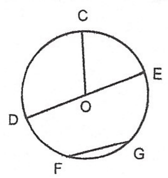
UNIT 8.2 – PRACTICE QUESTIONS

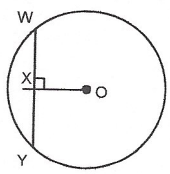
Short Answer

11. O is the centre of this circle.
Which line segment is a diameter?



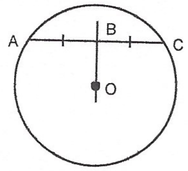
- The diameter goes through the center from one side to the other side.
- thus, diametere is $\overline{DE}$.

12. O is the centre of the circle.
What can you say about the lengths of WX and XY?



- since $\overline{OX}$ is a bisector line, it cuts the chord $\overline{WY}$ into 2 parts of equal length.
- thus $\overline{XW} = \overline{XY}$

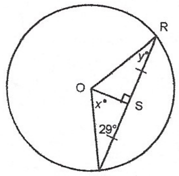
13. O is the centre of the circle.
What can you say about the measure of ∠OBC?



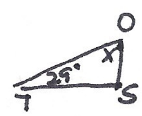
- since the bisector $\overline{OB}$ is Perpendicular to the chord $\overline{AC}$,

$\angle OBC = \angle OBA = 90°$ (a Right angle)

14. Point O is the centre of this circle.
Determine the values of $x°$ and $y°$.



- Look at △OST:



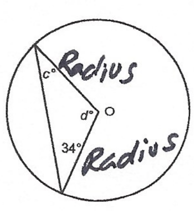
- angle at S = 90°
- thus

$x° = 180° - (90° + 29°)$

$\boxed{x° = 61°}$

- Look at △ OTR:
since $\overline{OT} = \overline{OR}$ = Radius, △OTR is an isosceles triangle. this means 2 angles are equal.
thus $\boxed{\angle R° = \angle T° = 29°}$

15. Point O is the centre of this circle.
Determine the values of $c°$ and $d°$.



- Like the problem before, △ is an isosceles triangle.
- thus means° that there are 2 equal angles:

$c° = 34°$

- To get $d°$:

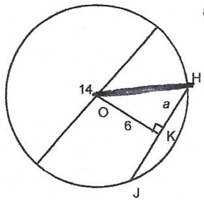
$180 - (34° + 34°) = 180° - 68°$

$\boxed{d° = 112°}$

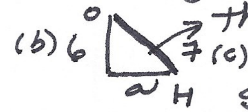
STRATEGY: - Make a Triangle.
- Identify the 2 Lengths you have.
- Identify and get the length you do not have.

NOTE: → Make sure The triangle includes the length you want to find

16. Point O is the centre of this circle. Without solving for *a*, sketch and label the length of any extra line segments you need to draw to determine the value of *a*.



• Make a triangle:

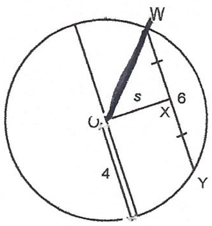


this is the Radius → Half the diameter = 7

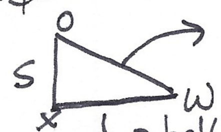
so $a = \sqrt{c^2 - b^2}$ ($a = 3.6$)

$a = \sqrt{7^2 - 6^2} = \sqrt{49 - 36} = \sqrt{13}$

17. Point O is the centre of this circle. Without solving for *s*, sketch and label the lengths of any extra line segments you need to draw to determine the value of *s*.



• We need to add $\overline{OW}$, which is a Radius equal to 4.

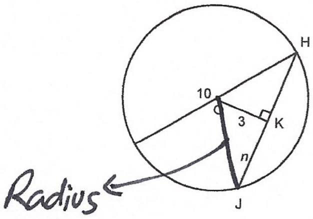


Radius = 4

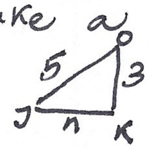
half the chord = 3

$S = \sqrt{(OW)^2 - (XW)^2}$

18. Point O is the centre of this circle.
Determine the value of *n* to the nearest tenth, if necessary.



• Make a triangle

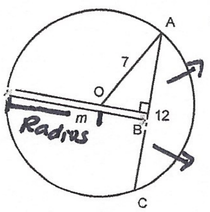


$\overline{OJ}$ is a Radius → Radius is half the diameter = 5

$n = \sqrt{(5)^2 - (3)^2} = \sqrt{25 - 9} = \sqrt{16}$

$n = 4$

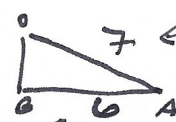
19. Point O is the centre of this circle.
Determine the value of *m* to the nearest tenth, if necessary.



