Graphing Quadratics Quiz Review

PART I: Vocabulary

Use the word bank to fill in the blanks in the sentences below. YOU MAY USE A WO some words not at all!

Word Bank			
$Y = ax^2 + bx + c$	Vertex	Positive	Parabol
$Y=a(x-h)^2+k$	Y-intercept	Negative	Axis of
Vertex Form	Vertically	X-intercept	Horizon

1.) A parabola is the graph of a quadratic function.

2.) The x-intercept is also the x-value

3.) The vertex form of a quadratic function is the equation $y=a(x-h)$

4.) The point (h, k) is the vertex of the parabola.

5.) The standard form of a quadratic function is the equation $y=ax^2+bx+c$.

6.) The c value in the standard form equation is the vertex.

7.) The formula x = -b/2a gives you the Axis of symmetry of the parabola.

8.) When **a** is postive, the vertex is the maximum value of the parabola.

9.) When **a** is negative, the vertex is the minimum value of the parabola.

10.) Changing the value of **h** in the vertex form equation shifts the graph horizontally.

11.) Changing the value of **k** in the vertex form equation shifts the graph vertically.

12.) Label the **axis of symmetry**, **vertex**, and **y-intercept** on the graph below:

1.) $f(x)=(x+3)^2-4$

Vertex: $-3, -4$

Axis of Symmetry: -3

Domain: $\mathbb{R}$ $(-\infty, \infty)$

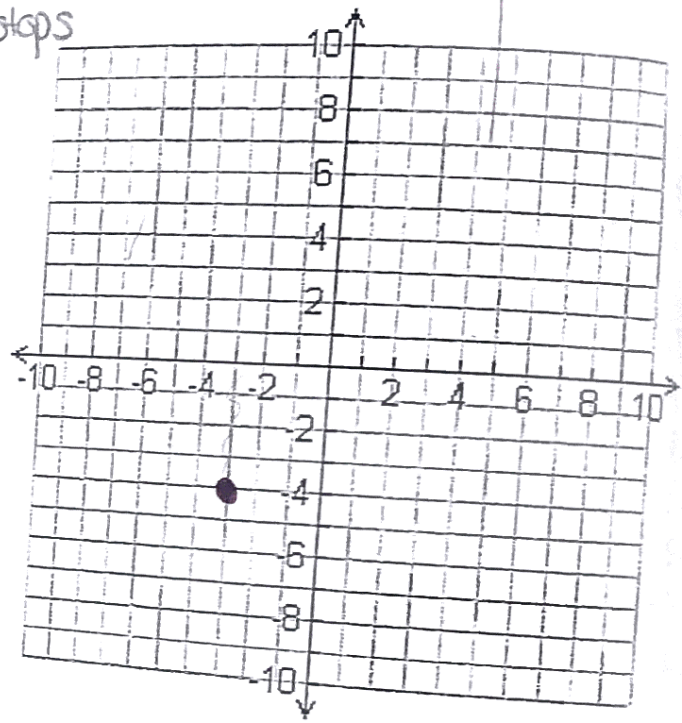
Range: $[-4, \infty)$

Increasing Interval: $-3,$

Decreasing Interval $-\infty, -3$

Maximum or Minimum? at -3

the line stops



2.) ~~$y=$~~ $2(x-2)^2+5$

Vertex: $-2, 2$

Axis of Symmetry: -2

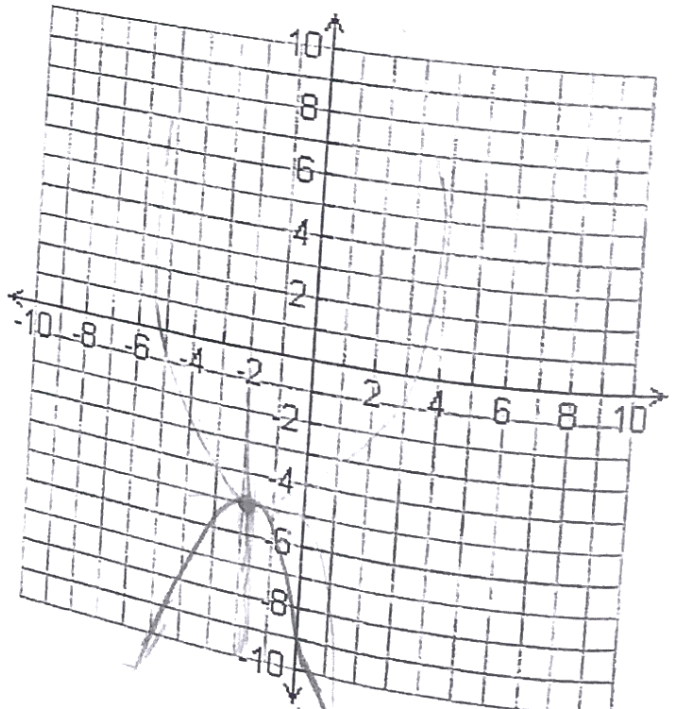
Domain: $(-\infty, \infty)$

Range: $[5, \infty)$

Increasing Interval: -5

Decreasing Interval $-10, \infty$

Maximum or Minimum? at -5



ebra II

.2 Vertex Form Worksheet

Name _____

Tell whether the quadratic function is in *standard form* or *vertex form*.

