

## Algebra 1 Yearlong Worksheet 15M

Find the equation of the :

- 1) Perpendicular bisector of the segment with endpoints (5, 2) and (13, -8)

$$M = \left( \frac{5+13}{2}, \frac{2+(-8)}{2} \right)$$

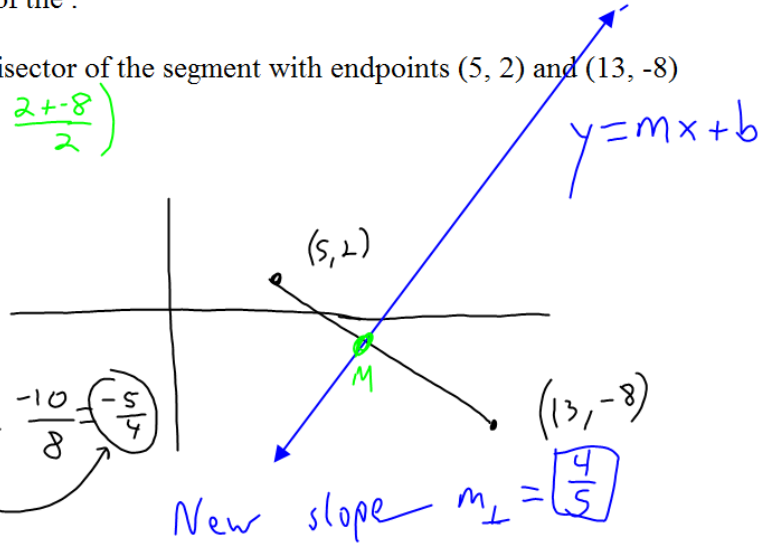
$$= \left( \frac{18}{2}, \frac{-6}{2} \right)$$

$$= (9, -3)$$

$$m = \frac{-8-2}{13-5} = \frac{-10}{8} = \left( -\frac{5}{4} \right)$$

Old slope

New slope  $m_{\perp} = \left( \frac{4}{5} \right)$



$$y = \frac{4}{5}x + b$$

$$(-3) = \frac{4}{5}(9) + b$$

$$-3 = \frac{36}{5} + b$$

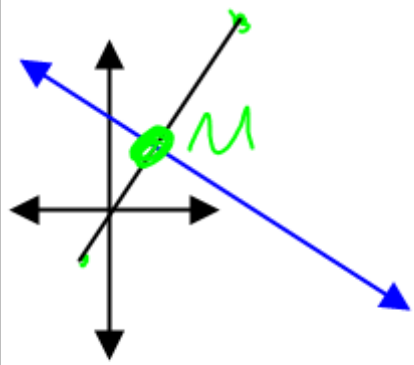
$$-15 = 36 + 5b$$

$$-51 = 5b$$

$$\frac{-51}{5} = b$$

$$y = \frac{4}{5}x - \frac{51}{5}$$

2) Perpendicular bisector of the segment with endpoints  $(-3, -8)$  and  $(9, 16)$



$$m = \frac{16 - (-8)}{9 - (-3)} = \frac{24}{12} = 2 \text{ old slope}$$

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

$$M = \left( \frac{-3+9}{2}, \frac{-8+16}{2} \right)$$

$$M = (3, 4)$$

$$y = -\frac{1}{2}x + b$$

$$11 = 2b$$

$$\frac{11}{2} = b$$

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

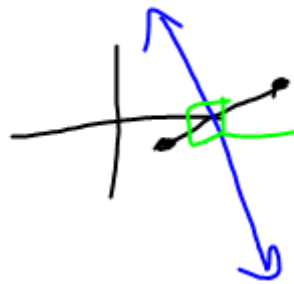
$$4 = -\frac{3}{2} + b$$

$$y = -\frac{1}{2}x + \frac{11}{2}$$

$$y = -\frac{1}{2}x + \frac{11}{2}$$

3) Perpendicular bisector of the segment with endpoints  $(4, -3)$  and  $(9, 1)$

3) Perpendicular bisector of the segment with endpoints (4, -3) and (9, 1)



$$M = \left( \frac{4+9}{2}, \frac{-3+1}{2} \right) = \left( \frac{13}{2}, \frac{-2}{2} \right) = \left( \frac{13}{2}, -1 \right)$$

$$\text{old slope} = \frac{1 - (-3)}{9 - 4} = \left( \frac{4}{5} \right)$$

$$\text{New slope} = \left( \frac{-5}{4} \right)$$

$$y = mx + b$$

$$y = \frac{-5}{4}x + b$$

$$y = \frac{-5}{4}x + \frac{57}{8}$$

$$y = \frac{-5}{4}x + b$$

$$(-1) = \frac{-5}{4} \left( \frac{13}{2} \right) + b$$

$$-1 = \frac{-65}{8} + b$$

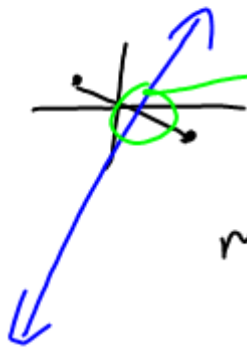
$$-8 = -65 + 8b$$

$$57 = 8b$$

$$\frac{57}{8} = b$$

4) Perpendicular bisector of the segment with endpoints (-4, 3) and (9, 2)

4) Perpendicular bisector of the segment with endpoints  $(-4, 3)$  and  $(9, 2)$



$$m = \frac{2-3}{9-(-4)} = \frac{-1}{13}$$

$$m_{\perp} = 13$$

$$y = 13x + b$$

$$\left(\frac{5}{2}\right) = 13\left(\frac{5}{2}\right) + b$$

$$\frac{5}{2} = \frac{65}{2} + b$$

$$M = \left(\frac{-4+9}{2}, \frac{3+2}{2}\right) = \left(\frac{5}{2}, \frac{5}{2}\right)$$

$$5 = 65 + 2b$$

$$-60 = 2b$$

$$-30 = b$$

$$y = 13x - 30$$

5) Perpendicular bisector of the segment with endpoints  $(4, -8)$  and  $(4, 10)$

5) Perpendicular bisector of the segment with endpoints  $(4, -8)$  and  $(4, 10)$

see  
graph