• Notice that m is the sum of the Radius and the line $\overline{OB}$.

6

• $\overline{OB}$ is a leg
$\overline{AB}$ is half the chord

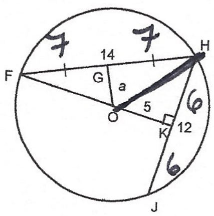


$\overline{OB} = \sqrt{(7)^2 - (6)^2}$
$= \sqrt{49 - 36} = \sqrt{13}$

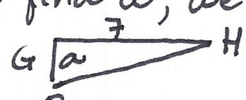
$\overline{OB} = 3.6$

• m then is = Radius + 3.6 = 10.6
7 + 3.6

20. Point O is the centre of this circle.
Determine the value of *a* to the nearest whole number.

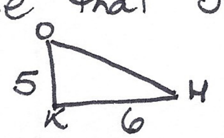


• to find a, we must use



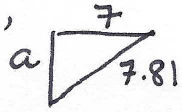
BUT, we need $\overline{OH}$.

• NOTICE that $\overline{OH}$ is the hypotenuse of:
($\overline{HK}$ is half the chord = 6)



$\overline{OH} = \sqrt{5^2 + 6^2} = \sqrt{25 + 36} = \sqrt{61}$
$\overline{OH} = 7.81$

• so,

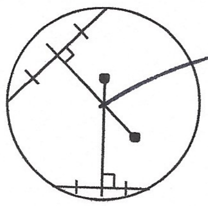


$a = \sqrt{(7.81)^2 - (7)^2} = \sqrt{61 - 49} = \sqrt{12} = 3.46$

so $a = 3$

Problem

21. Draw a point at the centre of this circle. Label the point O.
How do you know your answer is correct?



O

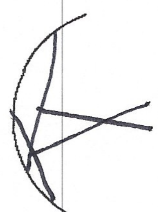
- this is correct because the bisector lines always come from the center of the circle.
- So if we find the center of the chord and draw a line from this center towards the center of the circle, all bisectors will meet at the center

22. a) In a circle, can a chord be longer than a diameter of the circle? Explain.
b) In a circle, can a chord be shorter than a radius of the circle? Explain.

a) No. the diameter is the longest chord in a circle.

b) Sure!

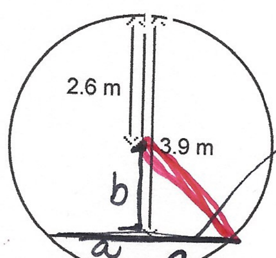
23. This arc is part of a circle.
Explain how you could locate the centre of the original circle.



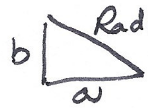
- Draw any chord.
- Find the middle of this chord, and draw a line from this center towards the center of the circle.
- Repeat with another chord.

24. A circle has diameter 32 cm. How far from the centre of the circle, to the nearest centimetre, is a chord 20 cm long?

25. A pedestrian underpass is constructed using a cylindrical pipe of radius 2.6 m. The bottom of the pipe will be filled and paved. The headroom at the centre of the path is 3.9 m.
How wide is the path to the nearest tenth of a metre?



- this is what we want to find.



Radius = 2.6 m

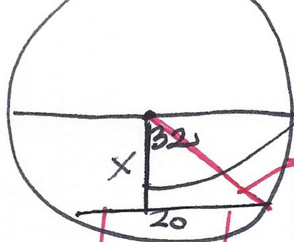
$b \Rightarrow (3.9 - 2.6)\,m = 1.3\,m$

So $a = \sqrt{(2.6)^2 - (1.3)^2} = \sqrt{6.76 - 1.69}$

$a = \sqrt{5.07} = 2.25$

the chord is $2 \times a$ so $\therefore = 4.5\,m$

24.

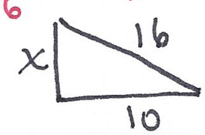


. this is what we want to find.

Radius → half the diameter = 16

16

So:



$x = \sqrt{(16)^2 - (10)^2}$

$x = \sqrt{256 - 100} = \sqrt{156}$

$x = 12.48\,cm$

$x = 12.5\,cm$