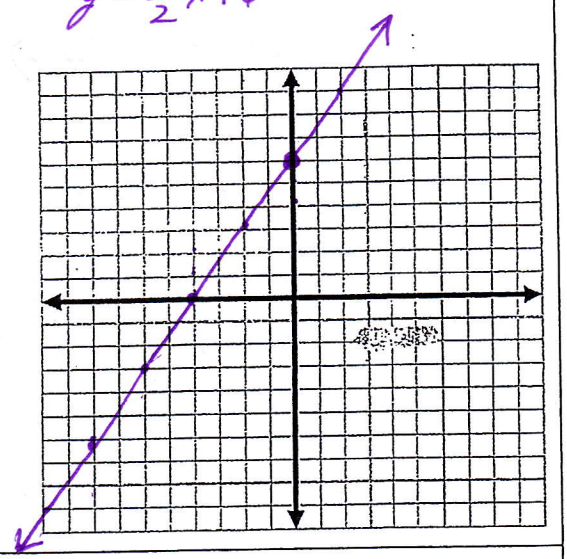
Spring Final Group Test Name: KEY 5/30 or ~~5/31~~ 5/31

1.	Combining Like Terms	a) $(5x^2+2x+4)+(2x^2+x-3)$ $7x^2+3x+1$	b) $(5x^2+2x+4)-(2x^2+x-3)$ $3x^2+x+7$
2.	Order of Operations & Distributive Property	a) $4+2(3\cdot 2)^2\div 3-8+5$ $4+2\cdot 6^2\div 3-8+5$ $4+2\cdot 36\div 3-8+5$ $4+24 \quad -8+5$ 25	b) $7(x-3)$ $7x-21$ c) $(6x+1)(x-2)$ $6x^2-11x-2$
3.	Evaluation	a) $2x^2-3x+5$ for $x=3$ 14	a) x^2-2x+1 for $x=-3$ 16
4.	Multiply binomials	a) $(x+3)(x+2)$ x^2+5x+6	b) $(3m+2)(m+1)$ $3m^2+5m+2$
5.	Factor	a) x^2+6x+8 $(x+2)(x+4)$ c) $9x^2-49$ $(3x+7)(3x-7)$	b) $42x^2-7x$ $7x(6x-1)$ d) $2x^2-x-3$ $(2x-3)(x+1)$ -6, $-\frac{3}{2}$, $\frac{2}{2}=1$, -1

6. **Simplify** (Laws of exponents)		7. **Simplify Radicals**	
a) $(5y^3)^2$ $25y^6$	b) $\frac{10yx^5}{2x^3}$ $5yx^2$	a) $\sqrt{8}$ $2\sqrt{2}$	b) $\sqrt{45}$ $3\sqrt{5}$
c) $5x^{-2}$ $\frac{5}{x^2}$	d) $5x^2\cdot 6x^2$ $30x^4$	c) $32^{\frac{2}{5}}$ 4	d) $\sqrt[6]{64^3}$ 8

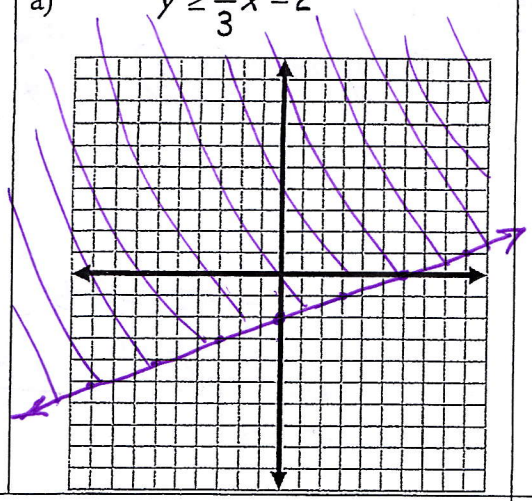
8.	Solving equations	a) $-2(x+3)=56$ $-2x-6=56$ $+6 \quad +6$ $\frac{-2x}{-2}=\frac{62}{-2}$ $x=-31$	b) $5x-2-2x=x-6$ $3x-\cancel{2}=\cancel{x}-6$ $-x+2 \quad -\cancel{x}+2$ $2x=-4$ $x=-2$
		c) $(x-2)(x+2)=(x-2)^2$ $\cancel{x^2}-\cancel{4}=\cancel{x^2}-4x-\cancel{4}$ $0=-4x$ $x=0$	d) $\left(\frac{x}{3}-10=7\right)3$ $x-30=21$ $+30 \quad +30$ $x=51$
9.	Systems of equations	**a) Solve:** $y=x-1$ and $y=-2x+5$ $x-1=-2x+5$ $+2x+1 \quad +2x+1$ $3x=6 \rightarrow x=2$ $y=2-1=1 \quad (2,1)$ b) $2x+2y=6$ $x+4y=9 \rightarrow x=-4y+9$ $2(-4y+9)+2y=6$ $-8y+18+2y=6$ $-6y=-12$ $y=2 \quad 2x+2(2)=6$ $x=1$	b) Airfares from Sacramento to San Diego cost \$180 for business class and \$120 for coach. A flight had 52 passengers who paid a total of \$7260. How many of each type of passenger flew that day? $b+c=52 \quad b=-c+52$ $180b+120c=7260$ $180(-c+52)+120c=7260$ $-180c+9360+120c=7260$ $-60c=-2100$ $\boxed{c=35 \quad b=17}$

