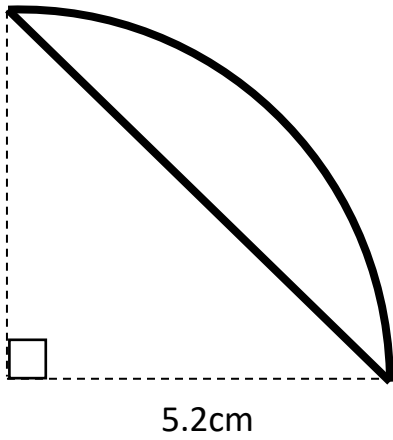


Key Stage 4	Name _____
Year 10 Group ___/H	
Autumn Term 2	
Week 12	
<u>Arcs and sectors</u>	

Week	Lesson	Title	Progress	Attainment	Online Links	
					Presentation	YouTube Video
12	34	Circle problems			Slides 02 – 19	
12	35	Length of an arc			Slides 20 – 37	
12	36	Area of a sector			Slides 38 – 55	

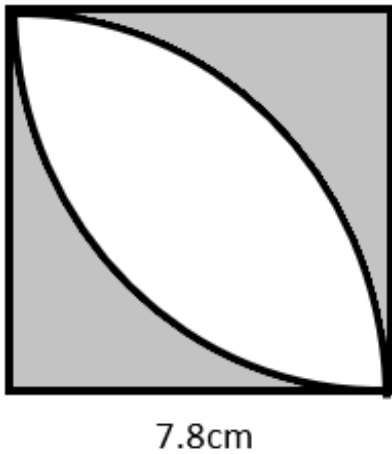
Circle problems

Example 1a. Find the perimeter of the segment.



“ I know of these things...”

Example 1b. Find the shaded area.





Draw a diagram



Make a table



Try all possibilities



Similar completed?



Work backwards

Problem Solving: TECHNIQUES

Make a model



Break into parts



Highlight key words



Use resources



Ask a friend



Guess and check



Look for a pattern

- Textbooks ✓
- MyMaths ✓
- Notes ✓
- Wall Displays ✓

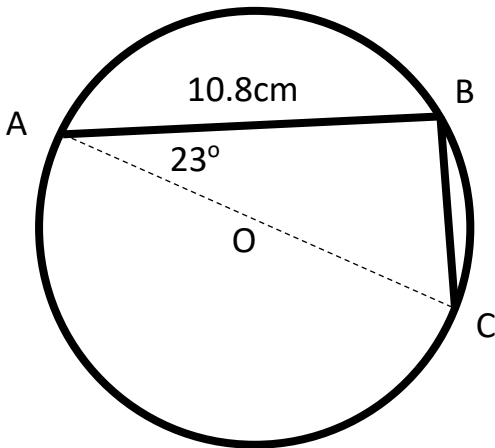
Circle problems

1. A cyclist trains for 1hour and 15mins on a bicycle that has wheels with radius 31cm. The wheels make approximately 23100 revolutions during the session. Find the average speed of the cyclist in km/h.

3. A metal circle with circumference 50cm is reformed as a right-angled triangle with base 15cm. Find the perimeter of the triangle.

