Unit II
Work Sample 1: Graphing Quadratic Relationships

Name:_____

1 For each quadratic function below determine the

a) direction of the opening of the parabola

b) the coordinates of the vertex using $x = \frac{-b}{2a}$ and subbing the x co-ordinate into the function to get the y-coordinate

c) the type of vertex as maximum or minimum

i) $y = -x^2 + 6x - 3$

ii) $y = 8x^2 + 8x - 12$

iii) $y = 4x^2 + 40x$

iv) $y = .1x^2 - x + 5$

v) y = $y = \frac{-1}{4}x^2 + 8x - 17$

vi) $y = \frac{3}{2}x^2 - 9x + 6$

vii) $y = x^2 + 8$

2 For each quadratic function below

A) find the vertex using $x = \frac{-b}{2a}$. Then substitute this value into the equation to find the y-coordinate of the vertex State its type.

B) Complete the table of values. Put the vertex in the middle of a table of values, take two points to the left of the vertex and two points to the right of the vertex.

C) Sketch its graph and the base graph $y = x^2$ on a separate x-y plane

D) Draw the axis of symmetry of each function on the graph and state its equation.

E) Complete the statement indicated.

F) Find the domain and range.

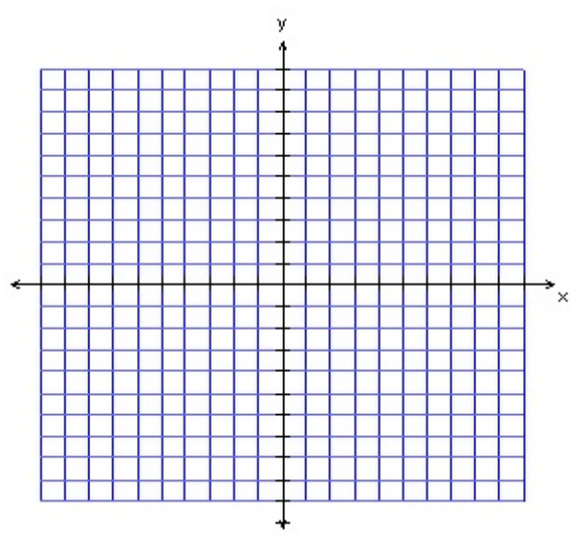
i) $y = -2x^2 + 8x + 4$

A) Vertex and type

B) Table of values

x	$y = x^2$	x	$y = -2x^2+8x+4$

C) Graph with $y = x^2$



D) Equation of the AOS for each graph:

AOS for $y = x^2$:_____ AOS for $y = -2x^2 + 8x + 4$:_____

E) y has a _____ value of y = _____ and it occurs at x = _____.

F) Domain Range

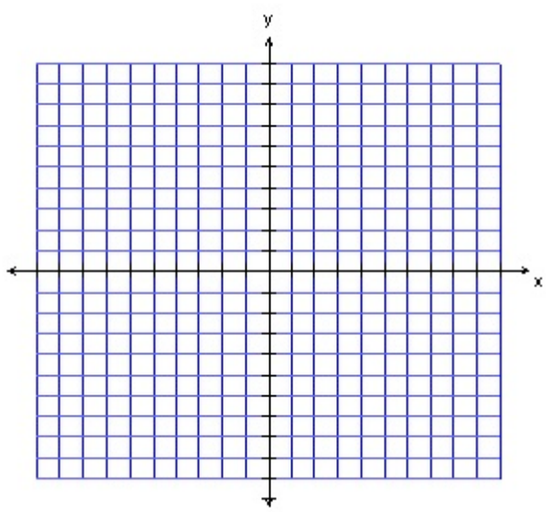
ii) $y = x^2 - 4x - 6$

A) Vertex and type

B) Table of values

x	$y = x^2$	x	$y = x^2 - 4x - 6$

C) Graph with $y = x^2$



D) Equation of the AOS for each graph:

AOS for $y = x^2$:_____ AOS for $y = x^2 - 4x - 6$:_____

E) y has a _____value of y = _____ and it occurs at x = _____.

