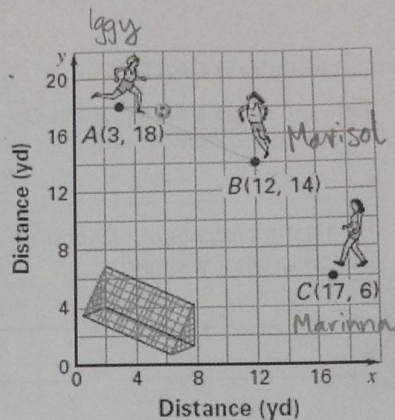


The diagram shows the position of three soccer players. Player A kicks the ball to Player B, who then kicks it to Player C. How far did Player A kick the ball? How far did Player B kick the ball? How far would Player A have kicked the ball if she had kicked it directly to Player C? Round all answers to the nearest tenth of a yard.



Player A = lggy
 Player B = Marisol
 Player C = Marinna

lggy to Marisol

(3, 18) (12, 14)

$$d_1 = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$x_2 = 12 \quad = \sqrt{(12 - 3)^2 + (14 - 18)^2}$$

$$x_1 = 3$$

$$y_2 = 14 \quad = \sqrt{(9)^2 + (-4)^2}$$

$$y_1 = 18$$

$$= \sqrt{81 + 16}$$

$$= \sqrt{97} \approx 9.8 \text{ yds}$$

Player A (lggy) kicked the ball
 9.8 yds

Marisol to Marinna

(12, 14) (17, 6)

$$d_2 = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$x_2 = 17 \quad = \sqrt{(17 - 12)^2 + (6 - 14)^2}$$

$$x_1 = 12$$

$$y_2 = 6 \quad = \sqrt{(5)^2 + (-8)^2}$$

$$y_1 = 14$$

$$= \sqrt{25 + 64}$$

$$= \sqrt{89} \approx 9.4 \text{ yds}$$

Player B (Marisol) kicked the
 ball 9.4 yds

lggy to Marinna

(3, 18) (17, 6)

$$d_3 = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(17 - 3)^2 + (6 - 18)^2}$$

$$x_2 = 17$$

$$x_1 = 3$$

$$= \sqrt{(14)^2 + (-12)^2}$$

$$y_2 = 6$$

$$= \sqrt{196 + 144}$$

$$y_1 = 18$$

$$= \sqrt{340} \approx 18.4$$

If lggy had kicked it to Marinna,
 the distance the ball would have
 traveled would've been 18.4 yds.

Use quadrilateral $QRST$

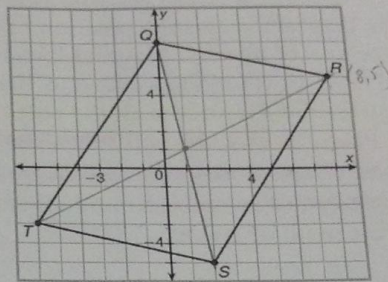
- ① Find the lengths of diagonals \overline{QS} and \overline{RT} . Round to the nearest tenth.

$$\overline{QS} = 12.1 \quad \overline{RT} = 16.1$$

- ② Find the midpoints of \overline{QS} and \overline{RT} . Describe what you find.

$$M_1 = (1, 1) \quad M_2 = (1, 1)$$

Same midpoint! OMG!



① Diagonal \overline{QS}

$$Q(0, 7)$$

$$S(2, -5)$$

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

$$= \sqrt{(2 - 0)^2 + (-5 - 7)^2}$$

$$= \sqrt{2^2 + (-12)^2}$$

$$= \sqrt{4 + 144}$$

$$= \sqrt{148}$$

$$= 12.1$$

Diagonal \overline{RT}

$$R(8, 5)$$

$$T(-6, -3)$$

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

$$= \sqrt{(-6 - 8)^2 + (-3 - 5)^2}$$

$$= \sqrt{(-14)^2 + (-8)^2}$$

$$= \sqrt{196 + 64}$$

$$= \sqrt{260}$$

$$= 16.1$$

② Midpoint of \overline{QS}

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

$$\left(\frac{0 + 2}{2}, \frac{7 + (-5)}{2} \right)$$

$$\left(\frac{2}{2}, \frac{2}{2} \right)$$

$$M_1 = (1, 1)$$

Midpoint of \overline{RT}

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

$$\left(\frac{8 + (-6)}{2}, \frac{5 + (-3)}{2} \right)$$

$$\left(\frac{2}{2}, \frac{2}{2} \right)$$

$$M_2 = (1, 1)$$

If you are reading this, write "Salisbury Steak Sweater" on your quiz for 5 extra points