Math 11   **Quadratics #2 – Review #2**   SOLUTIONS
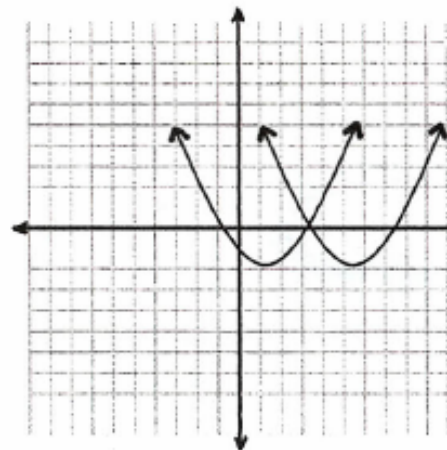
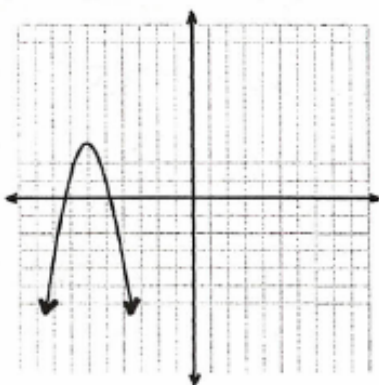1. What is different about these two graphs?
   a) Domain
   b) Range
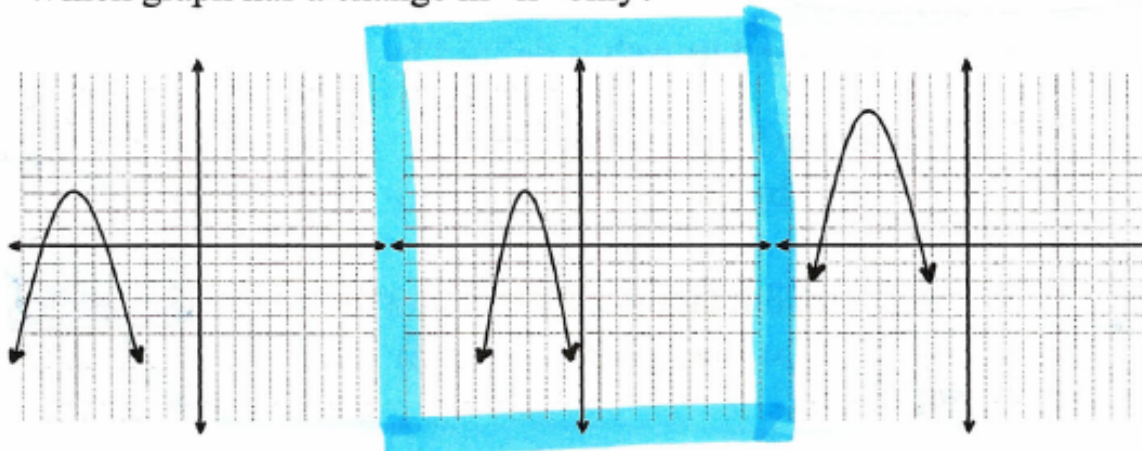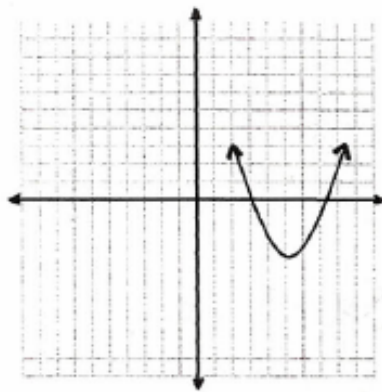   c) Axis of Symmetry
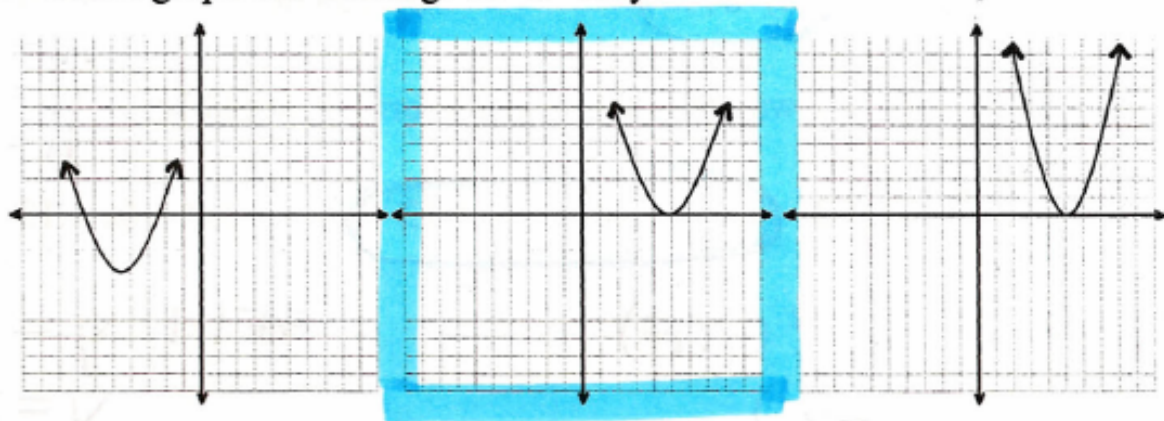   d) Stretch Factor

