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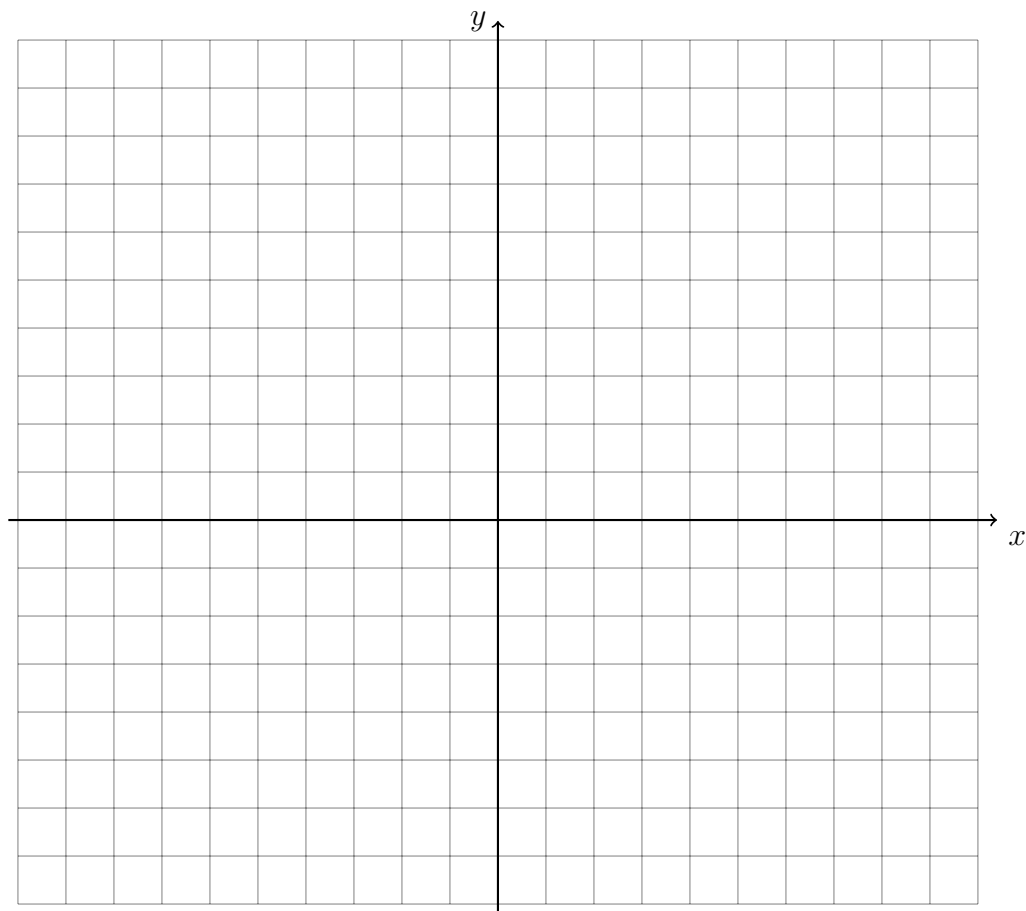
6.6 Homework: Distance formula, perpendicular and parallel slopes

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

$$y = -4x - 6$$

$$x - 3y = -21$$

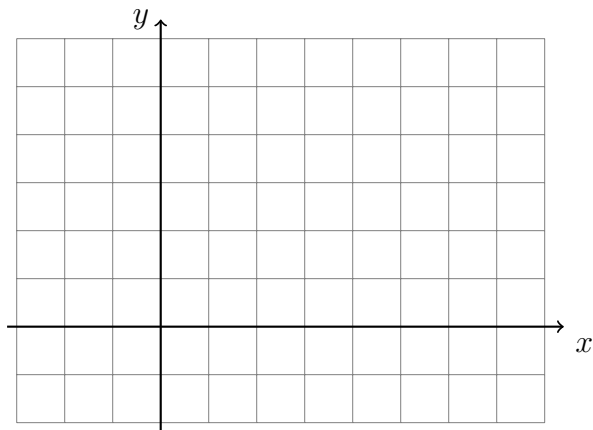
Are the lines parallel, perpendicular, or neither? Justify your answer.