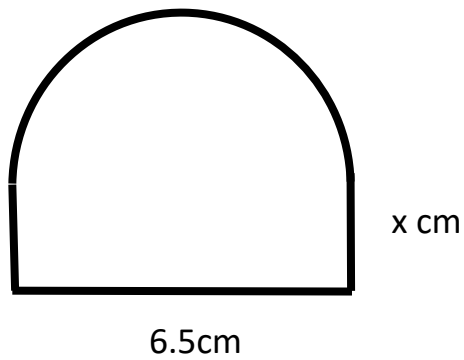
Circle problems

2. Find the area of the circle.



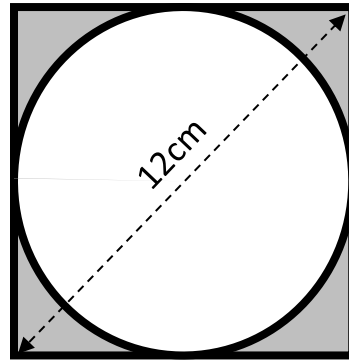
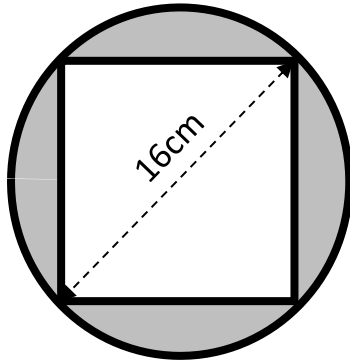
Note: "An angle in a semi-circle is equal to 90° " – in other words $\angle ABC = 90^\circ$.

4. Find the missing value x given area = 28.29 cm^2 (2d.p.)



Circle problems

Extension. Find the exact shaded area for each shape in terms of π .

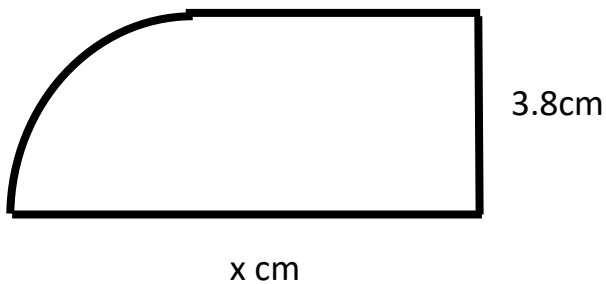


Note: Exact values do not include any decimals – you must use surds!

LESSON 34: Circle problems

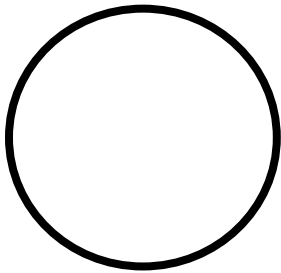
1. A right-angled triangle with hypotenuse 20cm and height 9cm is reformed as a circle with equal thickness. Find the circumference of the circle.

2. Find the missing value x given perimeter = 24.37cm (2d.p.)



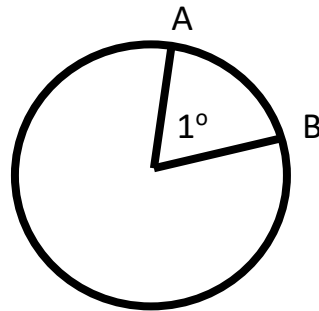
Length of an arc

1a. Find the circumference of a circle with diameter 10cm.



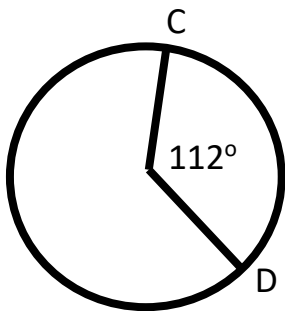
$d = 10\text{cm}$

1b. Find the length of minor arc AB when $\theta = 1^\circ$...



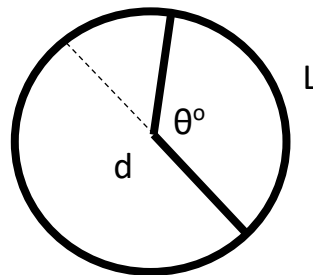
$d = 10\text{cm}$

1c. ...hence find the length of minor arc CD when $\theta = 112^\circ$.



$d = 10\text{cm}$

1d. Complete the formula.



Length of an Arc = $\pi d \div \text{_____} \times \text{_____}$

or...

Length of an Arc = _____ $\times \pi d$

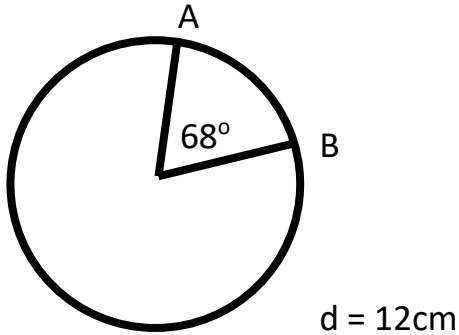
Note: You must remember this formula!

