Circles (Area & Circumference) - www.m4ths.com

(1) Write down the formula for the area of a circle.

(2) Find 2 formulae for the circumference of a circle.

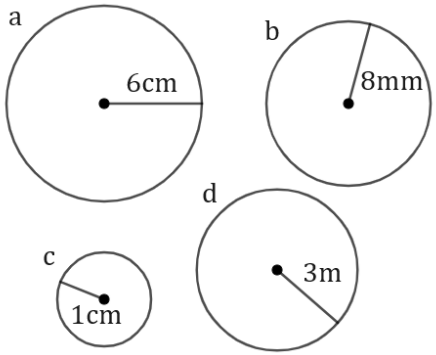
(3) State the relationship between the length of a radius and the length of the diameter of a circle.

(4) Complete the following sentences:

(a) If a circle has a radius of $4cm$ then the diameter of the circle is_____cm.

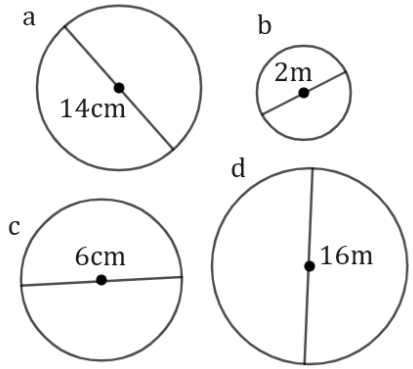
(b) If a circle has a diameter of $15cm$ then the radius of the circle is_____cm.

(5) Without a calculator, find the (i) area and (ii) circumference of each circle below **in terms of π.**



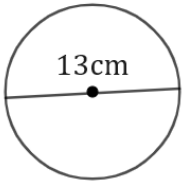
(6) For each of your answers to question (5) repeat the process but give each answer to 3 significant figures stating the units for each.

(7) Without a calculator, find the (i) area and (ii) circumference of each circle below in terms of π. *The length given one each is the **diameter** of the circle.*



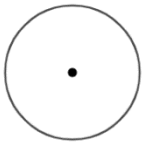
(8) For each of your answers to question (7) repeat the process but give each answer to 3 significant figures stating the units for each.

(9) Show that the area of the circle below is $132.7cm^2$ correct to one decimal place.



(10) Find the area **and** the circumference of a circle with radius $2.72cm$ giving your answers to 1dp.

(11) The area of the circle below is $144\pi\ cm^2$.

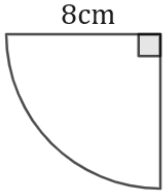


(a) Using the formula for the area of a circle, show that the radius of the circle is $12cm$.

(b) Use your answer to part (a) to find the circumference of the circle **in terms of π.**

(12) Fred has a circular tabletop he wants to paint. The diameter of the tabletop is $2.3m$. Paint is sold in tins of 1 litre and cost £7.99 per tin. Each litre of paint covers a surface area of $1.2m^2$. **Show that** it will cost Fred £31.96 to paint the tabletop with one coat of paint.

(13) A sector *(part)* of a circle is show below.

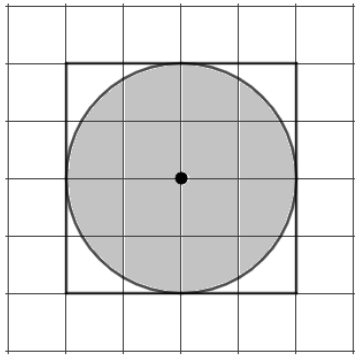


(a) Find the area of the sector **in terms of π.**

(b) Show that the perimeter of the sector is $28.6cm$ correct to 3SF.

(14) A circle has circumference 20π. Find the area of the circle in terms of π.

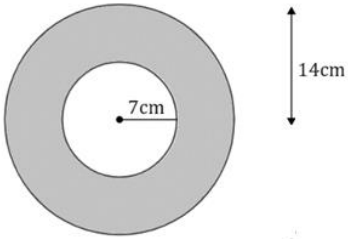
(15) The diagram below shows a circle drawn inside a square. The circle touches each side of the square.



(a) By counting squares, find the area of the square the circle sits in.

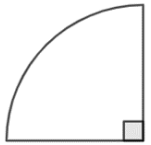
(b) Find the % of the square taken up by the circle.

(16) The diagram below shows two concentric circles. (*This means that they share the same centre)*



Show that ¾ of the diagram above is shaded.

(17) The area of the shape below is 6.25π.



Show that the perimeter is $(10 + 2.5\pi)cm$.

(18)* A circle has area $196t^2\pi\ cm^2$. Find the circumference in **terms of t and π.**

(19)* A semicircle has perimeter $20 + 10\pi$. Find the area of the semicircle in terms of π. *A sketch may help*

(20)* A circle has area A. Find a simplified expression for the circumference of the circle in terms of A.