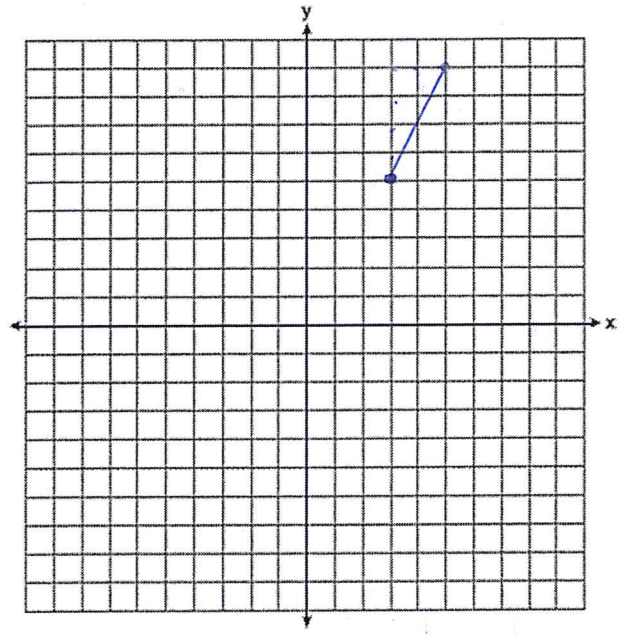


Name Schlansky
Mr. Schlansky

Date _____
Geometry

Perpendicular Bisector

1. Write an equation of the perpendicular bisector of the line segment whose endpoints are (3,5) and (5,9).



$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{4}{2}$$

$$m = 2$$

$$MP = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$MP = \left(\frac{3+5}{2}, \frac{5+9}{2} \right)$$

$$MP = \left(\frac{8}{2}, \frac{14}{2} \right)$$

$$MP = (4, 7)$$

$$m_{\perp} = -\frac{1}{2}$$

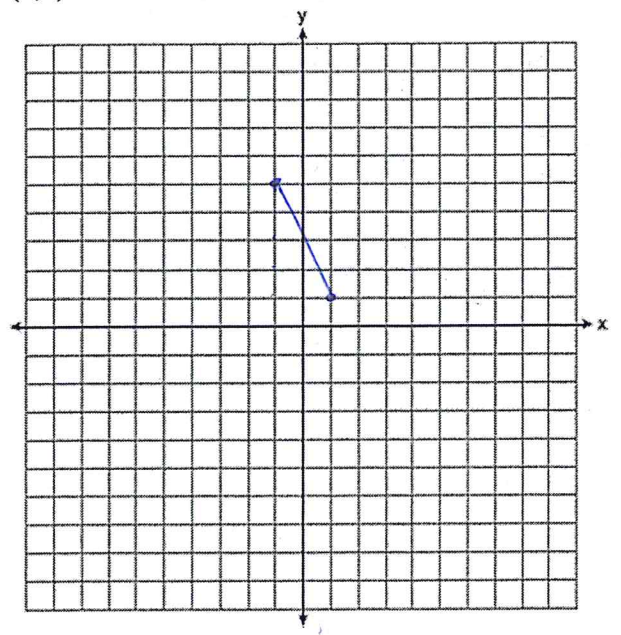
$$x_i = 4$$

$$y_i = 7$$

$$y - y_i = m(x - x_i)$$

$$y - 7 = -\frac{1}{2}(x - 4)$$

2. Write an equation of the perpendicular bisector of the line segment whose endpoints are (-1,5) and (1,1).



$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{-4}{2}$$

$$m = -2$$

$$MP = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$MP = \left(\frac{-1+1}{2}, \frac{5+1}{2} \right)$$

