

Station 1: Is $\overline{DG} \perp \overline{FE}$?

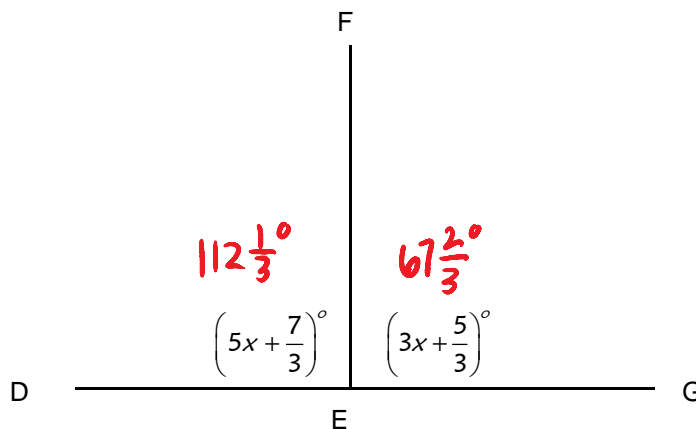
$$5x + \frac{7}{3} + 3x + \frac{5}{3} = 180$$

$$8x + 4 = 180$$

$$8x = 176$$

$$x = 22$$

NO!



Station 2:

Given: $\overline{KJ} \perp \overline{KM}$

$\angle JKO$ is 7 times as large as $\angle OKM$

(leave answer as a reduced fraction AND a decimal)

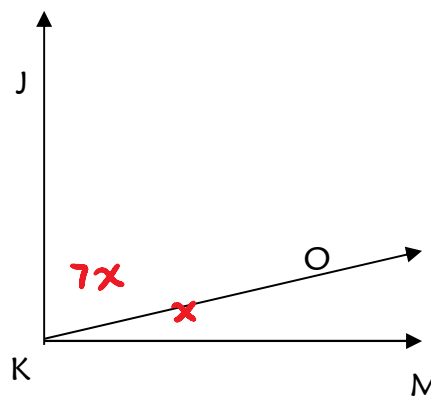
Find: $\angle JKO$

$$7x + x = 90$$

$$8x = 90$$

$$x = \frac{90}{8} = \frac{45}{4}$$

$$m\angle JKO = 7\left(\frac{45}{4}\right) = \boxed{\frac{315}{4}^\circ} \text{ or } \boxed{78.75^\circ}$$



Station 3

Given:

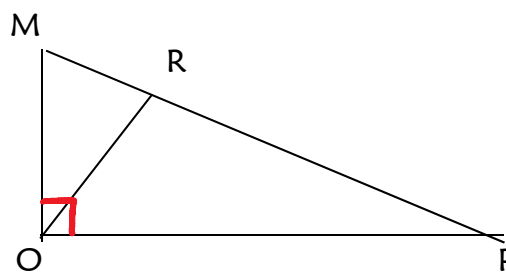
$$\angle MOR = 3x + 7$$

$$\angle ROP = 4x - 1$$

$\overline{MO} \perp \overline{OP}$

Which angle is larger, $\angle MOR$ or $\angle ROP$?

$\boxed{43^\circ}$
 $\boxed{47^\circ}$ ← Larger



$$3x + 7 + 4x - 1 = 90$$

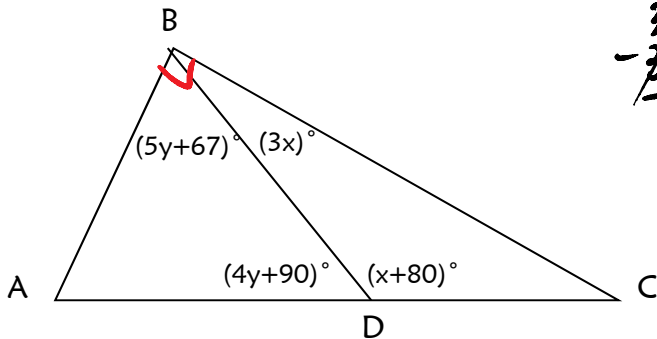
$$7x + 6 = 90$$

$$7x = 84$$

$$x = 12$$

Station 4

Given: $\overline{AB} \perp \overline{BC}$
Find x and y



$$3x + 5y + 67 = 90$$

$$3x + 5y = 23$$

$$4y + 90 + x + 80 = 180$$

$$-3(x + 4y = 10)$$

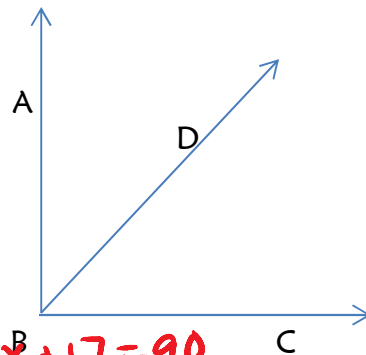
$$\begin{array}{r} 3x + 5y = 23 \\ -3x - 12y = -30 \\ \hline \end{array}$$

$$\begin{array}{r} -7y = -7 \\ y = 1 \\ x = 6 \end{array}$$

(6,1)

Station 5

$\overline{AB} \perp \overline{BC}$
 $\angle ABD = 5x^2 - 17x + 93$
 $\angle DBC = -3x^2 + 4x + 17$



Find x

$$5x^2 - 17x + 93 - 3x^2 + 4x + 17 = 90$$

$$2x^2 - 13x + 110 = 90$$

$$2x^2 - 13x + 20 = 0$$

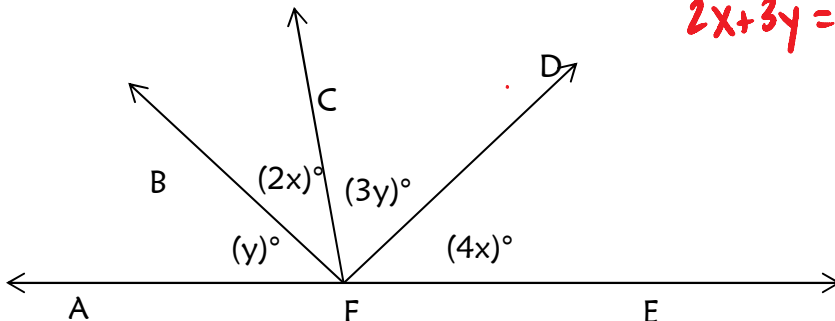
$$(2x - 5)(x - 4) = 0$$

$x = \frac{5}{2}$

~~$x = 4, \frac{5}{2}$~~

Station 6

Given: $\overline{BF} \perp \overline{FD}$
Find: $\angle DFE$



$$2x + 3y = 90$$

$$\begin{array}{r} 6x + 4y = 180 \\ -6x - 9y = -270 \\ \hline -5y = -90 \\ y = 18 \\ x = 18 \end{array}$$