Name_____Date_____Class Period_____

3-7 Practice Transformations of Linear Functions

1. **Writing** Identify the three types of transformations.

2. What is the difference between a slope change and a translation?

Describe the transformation that maps *f(x)* to *g(x).*

3. $f(x) = x,\ g(x) = -x$

4. $f(x) = x,\ g(x) = x + 7$

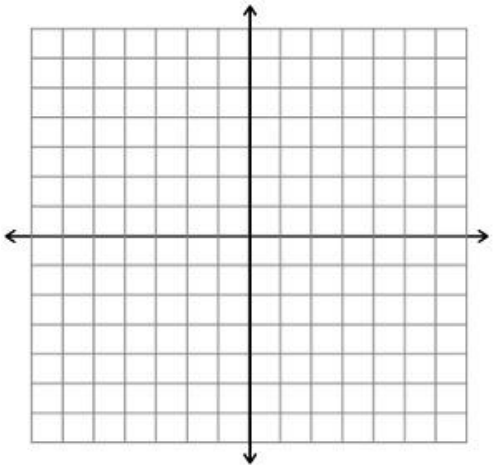
5. $f(x) = 2x - 3,\ g(x) = 6(2x - 3)$

6. $f(x) = 10x + 1,\ g(x) = 10x + 4$

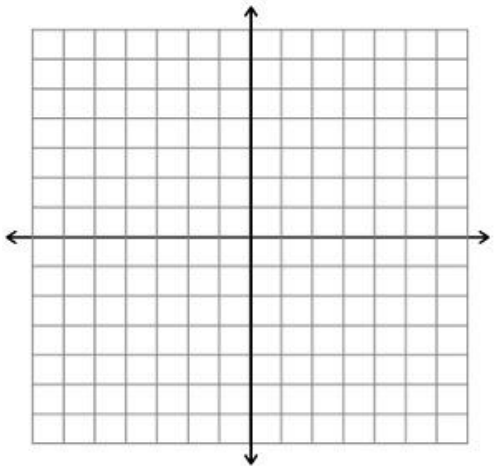
Given $f(x) = 2x + 1.$

Graph the indicated transformation. (Graph both lines on the same grid).

