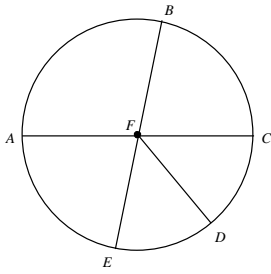


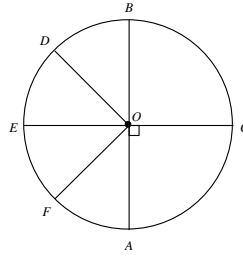
8.1 Measures of Angles and Arcs

1.



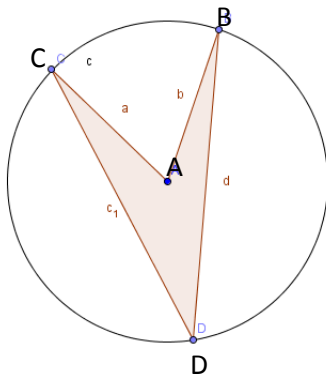
In $\odot F$, $\angle CFD \cong \angle DFE$, $m\angle BFA = 7x$, $m\angle AFE = 5x + 12$, and \overline{BE} and \overline{AC} are diameters. Find m arc DC.

2.

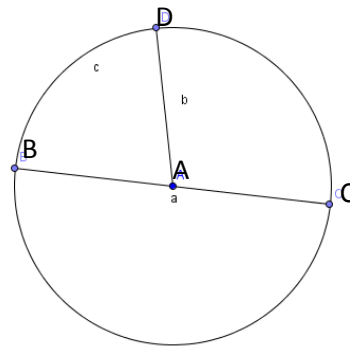


In $\odot O$, \overline{EC} and \overline{AB} are diameters, and $\angle BOD \cong \angle DOE \cong \angle EOF \cong \angle FOA$. Find m arc BC.

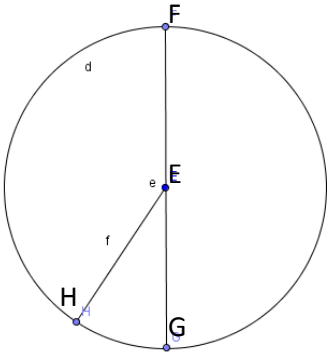
3. Find the length of arc CB if $\angle CDB = 27x - 14$ & $\angle CAB = (x^2 + 17x + 42)^\circ$



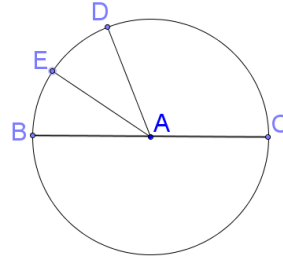
4. Find $m\angle BAD$ if BC is a diameter in Circle A, and the measure of arc DC is 102° .



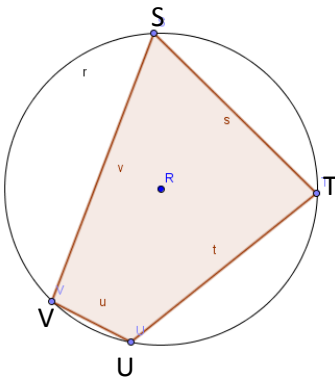
5. Find $m \text{ arc } HF$ if FG is a diameter in Circle E, and the measure of arc HG is 34° .



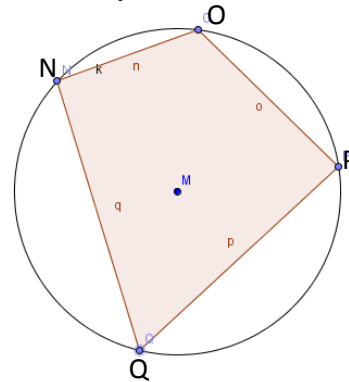
6. Find $m \text{ Arc } BE$ if $\angle BAE \cong \angle EAD$, and $\angle DAC = 110^\circ$



7. Given Quadrilateral $STUV$, and $\angle T = 87^\circ$, find $m \text{ arc } SVU$.



8. Use the properties of Inscribed Angles to show why $m\angle N + m\angle P = 180^\circ$



Answers:

1. 49° . Since \overline{BE} is a diameter, $m\angle BFA + m\angle AFE = 180$. Solve the equation, then substitute the value of x to find $m\angle BFA$. Since $\angle BFA$ and $\angle EFC$ are vertical angles, they are congruent. Additionally, use the fact that $m \text{ arc } DC = m\angle CFD = \frac{1}{2} m\angle CFE = \frac{1}{2} m\angle BFA$.
2. 90° . Since the diameters \overline{EC} and \overline{AB} are perpendicular, they form right angles which measure 90. Additionally, since $\angle BOD \cong \angle DOE \cong \angle EOF \cong \angle FOA$, all of those angles are $\frac{1}{2}(90^\circ)$ which is 45° . The measure of an arc is equal to the measure of its central angle, so add any angles that are necessary to find the measure of the given angle and its intercepted arc.
3. $\angle CDB = 40^\circ$ & $\angle CAB = 80^\circ$
4. $m\angle BAD = 78^\circ$
5. $m \text{ arc } HF = 146^\circ$
6. $m \text{ Arc } BE = 35^\circ$
7. $m \text{ arc } SVU = 174^\circ$
8. $m\angle N + m\angle P = 180^\circ$
 $-m\angle N = \frac{1}{2}m \text{ arc } OPQ$ & $m\angle P = \frac{1}{2}m \text{ arc } QNO$
 $\frac{1}{2}(m \text{ arc } OPQ + m \text{ arc } QNO = 360^\circ)$
 $\frac{1}{2}m \text{ arc } OPQ + \frac{1}{2}m \text{ arc } QNO = 180^\circ$
 $m\angle N + m\angle P = 180^\circ$