$$MP = \left(\frac{0}{2}, \frac{6}{2} \right)$$

$$MP = (0, 3)$$

$$m_{\perp} = \frac{1}{2}$$

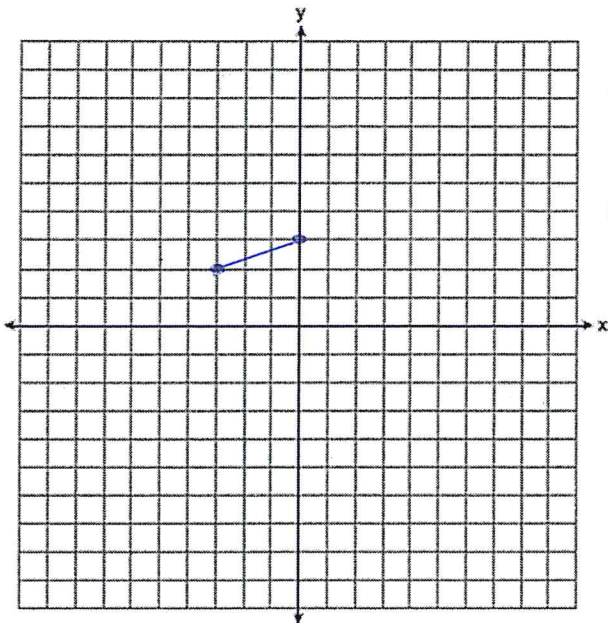
$$x_i = 0$$

$$y_i = 3$$

$$y - y_i = m(x - x_i)$$

$$y - 3 = \frac{1}{2}x$$

3. Write an equation of the perpendicular bisector of the line segment whose endpoints are (-3,2) and (0,3).



$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{1}{3}$$

$$mp = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$mp = \left(\frac{-3 + 0}{2}, \frac{2 + 3}{2} \right)$$

$$mp = \left(-\frac{3}{2}, \frac{5}{2} \right)$$

$$mp = (-1.5, 2.5)$$

$$m \perp = -3$$

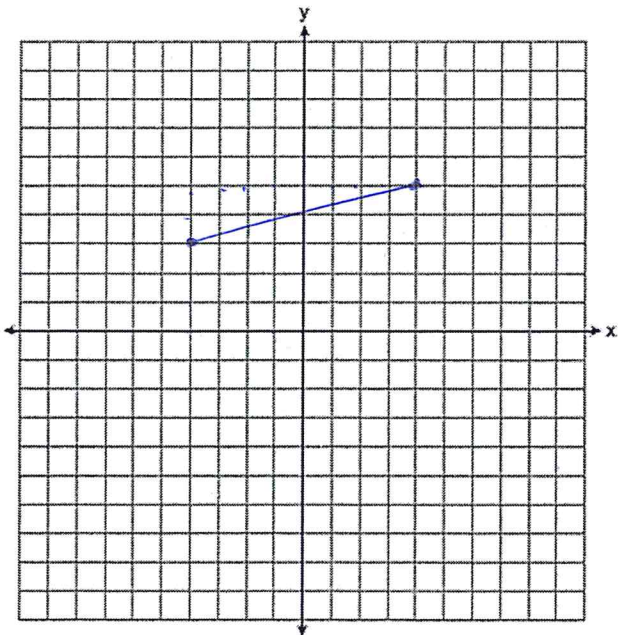
$$x_1 = -1.5$$

$$y_1 = 2.5$$

$$y - y_1 = m(x - x_1)$$

$$y - 2.5 = -3(x + 1.5)$$

4. Write an equation of the perpendicular bisector of the line segment whose endpoints are (-4,3) and (4,5)



$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{2}{8}$$

$$m = \frac{1}{4}$$

$$mp = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$mp = \left(\frac{-4 + 4}{2}, \frac{3 + 5}{2} \right)$$