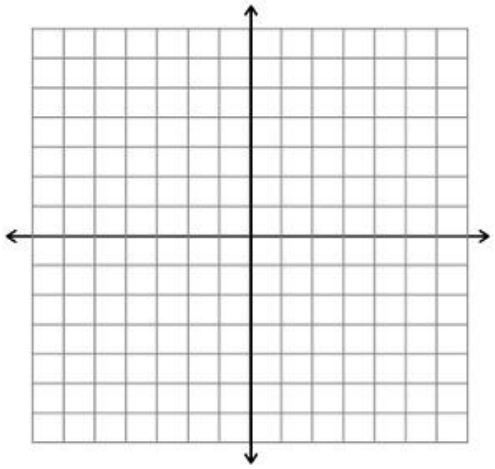
7. $f(x) + 3$



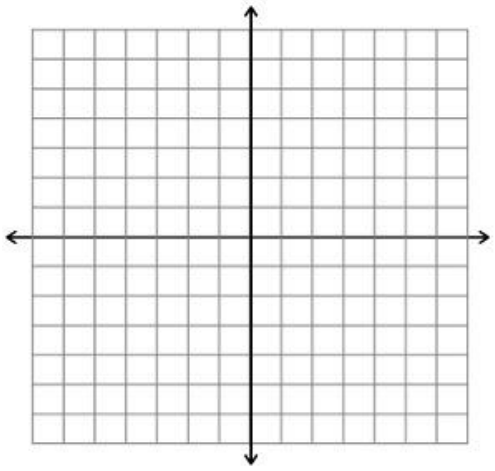
8. $\mathbf{2}f(x)$



9. $f(x) - 2$

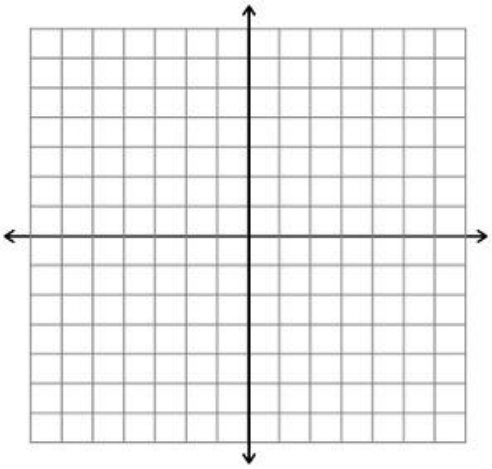


10. $-f(x)$

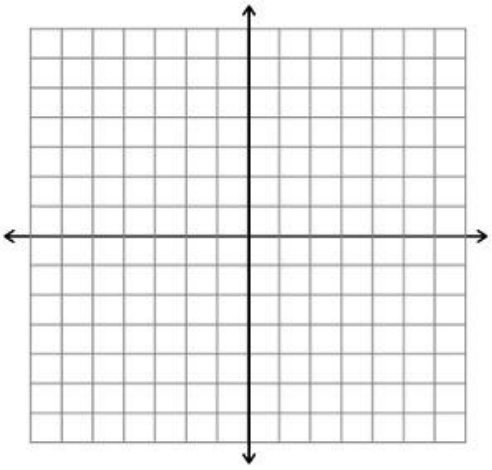


Determine the effects on the graph of the parent function, $f(x) = x$, for each g(x) function. Graph both functions on the same coordinate grid.

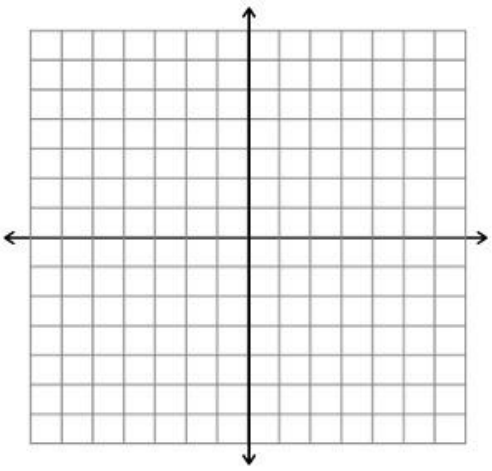
11. $g(x) = f(x) - 1$



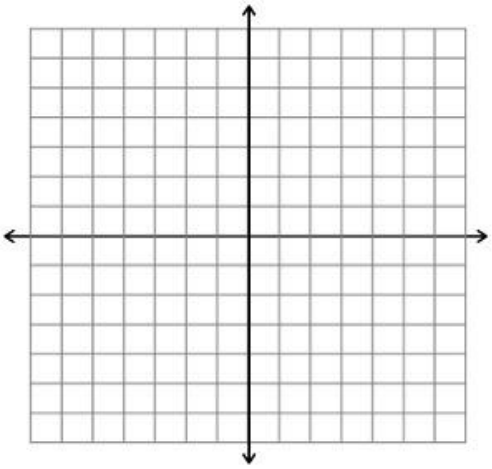
12. $g(x) = f(x) + 3$



13. $g(x) = -f(x)$



14. $g(x) = \frac{1}{3}f(x)$



15. A car rental store rents cars for $20 a day. The function f(x) = 20x represents the daily rental fee for x days. The company decides to add a one-time $10 fee for cleaning. Write the function g(x), which gives the new cost per day, as a transformation of f(x). How would the graph of g(x) compare to that of f(x)?

16. Multiple Representations The graph shows the function $f(x)$. Write an equation for $g(x)$ that would translate the graph vertically. Then write an equation for $h(x)$ that would change the steepness of the graph. Explain your reasoning.