8. Given: $f(x) = a(x-h)^2 + k$

a. What point is the vertex of the parabola?

(h, k)

b. What is the equation of the line of symmetry?

$x = h$

c. How can you tell if the parabola opens up or down?

+a = up -a = down

d. How do you identify the dilation?

a = big, narrow, fast
a = small, wide, stretch, slow

9. Does it matter in which order the transformations are done? Explain why or why not.

yes, you must 1st place the vertex
decide up or down,
then find dilation factor (a).

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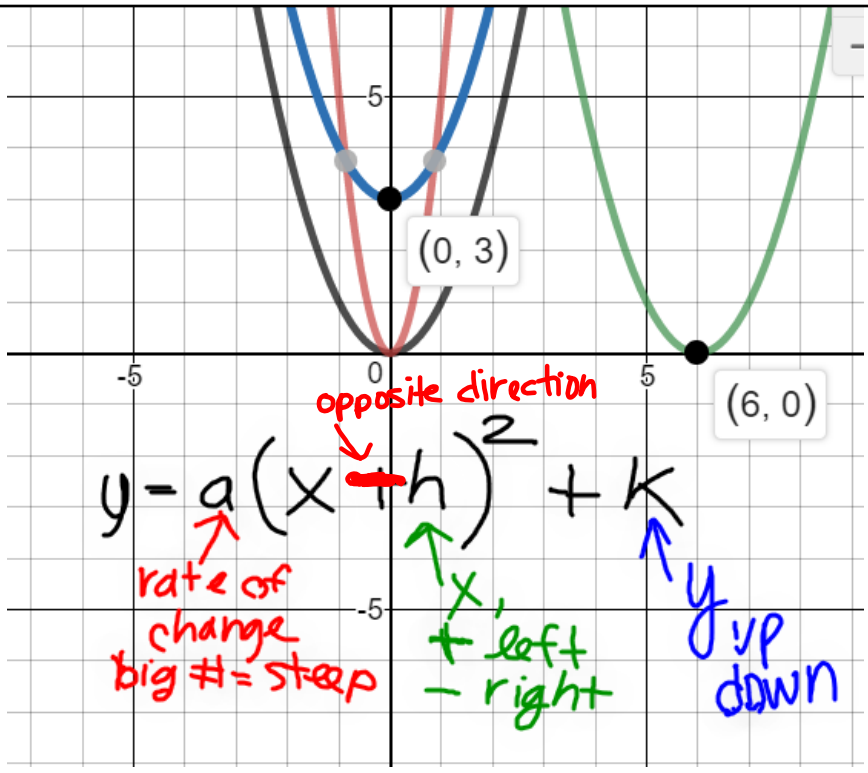

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factored = (x+_)(x+_)
vertex $y = a(x+h)^2 + k$

READY

Topic: Standard form of quadratic equations

The standard form of a quadratic equation is defined as $y = ax^2 + bx + c$, $(a \neq 0)$.

Identify a, b, and c in the following equations.

Example: Given $4x^2 + 7x - 6$, a = 4, b = 7, and c = -6

1. $y = 5x^2 + 3x + 6$

$a =$ 5
$b =$ 3
$c =$ 6

2. $y = x^2 - 7x + 3$

$a =$ 1
$b =$ -7
$c =$ 3

3. $y = -2x^2 + 3x + 0$

$a =$ -2
$b =$ 3
$c =$ 0

4. $y = 6x^2 - 5$

$a =$ _____
$b =$ _____
$c =$

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

$a =$ _____
$b =$ _____
$c =$

6. $y = 8x^2 - 5x - 2$

$a =$ _____
$b =$ _____
$c =$

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Multiply and write each product in the form $y = ax^2 + bx + c$. Then identify a, b, and c.

7. $y = x(x - 4)$

$a =$ _____
$b =$ _____
$c =$ _____

8. $y = (x - 1)(2x - 1)$

$a =$ _____
$b =$ _____
$c =$ _____

9. $y = (3x - 2)(3x + 2)$

$a =$ _____
$b =$ _____
$c =$ _____

F.O.I.L

10. $y = (x + 6)(x + 6)$

$a =$ _____
$b =$ _____
$c =$ _____

foil

11. $y = (x - 3)(x-3)$

$a =$ _____
$b =$ _____
$c =$ _____

12. $y = -(x + 5)^2$

$a =$ _____
$b =$ _____
$c =$ _____

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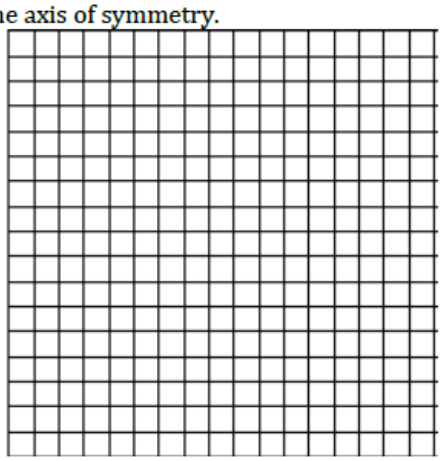
SET