$$mp = \left(\frac{0}{2}, \frac{8}{2} \right)$$

$$mp = (0, 4)$$

$$y - y_1 = m(x - x_1)$$

$$y - 4 = -4(x - 0)$$

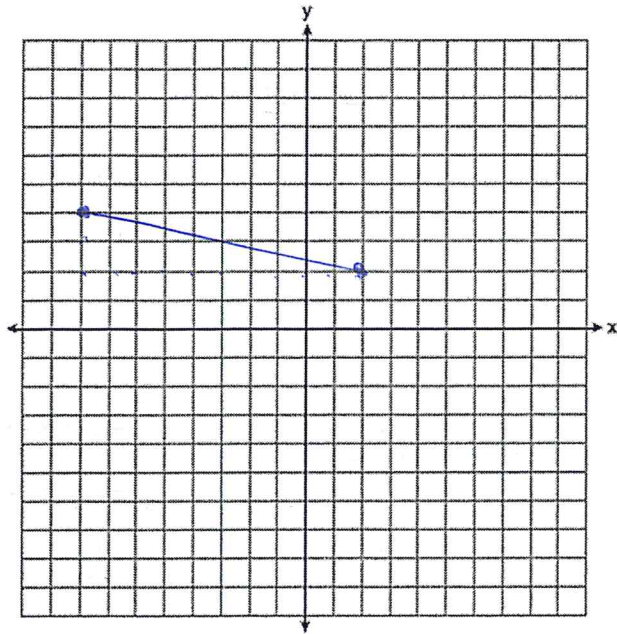
$$y - 4 = -4x$$

$$m \perp = -4$$

$$x_1 = 0$$

$$y_1 = 4$$

5. Write an equation of the perpendicular bisector of the line segment whose endpoints are $(-8,4)$ and $(2,2)$



$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{-2}{10}$$

$$m = \frac{-1}{5}$$

$$m_{\perp} = 5$$

$$x_1 = -3$$

$$y_1 = 3$$

$$MP = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$MP = \left(\frac{-8+2}{2}, \frac{4+2}{2} \right)$$

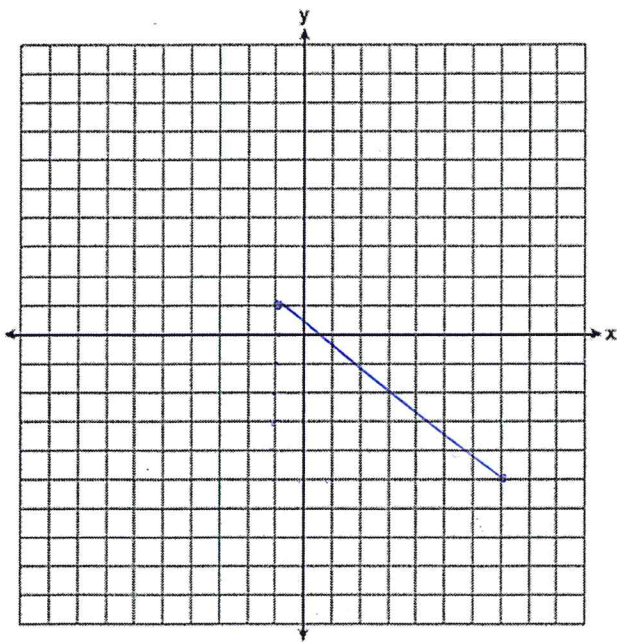
$$MP = \left(\frac{-6}{2}, \frac{6}{2} \right)$$

$$MP = (-3, 3)$$

$$y - y_1 = m(x - x_1)$$

$$y - 3 = 5(x + 3)$$

6. Write an equation of the perpendicular bisector of the line segment whose endpoints are $(-1, 1)$ and $(7, -5)$.



$$m = \frac{-6}{8}$$

$$m = \frac{-3}{4}$$

$$m_{\perp} = \frac{4}{3}$$

$$x_1 = 3$$

$$y_1 = -2$$

$$MP = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$MP = \left(\frac{-1+7}{2}, \frac{1+(-5)}{2} \right)$$

