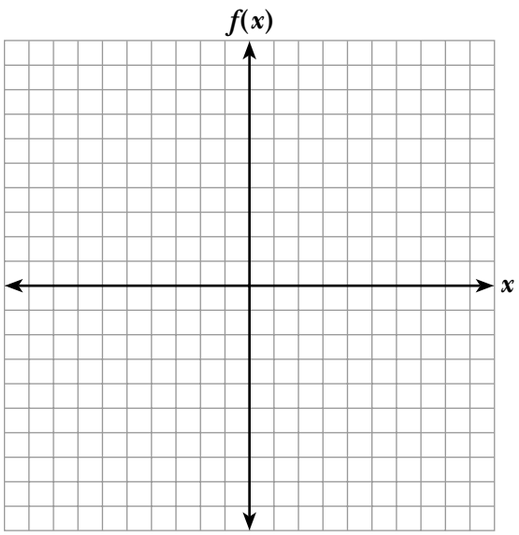
NAME _____ DATE _____

Module 9 Using Functions
Lesson 4 Graphing Functions

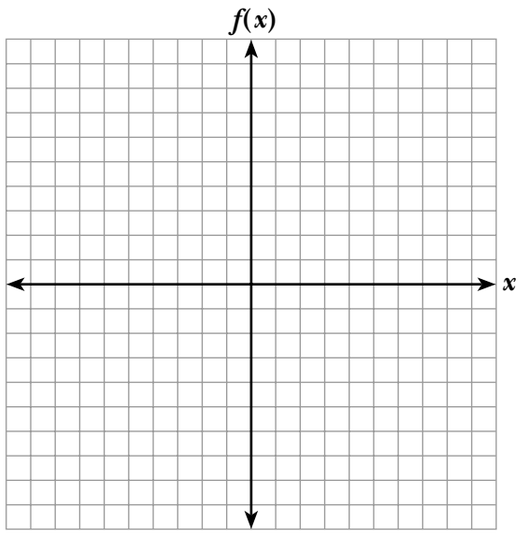
independent practice

Graph each linear function.

