Name: _____ Date: _____ Period: _____

Calculator Notes:

Example 1—Check the Graph: $y=$ graph

What is the vertex of the graph of the quadratic function $f(x) = x^2 - 4x + 3$?

a. (-2, -1) b. (2, -1) c. (-2, 1) d. (2, 1)

Practice:

1. What is the <u>vertex</u> of the graph of the quadratic function $f(x) = x^2 + 2x + 1$?

   a. (0, -1) b. (-1, 0) c. (-1, 1) d. (0, 1)

2. What is the <u>vertex</u> of the graph of the quadratic function $f(x) = 3x^2 - 12x + 9$?

   a. (-2, -3) b. (2, -3) c. (-2, 3) d. (2, 3)

3. What is the <u>y-intercept</u> of the graph of the quadratic function $f(x) = x^2 - 4x + 3$?

   a. (3, 0) b. (2, -1) c. (0, 3) d. (2, 1)

4. What is the <u>y-intercept</u> of the graph of the quadratic function $f(x) = 3x^2 - 12x + 9$?

   a. (0, 9) b. (9, 0) c. (-2, 3) d. (2, -3)

Example 2—Check the Graph: x-intercepts – find where $y=0$

What is the <u>solution set</u> for the quadratic equation $x^2 - 16 = 0$?

a. {4} b. {-4, 4} c. {256} d. {-256, 256}

diff. of sqaures $(x+3)(x-3) = 0$

Practice:

1. What is the solution set for the quadratic equation $x^2 - 9 = 0$?

   a. {3} b. {-3, 3} c. {81} d. {-81, 81}

2. What is the solution set for the quadratic equation $3x^2 - 12x + 9 = 0$?

   a. {2, -3} b. {2, 3} c. {1, 3} d. {1, 0}

3. What is the solution set for the quadratic equation $-4x^2 - 28x - 48 = 0$?

   a. {-3, 0} b. {-48, 0} c. {-3.5} d. {-3, -4}

Calculator Notes:

Example 3—Check the Table:

The population of a town is currently 9,000. The function $p = 9,000 + 8t^2$ can be used to estimate p, the population of the town t years from now. Based on this function, which statement is NOT true?

a. The population of the town is will increase by 200 people in 5 years. ✓
b. The population of the town will reach 10,000 between 11 and 12 years from now. ✓
c. The population of the town will increase by 256 people two years from now. ✗
d. The population of the town is increasing from now until 15 years. ✓

Practice:

1. The graph of the quadratic function h passes through the points (-4, 32), (3, 4), (5, 14), and (7, 32). Which of the following shows the same relationship as h?

   a. $h(x) = x^2 + 3x + 4$ b. $h(x) = x^2 - 3x + 4$ c. $h(x) = x^2 - 6x + 13$

2. Which set of ordered pairs contains only points that are on the graph of the function $y = 12 - 3x$?

   A. $\{(-3, -27), (0, 0), (6, 54)\}$

   B. $\{(-18, 10), (-6, 6), (18, -2)\}$

   C. $\{(-5, 27), (-1, 15), (8, -12)\}$

   D. $\{(-7, -9), (-4, 0), (2, 18)\}$

3. Which table shows the same relationship as $y = -x^2 + 3x$

   A.

x	-2	-1	0	1	2
y	-2	-2	0	4	10

   B.

x	-2	-1	0	1	2
y	-2	-1	0	1	1

   C.

x	-2	-1	0	1	2
y	-10	-4	0	2	2

   D.

x	-2	-1	0	1	2
y	-10	-4	0	4	10

Name: _____ Date: _____ Period: _____

Calculator Notes:

Example 4—Check the Table:

Simplify the following expression:

$y_1 = 0.25(-4d + 8) - 5(d + 8)$

(handwritten: DISTR, CLT, 2nd table, $y_1 = y_2$)

Answers:

A. $-4d + 38$ *(handwritten: $y_2 =$, crossed out)*

B. $-6d - 38$ *(handwritten: $y_2 =$)*

C. $-6d - 38$ *(handwritten: $y_2 =$)*

(handwritten: same)

Practice:

1. Simplify the following expression:

   $4(2x - 4) - (x + 6)$

   Answers:

   A. $5x - 22$ B. $7x - 22$ C. $7x - 10$

2. In which step below does a mistake first appear in simplifying the expression
   $0.5(-12c + 6) - 3(c + 4) + 10(c - 5)$?