1. $y = x^2 - 2x - 35$ standard	2. $y = 3(x-1)^2 + 3$ vertex	3. $y = -\frac{2}{3}(x-4)^2 + 7$ vertex	4. $y = -2x^2 + 16x - 24$ standard

Identify the vertex of the quadratic function in VERTEX form.

5. $y = 3(x-7)^2 - 1$ vertex	6. $y = 3(x+2)^2 - 5$ *if there's a (+) the # change too (-)	7. $y = (x-3)^2$ *no k makes vertex (0)	8. $y = -4(x-2)^2 + 4$ vertex 2, 4
9. $y = 2(x+1)^2 - 3$ -1, 3	10. $y = (x+4)^2$ -4 and 0	11. $y = \frac{1}{2}(x-5)^2 + 1$ 5 and 1	12. $y = -(x+6)^2 + 10$ -6, 10

Identify the vertex of the quadratic function in STANDARD form. Remember to use $x = \frac{-b}{2a}$

13. $y = 2x^2 - 16x + 31$ $x = \frac{-(-16)}{2(2)} = 8$ $2(8)^2 - 16(8) + 31$ $128 - (-128)$	14. $y = -x^2 - 4x + 1$	15. $y = 3x^2 - 6x + 4$

Given a quadratic equation in vertex form, find the vertex, axis of symmetry, whether the graph opens up or down, the maximum or minimum, and the y-intercept. Graph it!

16. $y = -2(x+2)^2 + 4$ * take from vertex make it standard

Vertex: -2, 4

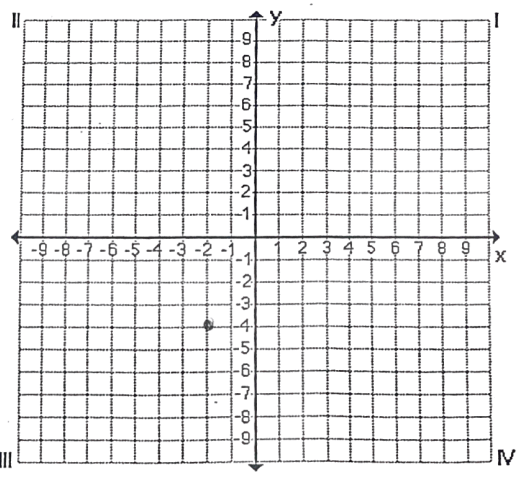
Axis of symmetry: -2

Opens: up down

Maximum Minimum

Max/Min Value: _____

y-intercept: _____



CPA2 Unit 2-2

Name _____ Pd _____

LT 5. I can graph quadratic functions in standard form (using properties of quadratics).
LT 6. I can graph quadratic functions in vertex form (using basic transformations).
LT 7. I can identify key characteristics of quadratic functions including axis of symmetry, vertex, min/max, y-intercept, x-intercepts, domain and range.
LT 8. I can rewrite quadratic equations from standard to vertex and vice versa.
LT 9. I can write quadratic equations given a graph or given a vertex and a point (without a calculator).
LT 10. I can write quadratic expressions/functions/equations given the roots/zeros/x-intercepts/solutions.
LT 11. I can write quadratic equations in vertex form by completing the square.

