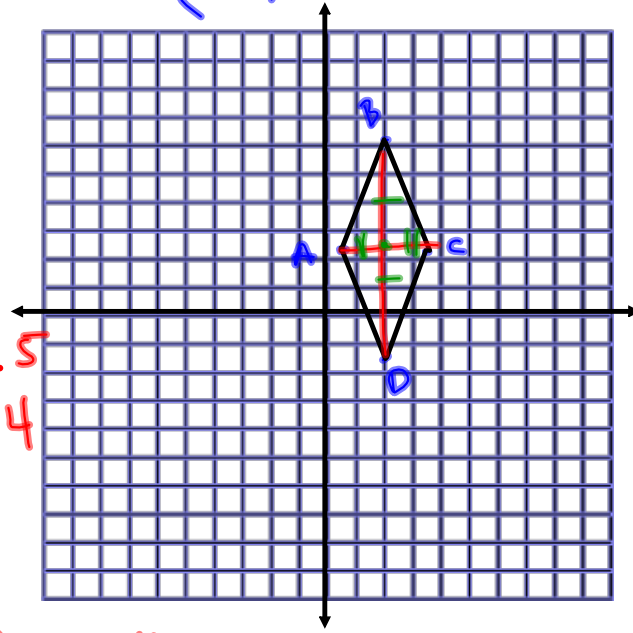


p 5.12

#4

(4, 4.5)



m_{BD}

m_{AC}

quad

$A(x_1, y_1)$
 $A(1, 4\frac{1}{2})$

$B(x_1, y_1)$
 $B(4, 12\frac{1}{4})$
 ① $y = 4.5$
 ② $x = 4$

$C(x_2, y_2)$
 $C(7, 4\frac{1}{2})$

$D(x_2, y_2)$
 $D(4, -3\frac{1}{4})$
 -3.25

$$m_{BD} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-3.25 - (12.25)}{4 - 4}$$

m_{BD} = undetermined (always means vertical line)

$$m_{AC} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{4.5 - 4.5}{7 - 1}$$

$m_{AC} = 0$

(that always means horizontal) \therefore BD is \perp AC cuz their slopes are '0' and undetermined

$$M_{BD} \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \quad \Bigg| \quad M_{AC} \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$M_{BD} \left(\frac{4+4}{2}, \frac{12.25 + (-3.25)}{2} \right) \quad \Bigg| \quad M_{AC} \left(\frac{1+7}{2}, \frac{4.5+4.5}{2} \right)$$

$$M_{BD} \left(4, \frac{9}{2} \right) \quad \Bigg| \quad M_{AC} (4, 4.5)$$

Each midpoint is equal to the point of intersection of diagonals, \therefore they bisect each other.

Horizontal Lines

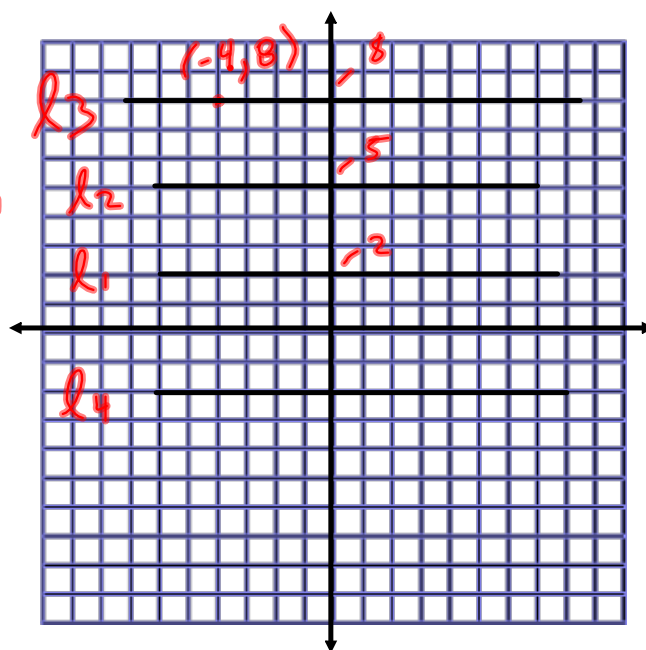
have no x in
their equation.

