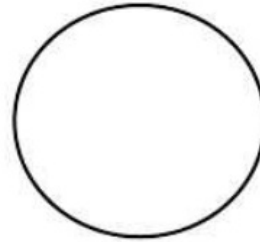The perpendicular distance from the center of the circle to a chord is 4 inches. What is the length of the chord? What is the measure of its central angle?

Inscribed Angles in Circles

$$m\angle APB = m\overarc{AB}$$

$$\tfrac{1}{2}m\overarc{AB} = m\angle ACB$$
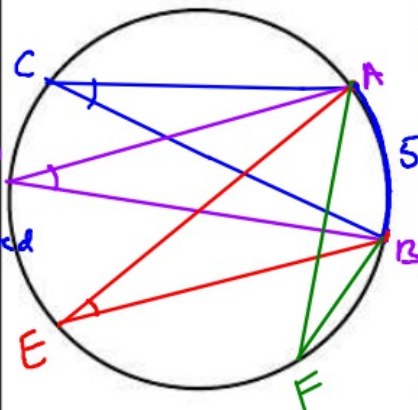
$$2m\angle ACB = m\overarc{AB}$$

Inscribed Angles

Vertex on Circle

$\angle ACB$

measure of Angle is half the intercepted arc.

Congruent Inscribed Angles

Same intercepted Arc

$$\angle ACB \cong \angle ADB \cong$$
$$\angle AEB \cong \angle AFB$$
$$= \tfrac{1}{2}m\overarc{AB}$$

C A D 50° B E F

In the diagram below, $\overline{BD}$ is a diameter of the circle with center O. Points A, B, C, and D are on the circle.

On the left (handwritten):
$m\overset{\frown}{AB} = 80°$
$m\overset{\frown}{BC} = 110°$
$m\overset{\frown}{DC} = 70°$
$m\overset{\frown}{AD} = 100°$
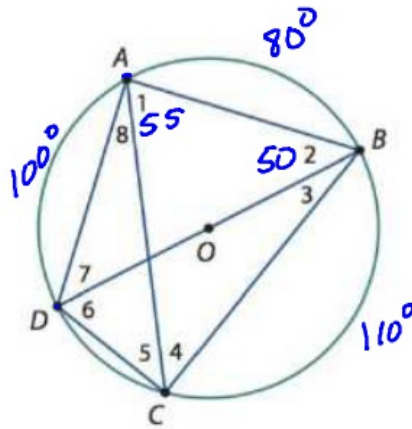
On the right (handwritten):
$m\angle 1 =$ $\qquad m\angle 5 = 40°$
$m\angle 2 = 40°$ $\qquad m\angle 6 =$
$m\angle 3 =$ $\qquad m\angle 7 = 50°$
$m\angle 4 = 50°$ $\qquad m\angle 8 =$

If measure of arc AB = 100°, find the measure of as many possible numbered angles as possible.

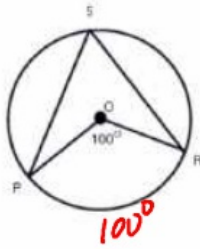Given the two measures $m\angle 1 = 55°$ and $m\angle 2 = 50°$, find the measures of the four minor arcs AB, BC, CD, and DA.

1) If $m\overset{\frown}{PQ} = 100°$, $m\angle QOS = 110°$, and $m\angle SOR = 35°$ find:

$m\angle POQ = 100°$ $\qquad m\overset{\frown}{QS} = 110°$
$m\overset{\frown}{SR} = 35°$ $\qquad m\angle ROP = 115°$
$m\overset{\frown}{RP} = 115°$ $\qquad m\overset{\frown}{PQS} = 210°$
$m\angle QOR = 145°$ $\qquad m\overset{\frown}{QSR} = 145°$
$m\overset{\frown}{SRP} = 150°$ $\qquad m\overset{\frown}{RPQ} = 215°$
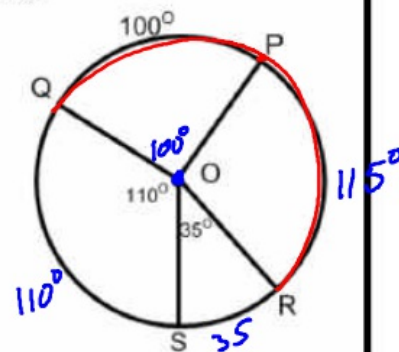
4) $m\angle POR = 100°$
$m\overarc{PR} = $ **100°**
$m\angle PSR = $ **50°**

5) $m\angle ABC = 70°$, $m\overarc{BC} = 100°$
$m\overarc{AC} = $ **140** $m\angle C = $ **60°**
$m\angle A = $ **50°** $m\overarc{AB} = $ **120°**
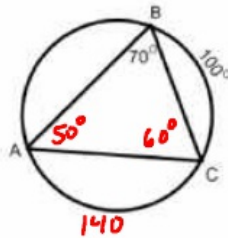
6) $\overline{AT}$ is a diameter,
$m\overarc{RT} = 86°$
$m\angle A = $ **43°** $m\angle R = $ **90°**
$m\angle T = $ **47** $m\overarc{AR} = $ **94**

100°

140
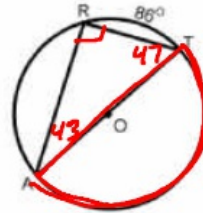
For questions 3-8, use $\odot P$ to find each measure.
In $\odot P$, $m\angle TPU = 25$, $m\angle SPT = 80$, and $PT = 5$.
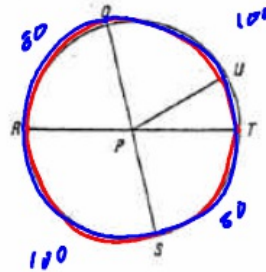$\overline{RT}$ and $\overline{QS}$ are diameters.

3. $QS = $ **10**

4. $m\overarc{TSR} = $ **130°**

5. $m\overarc{UTS} = $ **105°**

6. $m\overarc{RQU} = $ **155°**

7. $m\angle RPQ = $ **80°**

8. $m\angle SPR = $ **100°**

For questions 11-15, use the figure below. Find each
measure.

11. $m\overarc{FG} = $ **100°**

12. $m\angle FEG = $ **50°**

13. $m\overarc{EH} = $ **60°**

14. $m\angle EFH = $ **30°**

15. $m\angle FGE$
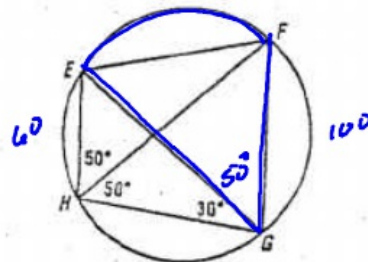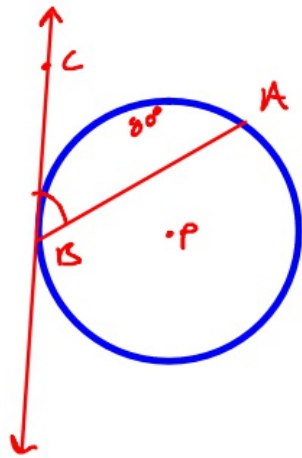
$\overleftrightarrow{BC}$ is tangent

to $\odot P$

$m\angle CBA = \frac{1}{2} m\overarc{BA}$