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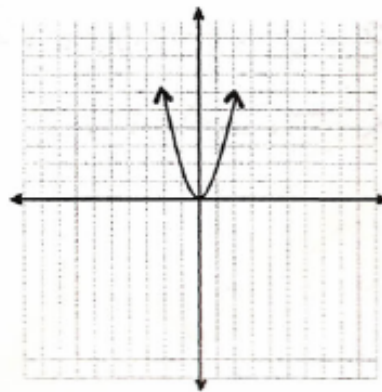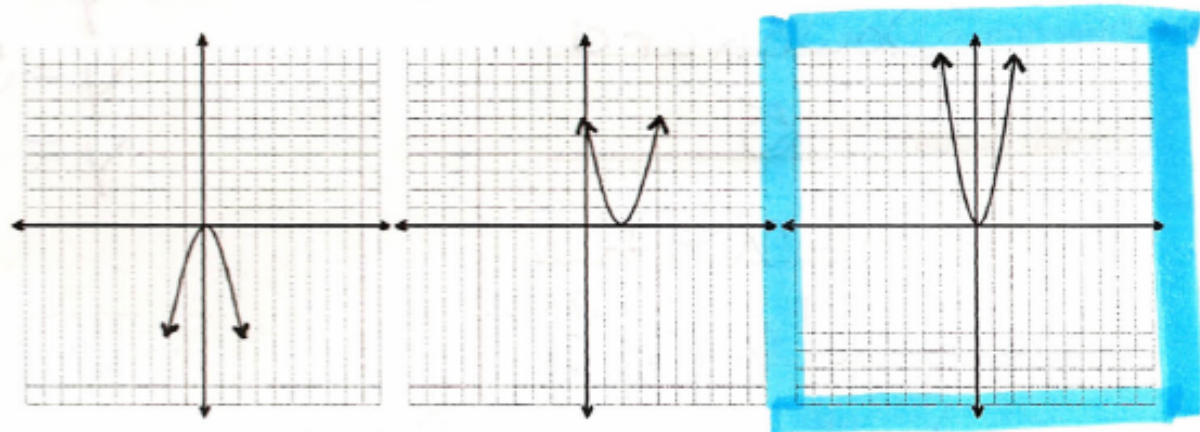
3. $y = a(x - h)^2 + k$

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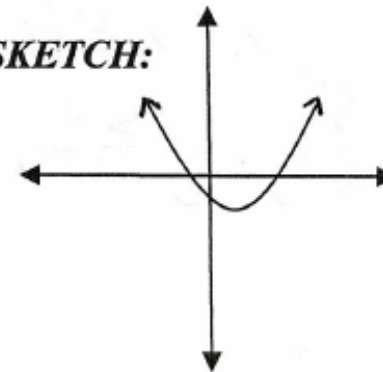
8. The parabola shown in the diagram has its x-intercepts at (-3, 0) and (11, 0). Which one of the following "could" be the vertex:

  SKETCH:

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

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

  Average of x-values :

  $\frac{-3+11}{2} = \frac{8}{2} = (4, ?)$

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?

<u>20</u> <u>6</u> Vertex °

Height Time

(6, 20)

$\frac{\downarrow}{T}$ $^{\searrow}H$

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?

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

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

$P=200m$

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)

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

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

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

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

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

11. What is the maximum height of the rocket?

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

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

* 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

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 $\{x\,|\,x \in R\}$

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

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

Vertex $(0,2)$

Direction Upward

Stretch Factor $1/3$

Axis of Symmetry $x=0$

Domain $\{x\,|\,x \in R\}$

Range $\{y\,|\,y \geq 2, y \in R\}$