" We can work it out... "

Length of an arc

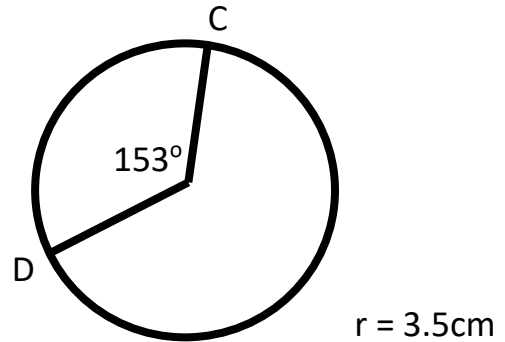
Example 2a.

Find the length of minor arc AB.



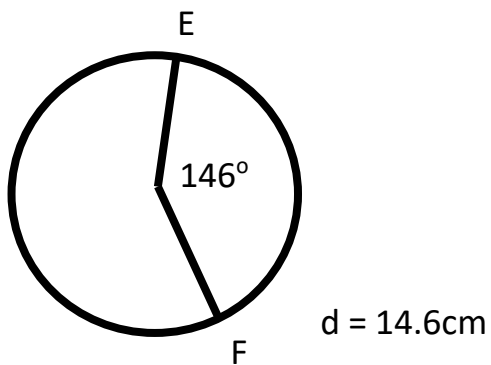
Example 2b.

Find the length of minor arc CD.



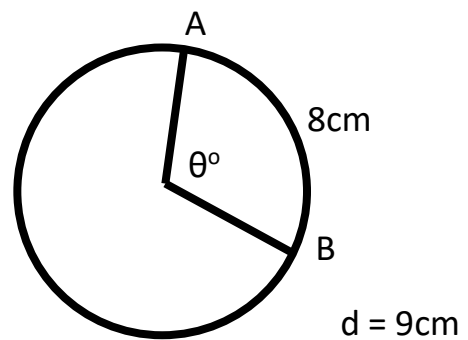
Example 2c.

Find the length of major arc EF.



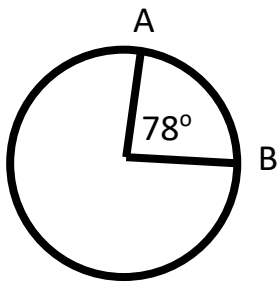
Example 3a.

Find the angle θ .



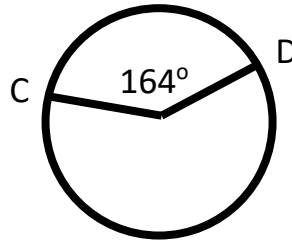
Length of an arc

2a. Find the length of minor arc AB.



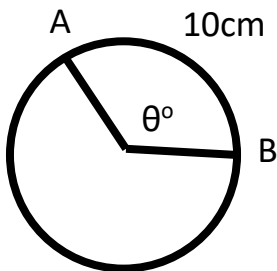
$$d = 18\text{cm}$$

2b. Find the length of minor arc CD.



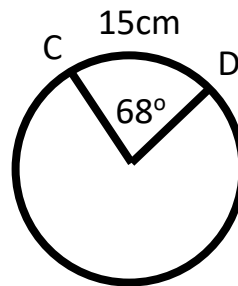
$$r = 10.8\text{cm}$$

3a. Find the angle θ .



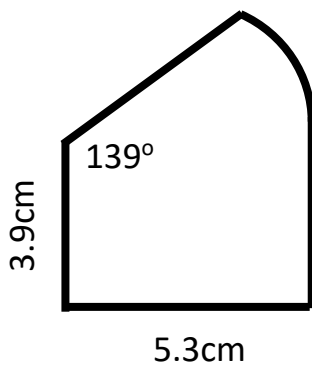
$$d = 8\text{cm}$$

3b. Find the diameter d.



