Name: _____ Date: _____ #59 All Transformations

For each quadratic below, tell how the parent function $f(x) = x^2$ has been transformed.

1. $y = 2(x-1)^2 + 3$; right 1, up 3, & vertically stretched
2. $y = -3(x-6)^2 + 9$; up 9, right 6, vertical stretch, reflect over x
3. $y = -\frac{1}{2}(x-3)^2 + 6$ reflect over x, vertically compress, right 3, up 6
4. $y = 2(x+1)^2 - 3$ vertical stretch, left 1, down 3
5. $y = -3(x-14)^2 + 4$ reflect over x, vertical stretch, right 14, up 4
6. $y = -\frac{1}{2}x^2 + 7$ reflect over x, vertically compress, up 7

Write the equation that would produce the following verbal descriptions of a transformed absolute value. |x|

7. Stretched vertically by a factor of 8 translated 7 unit right and 2 units up.

$8|x-7|+2$

$f(x) = 8|x-7|+2$

8. Compressed vertically by a factor of 1/3 reflected over the x axis and moved 2 units left

$-\frac{1}{3}|x+2|$

$f(x) = -\frac{1}{3}|x+2|$

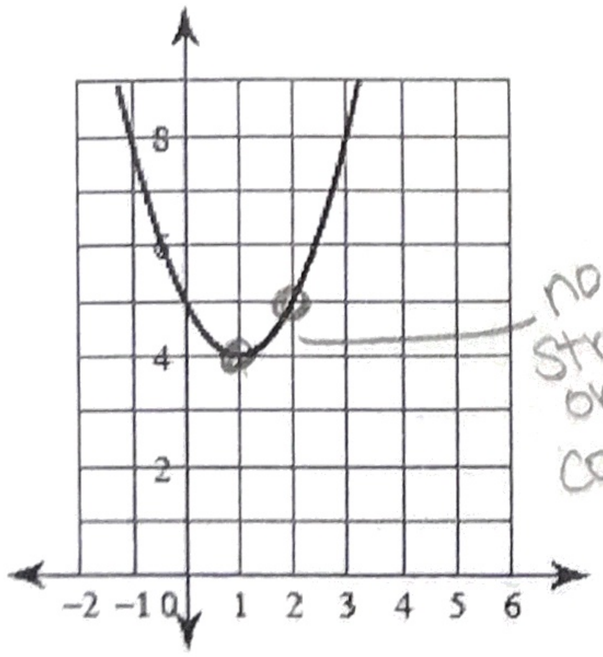
9. Reflected over the x axis and moved 3 units down.

$-|x|-3$

$f(x) = -|x|-3$

Describe how each graph is a transformation of $y = x^2$. (Bonus: write the equation)

10.

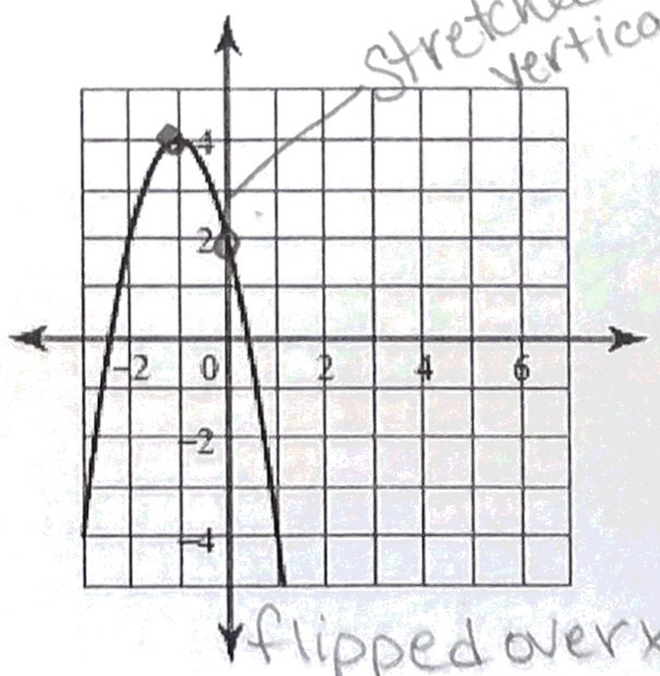


no stretch or comp.

moved right 1
up 4

$f(x) = (x-1)^2 + 4$

11.

