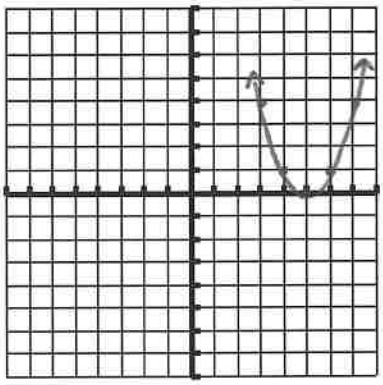
Algebra 1 **8.1 Quadratics & Translations** **Name** Key

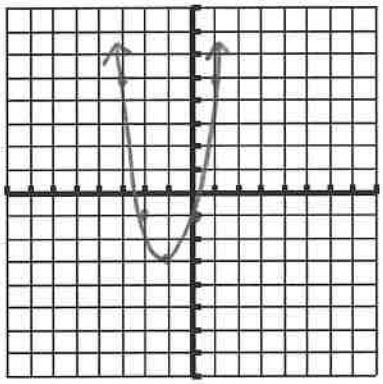
Make a sketch of each parabola. Then state the domain, range, vertex and axis of symmetry.

1) $y=(x-5)^2$



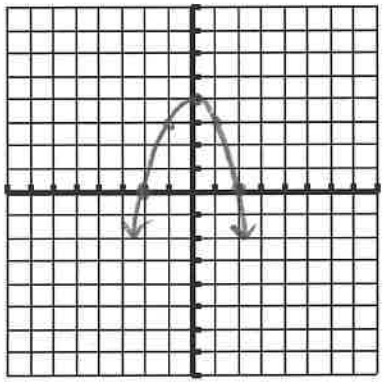
Domain: $x\in(-\infty,\infty)$ Range: $y\in[0,\infty)$
Vertex: $(5,0)$ AOS: $x=5$

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



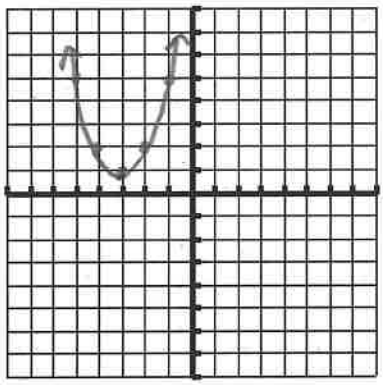
Domain: $x\in(-\infty,\infty)$ Range: $y\in[-3,\infty)$
Vertex: $(1,-3)$ AOS: $x=1$

3) $y=-x^2+4$



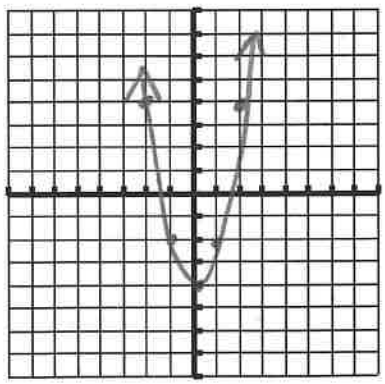
Domain: $x\in(-\infty,\infty)$ Range: $y\in(-\infty,4]$
Vertex: $(0,4)$ AOS: $x=0$

4) $y=(x+3)^2+1$



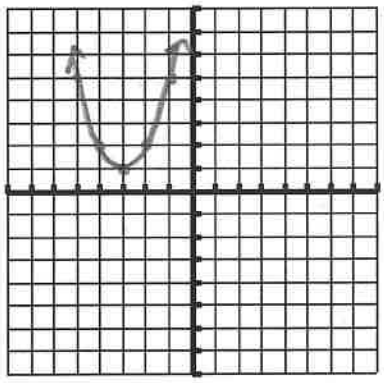
Domain: $x\in(-\infty,\infty)$ Range: $y\in[1,\infty)$
Vertex: $(-3,1)$ AOS: $x=-3$

5) $y=2x^2-4$



Domain: $x\in(-\infty,\infty)$ Range: $y\in[-4,\infty)$
Vertex: $(0,-4)$ AOS: $x=0$

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



Domain: $x\in(-\infty,\infty)$ Range: $y\in[1,\infty)$
Vertex: $(-3,1)$ AOS: $x=-3$

Describe the transformation from parent function, $f(x) = x^2$.

7. $y = (x-2)^2 + 8$ Right 2, up 8

8. $y = -(x+1)^2 + 4$ Reflected over x axis, left 1, up 4

9. $y = 3(x-2)^2 - 5$ Vertical dilation of 3, right 2, down 5

Each parabola described is the parent function $f(x) = x^2$. Write the equation for each parabola.

10. The parabola $g(x)$ is translated left 3 units and up 9 units. $y = (x+3)^2 + 9$

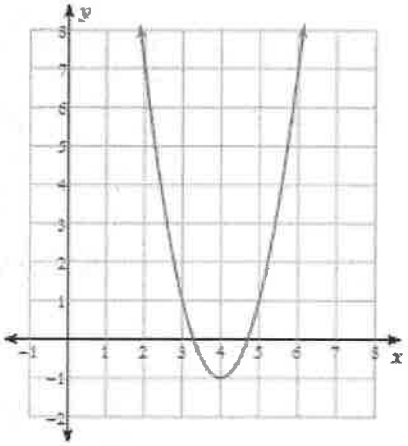
11. The parabola $h(x)$ is reflected over the x-axis and translated right 8 units. $y = -(x-8)^2$

12. The parabola $k(x)$ is vertically dilated by 4, translated right 7 units, and up 2 units.

$y = 4(x-7)^2 + 2$

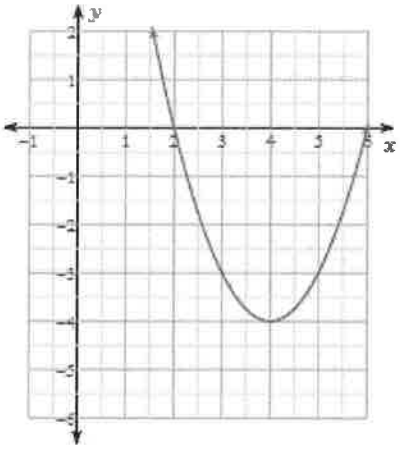
Write the equation of the transformed quadratics.

13.



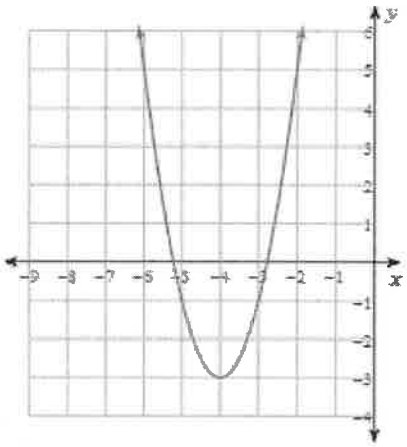
$y = 2(x-4)^2 - 1$

14.



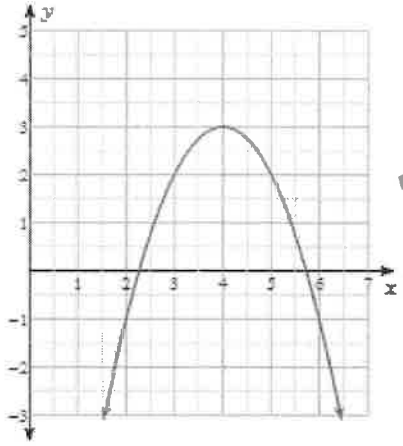
$y = (x-4)^2 - 4$

15.



$y = 2(x+4)^2 - 3$

16.



$y = -(x-4)^2 + 3$