# What's Going On?

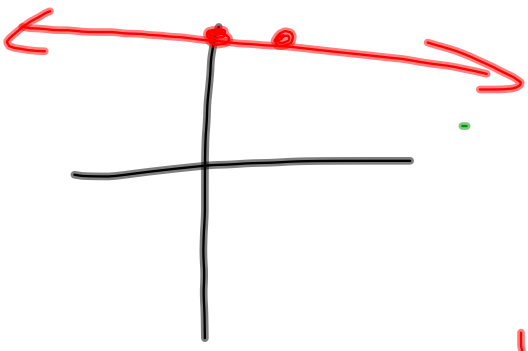
| | |
|---|---|
| Checking In | F.F.M. |
| Minds on | Some New Terms |
| Action! | Right Bisectors, Medians and Altitudes |
| Consolidation | Circles 2.0 |

**Learning Goal - I will be review Grade 9 Linear Equations.**

# F.F.M.

Determine the equation of the line through the points (3, 7) and (0, 7)
in slope y-intercept form AND standard form.

Hint: Draw a quick diagram



$y = mx + b$

$y = 7$

$y - 7 = 0(x - 3)$

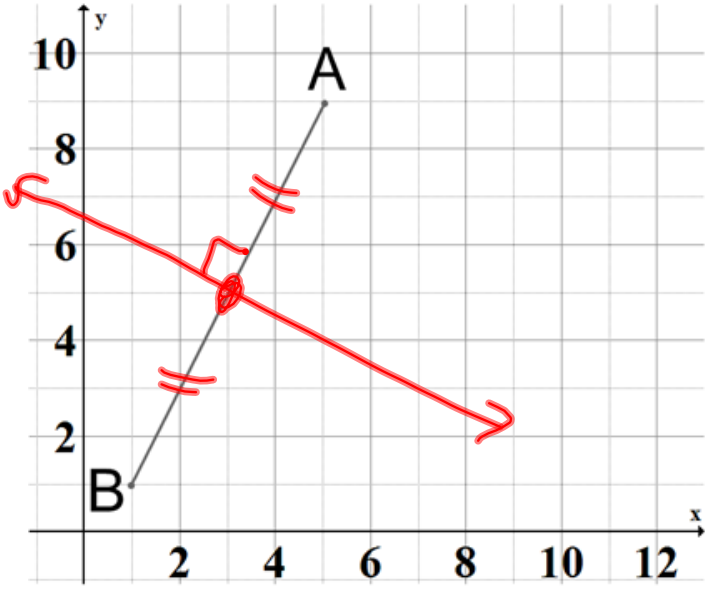
$0$

## Minds on

# Some New Terms

## Right Bisector

a line that "cuts" another line in half at a 90° angle (perpendicularly)