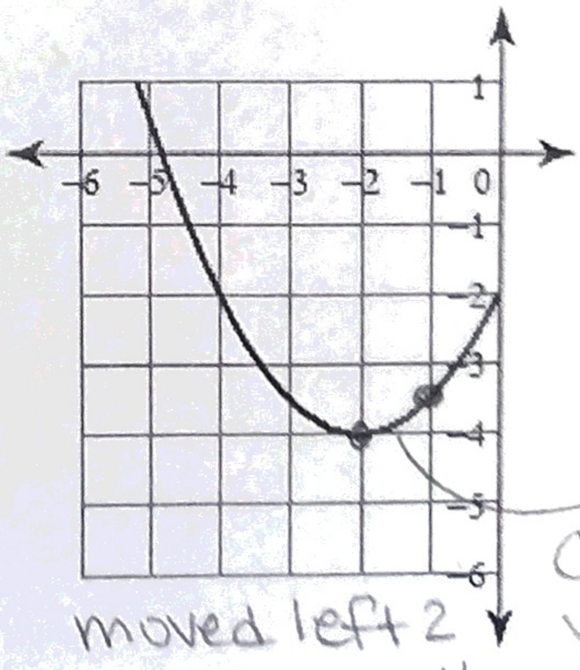


stretched vertical

flipped over x
moved left 1
up 4

$f(x) = -2(x+1)^2 + 4$

12.



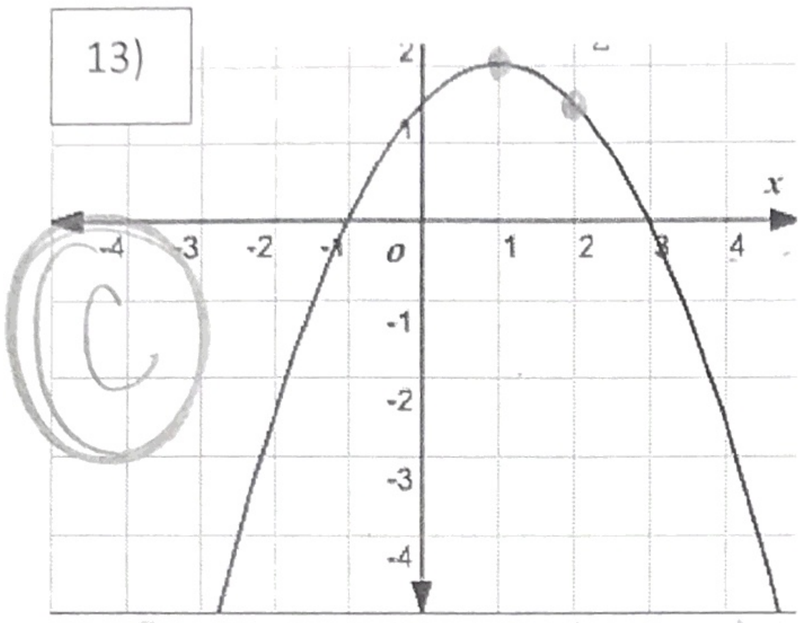
compress vertical

moved left 2
down 4

$f(x) = \frac{1}{2}(x+2)^2 - 4$

Match the graph to the equation. Not all equations will be used.

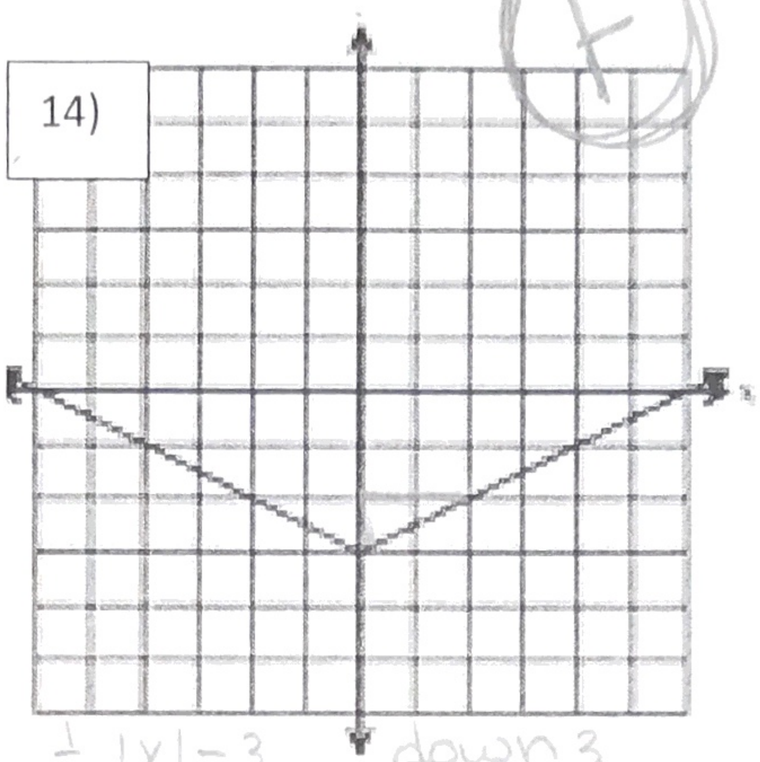
13)



