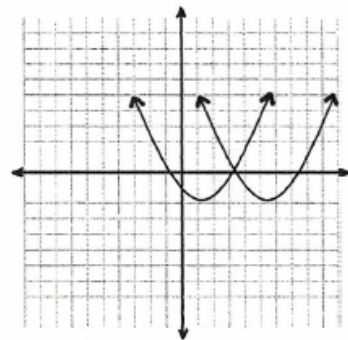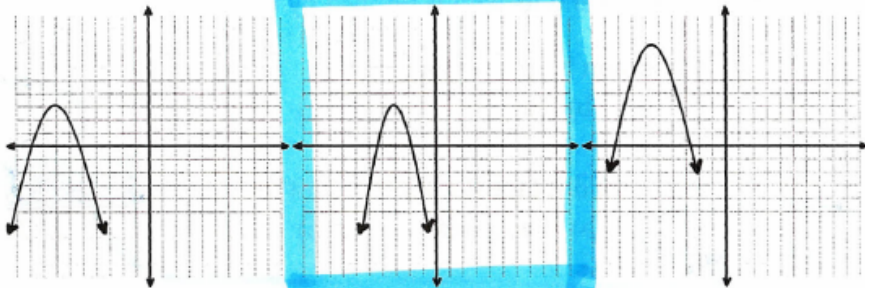Math 11   **Quadratics #2 – Review #2**   SOLUTIONS
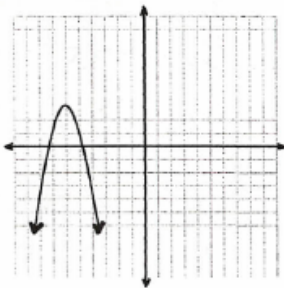
1. What is different about these two graphs?
   a) Domain   b) Range
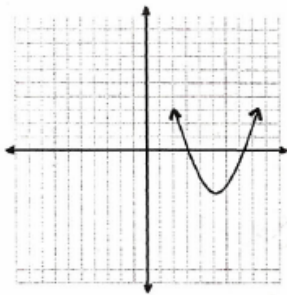   c) Axis of Symmetry   d) Stretch Factor
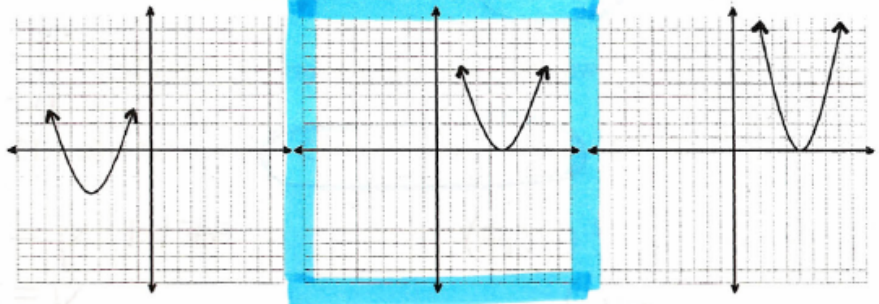
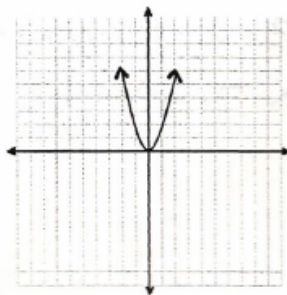2. $y = a(x - h)^2 + k$ Which graph has a change in "h" only?
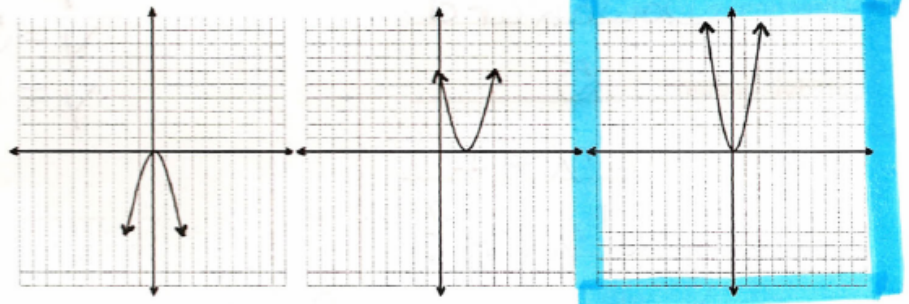
3. $y = a(x - h)^2 + k$ Which graph has a change in "k" only?

