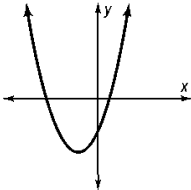


# 4-1 Notes

## Quadratic Functions and Transformations

Using prior knowledge from studying absolute value functions ( $y = a|x - h| + k$ ) and process of elimination, choose the concept from the list below that best represents the item in each box. EACH CONCEPT IS USED EXACTLY ONCE. (YOU MAY WANT TO USE PENCIL.)

axis of symmetry domain maximum value minimum value	parabola range parent quadratic function quadratic function	translation equation for line of symmetry vertex form vertex of the parabola
1. $y = ax^2 + bx + c$  _____	2. a line that divides a parabola into two mirror images  _____	3.   _____
4. $(h, k)$ , where $y = a(x - h)^2 + k$  _____	5. the y-value of the vertex when the parabola opens up  _____	6. $y = x^2$  _____
7. the y-value of the vertex when the parabola opens down  _____	8. $y = a(x - h)^2 + k$  _____	9. a shift of the graph horizontally or vertically  _____
10. $x = h$  _____	11. A set of input values ( $x$ ) of a relation  _____	12. A set of output values ( $y$ ) of a relation  _____

# Complete.

1. How do you know an equation is quadratic?

2. Circle all that applies.

A quadratic function is a "U" shaped graph that opens \_\_\_\_\_.

up                  down                  right                  left

3. What is one type of real world range that should be maximized? area

4. What is one type of real world range that should be minimized? expense

5. Graph by plotting the vertex,  $(h,k)$  of  $y = a(x-h)^2 + k$ , finding another point, and using symmetry to complete the graph. Also complete each category.

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

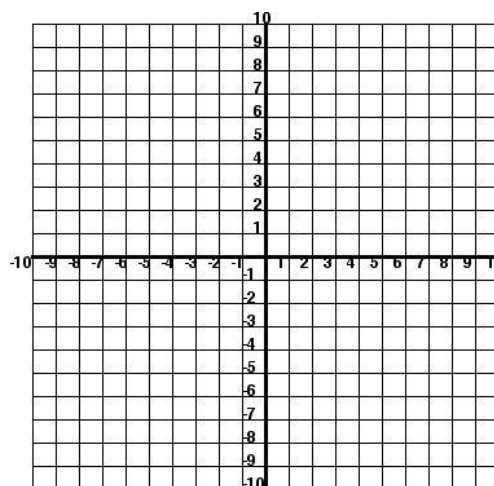
vertex: (      ,      ) another point: (      ,      )

axis of symmetry:

domain:

range:

max/min



b.  $y = -(x+3)^2 - 2$

vertex: (      ,      ) another point: (      ,      )

axis of symmetry:

domain:

range:

max/min

