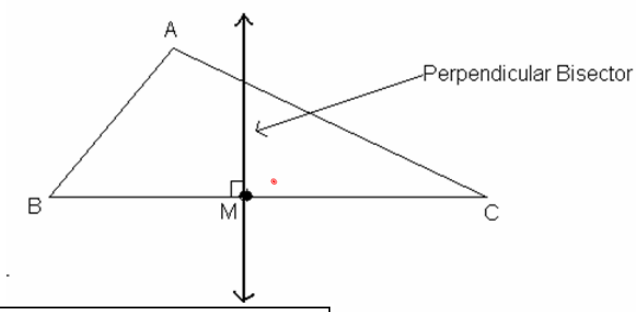
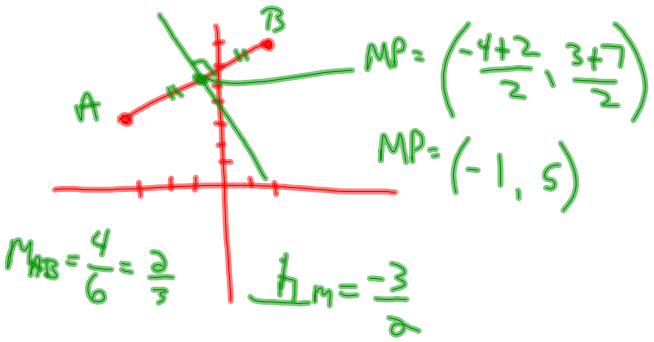
(3) Right Bisector (Perpendicular Bisector) → a **perpendicular** line drawn through the **midpoint** of a line segment




To get equation, find…
- $m_{BC}$
- $m_{\perp BC}$ ← slope
- midpoint of BC ← point

**Example…**

Determine the equation of the **perpendicular bisector** of the line segment with endpoints (-4,3) and (2,7).




$y = -\frac{3}{2}x + b$

$5 = -\frac{3}{2}(-1) + b$

$10 = 3 + 2b$

$7 = 2b$

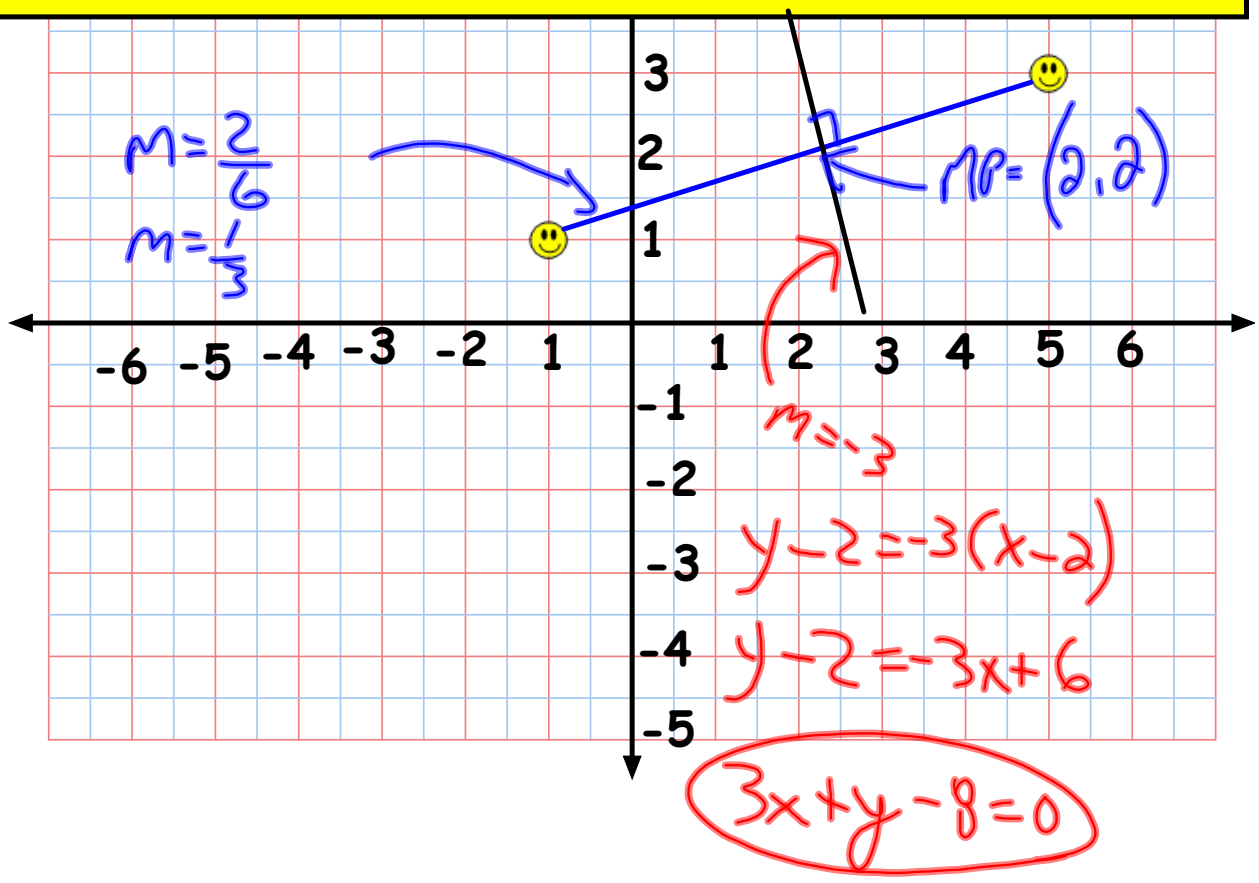
$\frac{7}{2} = b$

$y = -\frac{3}{2}x + \frac{7}{2}$ ← slope y-Intercept form ($y = mx + b$)

$2y = -3x + 7$

$3x + 2y - 7 = 0$ ← General Form

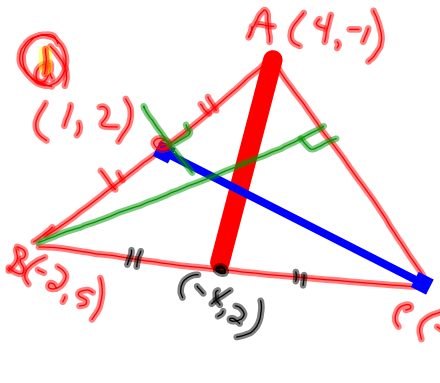
Example: Find the equation of the perpendicular bisector of a chord that has endpoints C (-1, 1) and D (5, 3)



# Warm Up

Given triangle ABC, with vertices A(4,-1), B(-2,5) and C(-6,-1), find...

(1) the equation of the median drawn from A
(2) determine the length of the median drawn from C
(3) the equation of the altitude drawn from B
(4) the equation of the perpendicular bisector of side AB




(1) $MP = (-4, 2)$

$m = \frac{3}{-8}$ $\quad y - 2 = -\frac{3}{8}(x+4)$

$8y - 16 = -3x - 12$

$3x + 8y - 4 = 0$

(2) $l = \sqrt{(1)^2 + (3)^2}$

$l = \sqrt{58}$

(3) $m_{AC} = \frac{0}{10} = 0$

$\therefore m_{AH} =$ undefined (vertical line)

$x = -2$

$x + 2 = 0$

$\frac{1}{17}x + \frac{2}{17} = 0$

(4) $m_{AB} = \frac{6}{-6} = -1$

$\perp m = 1 \quad (1,2)$

$y - 5 = -\frac{10}{0}(x+2)$

$0 = -10x - 20$

$10x + 20 = 0$

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

$x - 1 = y - 2$

$x - y + 1 = 0$