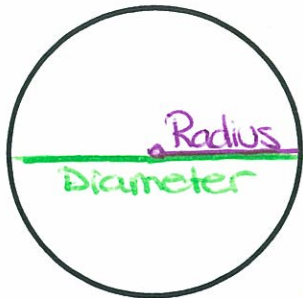


Review:

Circle

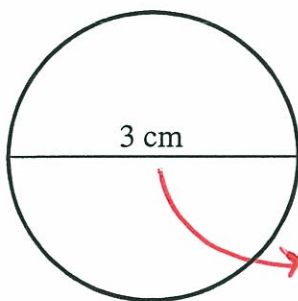


$$\text{Area} = \pi r^2$$

$$\text{Circumference} = 2\pi r \quad (\text{or } \pi d)$$

Perimeter

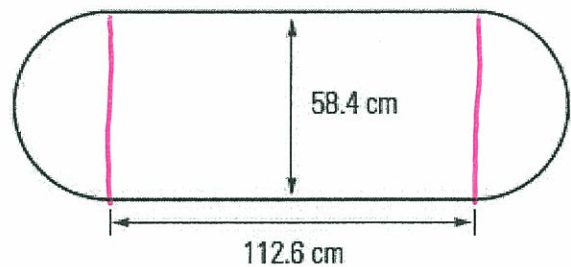
**Example 1:** Find the area of the shapes below (not drawn to scale)



$$\text{Area} = \pi r^2$$

$$A = \pi \times 1.5^2$$

$$A = 7.07 \text{ cm}^2$$



$$A = 112.6 \times 58.4 = 6575.84$$

Put ends together to make a circle



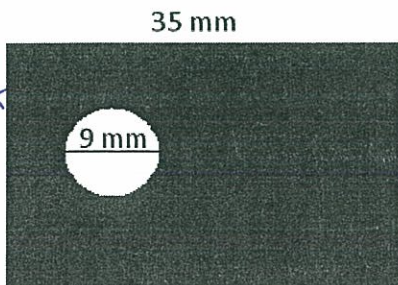
$$A = \pi r^2 = \pi \times 29.2^2 = 2678.648$$

$$\text{S. Area} = 6575.84 + 2678.648$$

$$9254.488 \text{ cm}^2$$

Find the area of the shaded portion

Find shaded area & subtract Area of circle



Area Rectangle:

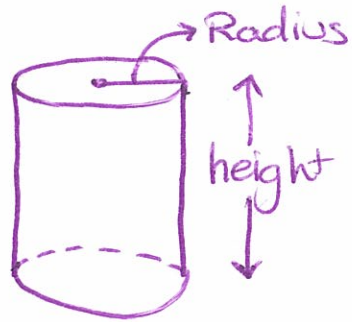
$$A = 35 \times 27 = 945$$

Area Circle:

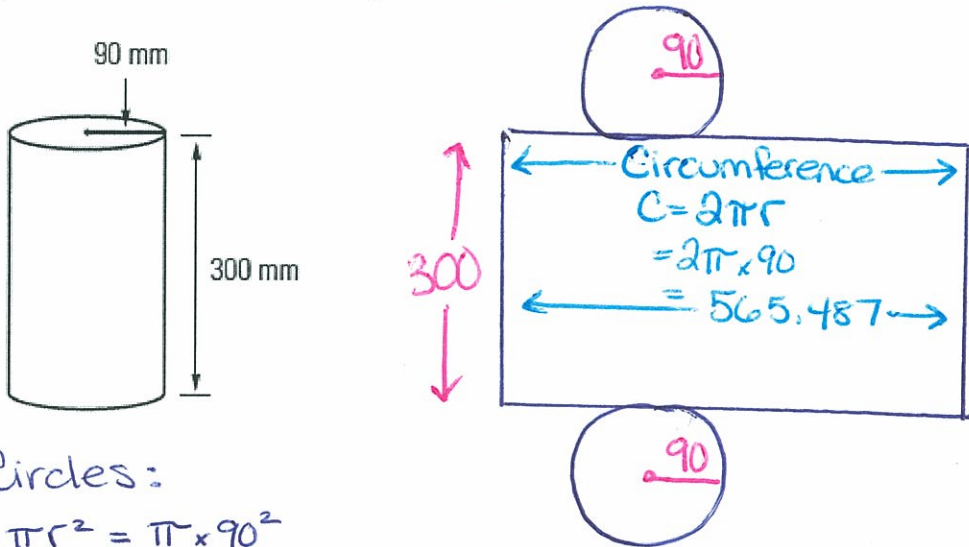
$$A = \pi r^2 = \pi \times 4.5^2 = 63.617$$

