Name: _____

Grade 10 Quadratics Review Self-Test

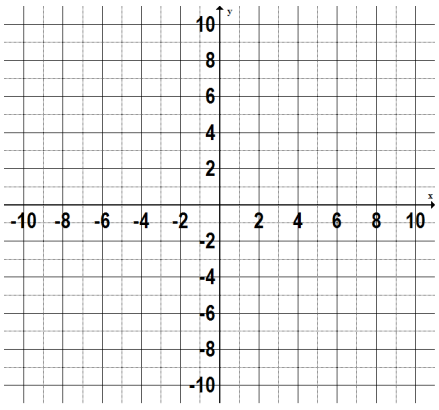
1. Determine the ***y-intercept*** for the following equation: $\boldsymbol{y = -3(x-4)^2 + 100}$

2. Clearly explain in words ***ALL*** of the transformations that must be applied to $\boldsymbol{y = x^2}$ to obtain the graph of the function below (point form is fine…)

$$\boldsymbol{y = -\frac{1}{4}(x+6)^2 + 12}$$

3. Sketch each quadratic and fill in the blanks below

$\boldsymbol{y = (x-2)^2 + 3}$



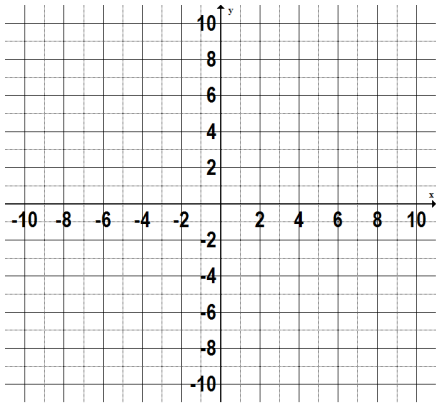
Vertex: _____

Axis of Symmetry: _____

x-Intercepts: _____

y-Intercept: _____

$\boldsymbol{y = -(x+5)^2 - 2}$



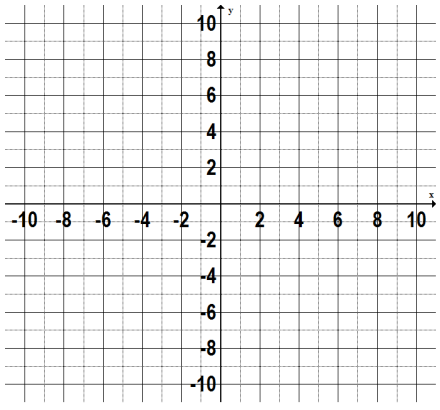
Vertex: _____

Axis of Symmetry: _____

Max / Min: _____

Range: _____

$\boldsymbol{y = 0.5(x-4)^2 + 5}$



Vertex: _____

Axis of Symmetry: _____

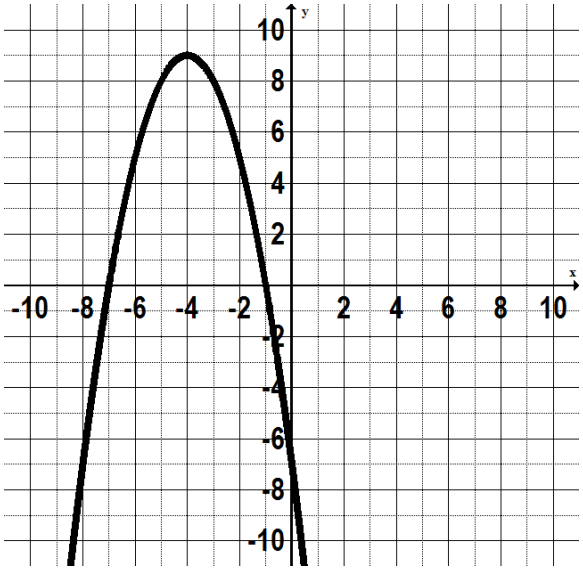
Step Pattern (1st 3 steps):_____

Domain: _____

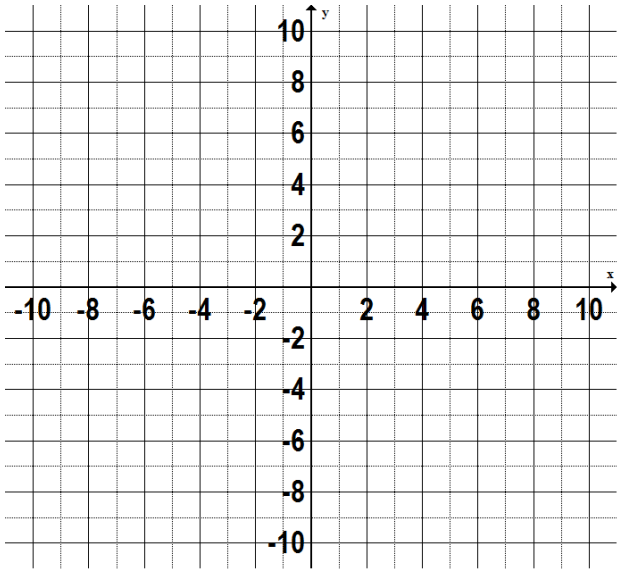
4. For each quadratic equation below, determine the zeros by factoring, then determine the vertex of the graph of the equation algebraically.

