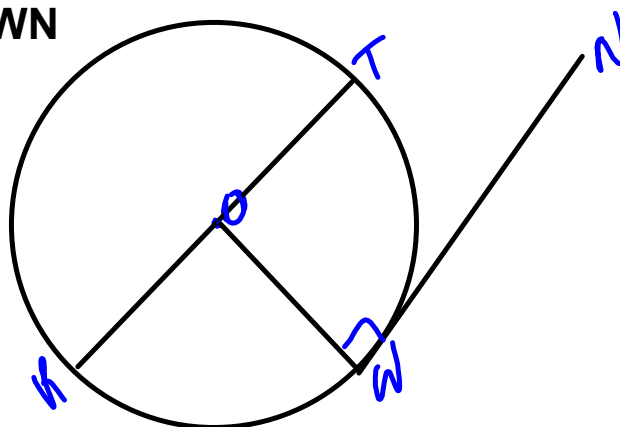


## Warm-Up

## May 15

1. Label the center O
2. Draw a diameter and label RT
3. draw a radius from point O and call the endpoint W.
4. Draw a tangent and call it WN



# SECTION 8.2

## PROPERTIES OF A CHORD

A line segment that joins two points on a circle is a **CHORD**.

A diameter of the circle is a chord that goes through the center of the circle.

Use 2 Letters to name a line

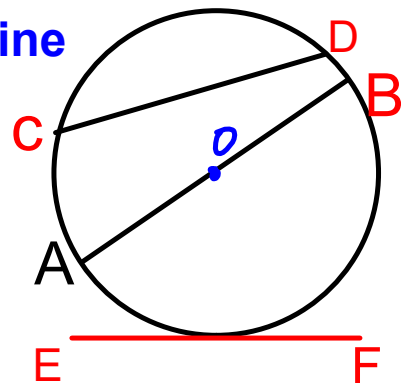
1. Name the tangent.  $EF$

2. Name the chord[s].

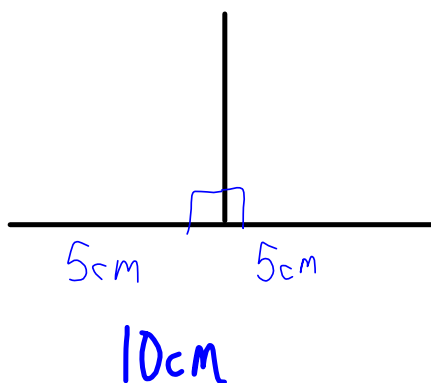
$CD, AB$

3. Name the diameter

$AB$



[hits at  $90^\circ$ ] [two pieces]  
A perpendicular bisector intersects a line segment at  $90^\circ$  and divides the line segment into two equal parts.



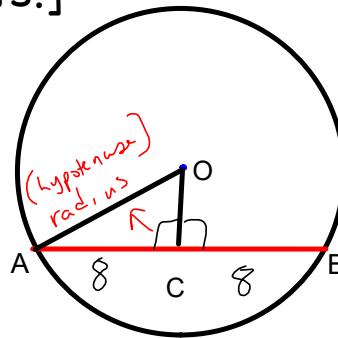
## Properties of a CHORD

### 1. Perpendicular to chord Property 1

The perpendicular from the center of a circle to a chord bisects the chord [that is the perpendicular divides the chord into two equal parts.]

$$AC = CB$$

$$\angle ACO = \angle BCO$$



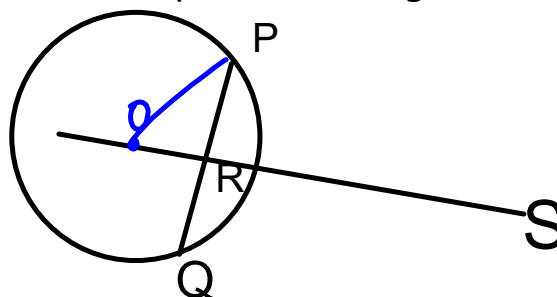
$$AB = 16$$

↑  
chord

## 2. Perpendicular to Chord Property 2

The perpendicular bisector of a chord in a circle passes through the center of the circle.

When  $PR = QR$  and  $\angle SRP = \angle SRQ$  then  $SR$  passes through  $O$  [the center of the circle]

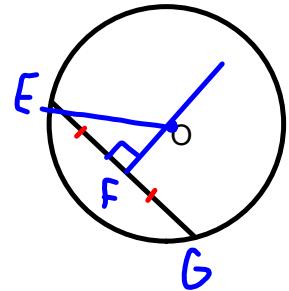


## To Summarize

### A perpendicular bisector of a chord:

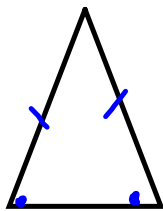
- \* Hits the chord at a  $90^\circ$  angle
- \* Cuts the chord into two equal parts
- \* Passes through the center

$\angle EFO = \angle GFO$   
 $EF = GF$

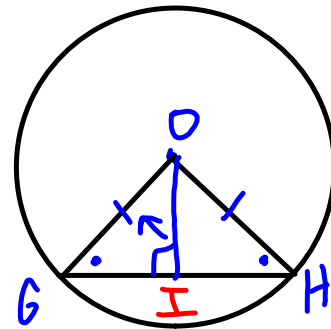


### Review

#### Isosceles triangle



- \* Two equal sides
- \* Base angles are equal



**Name Properly!!!**

1. Identify the radius  $OG, OH$
2. Identify the chord  $GH$
3. Identify equal angles  
 $\angle GIO = \angle HIO$   $\angle OGH = \angle OHG$
4. Identify equal sides

$OG = OH$

$GI = HI$

$\triangle OGH$  is an isosceles triangle

Draw a circle that includes the following information:

1. A tangent [RT] where T is the point of tangency
2. Label the center O
3. A radius [OT]
4. A cord [TA]
5. Perpendicular line from O to the chord [point B]
6. If the diameter of the circle is 17 and the chord length is 15 what is the distance from the center of the circle to the chord?