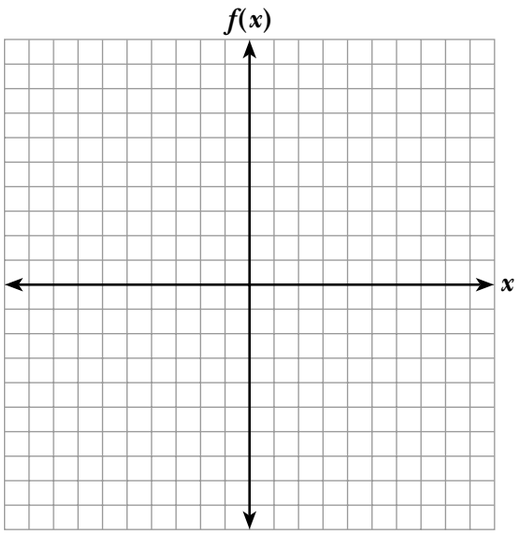
1. $f(x) = -3x$



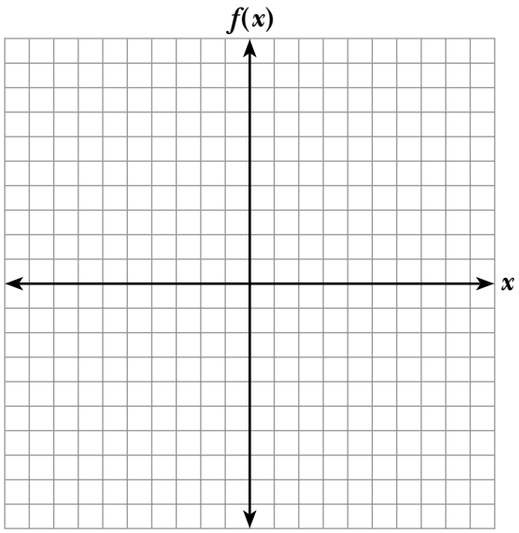
2. $f(x) = -2x$



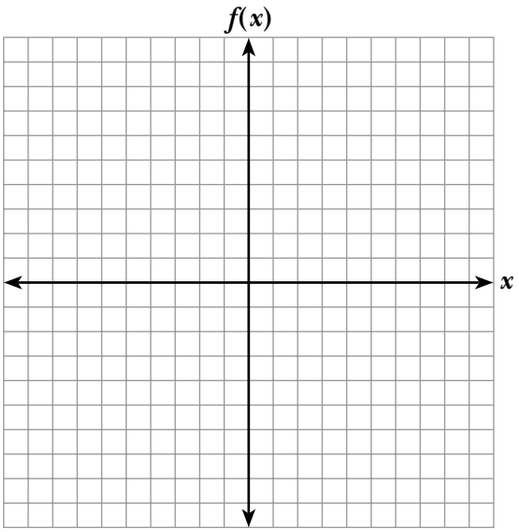
3. $f(x) = \frac{1}{4}x$



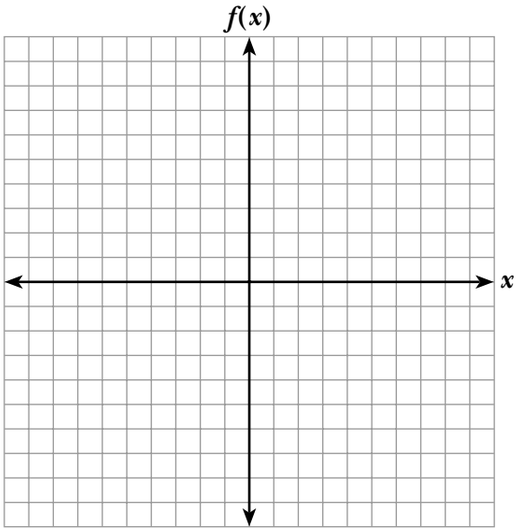
4. $f(x) = -\frac{2}{5}x$



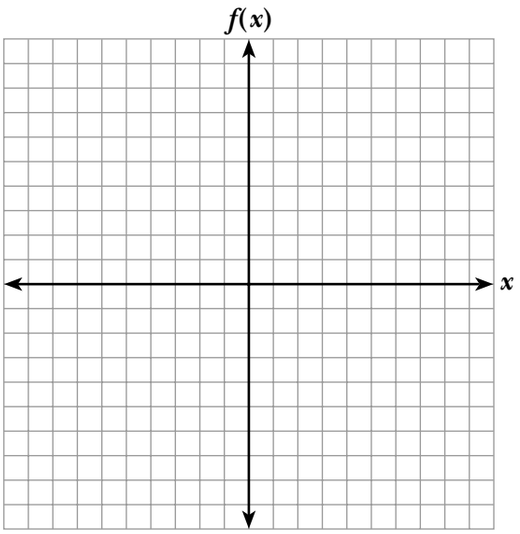
5. $f(x) = 3x - 5$



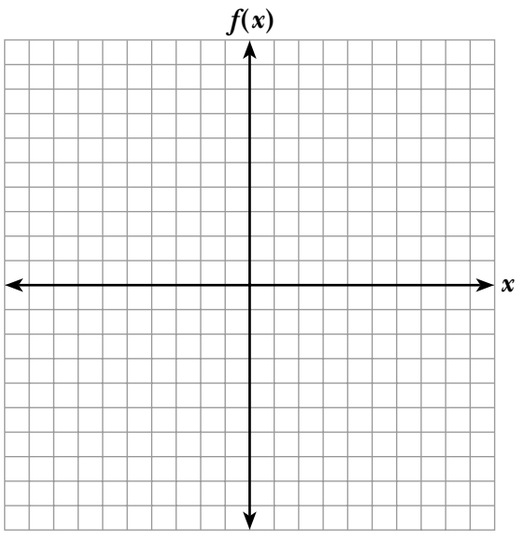
6. $f(x) = -2x + 4$



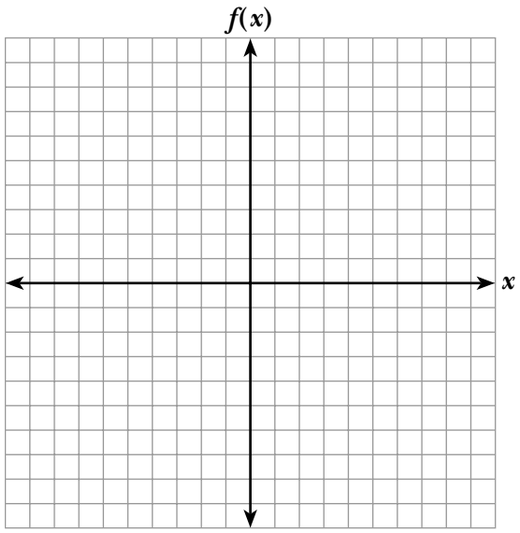
7. $f(x) = 1$



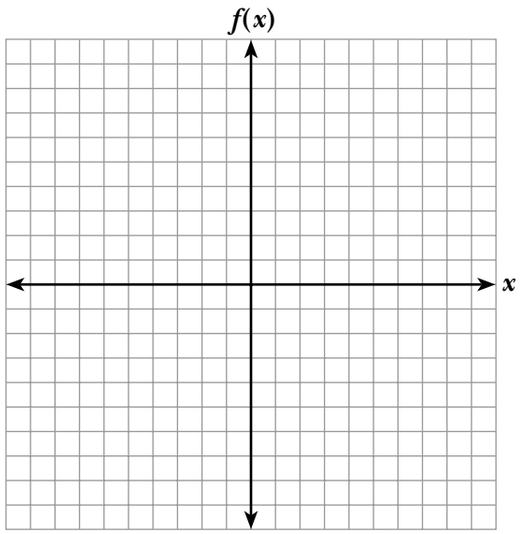
8. $f(x) = -5$



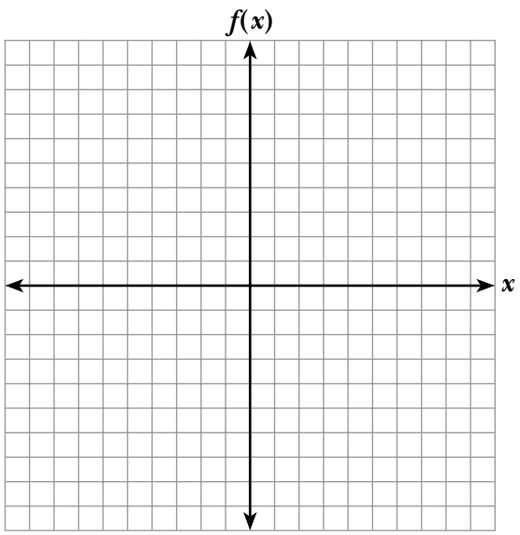
9. $f(x) = |x + 3|$



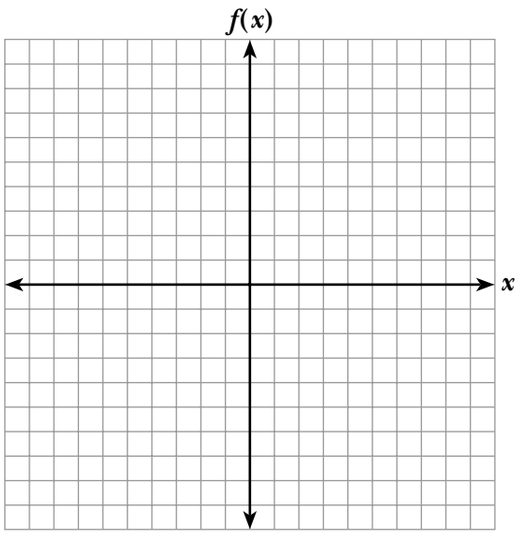
10. $f(x) = |x - 2|$