(b, 2)

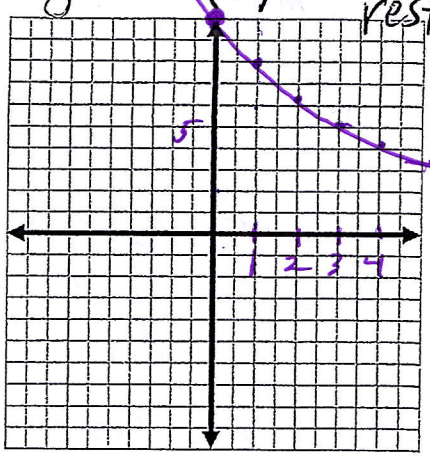
10.	Linear Equations	a) Find slope: (2, -4) and (-2, -3) P_1 P_2 $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3-(-4)}{-2-2} = -\frac{1}{4}$	b) Find **y-intercept** $3x + 5y = 45$ $-3x \quad -3x$ $5y = -3x + 45$ $y = -\frac{3}{5}x + 9$ y-int: (0, 9)
		c) Find **x-intercept** $3x + 5y = 45$ $-5y \quad -5y$ $3x = -5y + 45$ $x = -\frac{5}{3}y + 15$ x-int: (15, 0)	e) Find the equation of the line with a slope of -2 through the point (8, -1) $-1 = -2(8) + b$ $-1 = -16 + b$ $+16 \quad +16$ $15 = b$ $\boxed{y = -2x + 15}$
11.	Graphing Linear Equations	e) Find the equation of the line through the two points: (2, 8) and (6, 6) $m = \frac{6-8}{6-2} = -\frac{2}{4} = -\frac{1}{2}$ $8 = -\frac{1}{2}(2) + b$ $8 = -1 + b$ $9 = b$ $\boxed{y = -\frac{1}{2}x + 9}$	f) Graph the following equation: $-3x + 2y = 12$ $2y = 3x + 12$ $y = \frac{3}{2}x + 6$ 
12.	Use the quadratic formula or complete the square to find roots	a) $x^2 + 7x + 5 = 0$ $x = \frac{-7 \pm \sqrt{49-20}}{2}$ $\boxed{x = \frac{-7 \pm \sqrt{29}}{2}}$	b) $x^2 - 4x - 1 = 0$ $x = \frac{4 \pm \sqrt{16+4}}{2}$ $x = \frac{4 \pm 2\sqrt{5}}{2}$ $\boxed{x = 2 \pm \sqrt{5}}$

13. Graph:

a) $y \geq \frac{1}{3}x - 2$



b) $y = 10 \cdot (.8)^x$ Comment on restrictions on domain & range



14. Quadratic Equations

a) Find the roots (**x-intercepts**)

