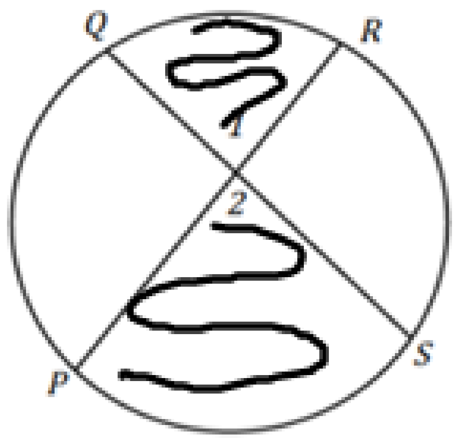
Sometimes, two chords do not intersect "on" the circle, but "in" the circle.

These chords cannot be called inscribed angles.

When two chords intersect "inside" a circle, two sets of vertical angles are formed.

Consider the figure below.

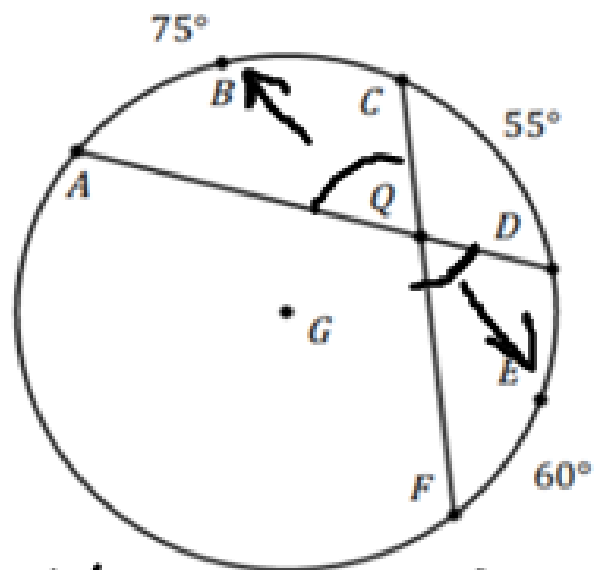


The angle formed inside of a circle by two intersecting chords is 1/2 of the sum of the chords' intercepted arcs.

Using the above circle as an example, angles 1 and 2 can be found using the function $m\angle 1 = \frac{1}{2}(m\overset{\frown}{QR} + m\overset{\frown}{PS})$

Let's Practice!

1. Consider the figure below, and determine $m\angle AQC$.

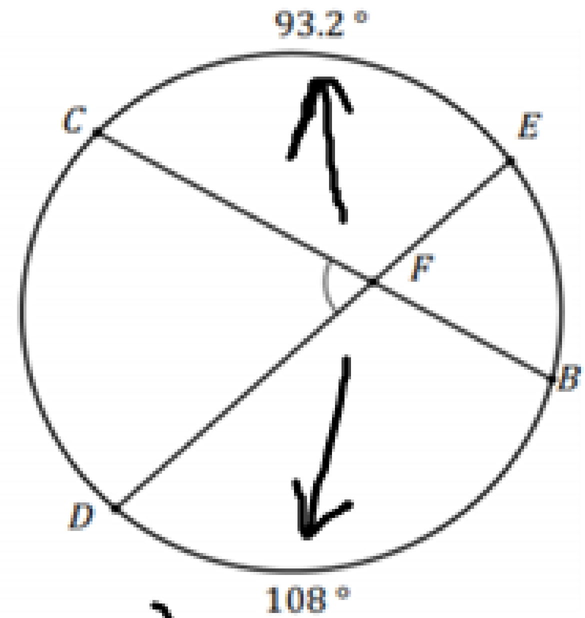


$$\begin{array}{r} 75 \\ 60 \\ \hline 135 \end{array}$$

$$\begin{array}{r} 67 \\ 2\overline{)135} \\ 12 \\ \hline 15 \end{array}$$

$$m\angle AQC = \tfrac{1}{2}(75+60)$$
$$= 67.5^\circ$$

2. Consider the diagram below and find $m\angle CFD$. Justify your answer.



$\frac{1}{2}(93.2 + 108)$

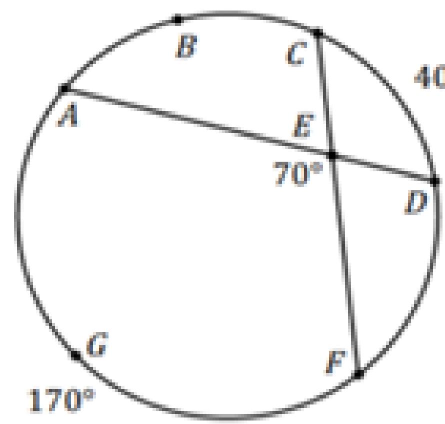
$\frac{1}{2}(201.2)$

(100.6)

$$\begin{array}{r} 180 \\ -100.6 \\ \hline 79.4 \end{array}$$

Mr. Fadhil gave the daily exit ticket shown in the diagram to his Geometry students.

Mr. Fadhil's Geometry 3^{rd} Block
Exit Ticket:
Find $m\widehat{DF}$



One of Mr. Fadhil's students argued that there was something wrong with this problem, based on the above diagram and the measurements.

What is the error in this problem? Justify your answer.

$$\frac{170+40}{2} \neq 70$$

$$= 105$$