   Step 1: $-6c + 3 - 3(c + 4) + 10(c - 5)$
   Step 2: $-6c + 3 - 3c - 12 + 10(c - 5)$
   Step 3: $-6c + 3 - 3c - 12 + 10c - 50$
   Step 4: $7c - 41$

   (handwritten: C -59)

3. Which expression is equivalent to $-6x^2 - 11x - 4$? *(handwritten: y_1)*

   (handwritten: $y_2 =$) A. $(3x + 7)(3x - 3)$
   (handwritten: $y_2 =$) B. $(-3x + 4)(2x - 1)$
   (handwritten: $y_2 =$) C. $(3x - 7)(3x + 3)$
   (handwritten: $y_2 =$) D. $(-3x - 4)(2x + 1)$

Calculator Notes:

Example 5—Check the Graph:

A graph is shown below.

negative slope (handwritten)
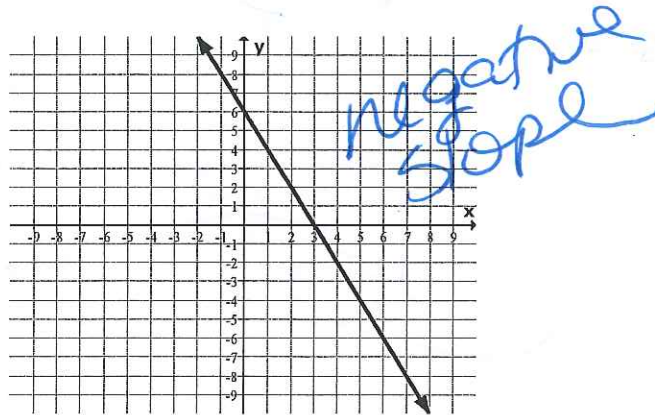
Which of the following equations is represented by the graph?

a. $y = 2x + 6$

b. $y = (x + 6)(-2x + 1)$ *parabola* (handwritten)

c. $y = -2x + 6$ (circled, handwritten)

Practice:

1. The graph of $y = 3x^2 - 2$ is shown below.

Constant to positive (handwritten)
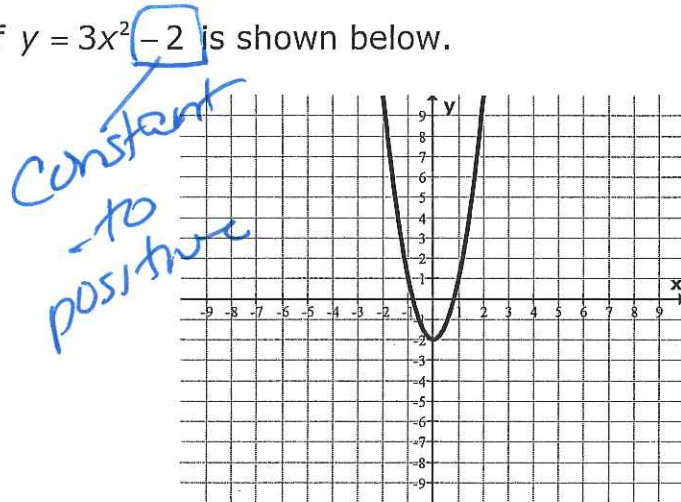
If the constant is changed from -2 to a positive number to create a new function, how will the graph of the new function compare with the graph of the original function?

a. The y-intercept of the new graph will be the same as the y-intercept of the original graph.

b. The vertex of the new graph will be different from the vertex of the original graph. (circled)

c. The new graph will be narrower than the original graph.

d. The new graph will open in the opposite direction as the original graph.

Calculator Notes:

2. The graph of line p represents $y = \dfrac{1}{5}x - 1$. If the slope of line p is multiplied by **-10** to create line r, which statement about the graphs of the two lines is true?

    a. Line r intersects line p. ✓
    b. Line r is parallel to line p.
    c. Line r is 10 units above line p.
    d. Line r is 10 units below line p.

$y_2 = \dfrac{1}{5}(-10)x - 1$

change the 'b'

3. If the graph of $y = 9x + 4$ is translated 4 units up, which equation describes the new graph?

$\dfrac{+4}{9x+8}$

    a. $y = 13x + 8$ b. $y = 13x + 4$ c. $y = 9x + 8$ d. $y = 4x + 4$

Name: _____ Date: _____ Period: _____

Calculator Notes:

Example 6—Graph It:

in shaded region

Which coordinate pair is in the solution set for $y < 1 - 6x$?

