

Name _____ Date _____ Period _____

WORKSHEET: Using Transformations to Graph Quadratic Functions

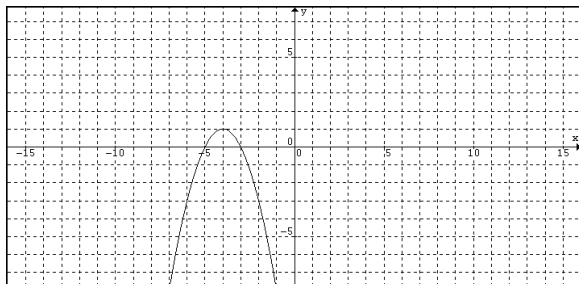
Describe the following transformations on the function $y = x^2$.

1. $y = -(x - 2)^2$	2. $y = (x + 3)^2 - 1$
3. $y = 3x^2 + 1$	4. $y = -2x^2$
5. $y = -x^2 - 5$	6. $y = 3(x + 1)^2$
7. $y = \frac{1}{3}(x + 2)^2 + 3$	8. $y = -\frac{1}{2}(x - 1)^2 + 3$
9. $y = (x + 3)^2$	10. $y = -(x - 1)^2 + 4$

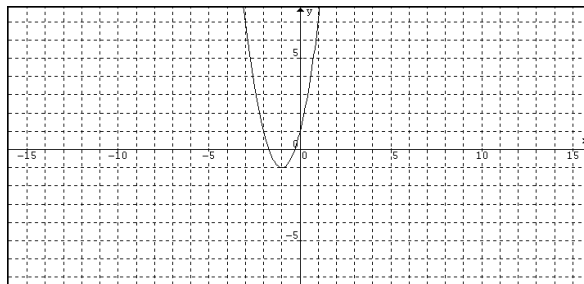
Write the equation for the function $y = x^2$ with the following transformations.

11. reflect across the x-axis, shift down 1	12. vertically stretch by a factor of 3, shift right 5 and up 1
13. shift up 5	14. reflect across the x-axis, shift down 8
14. reflect across the x-axis and vertically compress by a factor of $\frac{1}{2}$	16. vertically stretch by a factor of 4, shift left 3 and down 2

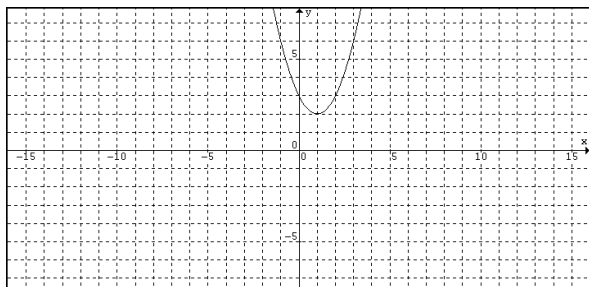
17.



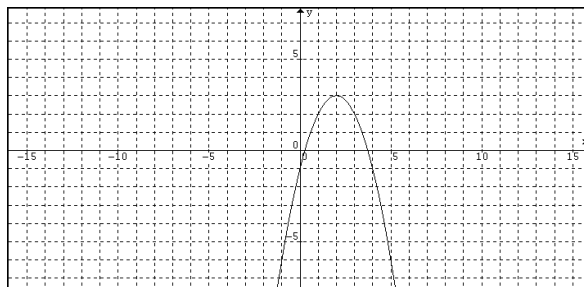
18.



19.



20.