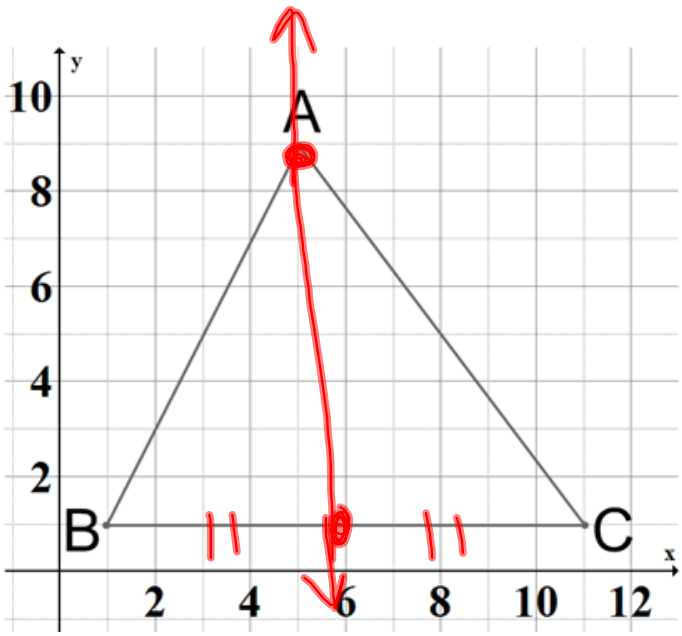


## Minds on

# Some New Terms

## Median

***a line*** dropped from a vertex of a triangle that lands on *the opposite* midpoint

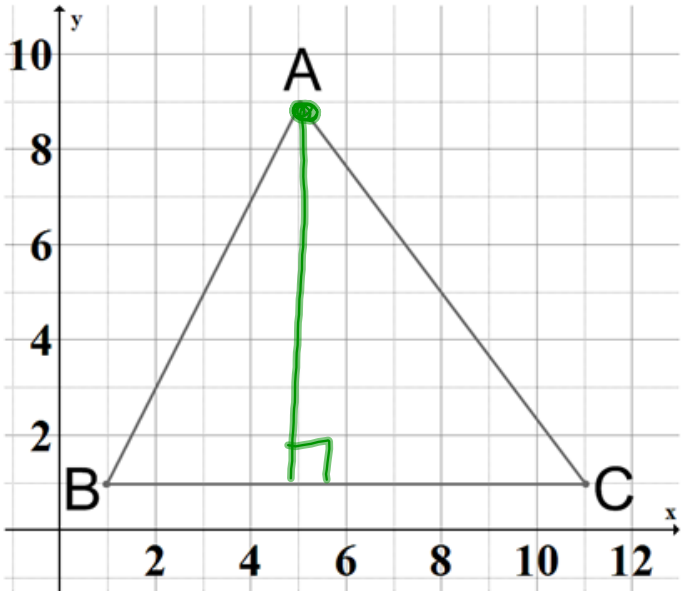


## Minds on

# Some New Terms

## Altitude

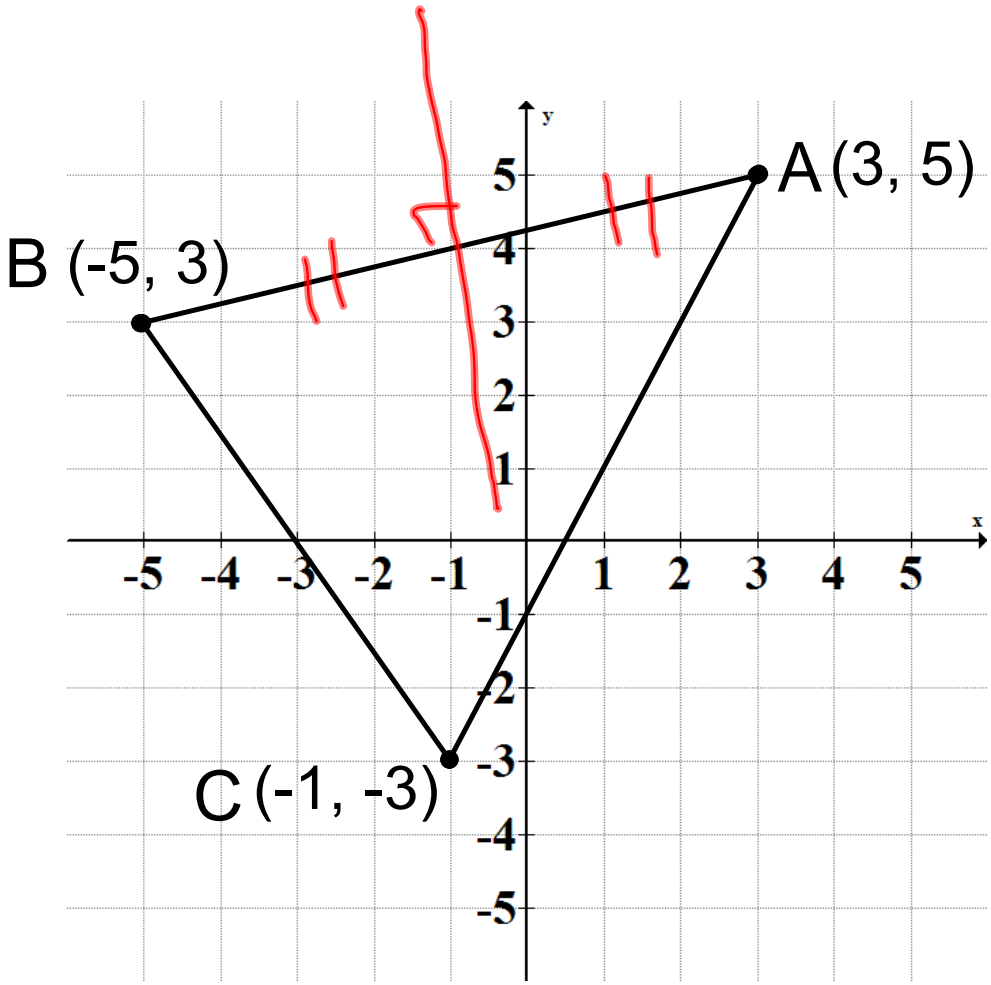
***The perpendicular height*** of a triangle