$y_1 =$

change \ to ▲ to shade

   A (1, 0)

   B (1, -1)

   C (0, 1)

   D (-1, 1)
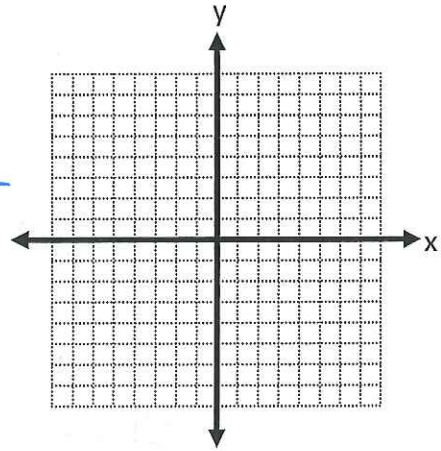
Practice:

1. Which coordinate pair is in the solution set for $y \geq 2x - 3$? *above*
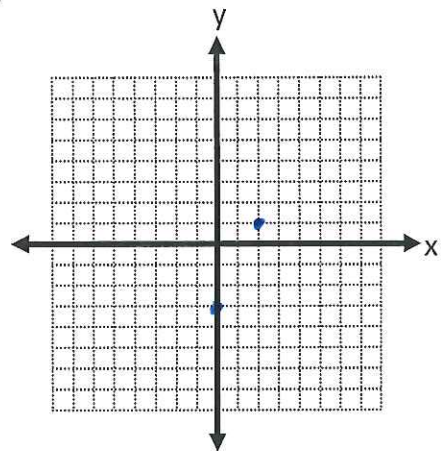
   A (1, -4)

   B (2, 0)

   C (0, -4)

   D (1, 0)

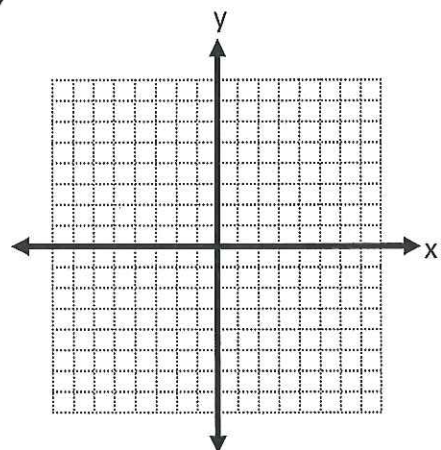2. Which coordinate pair is in the solution set for $y > -x$?

   A (1, -4)

   B (2, -2) *on the line*

   C (0, 0) *on the line*

   D (1, 1)

Name: _____ Date: _____ Period: _____

Calculator Notes:

Example 7—STAT, EDIT: *linear*

When the air conditioner inside a car is turned on, the temperature inside the car decreases at a constant rate. The table below shows the temperature t in degrees Fahrenheit m minutes after the air conditioner is turned on.

Number of Minutes After Air Conditioner is Turned On	Temperature in Degrees Fahrenheit
2	80
4	75
8	65
10	60
11	57.5

$a = -2.5$
$b = 85$

$\rightarrow -2.5$

Based on the data in the table, what is the temperature inside the car when the air conditioner has been turned on for 11 minutes?

$y = -2.5x + 85$
$y = -2.5(11) + 85$ $y = 57.5$ $\boxed{57.5^\circ}$

Based on the data in the table, what was the temperature inside the car when the air conditioner was first turned on?

when $x = 0$, y-int $\boxed{85^\circ}$

Practice:

1. A weightlifter is adding plates of equal weight to a bar. The table below shows the total weight, including the bar, that he will lift depending on the total number of plates on the bar.

Number of Plates	Total Weight in pounds
2	115
4	185
6	255
8	325

$\frac{70}{2} = 35$

$\begin{array}{r} 115 \\ -70 \\ \hline 45 \end{array}$

Based on this information, which statement is true?

a. The bar weighs 35 lb without any plates.

b. The bar weighs 70 lb without any plates.

c. The bar weighs 45 lb without any plates.

d. The bar weighs 25 lb without any plates.

Name: _____ Date: _____ Period: _____

Calculator Notes: *linear*

2. Mario plans to put his first paycheck into a savings account and add a certain fixed
   amount each month to save for a car. After a few months, he decided to make a
   table to keep track of his balance in the account. Below is the table Mario created.

Number of Months	Account Balance
3	455
5	545
6	590
9	725

Write an equation to represent the total account balance **a** for any number of
months, **m**. $a = 45m + 320$

What was the amount of Mario's first paycheck? $320
                   m = 0

If Mario increased his rate of deposit by $10 each month, how much money would
he have in 12 months? $a = 55m + 320$
                        $a = 55(12) + 320$
                        $a = 980 $980

3. As scuba divers descend, the pressure of the water increases. Scuba divers can
   determine their depth by the pressure. Pressure can be expressed in
   atmospheres. An atmosphere is equivalent to 14.7psi (pounds per square inch) of
   pressure. The table below shows the relationship between atmospheres of
   pressure and ocean depth.

X
Y

Depth of Ocean (feet)	0	33	66	99	132
Pressure (atmosphere)	1	2	3	4	5

slope
What is the rate of change in this situation?

$\dfrac{\Delta y}{\Delta x}$ $\dfrac{1}{33}$ atmospheres per foot