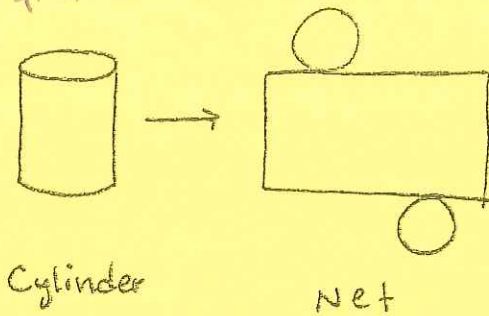


\* Add dimension for #1 on back

# Calculating the Surface Area of a Cylinder KEY



3 faces:  
 → 2 congruent circles  
 → 1 rectangle

To calculate the area of a circle we use the following formula:

formula →  $A = \pi r^2$

Where:  
 $\pi = 3.14$   
 $r \rightarrow$  the radius (ie)

\* Remember that you evaluate exponents before multiplying

eg) Find the area.

$$A = \pi r^2$$

$$= (3.14)(3)^2$$

$$= (3.14)(9)$$

$$= \boxed{28.26 \text{ cm}^2}$$

This question gives you the diameter so you cut it in half to find the radius.

$$A = \pi r^2$$

$$= (3.14)(5)^2$$

$$= (3.14)(25)$$

$$= \boxed{78.5 \text{ cm}^2}$$

Practice - Do not round your answers. Calculate the areas of the following circles:

1.

$$A = \pi r^2$$

$$= 3.14(8)^2$$

$$= 3.14(64)$$

$$= 200.96 \text{ m}^2$$

2.

$$A = 3.14(6)^2$$

$$= 3.14(36)$$

$$= 113.04 \text{ cm}^2$$

3.

$$A = 3.14(11)^2$$

$$= 3.14(121)$$

$$= 379.94 \text{ m}^2$$

4.

$$A = 3.14(6.5)^2$$

$$= 3.14(42.25)$$

$$= 132.765 \text{ mm}^2$$

5.

$$A = 3.14(2.5)^2$$

$$= 3.14(6.25)$$

$$= 19.625 \text{ m}^2$$

6.

$$A = 3.14(8.2)^2$$

$$= 3.14(67.24)$$

$$= 211.1336 \text{ m}^2$$

7.

$$A = 3.14(3.4)^2$$

$$= 3.14(11.56)$$

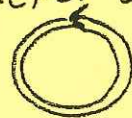
$$= 36.2984 \text{ cm}^2$$

To calculate the area of a rectangle, our formula is  $A = l \times w$ . However, usually one dimension will be missing and we need to calculate it using the following formula:

$$C = \pi d$$

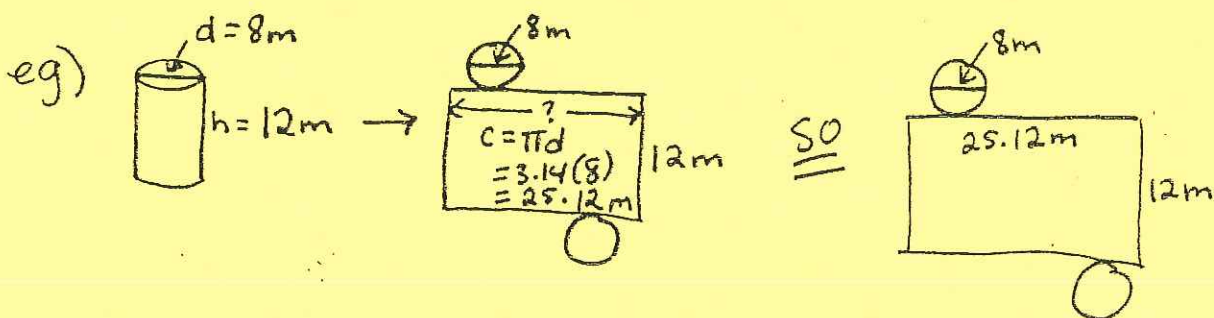
where:

$C \rightarrow$  the circumference of a circle (i.e. the perimeter or distance around it)