## Action!

# Right Bisectors, Medians and Altitudes

**Determine the equation of the right bisector of side AB.**



# Steps

1. Find the slope of AB.

2. Determine the slope of a line perpendicular to AB. Call it m.

3. Find the midpoint of AB.
Call it $M(x_1, y_1)$.

4. Plug the values found in Steps 2 and 3 into the point-slope form equation.

5. Simplify and rearrange into Standard Form.

1. $m = \frac{y_2 - y_1}{x_2 - x_1}$

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

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

$= \frac{2}{8}$

2. $\perp m = -\frac{8}{2}$

$= -4$

3. Midpoint: $\left(\frac{-5+3}{2}, \frac{3+5}{2}\right)$

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

$= (-1, 4)$

4. $y - 4 = -4(x + 1)$

5. $y - 4 = -4x - 4$

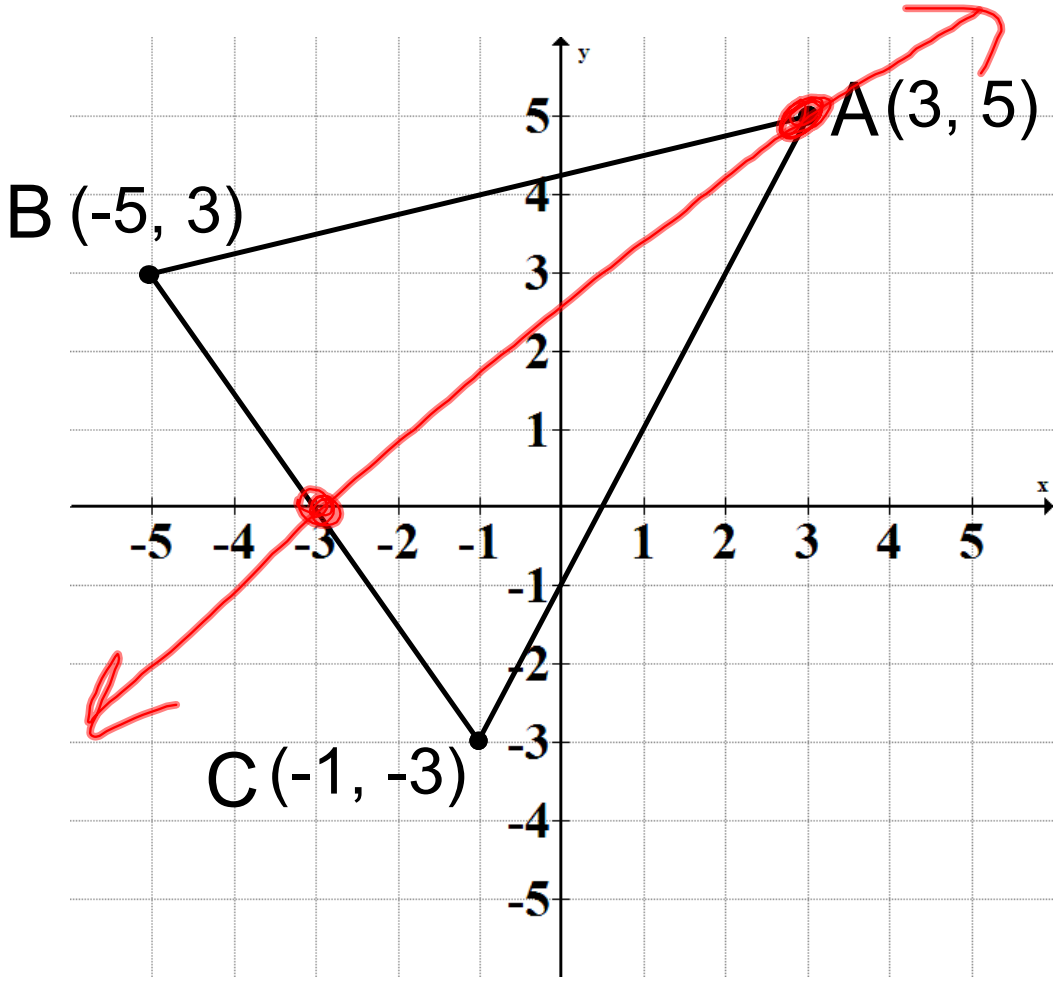
$+4x + 4 \quad +4x + 4$

$4x + y = 0$

## Action!

# Right Bisectors, Medians and Altitudes

**Determine the equation of the median from A to BC.**



# Steps

1. Find the midpoint of BC. Call it $M(x_1, y_1)$.

2. Find the slope of the line through A and M. $m = \frac{y_2 - y_1}{x_2 - x_1}$