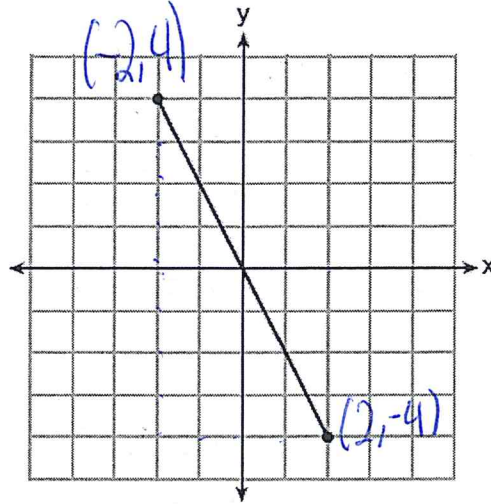
$$MP = \left(\frac{6}{2}, \frac{-4}{2} \right)$$

$$MP = (3, -2)$$

$$y - y_1 = m(x - x_1)$$

$$y + 2 = \frac{4}{3}(x - 3)$$

7. What is an equation of the perpendicular bisector of the line segment shown in the diagram below?



$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{-8}{4}$$

$$m = -2$$

$$m \perp = \frac{1}{2}$$

$$x_1 = 0$$

$$y_1 = 0$$

$$MP = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$MP = \left(\frac{-2 + 2}{2}, \frac{4 + (-4)}{2} \right)$$

$$MP = \left(\frac{0}{2}, \frac{0}{2} \right)$$

$$MP = (0, 0)$$

$$y - y_1 = m(x - x_1)$$

$$y - 0 = \frac{1}{2}(x - 0)$$

$$y = \frac{1}{2}x$$

1) $y + 2x = 0$

2) $y - 2x = 0$

3) $2y + x = 0$

4) $2y - x = 0$

$$2y = x \quad y = \frac{1}{2}x$$

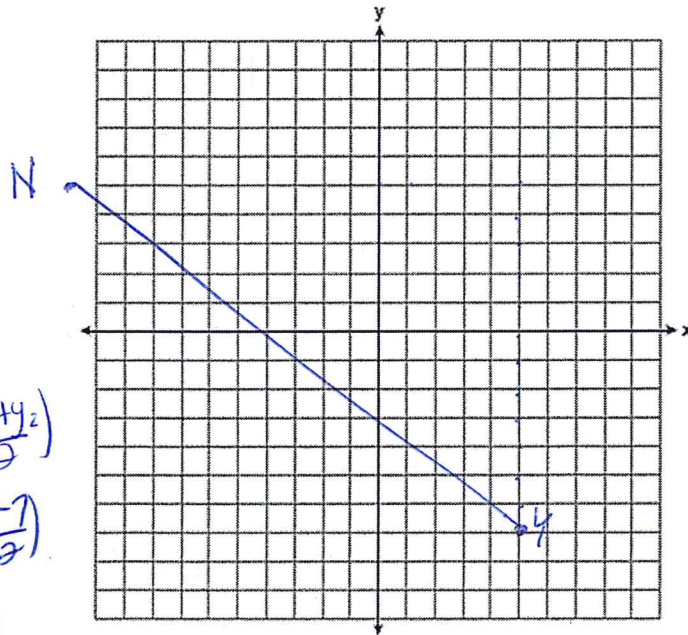
8. Line segment NY has endpoints $N(-11, 5)$ and $Y(5, -7)$. What is the equation of the perpendicular bisector of \overline{NY} ?

1) $y + 1 = \frac{4}{3}(x + 3)$

2) $y + 1 = -\frac{3}{4}(x + 3)$

3) $y - 6 = \frac{4}{3}(x - 8)$

4) $y - 6 = -\frac{3}{4}(x - 8)$



$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{-12}{16}$$

$$m = -\frac{3}{4}$$

$$m \perp = \frac{4}{3}$$

$$x_1 = -3$$

$$y_1 = -1$$

$$MP = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$MP = \left(\frac{-11 + 5}{2}, \frac{5 + (-7)}{2} \right)$$

$$MP = \left(-\frac{6}{2}, -\frac{2}{2} \right)$$

$$MP = (-3, -1)$$

$$y - y_1 = m(x - x_1)$$

$$y + 1 = \frac{4}{3}(x + 3)$$