F) Domain Range

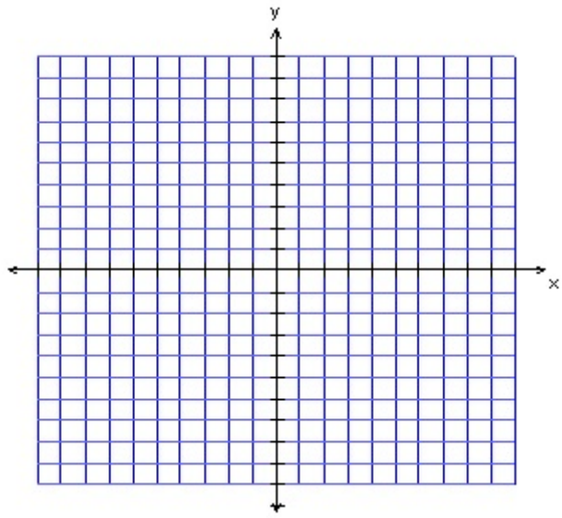
iii) $y = -0.2x^2 + 2x + 1$

A) Vertex and type

B) Table of values

x	$y = x^2$	x	$y = -0.2x^2 + 2x + 1$

C) Graph with $y = x^2$



D) Equation of the AOS for each graph:

AOS for $y = x^2$:_____ AOS for $y = x^2 - 4x - 6$:_____

E) Y has a _____ value of y = _____ at x = _____.

F) Domain Range

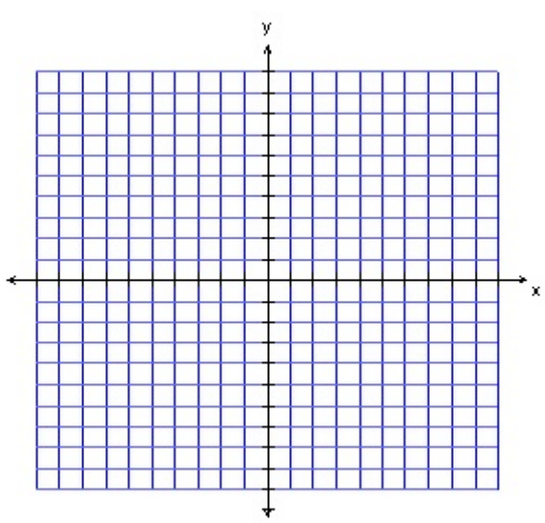
iv) $y = 2x^2 + 5$

A) Vertex and type

B) Table of values

x	$y = x^2$	x	$y = 2x^2 + 5$

C) Graph with $y = x^2$



D) Equation of the AOS for each graph:

AOS for $y = x^2$:_____ AOS for $y = 2x^2 + 5$:_____

E) y has a _____ value of y = _____ and it occurs at x = _____.

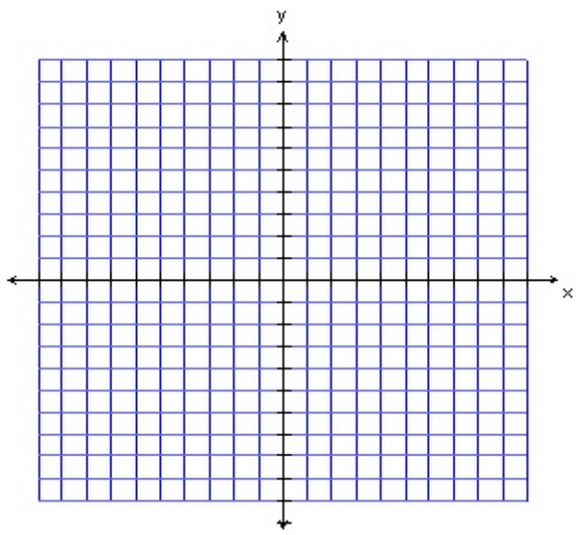
F) Domain Range

3 For $y = -2x^2 + 4x + 3$

a) What is the vertex and its type?

b) Fill in a table of values with the base graph $y = x^2$ and sketch its graph.

x	$y = x^2$	x	$y = -2x^2 + 4x + 3$



c) y has a _____ value of y = _____ and it occurs at x = _____.

d) What is the domain and range of the graph?

e) Is the graph wider or more narrow than the base graph of $y = x^2$. Explain why.

4 In y = $ax^2 + bx + c$

A) what do you notice about the graph if a is positive?

B) What do you notice about the parabola if a is negative?

C) What do you notice about the parabola if a > 1 or less that -1? (Compared to the base graph of $y = x^2$)

D) What do you notice about the parabola if a is between 0 and -1 or a is between 0 and 1 ? (Compared to the base graph of $y = x^2$)

E) If a is positive, what type of vertex is on the parabola?

F) If a is negative, what type of vertex is on the parabola?

G) What is the domain of any parabola?

H) Explain how the type of vertex affects the range of the graph?