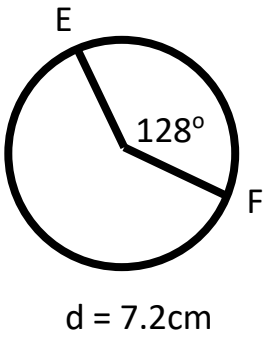
$$d = \underline{\hspace{2cm}}$$

4a. Find the perimeter.

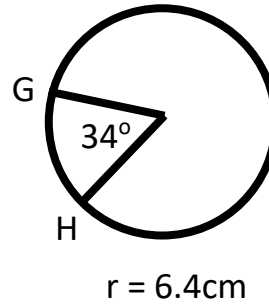


Length of an arc

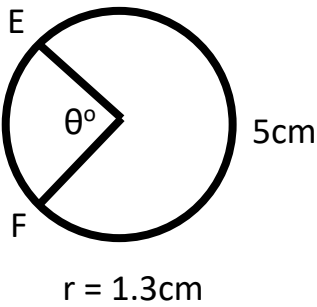
2c. Find the length of major arc EF.



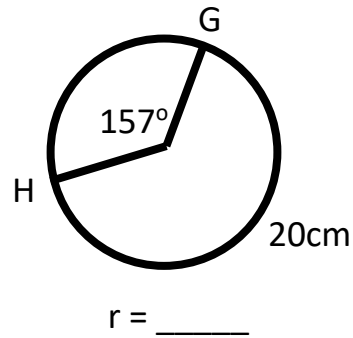
2d. Find the length of major arc GH.



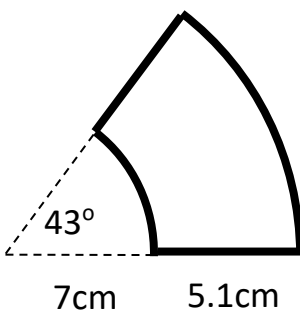
3c. Find the angle θ .



3d. Find the radius r.



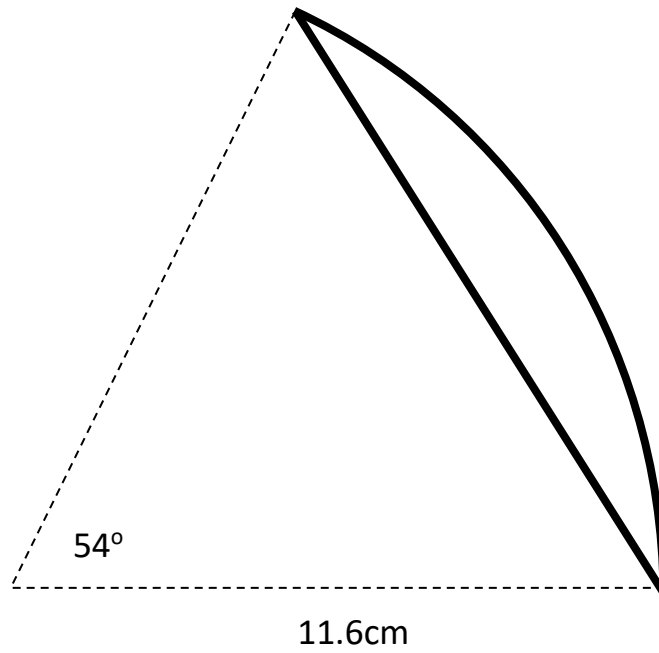
4b. Find the perimeter of the shape.



Length of an arc

Extension.

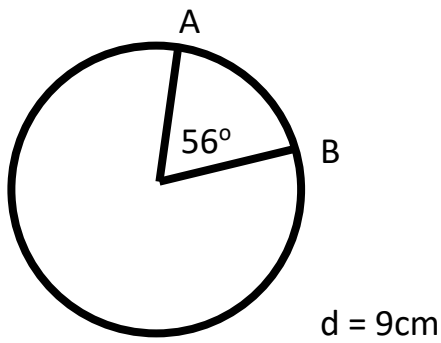
Find the perimeter of the segment.



