Name:

BECA / Dr. Huson / IB Math 6 Geometry

6.10: Applying Algebra to Geometric Situations

1. Write down the slope perpendicular to the given slope.

   (a) $m = -\frac{4}{3}$ $\quad m_\perp =$

   (b) $m = 3$ $\quad m_\perp =$

   (c) $m = 0.5$ $\quad m_\perp =$

   (d) $m = -\frac{2}{3}$ $\quad m_\perp =$

2. The line l has the equation $y = \frac{2}{3}x + 1$. To each line below, circle whether l is parallel, perpendicular, or neither.

   (a) parallel perpendicular neither $y = -\frac{2}{3}x - 1$

   (b) parallel perpendicular neither $y = \frac{3}{2}x + 4$

   (c) parallel perpendicular neither $2x - 3y = -7$

   (d) parallel perpendicular neither $3x + 2y = 5$

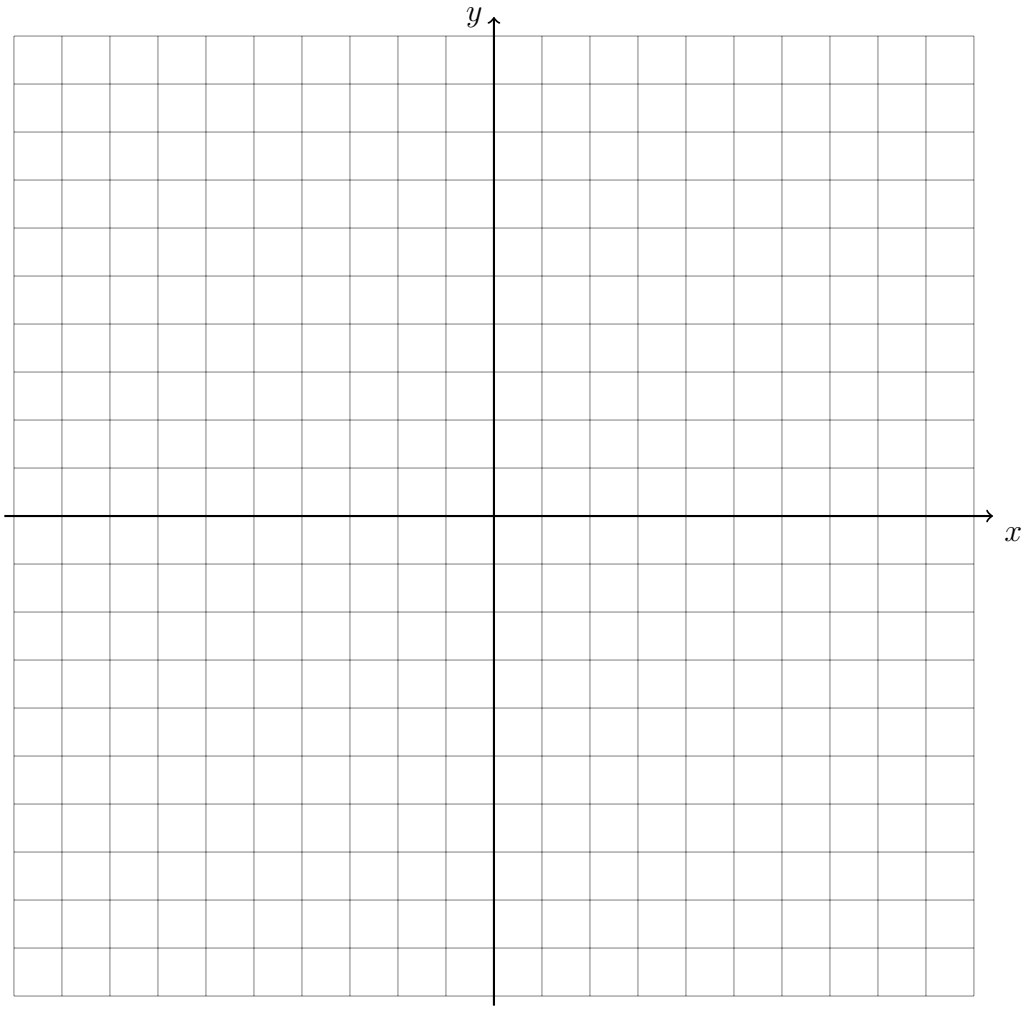
   In the following problems, use the point-slope formula: $y - y_A = m(x - x_A)$

