Area and circumference of circles

What is π?

π (pronounced pi) is a very special number in maths.

If you divide the circumference of **any** circle and divide it by its diameter the answer is always 3.1415926535…. That is why it was given it's own name as it is so special!

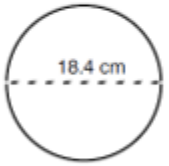
π = 3.1415926535…..

Circumference of a Circle

Circumference = π x diameter

C = πd

Calculate the circumference of this circle giving your answer to 1.d.p.



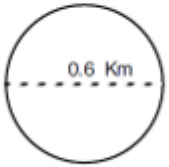
C = π x d
C = π x 18.4
C = 57.8053…
C = 57.8 cm (1.d.p.)

Area of a Circle

Area = π x radius^2

A = πr^2

Calculate the area of this circle giving your answer to 1.d.p.



(r = 0.6 ÷ 2 = 0.3)

A = π x r^2
A = π x 0.3^2
A = 0.2874…
A = 0.3 cm^2 (1.d.p.)

Giving Answers in Terms of π

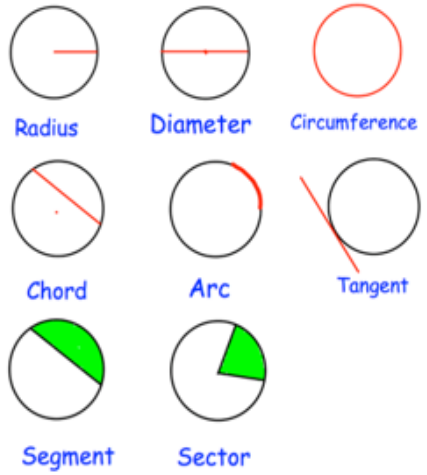
(This is on the non calc paper only).

Calculate the circumference and area of this circle giving your answers in terms of π.

C = π x d
C = π x 2 x 8
C = 16π cm

A = π x r^2
A = π x 8^2
A = 64π cm^2

Parts of a Circle



Perimeter of a Semicircle

Calculate the perimeter of this semi-circle, giving answer to 1 d.p.

24 cm

The curve is half of the circumference, then add on the straight length (the diameter).

$P = \frac{\pi x d}{2} + d$

$P = \frac{\pi x 24}{2} + d$

P = 61.6991…
P = 61.7 cm (1.d.p.)

Area of a Semicircle

Calculate the area of this semi-circle, giving your answer to 1 d.p.

24 cm

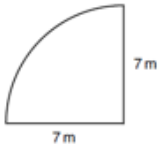
Find the area of the whole circle, then halve it.

$A = \frac{\pi x r^2}{2}$

$A = \frac{\pi x 12^2}{2}$

A = 226.1946
A = 226.2 cm^2 (1.d.p.)

Quarter Circles



Perimeter of a quarter circle

$C = \frac{\pi x d}{4} + r + r$

Area of a quarter circle

$A = \frac{\pi x r^2}{4}$