Hint: Find the length of the chord using trigonometry.

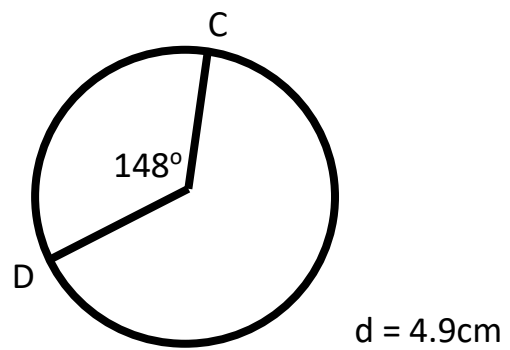
LESSON 35: Length of an arc

1. Find the length of the minor arc AB.

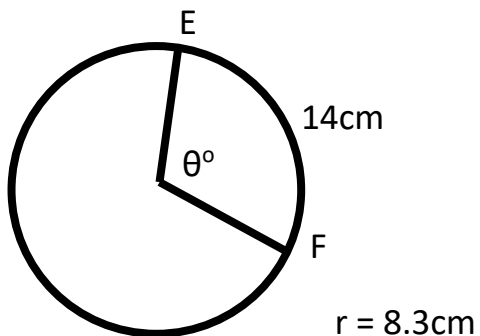


$$\text{Length AB} = (\pi \times \underline{\hspace{2cm}}) \div 360 \times \underline{\hspace{2cm}}$$

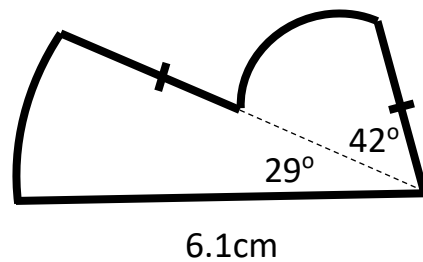
2. Find the length of major arc CD.



3. Find the angle θ .

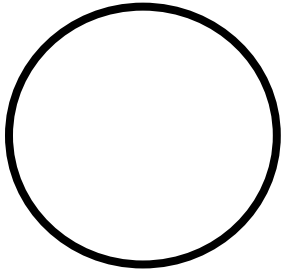


4. Find the perimeter of the shape.



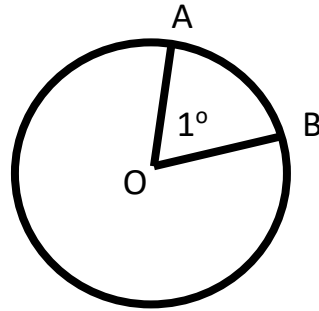
Area of a sector

1a. Find the area of a circle with radius 5cm.



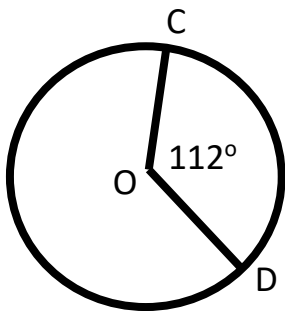
$r = 5\text{cm}$

1b. Find the area of minor sector AOB when $\theta = 1^\circ$...



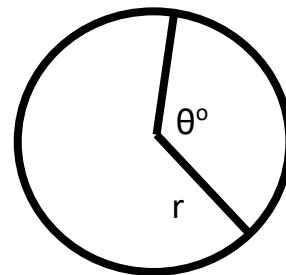
$r = 5\text{cm}$

1c. ...hence find the area of minor sector COD when $\theta = 112^\circ$.



$r = 5\text{cm}$

1d. Complete the formula.



Area of a Sector = $\pi r^2 \div \text{_____} \times \text{_____}$

or...

