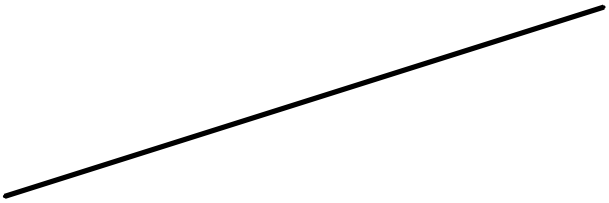
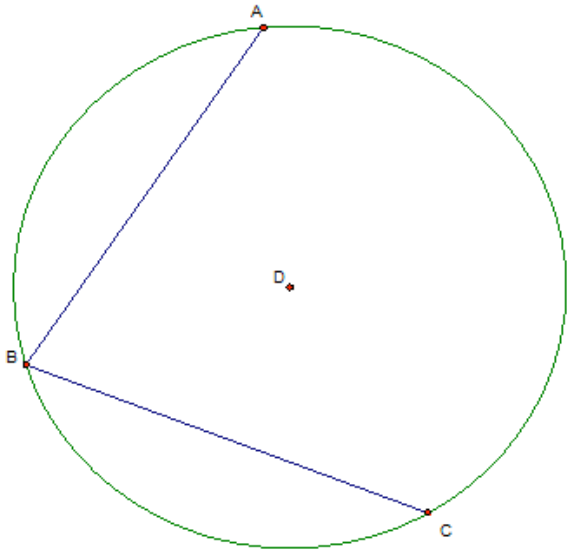
Properties of Chords

Let's construct the perpendicular bisector of the following segment together!!!!



Now try this one on your own!!!

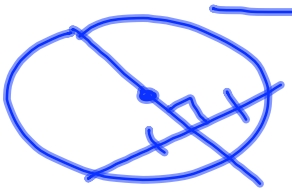
Construct the perpendicular bisector of each of the chords in the circle below.



Use your circle diagram to help you fill in the blanks to the following properties

Chord Property 1 (CP1):

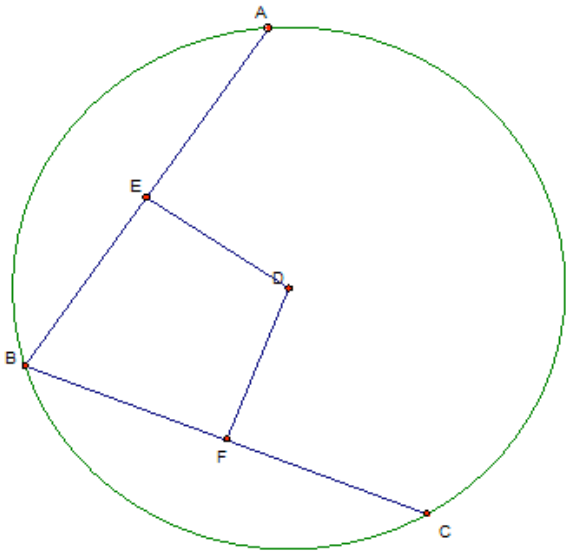
A line through the center of a circle that bisects a chord is perpendicular to the chord.



Chord Property 2 (CP2):

The perpendicular line from the center of a circle to a chord bisects the chord.

How can we located the unmarked centre of a circle???

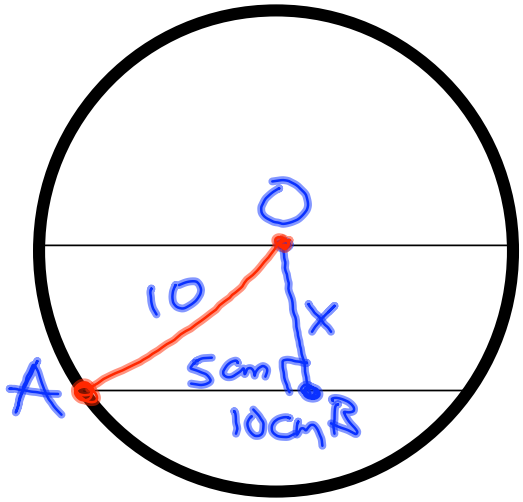


In the above diagram, measure the length of chord AB and chord BC.

Measure the length of segment DE and segment DF.

what can you conclude?

Example 1:
A circle 20 cm in diameter has a chord of length 10 cm. Find the perpendicular distance from the chord to the center of the circle.

