**Lesson 4:**

**SURFACE AREA OF CYLINDERS AND SPHERES**

A cylinder is like a prism but its bases are circles. To find the surface area of a cylinder, you need to find the area of the two circles and the area of the side between them – the lateral face. It is easy to see how to do this by drawing a net of a cylinder.

 C

 top

 circumference, C

 radius, r

 h

 height, h

 base r

From this net, you can see that the cylinder is made up of 2 circles and the lateral face which is a rectangle. The length of the rectangle is the circumference of the circle, and the width of the rectangle is the height of the cylinder. To calculate the surface area of a cylinder, calculate these parts and add them together.

Example 1: Calculate the surface area of a cylinder that has a radius of 9 cm and a height of 25 cm, as shown below.

 9 cm

 25 cm

Solution:

NOTE: The formula for surface area of a cylinder is:

 SA **= 2π*rh* + 2π*r2***

A sphere is like a ball. All points on a sphere are the same distance from the centre. It is not possible to draw the net of a sphere, and thus we simply use a formula to calculate its surface area. The surface area depends on the radius of the sphere.

The formula for surface area of a sphere is:

 SA = **4π*r2*** r

Example 2: Calculate the surface area of the following sphere.

 **5.2 cm**

Example 3: If a ball has a surface area of 3500 mm2, what is the radius of this ball?

**ASSIGNMENT 7 – SURFACE AREA OF CYLINDERS AND SPHERES**

1) Draw a net and use it to find the surface area of a pipe that has a radius of 15 cm and is 75 cm long.

2) Find the surface area of a cylindrical pop can that is 37 cm tall and has a *diameter* of 8 cm.

3) A sphere has a radius of 7.6 m. What is its surface area?

4) Find the radius of a sphere with a surface area of 6700 m2.

5) A hemisphere is **half** a sphere. What is the surface area of a hemisphere with a radius of 28.4 mm?