4. $y = a(x - h)^2 + k$ Which graph has a change in "a" only?

*** Use the following equation for questions (5 – 7): $\frac{1}{2}(y-3)=(x+4)^2$

5. The "3" moves the graph:
   a) up/down b) left/right c) and stretches it d) and reflects it in the x-axis

6. The "4" moves the graph:
   a) up/down b) left/right c) and stretches it d) and reflects it in the x-axis

7. The " ½ " :
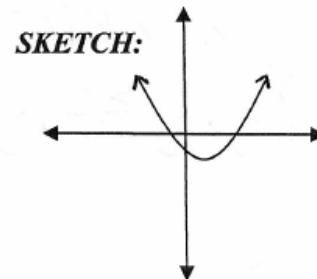   a) moves the graph up/down b) moves the graph sideways c) stretches the graph d) flips the graph

8. The parabola shown in the diagram has its x-intercepts at (-3, 0) and (11, 0). Which one of the following "could" be the vertex:

   SKETCH:

   a) (4, -5)   b) (14, -3)

   c) (8, -2)   d) (7, 4)

   Average of x-values :
   $-\frac{3+11}{2} = \frac{8}{2} = (4, ?)$

3

9. A ball is kicked and its graph is defined by $-\frac{1}{5}(y-20)=(x-6)^2$. What is the maximum height? How long does it take to reach the maximum height?

$\underline{20} \quad \underline{6}$ Vertex:

Height Time

$(6, 20)$

$\frac{}{\uparrow T} \quad \searrow H$

a) 20 m   6 s   b) 5 m   6 s   c) 20 m   5 s   d) 6 m   20 s

10. Which of the following equations could be used to find the area, if you had 200 m of material to construct a fence around the following area?

$P = 200m$

a) $y = (200 - x)(x)$ b) $y = (100 - 2x)(x)$

c) $y = (200 - 2x)(x)$ d) $y = (100 - x)(2x)$

x Let $x = $ width

$200 - 2x = $ length

$A = \ell \times w$

$A = (200 - 2x)(x)$

***A rocket is launched and its path is defined by $h = -4t^2 + 40t$. Use this equation to answer (11 – 13)

11. What is the maximum height of the rocket?

a) 40 m   b) 160 m   c) 10 m   d) 100m

$h = -4t^2 + 40t$

$h = -4(t^2 - 10t)$

$h - 100 = -4(t^2 - 10t + 25)$

$h - 100 = -4(t-5)^2$

12. How much time would it take the rocket to hit the ground? 5×2

a) 10 seconds   b) 5 seconds   c) 4 seconds   d) 20 seconds

$h = -4(t-5)^2 + 100$

* Vertex $(5, 100)$

13. How high would the rocket be after 3 seconds?

a) 40 m   b) 84 m   c) 156 m   d) 100 m

$h = -4(3)^2 + 40(3)$

$h = -4(9) + 120$

$h = -36 + 120$

$h = 84m$

Time to Max.
reach Height
Max.
height

4

14. If $y = 3(x - 2)^2 + 1$ was placed in general form, it would be:

a) $y = 3x^2 - 6x + 3$ (b) $y = 3x^2 - 12x + 13$ c) $y = 3x^2 - 6x + 13$ d) $y = 3x^2 - 6x + 3$

$$y = 3(x-2)^2 + 1$$
$$y = 3(x-2)(x-2) + 1$$
$$y = (3x-6)(x-2) + 1$$
$$y = 3x^2 - 6x - 6x + 12 + 1$$
$$y = 3x^2 - 12x + 13$$

15. $-\frac{1}{5}(y+2)=(x-1)^2$ (TF)

Vertex __(1,-2)__

Direction __Downward__

Stretch Factor __5__

Axis of Symmetry __$x=1$__

Domain __$\{x \mid x \in R\}$__

Range __$\{y \mid y \leq -2, y \in R\}$__

16. $3(y-2)=x^2$ $\Rightarrow 3(y-2)=(x-0)^2$ (TF)

Vertex __(0,2)__

Direction __Upward__

Stretch Factor __$\frac{1}{3}$__

Axis of Symmetry __$x=0$__

Domain __$\{x \mid x \in R\}$__

Range __$\{y \mid y \geq 2, y \in R\}$__