

Name:

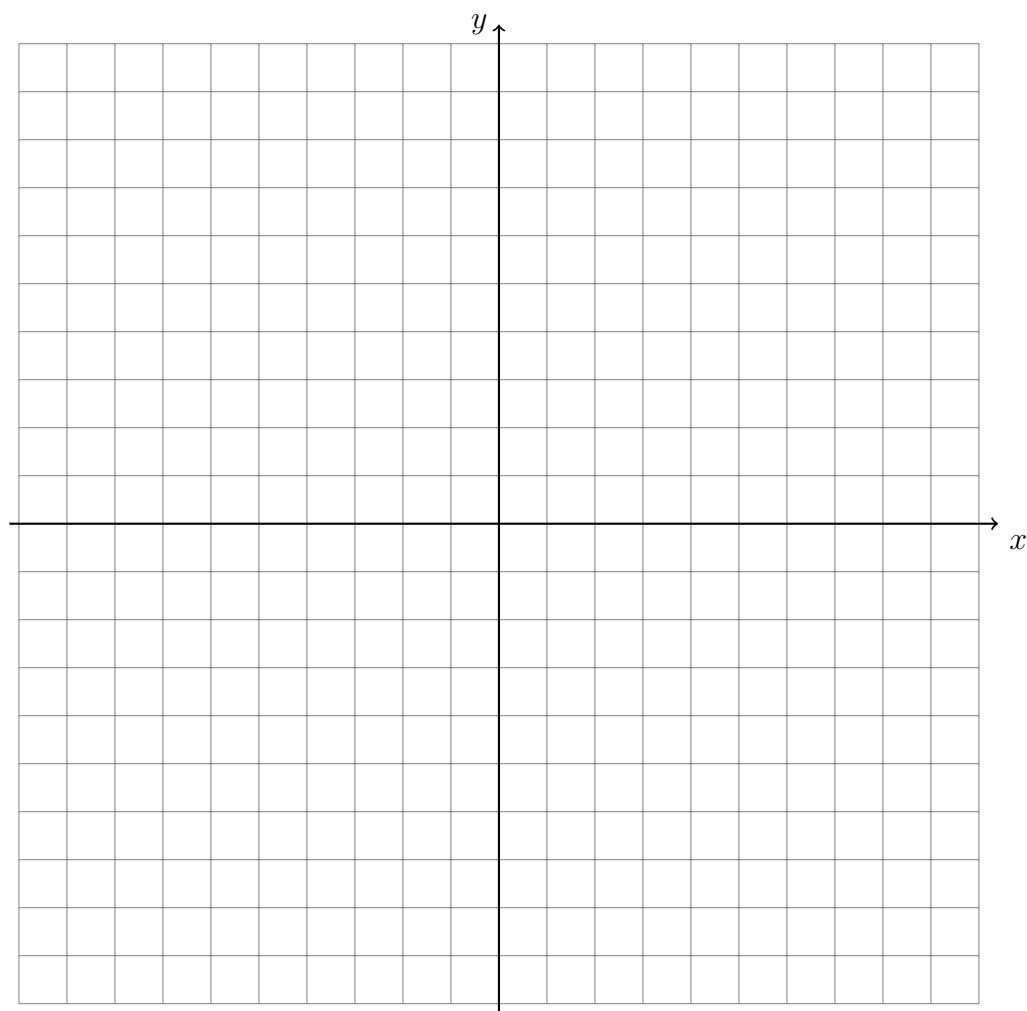
**7-7 Test: Linear & quadratic functions on the coordinate plane**

1. Graph and label the two equations. Mark their intersection as an ordered pair.

$$y = \frac{2}{3}x - 5$$

$$3x + 2y = 16$$

Are the lines parallel, perpendicular, or neither? Justify your answer.