$y = x^2 - 2x - 8$

$y = (x-4)(x+2)$ -8, -4, 2, -2

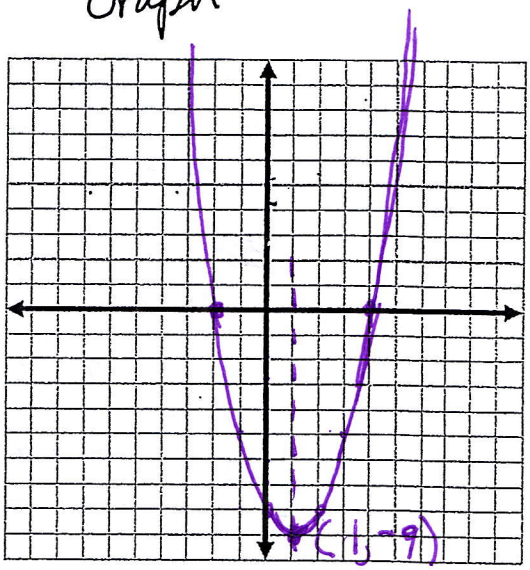
x-ints: $(4, 0)$ $(-2, 0)$

LOS: $x = 1$

Identify the vertex.

$y = 1^2 - 2(1) - 8 = -9$

Graph



$y = 3x + 5$ $\quad$ $y = x^2 + 6x + 9$ $\quad$ $\frac{3x(x+1)}{x(x+1)}$ $\quad$ $7 + 5(10-4)^2$

Using the above, give an example of:

15. A variable: x

16. An exponent: 2 (as in x^2)

17. A coefficient: 3 ($3x$)

18. A term: $3x$

19. A factor: $(x+1)$

20. A constant term: 5

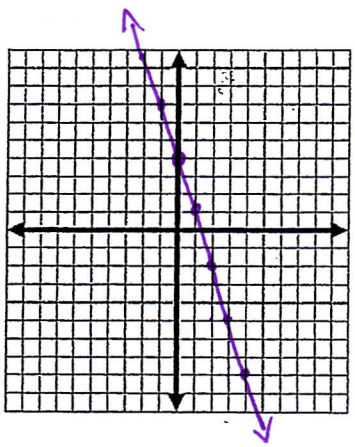
21. An linear equation: $y = 3x + 5$

22. A quadratic: $y = x^2 + 6x + 9$

23. An expression: $7 + 5(10-4)^2$

24. Which of the above, when graphed would be a parabola?

$y = x^2 + 6x + 9$

Sequences 24.	Generate the first four terms of sequence for the equation given: $-2\,(4^n) = t(n)$ -2, -8, -32, -128 $t(n) = -3 - 2n$ -3, -5, -7, -9	Write the equation for each sequence 16, 6.4, 2.56, 1.024 (×0.4) Could be arithmetic 7, 0, -7, -14 (−7) OR could be geometric -3.5, -7, -14 (×2)
Is it a solution? 25	Is (5,7) a solution to the system $2x + y = 17$ $x - y = -1$? Why or why not?* NO $x = y - 1$	$2(y-1)+y=17 \rightarrow 3y=19$ $y = \frac{19}{3}$
	*Answers will vary. I started to solve system and found $y = \frac{19}{3}$ so (5, 7) is not the solution.	
Name a point that is a solution to: 26	a) $y = -3x + 4$  $\left(\frac{4}{3}, 0\right)$	b) $x^2 - 5x = -6$ * $x^2 - 5x + 6 = 0$ $(x-3)(x-2) = 0$ -3, -2, 6, -5 solutions are $x = 3$ or $x = 2$
Solving Complicated 27.	(a) $4^{(x-2)} = 2^5$ $2x - 4 = 5$ $2x = 9$ $\boxed{x = 4.5}$	(b) $\left(\frac{x^2}{2} - 3x + \frac{5}{2} = 0\right) 2$ $x^2 - 6x + 5 = 0$ $(x-5)(x-1) = 0$ $\boxed{x = 5 \text{ or } x = 1}$
	(c) $3\sqrt{x-2} = 108$ $\sqrt{x-2} = 36$ — Divide both sides by 3 $x - 2 = 1296$ — Square both sides $\boxed{x = 1298}$	(d) $\lvert 8x - 1 \rvert = 5$ Solve for + and − absolute value $8x - 1 = 5$ OR $8x - 1 = -5$ $8x = 6$ $\quad$ $8x = -4$ $x = \frac{3}{4}$ OR $x = -\frac{1}{2}$