Starter
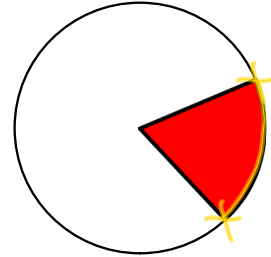Find the circumference of the circles:
give your answers to 3 s.f.
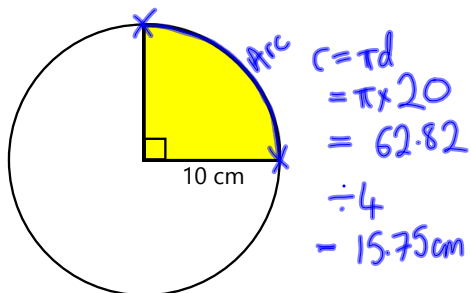
14 cm

30 cm

22 cm
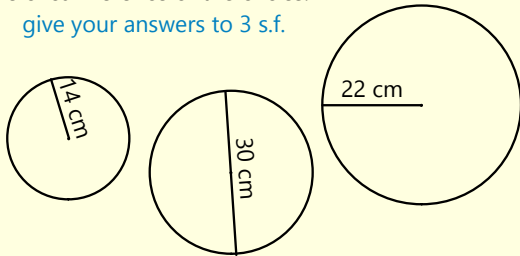
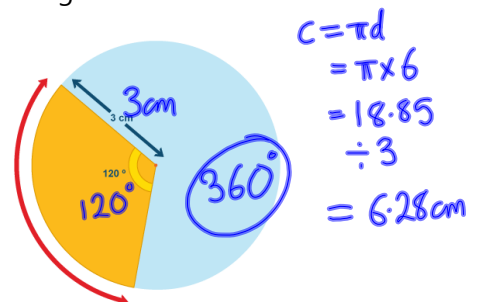**Today's Learning:**

To be able to find the length of an arc of a circle.
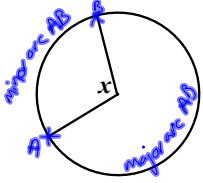
What is the length of the arc?

10 cm

Arc

$c = \pi d$
$= \pi \times 20$
$= 62.82$

$\div 4$
$= 15.75 cm$

What is the length of the arc?

3cm

120°

360

$c = \pi d$
$= \pi \times 6$
$= 18.85$
$\div 3$
$= 6.28 cm$

Arc Length

14/3/17

An arc is a section of the circumference of a circle.

minor arc AB
major arc AB
A
B
x

$$\text{Arc Length} = \frac{x}{360} \times \pi \times d$$

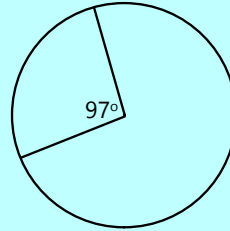**e.g.** Find the length of the minor arc:

7 m
124°

$\text{Arc length} = \frac{x}{360} \times \pi \times d$

$= \frac{124}{360} \times \pi \times 14$

$= 15.1 \text{ m}$
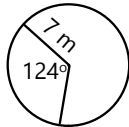
pg 8

Q1 → 4
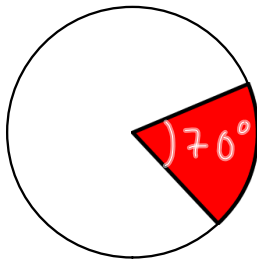
If the length of the minor arc is 50m, what is the diameter of the circle (to 1 d.p.)?

97°

$\text{Arc length} = \frac{x}{360} \times \pi \times d$

$50 = \frac{97}{360} \times \pi \times d$

$\div \pi \qquad \div \pi$

$\div \frac{97}{360} \qquad \div \frac{97}{360}$

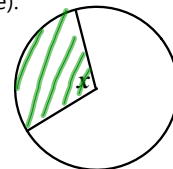$50 \div \pi \div \frac{97}{360} = 59.0 \text{ cm}$

Today's Learning:

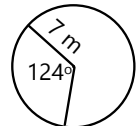To find the area of a sector of a circle.

70°

Sector Area

A sector is a fraction of the area of a circle (like a pie chart slice).

x

$$\text{Sector Area} = \frac{x}{360} \times \pi \times r^2$$

e.g. Find the area of the minor sector:

7 m
124°

$\text{Sector Area} = \frac{124}{360} \times \pi \times 7^2$

$= 53.0 \text{ m}^2 \ (1 dp)$

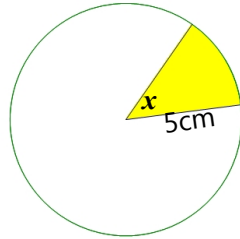The area of the yellow segment is **12cm²**.

Find the angle x

$12 = \frac{x}{360} \times \pi \times 5^2$

$12 \div \pi \div 5^2 = \frac{x}{360}$

$0.15 = \frac{x}{360}$

$\times 360 \qquad \times 360$

$x = 54°$

5cm

Today's Learning:

Working backwards to find angles, diameters and radii.

1) Fully factorise the following:

a) $2m^2 + m - 3$ b) $b^2 - 9$ c) $2h^2 + 14h + 20$

$(2m+3)(m-1)$ $(b+3)(b-3)$ $2(h^2+7h+10)$

$2m^2 - 6m + m - 3$ $2m^2 - 2m + 3m - 3$ $2(h+5)(h+2)$

2) Using the formula, find the gradient of the straight line that joins:
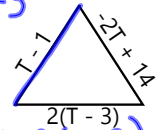
a) (1, 3) and (7, 9)   b) (-2, 1) and (-5, -4)

$gr = \frac{y_2 - y_1}{x_2 - x_1}$

$= \frac{9-3}{7-1} = \frac{6}{6} = 1$

$gr = \frac{-4-1}{-5-(-2)}$

$= \frac{-5}{-3} = \frac{5}{3}$

3) The lengths of the sides of this triangle are shown. If the triangle is equilateral, find T.

$-2T + 14 = 2(T-3)$

$-2T + 14 = 2T - 6$

$-2T + 20 = 2T$

$20 = 4T$

$5 = T$

$T - 1 = 2(T-3)$

$T - 1 = 2T - 6$

$-1 = T - 6$

$5 = T$

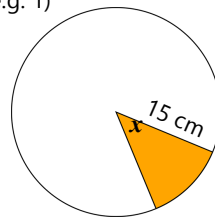T - 1   -2T + 14
2(T - 3)

Working Backwards   16/3/17

Fill in what you know and rearrange the equation.

e.g. 1)

x 15 cm

The length of the minor arc is 12 cm. Find the angle x.

$Arc \ length = \frac{x}{360} \times \pi \times d$

$12 = \frac{x}{360} \times \pi \times 30$

$\times 360 \qquad \times 360$

$12 \times 360 = x \times \pi \times 30$

$\div \pi \div 30 \qquad \div \pi \div 30$

$12 \times 360 \div \pi \div 30 = x$

$x = 45.8° \ (3sf)$