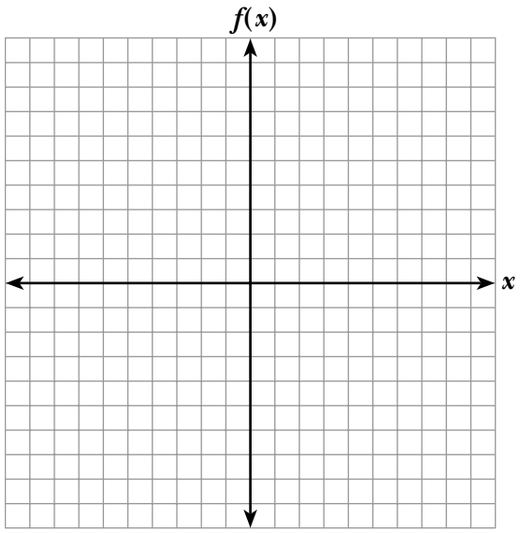
11. $f(x) = |x| + 3$



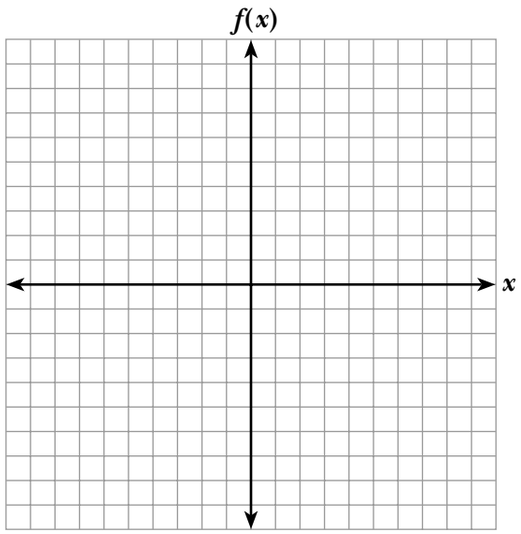
12. $f(x) = |x| - 6$



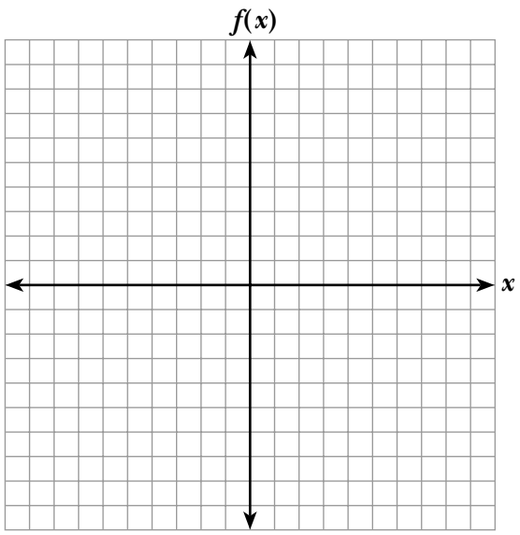
13. $f(x) = |x - 3| - 2$



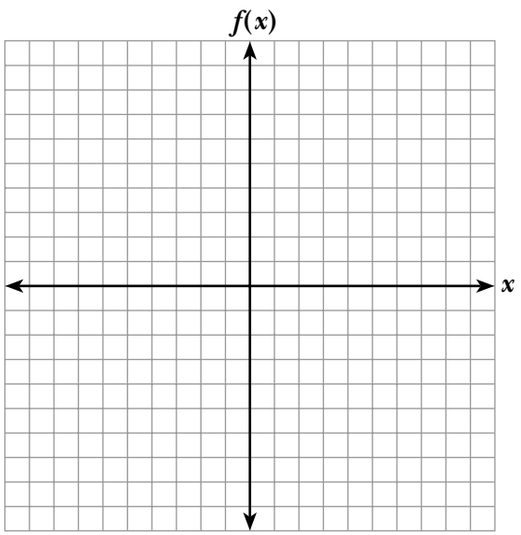
14. $f(x) = |x + 4| + 1$



15. $f(x) = \begin{cases} 2x, & x < 0 \\ 4x, & x \geq 0 \end{cases}$

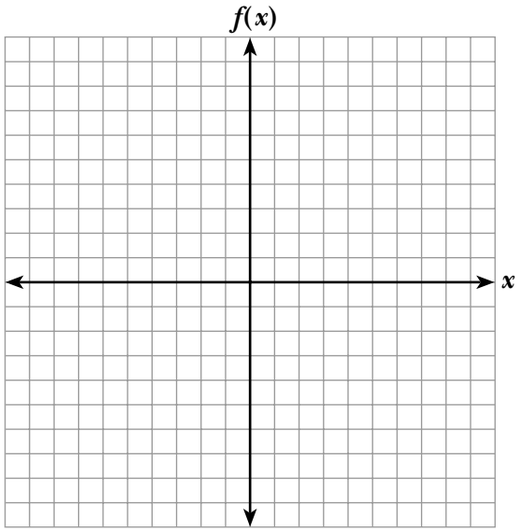


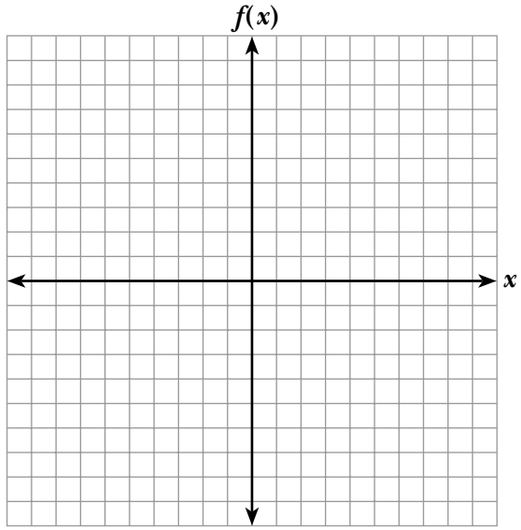
16. $f(x) = \begin{cases} x, & x \leq 2 \\ 8 - 3x, & x > 2 \end{cases}$



17. $f(x) = \begin{cases} -1, x \leq -1 \\ -x - 2, -1 < x < 5 \\ -2x + 3, x \geq 5 \end{cases}$