2. The line l has the equation $y = 3x + 2$.
 - (a) What is the slope of the line k , given $k \parallel l$?
 - (b) What is the slope of the line m , given $m \perp l$?

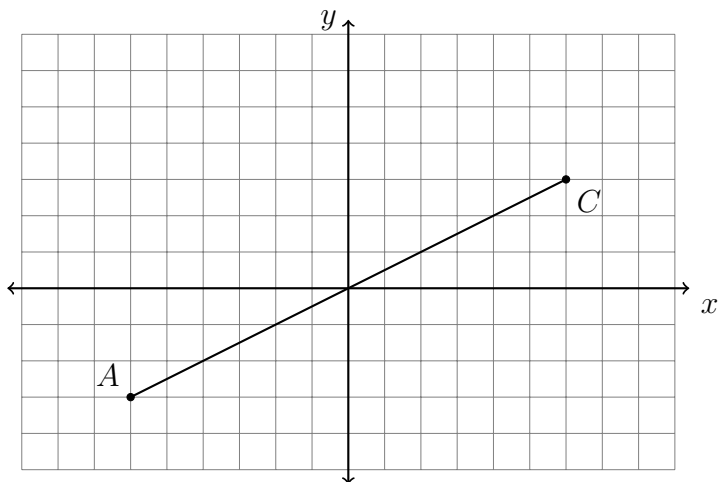
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3. On the graph below, draw \overline{AB} , with $A(-1, 1)$ and $B(7, 3)$, labeling the end points. Determine and state the coordinates of the midpoint M of \overline{AB} and mark and label it on the graph.



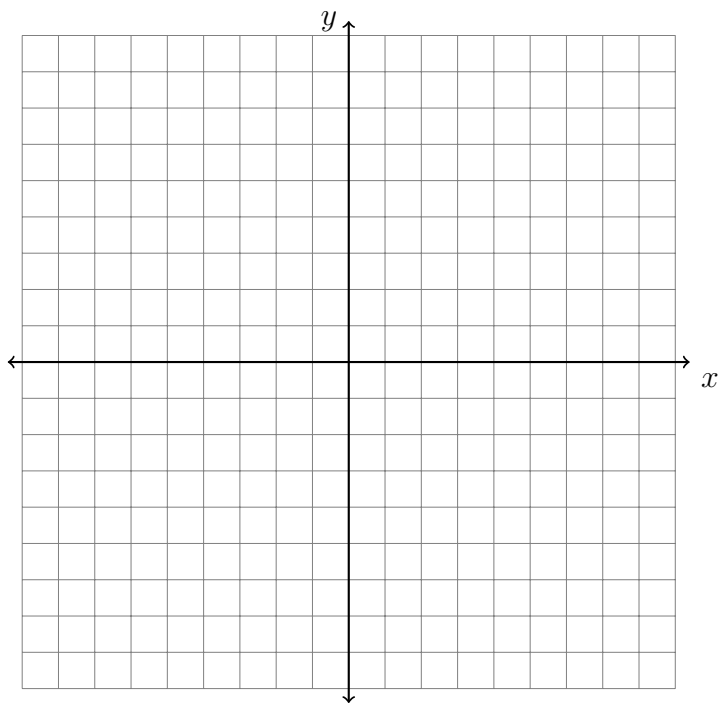
4. $A(-1, 7)$ is one endpoint of \overline{AB} . The segment's midpoint is $M(1, 2)$. Find the other endpoint, B .

5. In the diagram below, \overline{AC} has endpoints with coordinates $A(-6, -3)$ and $C(6, 3)$. If B is a point on \overline{AC} and $AB:BC = 1:3$, what are the coordinates of B ?



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



Show that the midpoints of the two diagonals, \overline{AC} and \overline{BD} , are the same point.

Prove $ABCD$ is a parallelogram. Use the following theorem: A quadrilateral is a parallelogram if and only if its diagonals bisect each other.

Be sure to state the conclusion in your proof.