C

Quad flip over x
right 1
up 2
vert. comp.
$-\frac{1}{2}(x-1)^2+2$

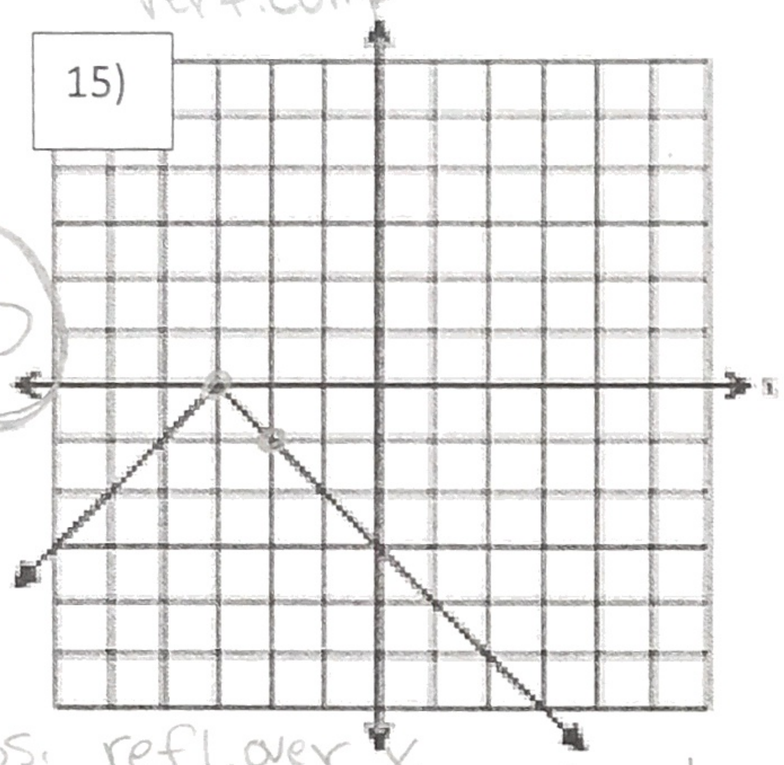
14)



F

$\frac{1}{2}|x|-3$
down 3
Abs. Val vert compr.

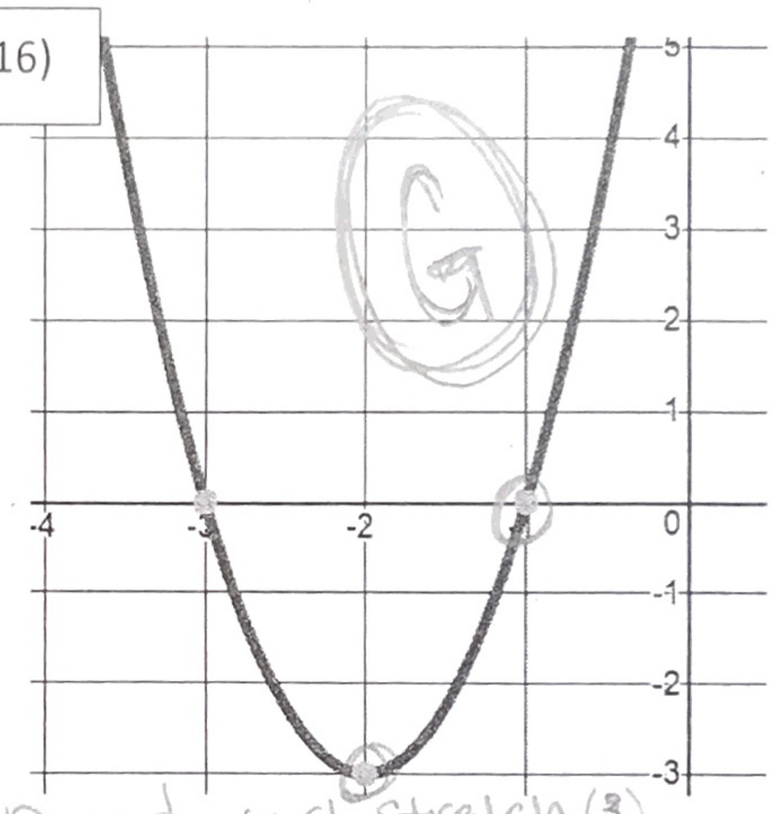
15)