21. If you wanted to shift $y = -3(x - 2)^2 + 1$ down 4 and left 5, what would be the new equation?

22. If you wanted to shift $y = x^2 + 3$ left 2 and up 5, what would be the new equation?

23. If you wanted to shift $y = (x + 4)^2$ down 3 and right 2, what would be the new equation?

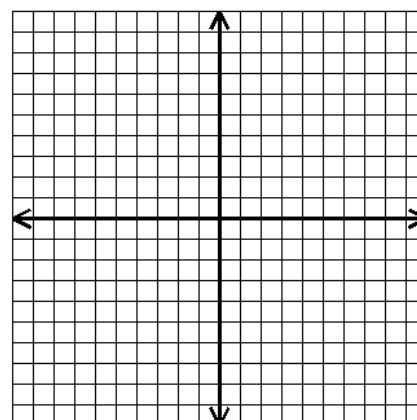
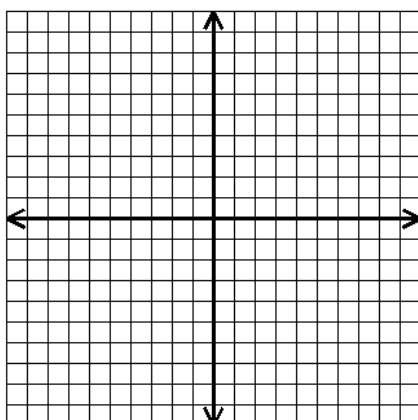
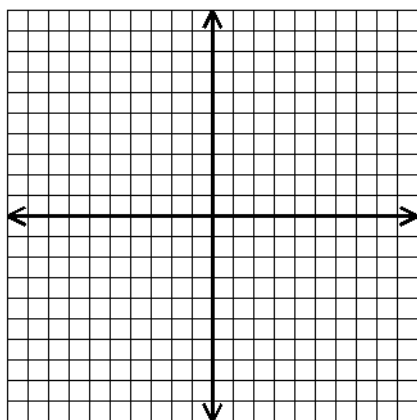
24. If you wanted to shift $y = -x^2$ right 3 and up 5, what would be the new equation?

Use transformations to graph each quadratic function.

25. $f(x) = 2(x - 2)^2$

26. $g(x) = -(x + 4)^2 + 1$

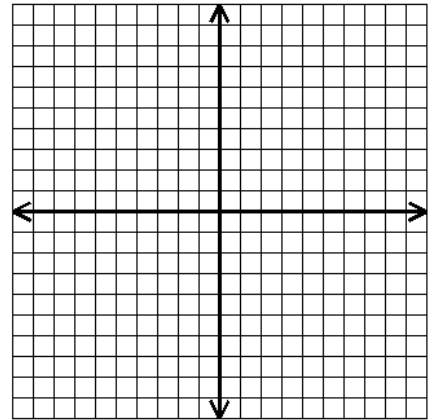
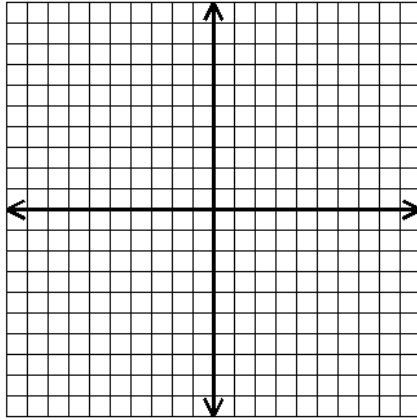
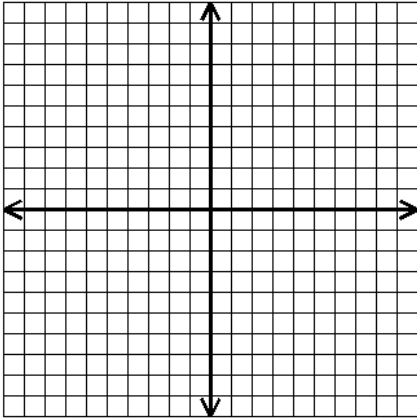
27. $f(x) = \frac{1}{2}x^2 + 3$



28. $f(x) = 2(x - 1)^2$

29. $h(x) = (x + 3)^2 - 4$

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



Factor.

31. $3x^2 - 18$

32. $12x^2 + 5x - 2$

33. $15x^2 + 5x$

34. $x^2 + 4x - 21$

35. $6x^2 - x - 1$

36. $x^2 + x - 30$