Topic: Graphing a standard $y=x^2$ parabola

13. Graph the equation $y = x^2$.
Include at least 3 accurate points on each side of the axis of symmetry.



a. State the vertex of the parabola.

b. Complete the table of values for $y = x^2$.

x	$f(x)$
-3	
-2	
-1	
0	
1	
2	
3	

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Topic: Writing the equation of a transformed parabola in vertex form.

Find a value for ω such that the graph will have the specified number of x-intercepts.

14. $y = x^2 + \omega$
2 (x-intercepts)

15. $y = x^2 + \omega$
1 (x-intercept)

16. $y = x^2 + \omega$
no (x-intercepts)

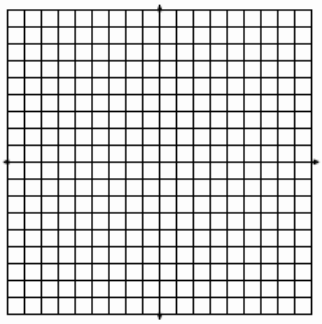
17. $y = -x^2 + \omega$
2 (x-intercepts)

18. $y = -x^2 + \omega$
1 (x-intercept)

19. $y = -x^2 + \omega$
no (x-intercepts)

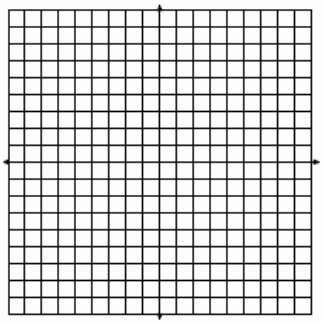
Graph the following equations. State the vertex.
(Be accurate with your key points and shape!)

20. $y = (x-1)^2$



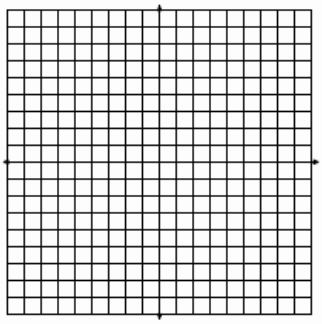
Vertex? _____

21. $y = (x-1)^2 + 1$



Vertex? _____

22. $y = 2(x-1)^2 + 1$



Vertex? _____

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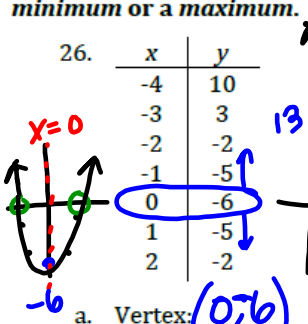
GO

Topic: Features of Parabolas

Use the table to identify the vertex, the equation for the axis of symmetry (AoS), and state the number of x-intercept(s) the parabola will have, if any. State whether the vertex will be a *minimum* or a *maximum*.



26.

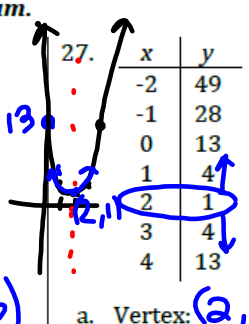
x	y
-4	10
-3	3
-2	-2
-1	-5
0	-6
1	-5
2	-2

a. Vertex: (0,-6)

b. AoS: x = 0

c. x-int(s): crosses twice

d. MIN or MAX



27.

x	y
-2	49
-1	28
0	13
1	4
2	1
3	4
4	13

a. Vertex: (2,1)

b. AoS: x = 2

c. x-int(s): 0 doesn't cross

d. MIN or MAX

28.

x	y
-7	-9
-6	3
-5	7
-4	3
-3	-9
-2	-29
-1	-57

a. Vertex: _____

b. AoS: _____

c. x-int(s): _____

d. MIN or MAX

29.

x	y
-8	-9
-7	-8
-6	-9
-5	-12
-4	-17
-3	-24
-2	-33

a. Vertex: _____

b. AoS: x

c. x-int(s): _____

d. MIN or MAX

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