LT 5. I can graph quadratic functions in standard form (using properties of quadratics).
LT 6. I can graph quadratic functions in vertex form (using basic transformations).
LT 9. I can write quadratic equations given a graph or given a vertex and a point (without a calculator).

For problems 1 to 8, match each graph with its equation.

A. $a(x) = (x+1)^2 - 1$

B. $b(x) = -x^2 - 1$

C. $c(x) = (x-1)^2 + 1$

D. $d(x) = x^2 - 2x + 1$

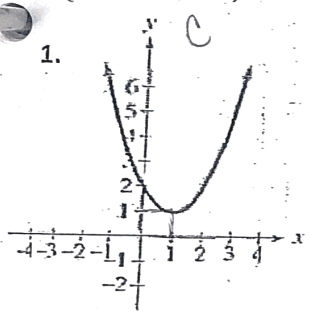
E. $e(x) = x^2 + 2x + 1$

F. $f(x) = (x+1)^2 + 1$

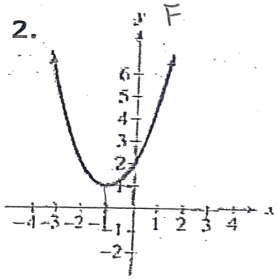
G. $g(x) = (x-1)^2 - 1$

H. $h(x) = x^2 - 1$

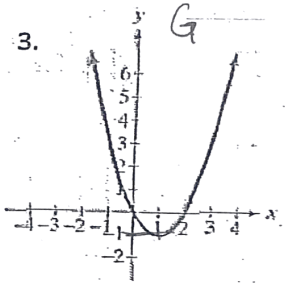
1. C



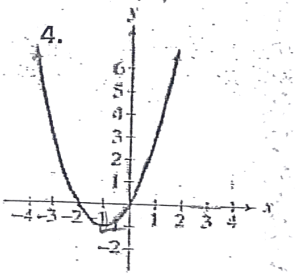
2. F



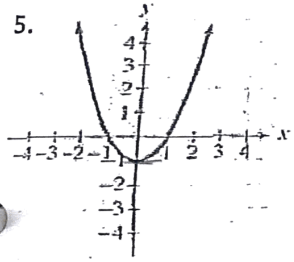
3. G



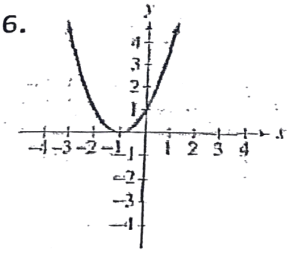
4. A



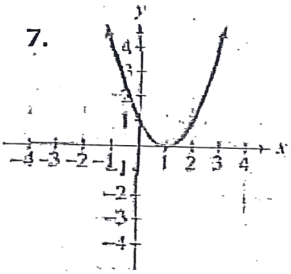
5. H



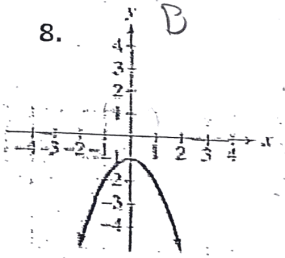
6. E



7. D



8. B



Algebra 1

Study guide (scrap paper)