Area of a sector = _____ $\times \pi r^2$

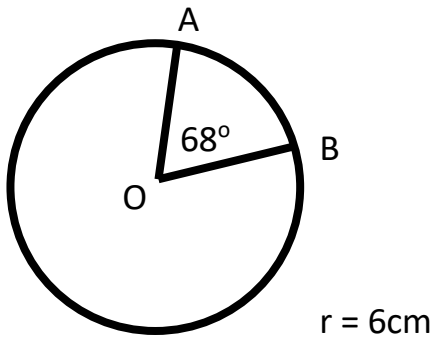
Note: You must remember this formula!

" We can work it out..."

Area of a sector

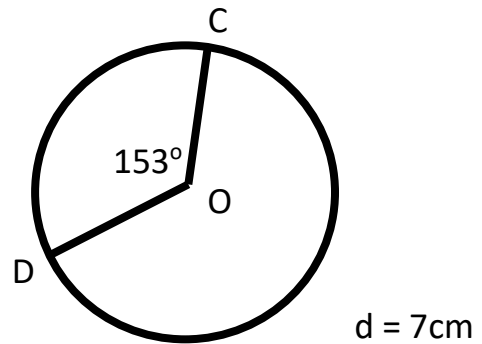
Example 2a.

Find the area of minor sector AOB.



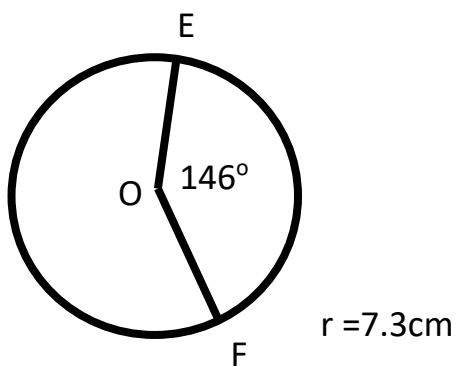
Example 2b.

Find the area of minor sector COD.



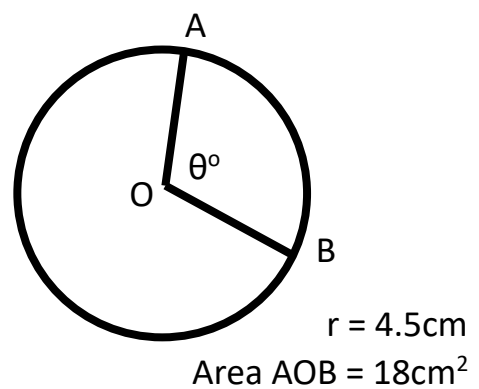
Example 2c.

Find the area of major sector EOF.



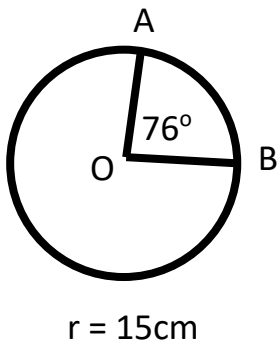
Example 3a.

Find the angle θ .

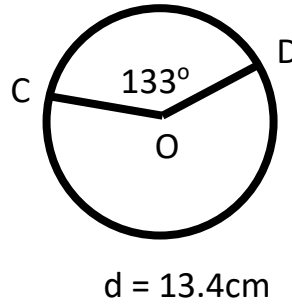


Area of a sector

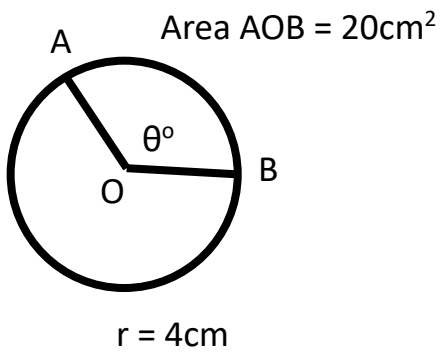
2a. Find the area of minor sector AOB.



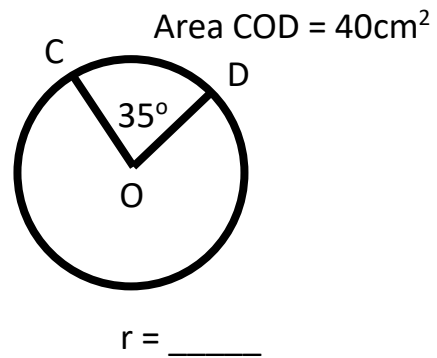
2b. Find the area of minor sector COD.