B

Abs. refl. over x
val. left 3
$-|x+3|$

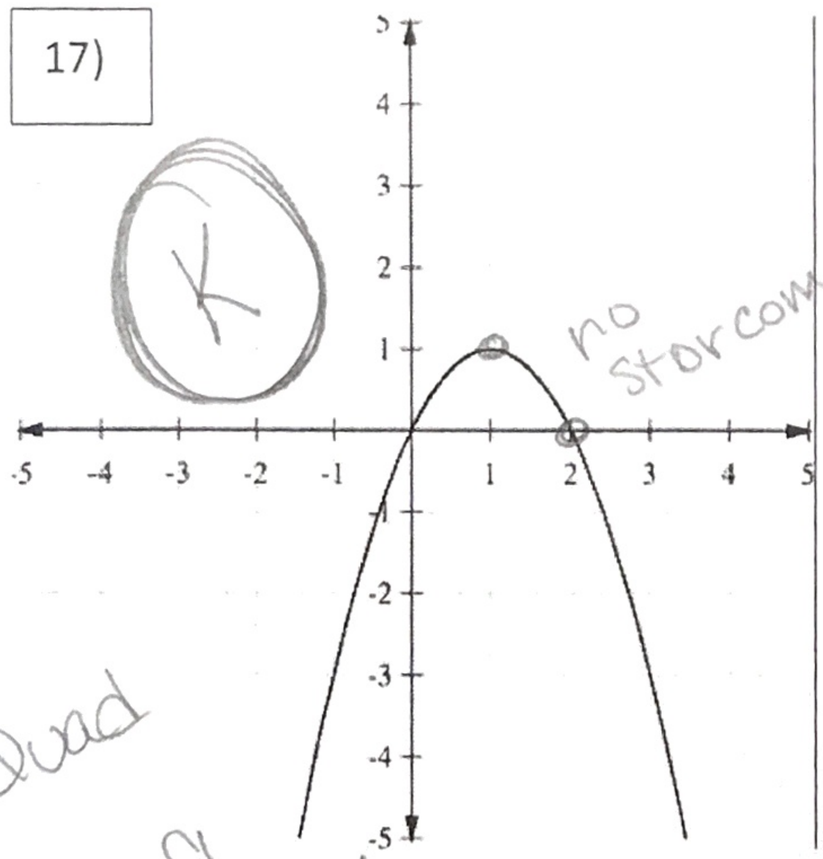
16)



G

Quad vert. stretch (3)
left 2 down 3
$3(x+2)^2-3$

17)

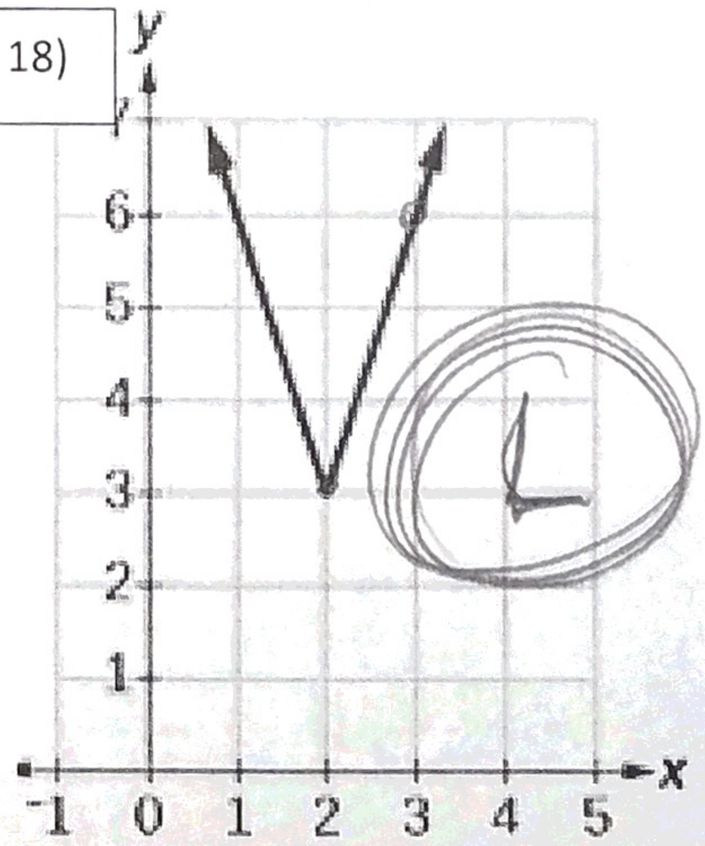


K

Quad
refl. over x
right 1
up 1
$-(x-1)^2+1$

no vert comp.

18)



L

Abs. Value
vertical stretch (3)
right 2 up 3
$3|x-2|+3$

A) $f(x) = (x-2)^2 - 3$

B) $f(x) = -|x+3|$

C) $f(x) = -\frac{1}{2}(x-1)^2 + 2$

D) $f(x) = 2|x| - 3$

E) $f(x) = \frac{1}{2}(x+1)^2 + 2$

F) $f(x) = \frac{1}{2}|x| - 3$

G) $f(x) = 3(x+2)^2 - 3$

H) $f(x) = -|x-3|$

I) $f(x) = -(x-1)^2 + 1$

J) $f(x) = -\frac{1}{2}|x-1| + 2$

K) $f(x) = -(x+1)^2 + 1$

L) $f(x) = 3|x-2| + 3$