3. Plug **either** A or M and the slope into the point-slope form equation.

4. Simplify and rearrange into Standard Form.

1. $M = \left(\frac{-5-1}{2}, \frac{3-3}{2}\right)$

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

$= (-3, 0)$

2. Slope of median

$m = \frac{0-5}{-3-3}$

$= \frac{-5}{-6}$

$= \frac{5}{6}$

3. $y - 0 = \frac{5}{6}(x - (-3))$

$y = \frac{5}{6}(x+3)$

$6(y) = \left(\frac{5}{6}x + \frac{15}{6}\right)6$

$6y = 5x + 15$

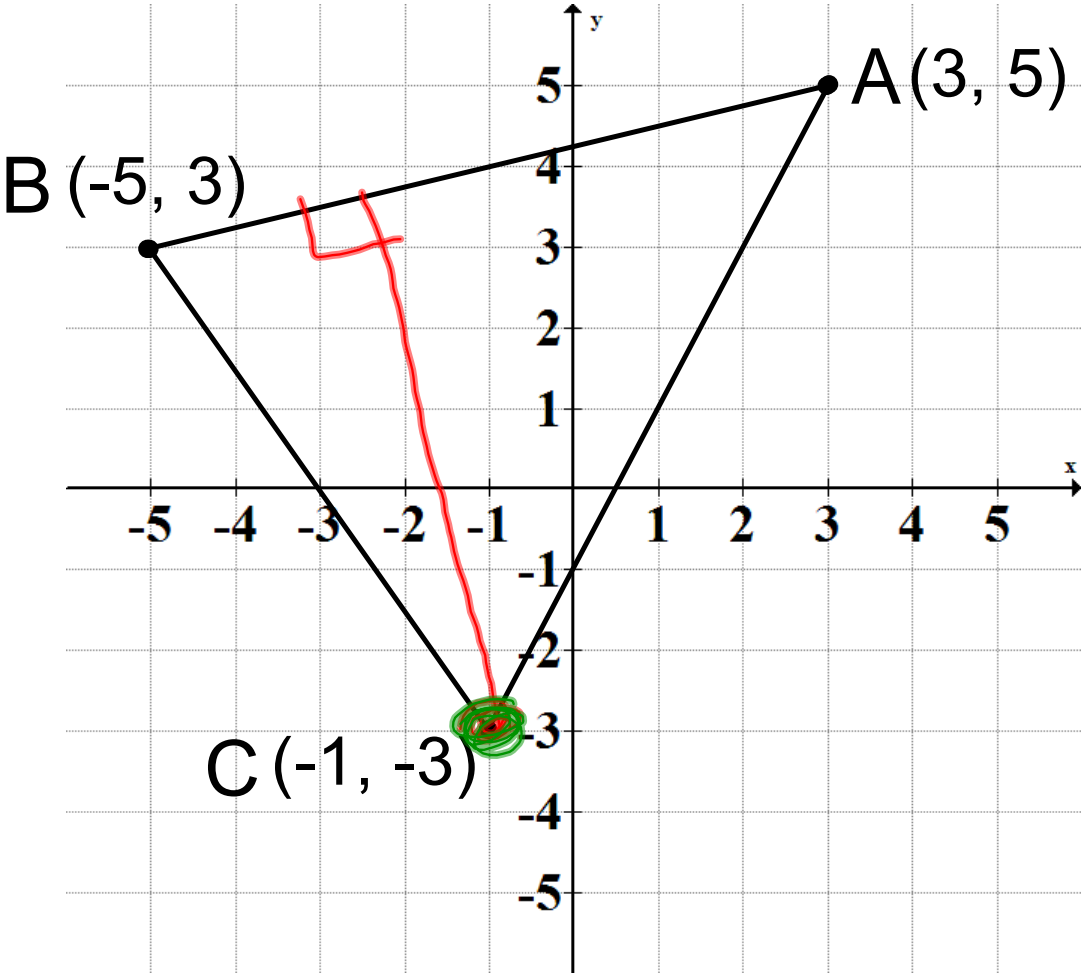
$-6y \quad -6y$

$5x - 6y + 15 = 0$

## Action!

# Right Bisectors, Medians and Altitudes

**Determine the equation of the altitude from C to AB.**



# Steps

1. Find the slope of $AB$.

2. Find the slope of a line perpendicular to $AB$. Call it m.

3. Plug the point $C(x_1, y_1)$ and slope m into the point-slope form equation.

4. Simplify and rearrange into Standard Form.

1. $m = \frac{3-5}{-5-3}$

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

$= \frac{1}{4}$

2. $\perp m = -4$

3. $y-(-3) = -4(x-(-1))$

4. $x+3 = -4x-4$

$+4x \quad +4$

$4x+y+7=0$

## Consolidation

# Homework

Pg. 95
# 2, 6, 8, 14