$$l_1: y = 2$$

$$l_2: y = 5$$

$$l_3: y = 8$$

$$l_4: y = -2$$

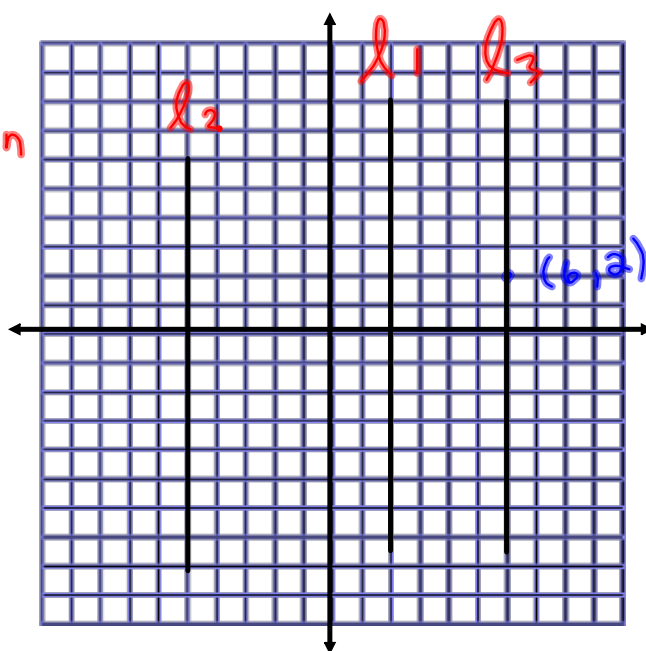


Vertical Lines
have no y
in their equation

$$l_1 : x = 2$$

$$l_2 : x = -5$$

$$l_3 : x = 6$$



Q11

$X(x_1, y_1)$
 $X(-5, 0)$

$Y(x_2, y_2)$
 $Y(0, 8)$

$Z(x_2, y_2)$
 $Z(?, 0)$

$\Delta XYZ?$

$$m_{xy} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{8 - 0}{0 - (-5)}$$

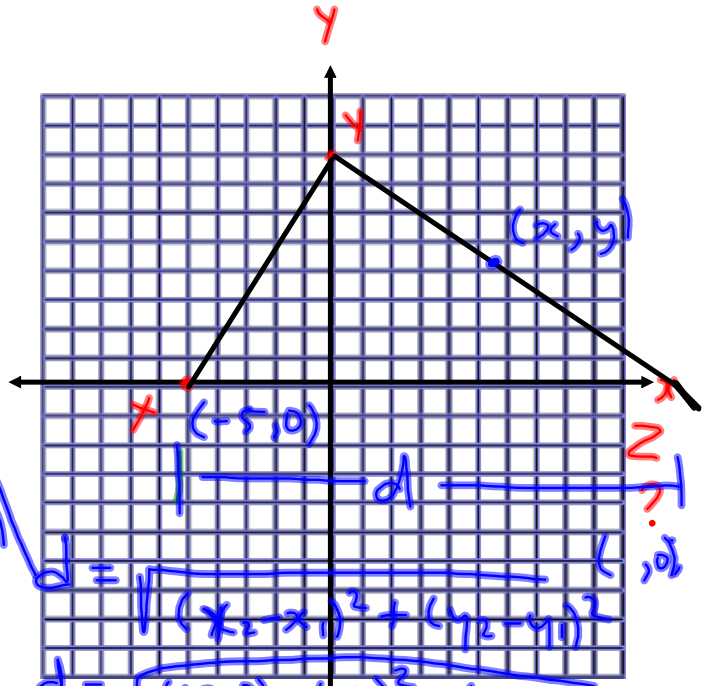
$$= \frac{8}{5}$$

BE CAREFUL
negative reciprocal

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$$d = \sqrt{(12.8 - (-5))^2 + (0 - 0)^2}$$

$$d = \sqrt{17.8^2} = 17.8 \text{ units}$$



One equation with one unknown.
 Solve for the unknown! By isolating it!

$m_{yz} = -\frac{5}{8} = \frac{y_2 - y_1}{x_2 - x_1}$

$$-\frac{5}{8} = \frac{0 - 8}{x_2 - 0}$$

$$\frac{-5}{8} = \frac{-8}{x_2}$$

$$-5x_2 = -8(8)$$

$$\frac{-5x_2}{-5} = \frac{-64}{-5}$$

$$x_2 = 12.8$$

Q12

Pit $(-3, 5)$
 $x_1 \quad y_1$

MTL
 $(1, 12)$
 $x_1 \quad y_1$

Point of Division Formula

$$DE \left(\frac{bx_1 + ax_2}{b+a}, \frac{by_1 + ay_2}{b+a} \right)$$

$$\frac{3}{1} = \frac{a}{b}$$

Richmond, DE
 $(1, 0)$

$$DE \left(\frac{1(1) + 2(0)}{2+1}, \frac{1(12) + 2(-6)}{2+1} \right)$$

Rich VA

1b

0i

Raleigh

$$DE \left(\frac{1+0}{3}, \frac{12-12}{3} \right)$$

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

$(0, -6)$
 $x_2 \quad y_2$

$$DE \left(\frac{1}{3}, 0 \right)$$

ANSWERS