$\pi \rightarrow 3.14$

$d \rightarrow$  diameter



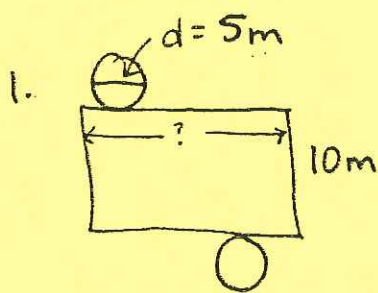
$$A = l \times w$$

$$= (25.12)(12)$$

$$= \boxed{301.44}$$

### Practice

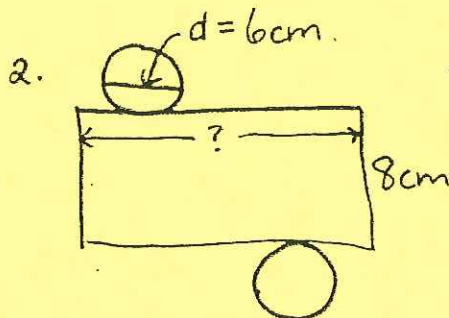
Find the length of the missing side using  $C = \pi d$ .



$$C = \pi d$$

$$= 3.14(5)$$

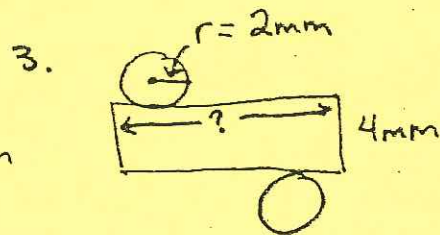
$$= 15.7m$$



$$C = \pi d$$

$$= 3.14(6)$$

$$= 18.84cm$$



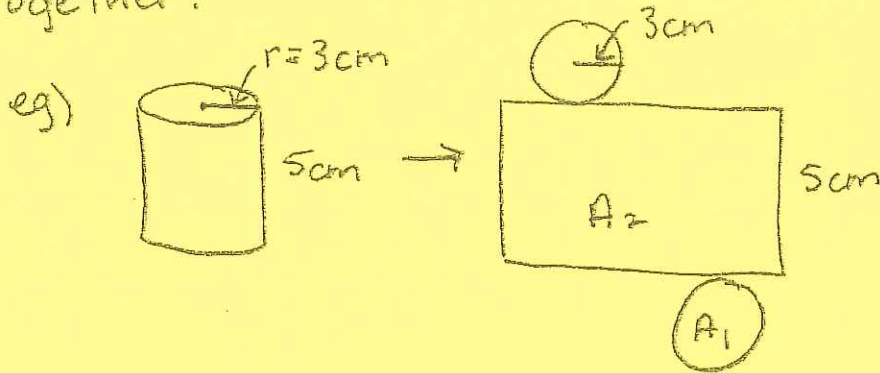
$$C = \pi d$$

$$= 3.14(4)$$

$$= 12.56mm$$



To calculate the ~~the~~ surface area of a cylinder, draw the net, find the surface area of each face and add it all together.



$$\begin{aligned}
 A_1 &= \pi r^2 \\
 &= 3.14(3)^2 \\
 &= 3.14(9) \\
 &= 28.26 \text{ cm}^2
 \end{aligned}$$

$$\begin{array}{r}
 \times 2 \quad \leftarrow \text{multiply by 2 because there are} \\
 \hline
 56.52 \text{ cm}^2 \quad \leftarrow \text{2 congruent circular faces}
 \end{array}$$

\*Remind them not to round until their final answer, if necessary.

$$\begin{aligned}
 A_2 &= l \times w \quad \leftarrow \text{Before I do this, I have to find the missing side.} \\
 &= (18.84) \times (5) \\
 &= 94.2 \text{ cm}^2
 \end{aligned}$$

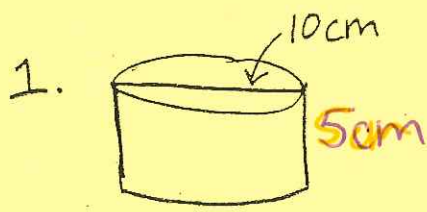
ie)

Now add all together.

$$56.52 \text{ cm}^2 + 94.2 \text{ cm}^2 = 150.72 \text{ cm}^2$$

# Practice

Draw the net and calculate the surface area for the following cylinders.



$$S.A = 2\pi r^2 +$$