1. Determine weather its a solution

$-35 = 8(3)+5$ multiply 8×3

$-24+5$ add

$-35 \overset{x}{=} -19$ if it dosent equal -35 it is not a solution

$-35 = 8(1)+5$

$8+5$

$-35 \overset{x}{=} 13$

$-35 = 8(-5)+5$

$-40+5$

$-35 \overset{\checkmark}{=} -35$

$-35 = 8(7)+5$

$56+5$

$-35 \overset{x}{=} 61$

2. Find the slope of the line passing through the points $(-9,-6)$ and $(-4,5)$ (x_1, y_1) (x_2, y_2)

Slope $= \frac{\text{rise}}{\text{run}}$ $\frac{y_2 - y_1}{x_2 - x_1}$

$$\frac{5-(-6)}{4-(-9)} = \frac{11}{13}$$

Algebra 1

Bellringer

Find the x intercepts, axis of symetry and vertex of the following quadratic equation

$$f(x) = x^2 + 8x + 12$$

AOS

$$x = \frac{-8}{2(1)} = -4$$

Vertex

$f(x) = -4^2 + 8(-4) + 12$

$16 - 32 + 12$

$y = -4$

vertex $= (-4, -4)$

x - intercept

$0 = x^2 + 8x + 12$

$0 = (x+6)(x+2)$

$x + 6 = 0$ $\quad$ $x + 2 = 0$

$-6 \quad -6$ $\quad$ $-2 \quad -2$

$x = -6$ $\quad$ $x = -2$

Name: _____ Date:_____ Period: _____ **Review**

Unit 3 Review – Systems of Equations

Reviews do **NOT** cover all material from the lessons but will hopefully remind you of key points. To be prepared, you must study all packets from Unit 3.

3.1 Standard Form Equations of Lines

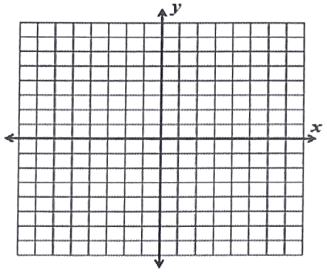
A solution of a two-variable equation is a coordinate pair (x, y). If this solution is substituted into an equation, then the equation is true. When ALL of these solutions are plotted on a coordinate grid, it creates the graph of a line.

1. Circle all the ordered pairs (x, y) that are solutions to $5x + 2y = -1$.

$(-5, 10)$ $(-3, 7)$ $(-1, 2)$ $(3, -8)$ $(4, -10)$

2. $x - 3y = 9$

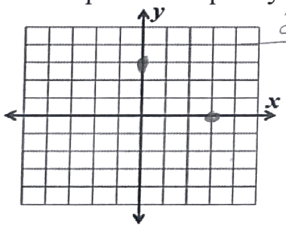
Know how to graph by solving for y or finding **intercepts**



3.2 Systems of Inequalities

A solution set of an inequality are all the points on ONE SIDE of the line. The line is also included if it is an "or equal to" inequality represented by $\leq$ or $\geq$. To discover which side of the line is shaded, you can either use a test point like $(0, 0)$, or solve for y and shade above or below the line depending on if it is the greater than or less than symbol (respectively).

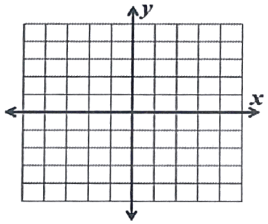
3. Graph the inequality $3x - y \leq 3$



$-y \leq 3 - 3x$

$-1 \quad -1$

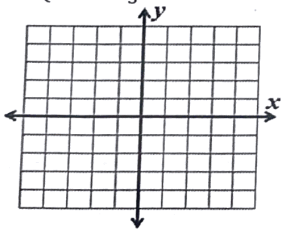
4. Graph the system of inequalities: $\begin{cases} x + y \geq 2 \\ x - 3y < 6 \end{cases}$



3.3 Graph Systems of Equations

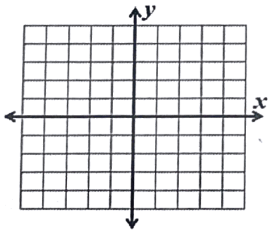
A system of equations will have one of three types of solutions.