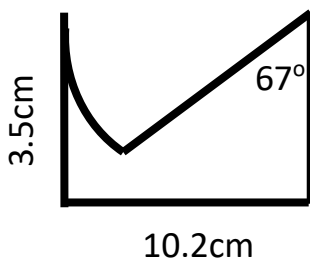
3a. Find the angle θ .



3b. Find the radius r .

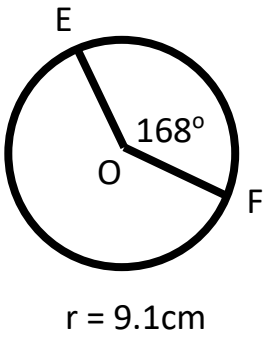


4a. Find the area of the shape.

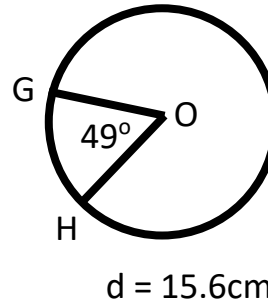


Area of a sector

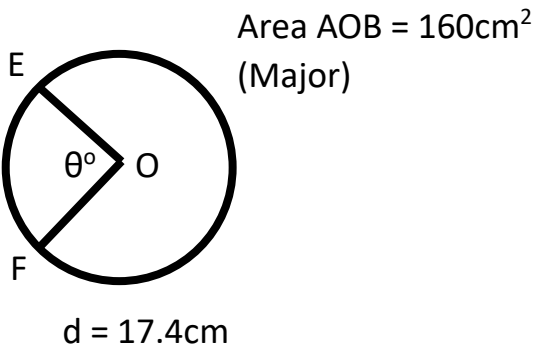
2c. Find the area of major sector EOF.



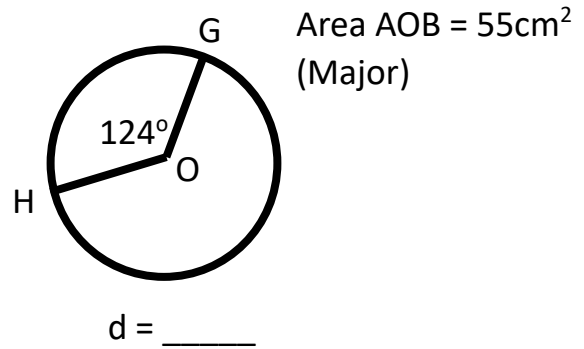
2d. Find the area of major sector GOH.



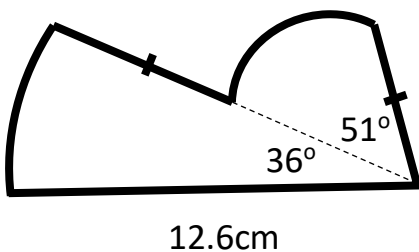
3c. Find the angle θ .



3d. Find the diameter d.



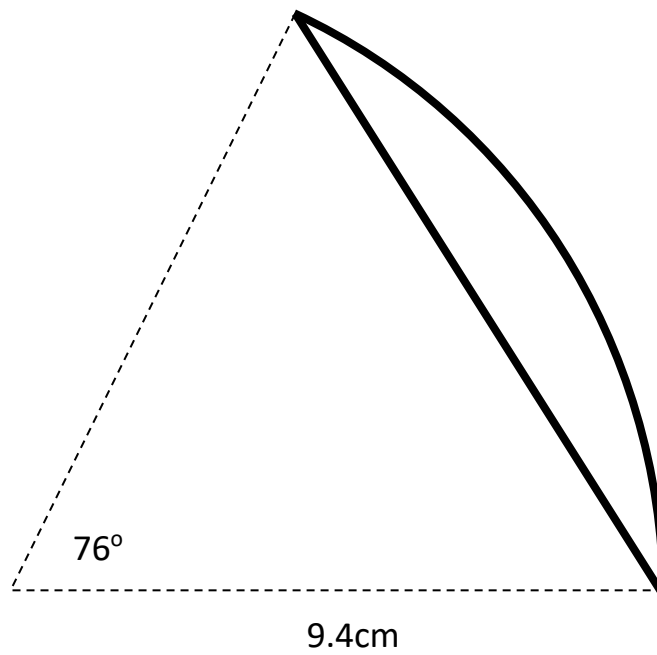
4b. Find the area of the shape.



