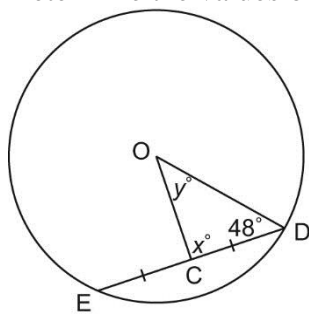


Unit 8: Circle Geometry

Name: _____

8.2 Properties of Chords in a Circle - Worksheet

1. Point O is the centre of the circle.
Determine the values of x° and y° .



Since OC bisects (cuts into two equal parts) the chord ED
Then, $x = 90^\circ$

$$\begin{aligned} y^\circ &= 180 - (90 + 48) \\ &= 180 - 138 \\ &= 42^\circ \end{aligned}$$

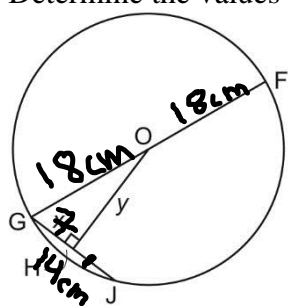
2. Point O is the centre of the circle; OF = 18 cm; and GJ = 14 cm.
Determine the values of x and y to the nearest tenth of a centimetre where necessary.

To find y :

$$\begin{aligned} b^2 &= c^2 - a^2 \\ b^2 &= 18^2 - 7^2 \\ b^2 &= 324 - 49 \\ b^2 &= 275 \end{aligned}$$

$$b = \sqrt{275}$$

$$b = 16.6 \text{ cm, so } y = 16.6 \text{ cm}$$



OF is the radius so, $GO = 18 \text{ cm}$

Since GJ has been intersected by a line that passes through the center at 90° then, $GH = HJ$

$$\text{So, } x = 14 \div 2 = 7 \text{ cm}$$

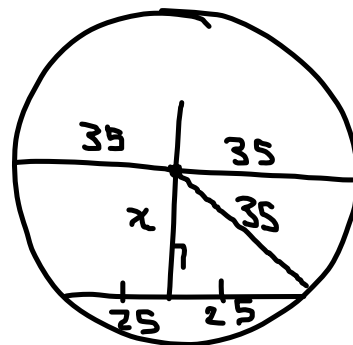
3. A circle has diameter 70 cm, so radius = $70 \div 2 = 35$
A chord in the circle is 50 cm long.
How far is the chord from the centre of the circle?
Give the answer to the nearest tenth of a centimetre.

The distance between the chord and the center is 24.5 cm

$$\begin{aligned} b^2 &= c^2 - a^2 \\ b^2 &= 35^2 - 25^2 \\ b^2 &= 1225 - 625 \end{aligned}$$

$$\sqrt{b^2} = \sqrt{600}$$

$$b = 24.5$$



4. A circle has diameter 22 cm. $r = 22 \div 2 = 11 \text{ cm}$

Two chords are drawn on opposite sides of the centre of the circle.

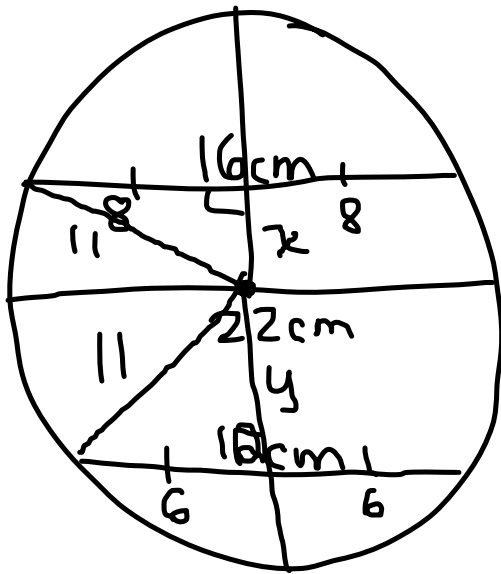
One chord is 16 cm long and the other chord is 12 cm long.

a) Which chord is closer to the centre of the circle?

b) How much closer to the centre is this chord?

Give the answer to the nearest tenth of a centimetre.

The chord closest to the center is 16cm.



find x:

$$b^2 = c^2 - a^2$$

$$b^2 = 11^2 - 8^2$$

$$b^2 = 121 - 64$$

$$\sqrt{b^2} = \sqrt{57}$$

$b = 7.5 \dots$ distance between 16cm chord and the center.

find y:

$$b^2 = c^2 - a^2$$

$$b^2 = 11^2 - 6^2$$

$$b^2 = 121 - 36$$

$$\sqrt{b^2} = \sqrt{85}$$

$b = 9.2 \dots$ distance between 12cm chord and center.

The 16cm chord is $9.2 - 7.5 = 1.7 \text{ cm}$ closer to the center.