a. $x^2 - 11x + 24 = 0$ Zeros: Vertex:	b. $-\frac{1}{2}x^2 - 4x = -10$ Zeros: Vertex:
c. $x^2 + 6x - 27 = 0$ Zeros: Vertex:	d. $x^2 - 6x + 9 = 0$ Zeros: Vertex:
e. $x^2 - 11x = 0$ Zeros: Vertex:	f. $x^2 + 12x + 36 = 0$ Zeros: Vertex:
g. $-5x^2 - 40x = 0$ Zeros: Vertex:	h. $2x^2 + 2x = 24$ Zeros: Vertex:

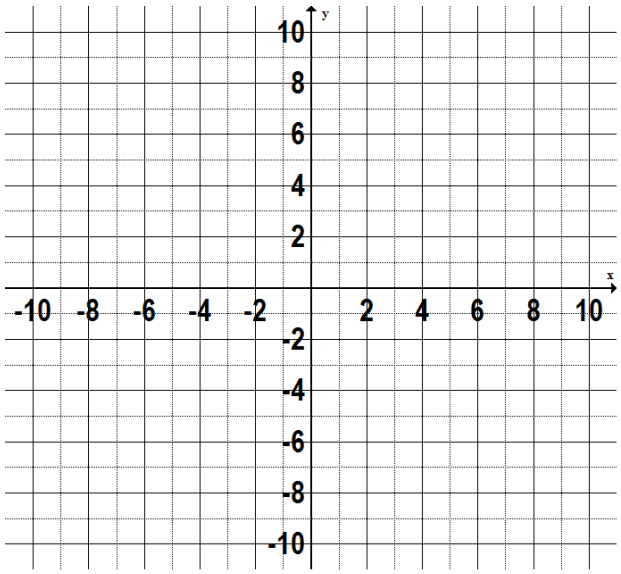
5. Complete the table below for each relation:



Standard Form Equation:	
Vertex Form Equation:	
Factored Form Equation:	
Vertex:	
Zeros:	
y-Intercept:	
Range:	
Step Pattern:	



Standard Form Equation:	$y = 3x^2 + 48x + 192$
Vertex Form Equation:	
Factored Form Equation:	
Vertex:	
Zeros:	
y-Intercept:	
Range:	
Step Pattern:	



Standard Form Equation:	
Vertex Form Equation:	$y = -0.2(x - 4)^2 + 5$
Factored Form Equation:	
Vertex:	
Zeros:	
y-Intercept:	
Range:	
Step Pattern:	

Use this space to work out your answers for #5.

6. Sideshow Bob fires a cannon hurtling Krusty the Clown through the air.
   Krusty's path can be modelled by the equation $\boldsymbol{h = -8t^2 + 400t}$, where $\boldsymbol{t}$ is the time in seconds and $\boldsymbol{h}$ is the height of Krusty above the ground in metres.

a) **Create a rough sketch** of Krusty's parabolic flight.
   (label the vertex, the y-intercept, and show how you obtained them)

b) What is the **maximum height** reached by Krusty? _____ m

c) After how long does Krusty reach his maximum height? _____ s

d) How many seconds will it take for Krusty to **land back on the ground**? _____ s

7. In 1993, Joe Carter hit a homerun over the left field wall at the SkyDome in the bottom of the 9th to give the Blue Jays, and Canada, an unprecedented two World Series Championships in a row! It was amazing; I was 10.
The function $\boldsymbol{h = -0.001d^2 + 0.4d + 3}$ models the height, *h* feet, of Joe's ball as a function of the distance travelled, *d* feet, from home plate.

a) How high above the ground did Joe make contact with the ball? _____ ft.

b) What was the height of the ball as it sailed over the wall 325 feet from home plate? _____ ft.

c) How far from home plate was the ball when it began to fall back to the ground? _____ ft.

d) What was the height of the ball when it began to fall back to the ground? _____ ft.

e) How far from home plate would the ball have hit the ground? _____ ft.
(Assume the ball lands on the ground)

f) Approximately how many feet did the ball travel at a height of at least 30 feet? _____ ft.

g) Draw and label a rough sketch of the situation.
Include: zeros, vertex, y-intercept, axis of symmetry, points at which ball was 30 feet above the ground, home plate, the outfield wall, height of the ball as it sailed over the wall.