Area of a sector

Extension.

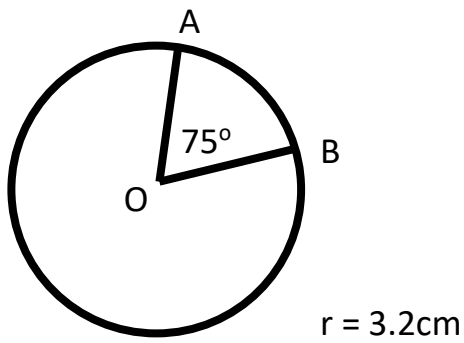
Find the area of the segment.



Hint: Find the height of the triangle using trigonometry.

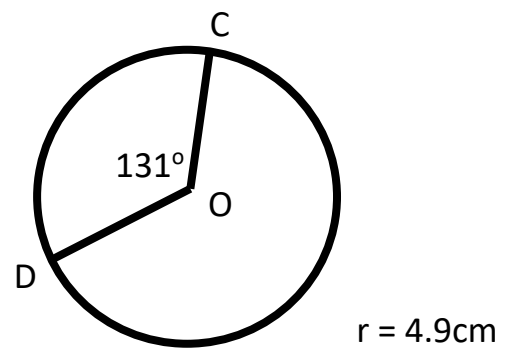
LESSON 36: Area of a sector

1. Find the area of the minor sector AOB.

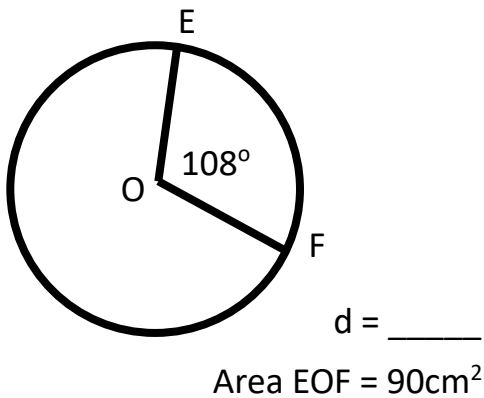


$$\text{Area AOB} = (\pi \times \underline{\hspace{2cm}}^2) \div 360 \times \underline{\hspace{2cm}}$$

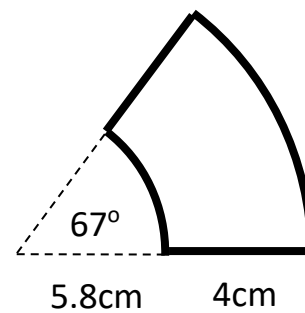
2. Find the area of the major sector COD.



3. Find the diameter d.

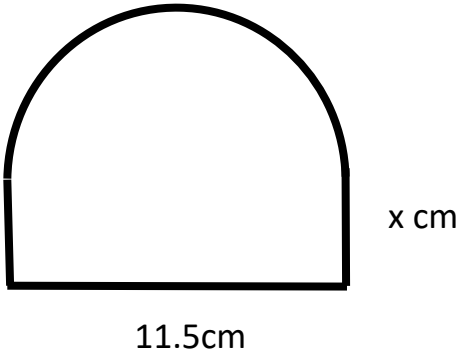


4. Find the area of the shape.



Circle problems (Alternate)

1. Find the missing value x given perimeter = 37.96cm (2d.p.)



2. Find the missing value x given area = 64.29cm^2 (2d.p.)

