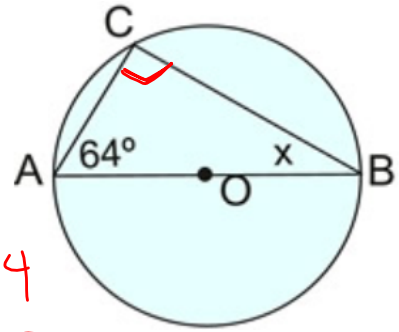
DO NOW

Given circle O with diameter $\overline{AB}$.
Find x.



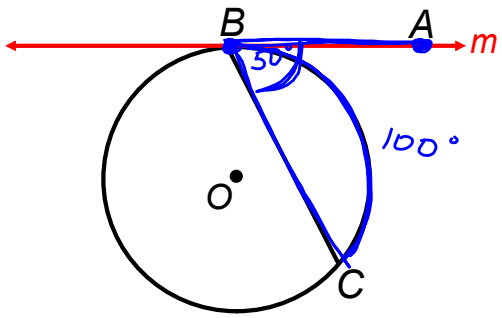
26°

64 + 90 = 154

180 − 154 = 26°

Tangent to a Circle

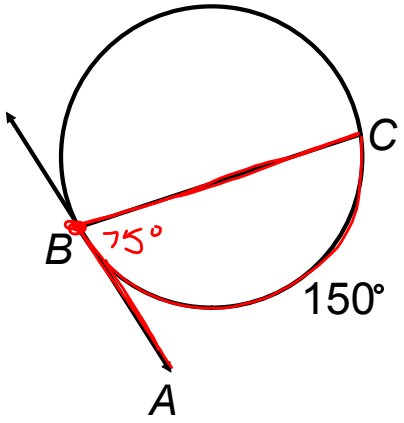
A line that intersects the circle at only ONE point



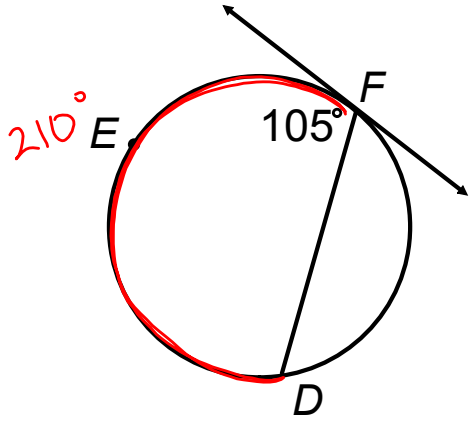
Line m is a tangent to circle O

$$m\angle ABC = \frac{1}{2} m\overset{\frown}{BC}$$

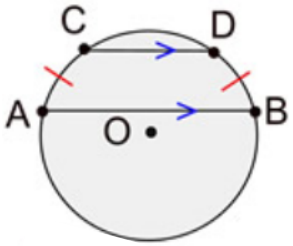
1) Find $m\angle ABC$



2) Find $m\overset{\frown}{DEF}$



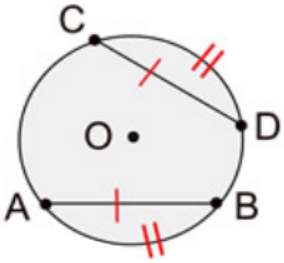
In a circle, parallel chords intercept congruent arcs



IF: $\overline{AB} \parallel \overline{CD}$

THEN: $\overset{\frown}{AC} \cong \overset{\frown}{DB}$

In a circle, congruent chords have congruent arcs



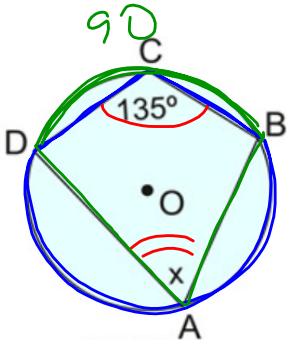
IF: $\overline{AB} \cong \overline{CD}$

THEN: $\overset{\frown}{AB} \cong \overset{\frown}{CD}$

A quadrilateral inscribed in a circle is called a *cyclic quadrilateral*

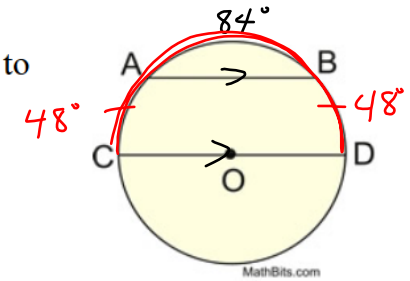
The opposite angles in a cyclic quadrilateral are **supplementary**

Given circle O with inscribed quadrilateral. Find x.



180 − 135 = 45°

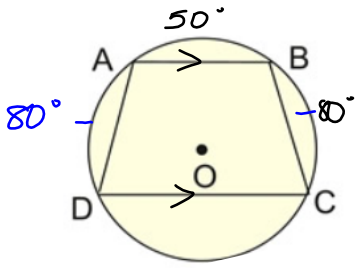
1) Given circle O with diameter $\overline{CD}$ parallel to chord $\overline{AB}$.
If $m\overset{\frown}{AB} = 84°$, find $m\overset{\frown}{CA}$.



180 − 84 = 96°

$\frac{96}{2}$ = 48°

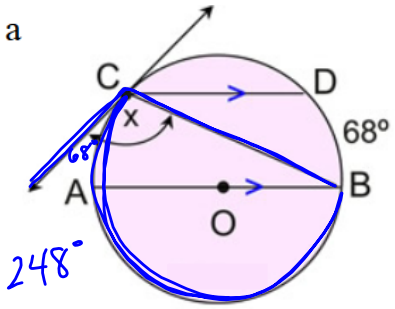
2) Given circle O with quadrilateral $ABCD$ and chord $\overline{CD}$ parallel to chord $\overline{AB}$.
$m\overset{\frown}{AB} = 50°$, $m\overset{\frown}{BC} = 80°$
Find $m\overset{\frown}{CD}$.



80 + 80 + 50 = 210

360 − 210 = 150°

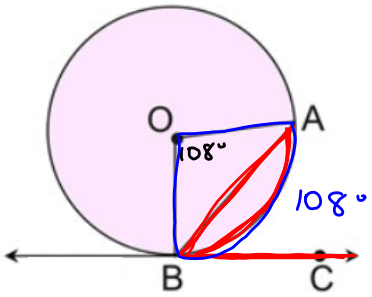
3) Given circle O with diameter $\overline{AB}$ and a tangent at C. $\overline{AB} \parallel \overline{CD}$
Find x.



$x = \frac{1}{2}(248)$

$x = 124°$

4) Given circle O with tangent at B.
If $m\angle AOB = 108°$, find $m\angle ABC$.



$m\angle ABC = \frac{1}{2}(108)$

$m\angle ABC = 54°$