$$\text{Shaded Area} = 945 - 63.617 = 881.383 \text{ mm}^2$$

**CYLINDER:** A Prism with ends that are circles



**Example 2:** Draw the net of the cylinder below and find the surface area.



Area Circles:

$$A = \pi r^2 = \pi \times 90^2 = 25446.900$$

2 circles so

$$A = 2 \times 25446.9$$

$$= 50893.8 \text{ mm}^2 \rightarrow$$

$$\text{Total SA} = 50893.8 + 169646.7$$

$$= 220540.5 \text{ mm}^2$$

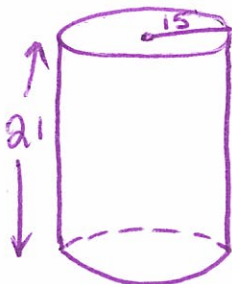
Area Rectangle

$$A = \text{length} \times \text{width} = 565.489 \times 300 = 169646.7$$

**SURFACE AREA CYLINDER:**

$$\hookrightarrow SA = 2\pi r^2 + 2\pi r h$$

**Example 3:** Find the surface area of a container that has a radius of 15 cm and a height of 21 cm.



SA cylinder:

$$\begin{aligned} SA &= 2\pi r^2 + 2\pi r h \\ &= 2 \times \pi \times 15^2 + 2 \times \pi \times 15 \times 21 \\ &= 1413.717 + 1979.203 \\ &= 3392.92 \text{ cm}^2 \end{aligned}$$



**Example 4:** Find the surface area of the figure below.

**Circle**  
 $A = \pi r^2$   
 $= \pi \times 2^2$   
 $= 12.5666$

**Side of Cylinder:**  
 $A = 2\pi r h$   
 $A = 2 \times \pi \times 2 \times 9$   
 $= 113.097$

**Side of Cylinder:**  
 $A = 2\pi r h$   
 $A = 2 \times \pi \times 3.5 \times 4$   
 $A = 87.965$

**Bottom Circle**  
 $A = \pi r^2$   
 $= \pi \times 3.5^2$   
 $= 38.485$

**Find Shaded Area.**  
 Area of Big Circle & subtract Area small circle.  
 $A_{BIG}:$   
 $A = \pi \times 3.5^2$   
 $= 38.485$   
 $A_{SMALL}:$   
 $A = \pi \times 2^2$   
 $= 12.566$   
**Shaded Area:**  
 $A = 38.485 - 12.566$   
 $= 25.919$

Find the total surface Area

$$SA = 12.5666 + 87.965 + 113.097 + 38.485 + 25.919$$

$$SA = 278.032 \text{ cm}^2$$

**Example 5:** What is the height of a cylinder with surface area of 339 in<sup>2</sup> and a radius of 3"?

Formula:  $SA = 2\pi r^2 + 2\pi r h$

$$339 = 2 \times \pi \times 3^2 + 2 \times \pi \times 3 \times h$$

$$339 = 56.549 + 18.850h$$

$$282.451 = 18.85h$$

$$h = 282.451 \div 18.85 = 14.984 \text{ in}^2$$