18. $f(x) = \begin{cases} \frac{3}{2}x + 3, x \leq -2 \\ 0, -2 < x < 2 \\ x - 2, x \geq 2 \end{cases}$





Journal

1. What is the equation of a graph formed by translating the parent graph of the function $f(x) = |x|$ up a units and to the right b units? Explain.
2. Explain how to use the graph of $f(x)$ to find $f(a)$, if a is a constant.
3. Graph the piecewise function $f(x) = \begin{cases} -3x, x < 2 \\ x - 8, x \geq 2 \end{cases}$. What is the domain of the function? What is the range? How does the equation show the domain and range? How does the graph show the domain and range?
4. Graph the functions $f(x) = |x|$ and $g(x) = 2|x|$. Compare and contrast the graphs. Predict what the graph of $h(x) = 4|x|$ would look like.
5. Define a piecewise function in your own words. Describe the notation used to write the equation of a piecewise function.

Cumulative Review

Use the ordered pairs to write a linear function. Then, use the function to find the given value.

1. (0, 10) and (3, 25); $f(5)$

2. (0, 200) and (7, 1600); $f(4)$

3. (0, 112) and (9, 148); $f(20)$

4. (0, 62.5) and (5, 37.5); $f(10)$

5. (40, –360) and (70, –120); $f(0)$

6. (120, –400) and (180, –500); $f(270)$

Solve.

7. $|x + 2| = -5$

8. $|x - 5| = 3$

9. $2|x - 6| = 14$

10. $|x + 10| \geq 8$