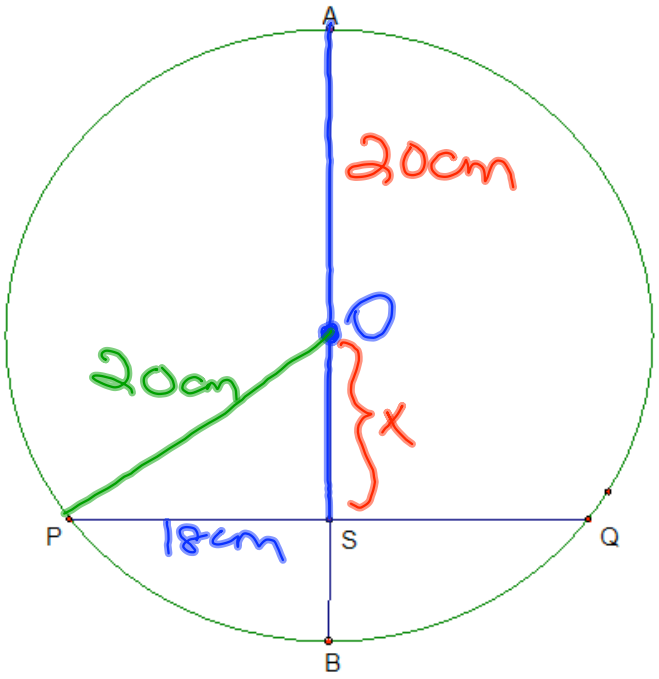


*Hint:
Try to form right Δ's.
By drawing in a radius.

Statement	Reason
1. AB = 5 cm	1. CP 2
2. OA = 10 cm	2. Radius.
3. $a^2+b^2=c^2$ $x^2+5^2=10^2$ $x^2=10^2-5^2$ $x^2=\sqrt{75}$ $x=8.7$ cm	3. Pythagorean Theorem.

Example 2:

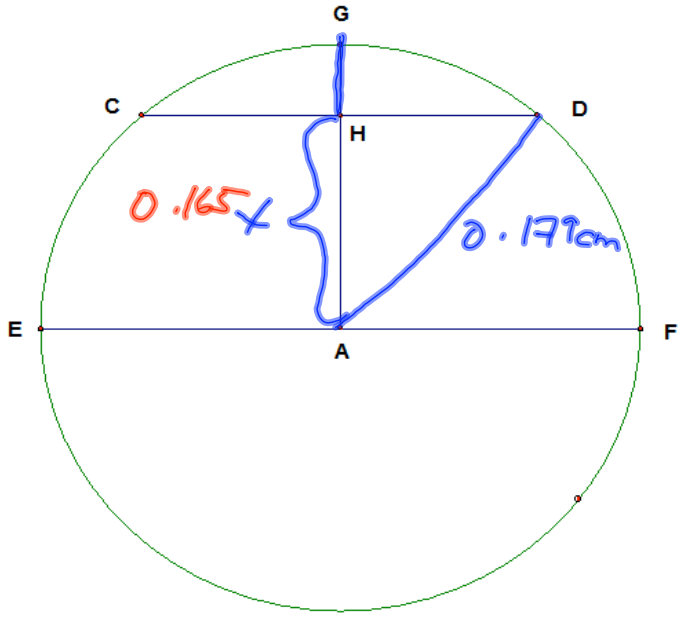
PQ = 36 cm
radius = 20 cm
Find length AS



Statement	Reason
1. $OA = 20cm$	1. radius
2. $OP = 20cm$	2. " "
3. $PS = 18cm$	3. CP2
4. $x^2 + 18^2 = 20^2$ $x = \sqrt{20^2 - 18^2}$ $x = 8.7cm$	4. Pyth Theorem
5. $AS = 20 + 8.7cm$ $28.7cm$	5. Calculation.

F-18 Fuel Line Cross Section

A is the center of the circle and GA is perpendicular to CD. EF = 0.358 cm and chord CD = 0.140 cm. IF GH is longer than 0.10 cm the fuel line is not within safety specifications and must be replaced. Determine whether the fuel line needs replacing.



Statement	Reason
1. AD = 0.179 cm	1. Radius.
2. DH = 0.07 cm	2. CP2
3. $AH^2 + 0.07^2 = 0.179^2$	3. Pythagorean Theorem.
$AH = \sqrt{0.179^2 - 0.07^2}$	
$AH = 0.165$	
4. $GH = 0.179 - 0.165$	4. Calc.
$= 0.014$ cm	

Assignment:

Pg. 435 1 odds, 2 odds

5, 8, 9, 10, 13, 17, 22, 27 odds