5. $\begin{cases} x = -3 \\ y = -\frac{5}{3}x - 3 \end{cases}$



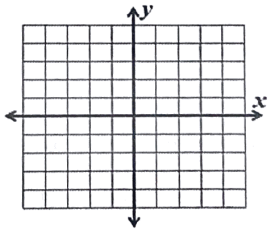
Answer: _____

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



Answer: _____

7. $\begin{cases} x + y = -4 \\ 3y = -3x - 12 \end{cases}$



Answer: _____

Assignment #8

Inequalities

Khan Academy

- x is always on the left side

1. $\frac{2x}{2} < \frac{12}{2}$

answer: $x < 7.5$

2. $-36 + x < 8$

$+36 \quad +36$

$x < 44$

3. $\frac{12}{-5} < \frac{-5x}{-5}$ flip

answer: $-2 > x$

$x < -3$

4. $4.7 > \frac{x}{4} \cdot 4$ flip

answer: $28 > x$

$x < 28$

5. $x - 6 \leq 2$

$+6 \quad +6$

$x \leq 9$

6. $\frac{x}{-6} \geq -20$

$-20 \cdot \frac{x}{-6} \geq -20$

$x \quad x \leq -120$

7. $17x \geq -17$

$\frac{17x}{17} \geq \frac{-17}{17}$

$x \geq -1$

Two - Step inequalities

8. $11q + 5 \leq 49$

$-5 \quad -5$

$\frac{11q}{11} \leq \frac{44}{11} = 4$

answer = $q \leq 4$

9. $9 - 4d \geq -3$

$-9 \quad -9$

$\frac{-4d}{-4} \geq \frac{-12}{-4} = 3$

answer: $d \leq 3$

10. $-3x + 8 \leq 15$

$-8 \quad -8$

$\frac{-3x}{-3} \leq \frac{-7}{-3}$

answer: $x \geq -7/3$

14. $12 - 6x > 24$

$-12 \quad -12$

$\frac{-6x}{-6} > \frac{12}{-6}$

$x < -2$

11. $16x - 7 \leq -87$

$+7 \quad +7$

$\frac{16x}{16} \leq \frac{-64}{16}$

answer: $x \leq -4$

Quiz

15. $-12 \leq 44 + x$

$-44 \quad -44$

$-56 \leq x$

$x \geq -56$

12. $10c + 5 \leq 45$

$-5 \quad -5$

$\frac{10c}{10} \leq \frac{40}{10}$

answer: $c \leq 4$

13. $-11 - 2d \geq 1$

$+11 \quad +11$

$\frac{-2d}{-2} \geq \frac{12}{-2}$

$d \leq -6$

x, y
1, 7

x, y
2, -7

5 $y = -2x - 5$
$7 = -2(1) - 5$
$-2 - 5 = 7$ ✓

$y = -2x - 5$
$-7 = -2(2) - 5$
$4 - 5$

neither

x, y
5, 10

6. $y + 5 = 2(x + 1)$
$10 + 5 = 2(5 + 1)$?
$15 = 10 + 2 = 12$

x, y
-2, 2

x, y
-3, 4

7. $y = -3x - 4$
$4 = -3(-3) - 4$
$6 - 4 = 2$

$4 = -3(-2)$
$6 - 4$

x, y
2, 2

x, y
1, 2

8. $2x + 3y = 10$
$2(1) + 3(2) = 10$
$2 + 6$

$2x + 3y = 10$
$2(2) + 3(2) = 10$ ✓
$4 + 6 = 10$

x, y
1, 11

x, y
-1, -5

9 $y = 8x + 3$
$11 = 8x + 3$
$8(1) + 3$

$y = 8x + 3$
$-1 = 8(-5) + 3$
$-40 + 3$
$-1 = -43$

x, y
(5, 3)

x, y
(4, 1)

10. $5(5) - 2(3) = 18$
$25 - 6 = 18$
$19 = 18$

$5(4) - 2(1) = 18$
$20 - 2 = 18$ ✓