2. Find the decimal value of each expression, rounded to the nearest hundredth.

(a)  $5\sqrt{7}$

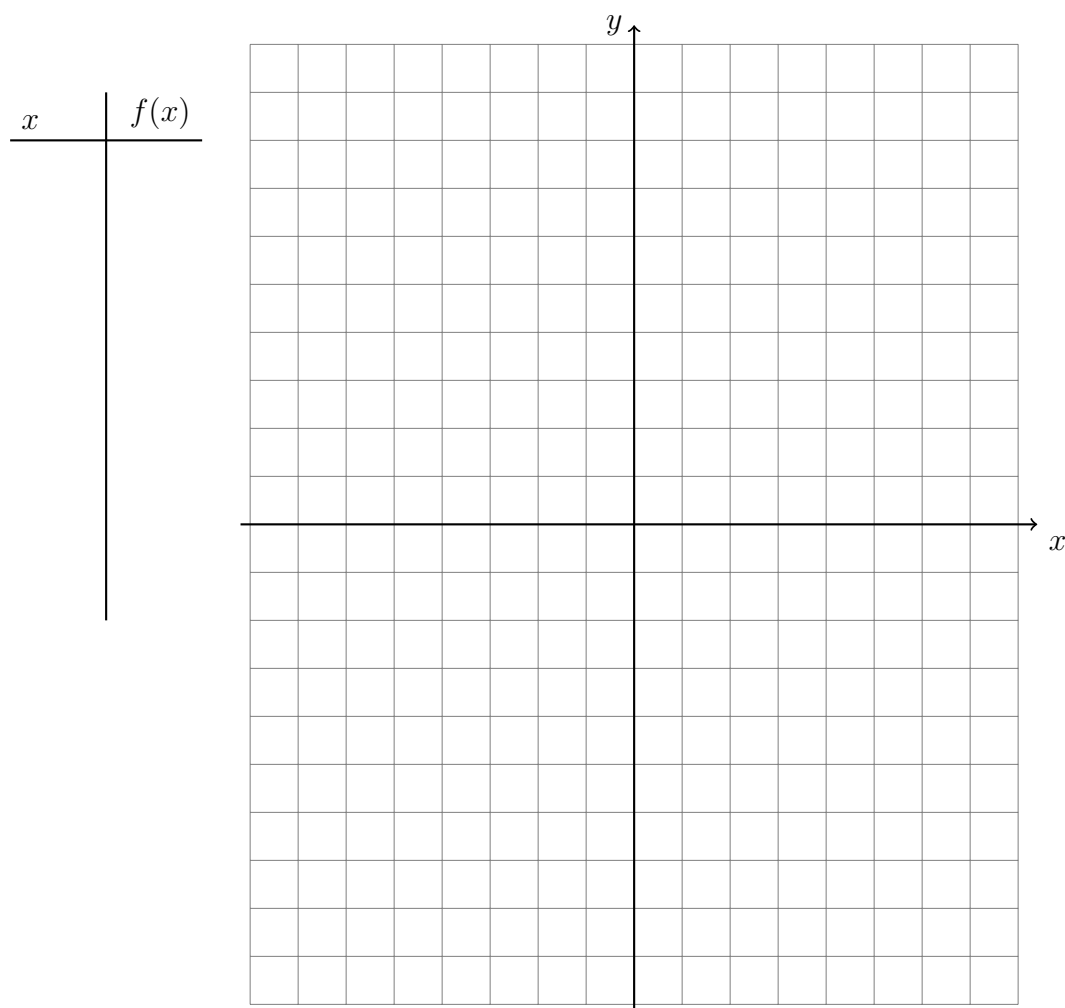
(c)  $4 - \sqrt{7}$

(b)  $\frac{4^2}{17}$

(d)  $7\pi$

3. Complete the t-chart for  $x = 2, 3, 4, 5, 6, 7$ , then graph and label the function on the grid below. Use pencil for graphs. Draw parabolas as smooth curves.

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



- (a) Mark the vertex on the graph as an ordered pair.
- (b) Write down the equation for the axis of symmetry.
- (c) The function is translated two units to the left and three units down,  $f \rightarrow g$ . What is the equation of  $g$ ?

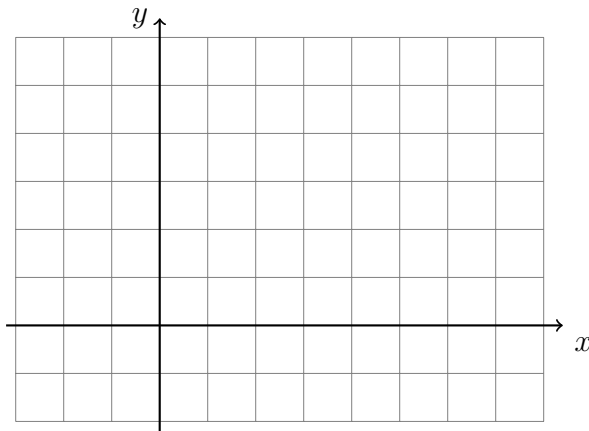
Name:

4. The line  $l$  has the equation  $y = \frac{1}{4}x - 11$ .

(a) What is the slope of the line  $k$ , given  $k \parallel l$ ?

(b) What is the slope of the line  $m$ , given  $m \perp l$ ?