3. What is the equation of a line through the point $A(3, -2)$ and parallel to the line $y = 3x - 1$?

4. What is an equation of the perpendicular bisector of $\overline{QR}$ with $Q(2, 0)$ and $R(6, 2)$?

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

$y = \frac{3}{4}x + 2$ $\qquad\qquad$ $3x + 3y = -15$



Are the lines parallel, perpendicular, or neither? Justify your answer, stating the values of the lines' slopes.

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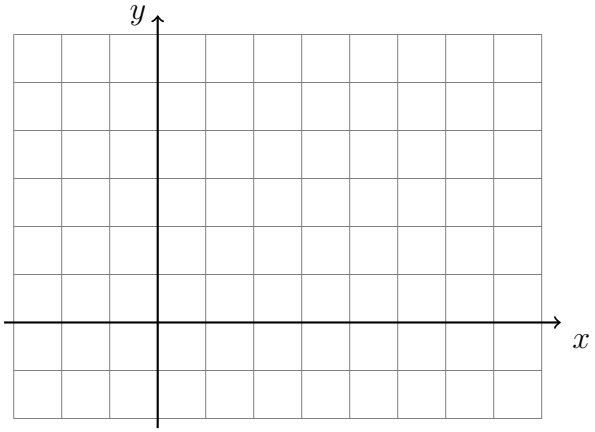
6. Given $J(-2, 7)$ and $K(1, 4)$, find the length of $\overline{JK}$. Leave the result in simplified radical form (not a decimal).

7. On the graph below, draw $\overline{AB}$, with $A(-2, 1)$ and $B(4, 4)$, labeling the end points.

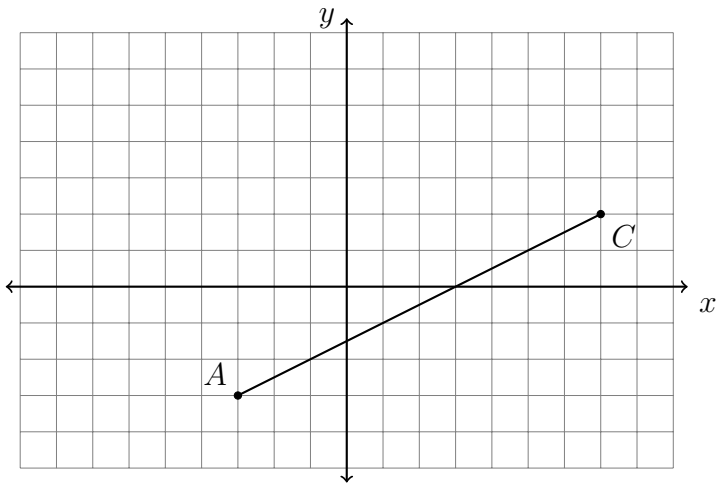


   (a) Determine and state the coordinates of the midpoint M of $\overline{AB}$. Mark M and label it on the graph.

   (b) Find the slope of $\overline{AB}$.

   (c) Find the length of $\overline{AB}$. Leave the result as a simplified radical.

8. In the diagram below, $\overline{AC}$ has endpoints with coordinates $A(-3,-3)$ and $C(7,2)$.



If B is a point on $\overline{AC}$ and $AB{:}BC = 2{:}3$, what are the coordinates of B?

9. $A(2,4)$ is one endpoint of $\overline{AB}$. The segment's midpoint is $M(7,3)$. Find the other endpoint, B.

10. A translation maps $A(-1,12) \rightarrow A'(5,6)$. What is the image of $B(10,-1)$ under the same translation?