

Describe the translation in each function as it relates to its parent graph. Then graph the function.

8. $y = x^2 + 4$ Up 4 units
 9. $y = |x| - 3$ Down 3 units
 10. $y = x - 1$ Down 1 unit
 11. $y = x + 2$ Up 2 units
 12. $y = (x - 5)^2$ Right 5 units
 13. $y = |x + 6|$ Left 6 units

Describe the reflection in each function as it relates to its parent graph. Then graph the function.

14. $y = -x$
 15. $y = -x^2$
 16. $y = (-x)^2$
 17. $y = |-x|$
 18. $y = -|x|$
 19. $y = (-x)$

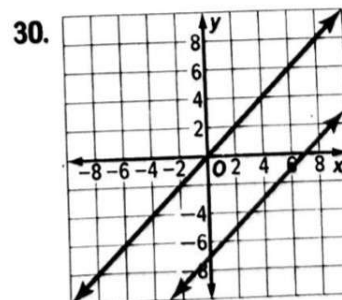
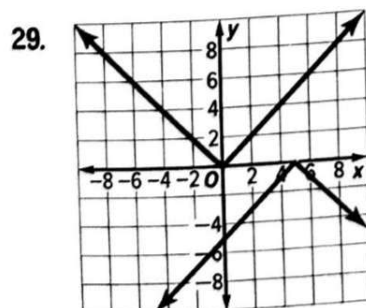
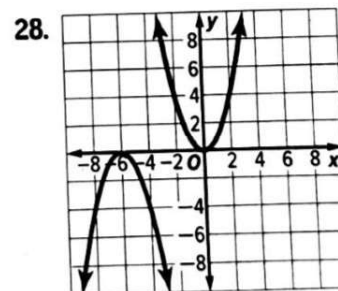
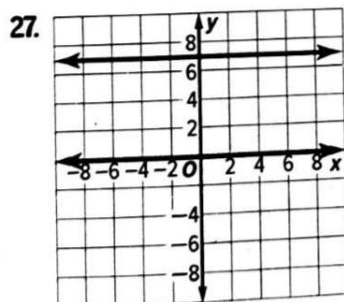
Describe the dilation in each function as it relates to its parent graph. Then graph the function.

20. $y = (3x)^2$
 21. $y = 6x$
 22. $y = 4|x|$ Narrower
 23. $y = |2x|$
 24. $y = \frac{2}{3}x$ Wider
 25. $y = \frac{1}{2}x^2$

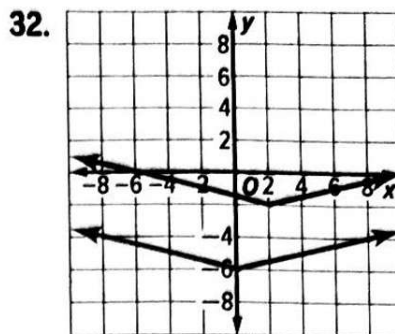
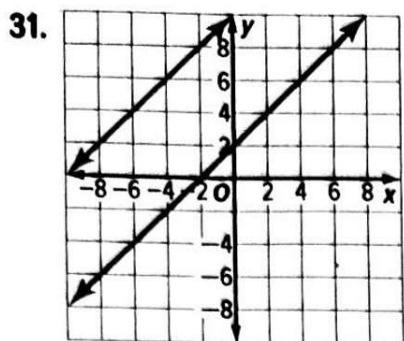
26. **MP SENSE-MAKING** A non-impact workout can burn up to 7.5 Calories per minute. The equation to represent how many Calories a person burns after m minutes of the workout is $C(m) = 7.5m$.

- a. Identify the transformation in the function.
 b. Graph the function.

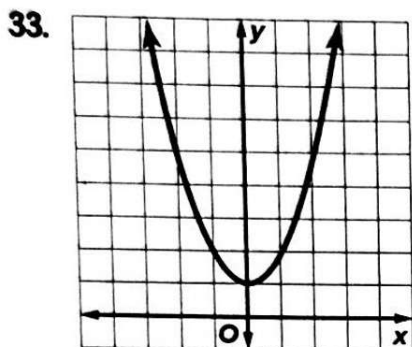
Describe the transformation in the graph of the function in green as it relates to its parent graph in blue.



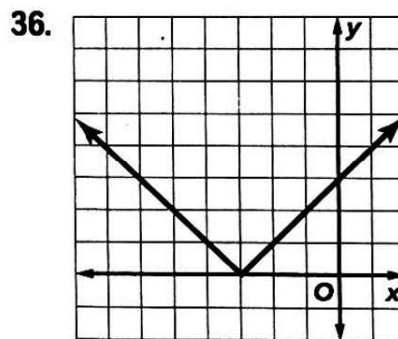
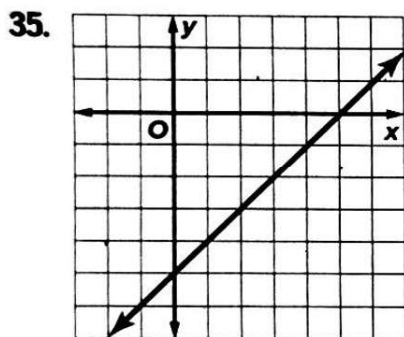
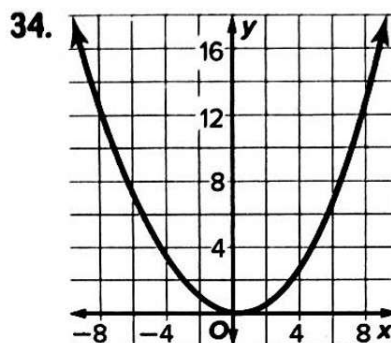
Describe the translation in the graph of the function in green as it relates to the graph of the function in blue.



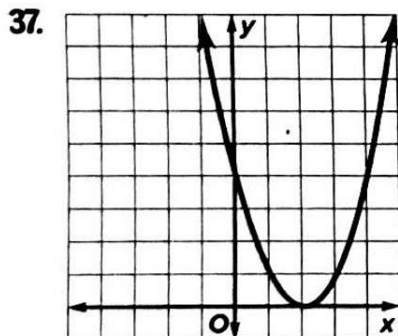
Use the transformation of a parent graph to write an equation for the function represented by each graph.



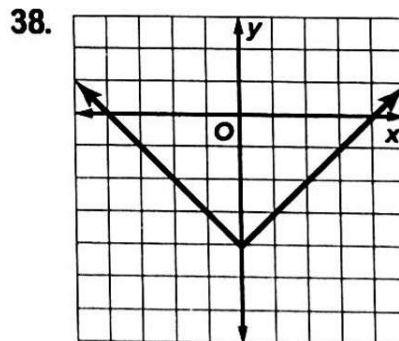
$$y = x^2 + 1$$



$$y = |x + 3|$$



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



MP TOOLS Use a calculator to find the maximum or minimum of each function. Round to the nearest hundredth if necessary.

43. $f(x) = -9x^2 - 12x + 19$

45. $f(x) = -8.3x^2 + 14x - 6$

47. $f(x) = 28x - 15 - 18x^2$

44. $f(x) = 12x^2 - 21x + 8$

46. $f(x) = 9.7x^2 - 13x - 9$

48. $f(x) = -16 - 14x - 12x^2$

maximum because Quadratic
aiming down
 $(-0.667, 23)$

minimum because Quadratic
aiming up
 $(0.875, -1.188)$