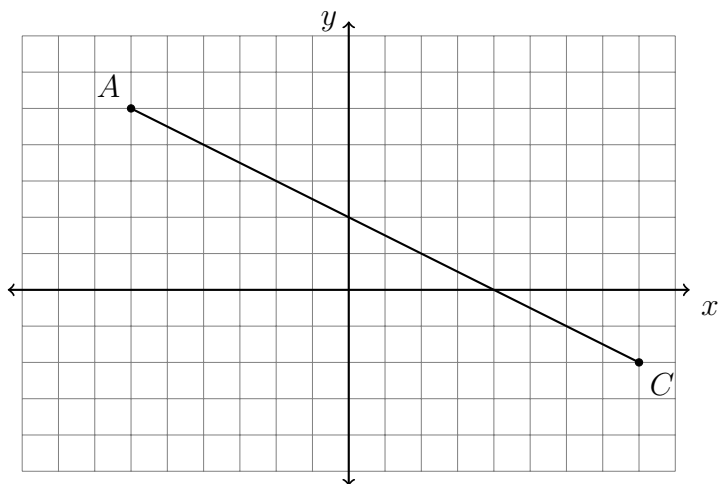
5. On the graph below, draw  $\overline{AB}$ , with  $A(-2, 3)$  and  $B(5, 1)$ , labeling the end points. Determine and state the coordinates of the midpoint  $M$  of  $\overline{AB}$  and mark and label it on the graph.



6. Given  $M(2, 6)$  and  $N(-3, -6)$ , find the length of  $\overline{MN}$ .

7. A translation maps  $A(3, 11) \rightarrow A'(-2, 3)$ . What is the image of  $B(0, 7)$  under the same translation?

8. In the diagram below,  $\overline{AC}$  has endpoints with coordinates  $A(-6, 5)$  and  $C(8, -2)$ .

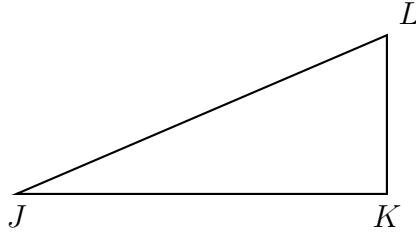


If  $B$  is a point on  $\overline{AC}$  and  $AB:BC = 2:5$ , what are the coordinates of  $B$ ?

9.  $A(1, -3)$  is one endpoint of  $\overline{AB}$ . The segment's midpoint is  $M(5, 4)$ . Find the other endpoint,  $B$ .

Name:

10. Given right  $\triangle JKL$  with  $\overline{JK} \perp \overline{KL}$ ,  $JL = 12.4$ ,  $m\angle J = 41^\circ$ . Find the length  $JK$ , rounded to the nearest hundredth.



In the following two problems, solve for the value of  $x$ .

11.  $\frac{1}{5}(10x + 5) = 3$

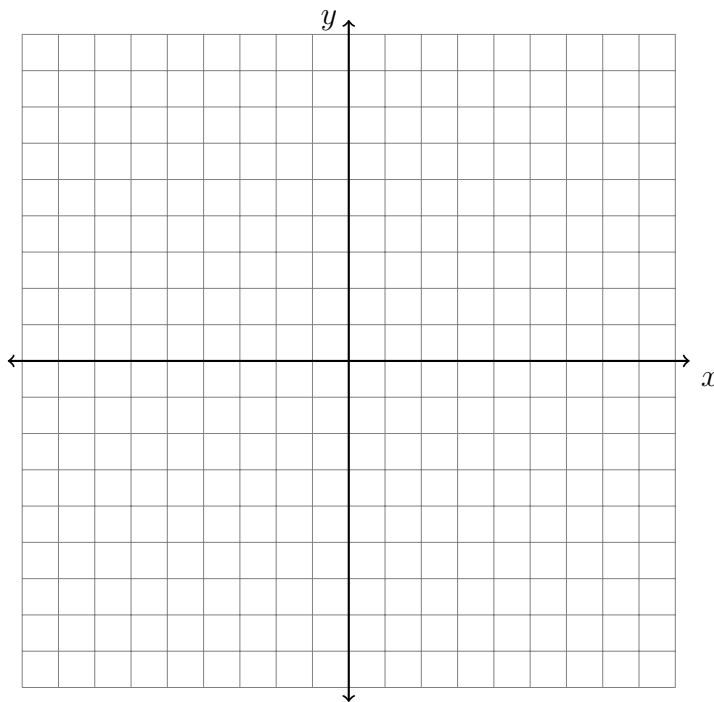
12.  $\frac{2}{3}(5 - x) = -4$

13. Given  $f(x) = \frac{1}{3}x + 3$ . Solve for  $x$  such that for  $f(x) = 2$ .

14. Given  $g(x) = -2x^2 - 5x + 3$ . Simplify  $g(1)$ .

15. Given  $h(x) = x^2 - 4x - 5$ . Solve  $h(x) = 0$ .

16. Spicy: On the set of axes below, graph the quadrilateral  $ABCD$  having coordinates  $A(-3, -3)$ ,  $B(5, 1)$ ,  $C(6, 8)$ , and  $D(-2, 4)$ .



Given that  $\overline{AD} \parallel \overline{BC}$ . Use what you know about slope and the definition that a parallelogram is a quadrilateral with two pairs of parallel sides to prove  $ABCD$  is a parallelogram. Be sure to state the conclusion in your proof.