

***SURFACE AREA***

# ***LEARNING GOALS***

**By the end of the lesson I will be able to:**

- **Find the surface area of prisms and pyramids**
- **Find the surface area of cylinders**

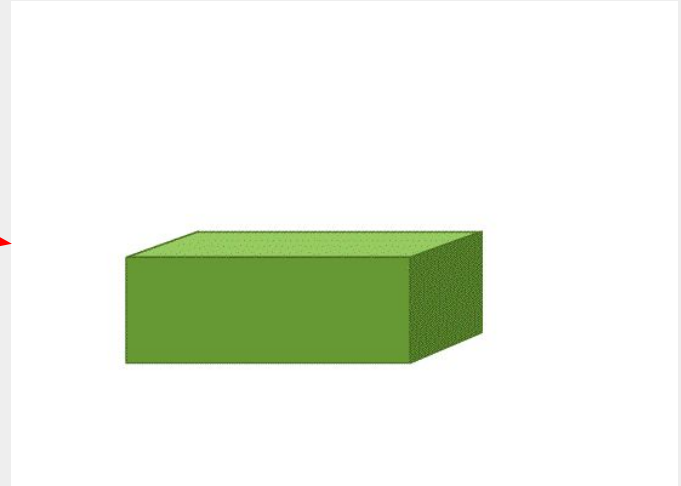
# ***RECTANGULAR PRISMS***

**How many sides on a rectangular prism?**



**6, all of which are rectangles**

**What does it look like unfolded?**



# ***SURFACE AREA***

**Find the surface area by adding up the area of all 6 sides.**

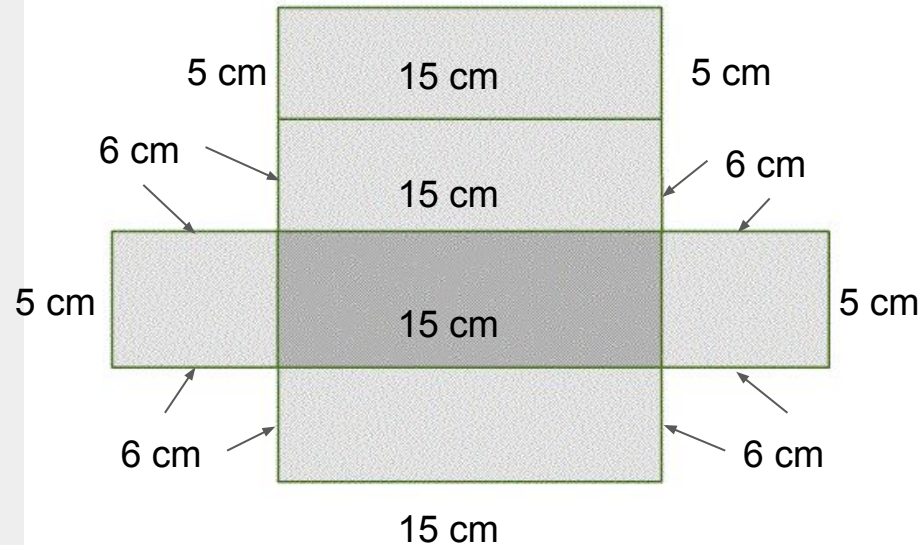
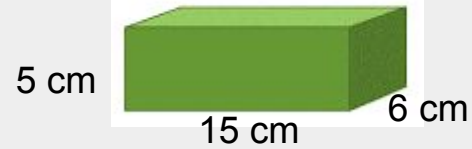
**There are:**

**2, 6 cm x 5 cm rectangles  
= 30 cm<sup>2</sup>**

**2, 15 cm x 6 cm rectangles  
= 90 cm<sup>2</sup>**

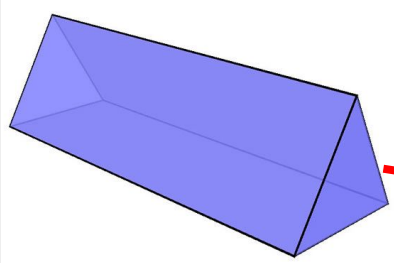
**2, 15 cm x 5 cm rectangles  
= 75 cm<sup>2</sup>**

**So,  $2 \times 30 + 2 \times 90 + 2 \times 75$   
= 390 cm<sup>2</sup>**



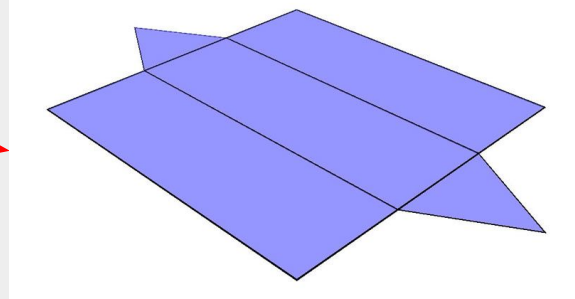
# **TRIANGULAR PRISMS**

**How many sides on a triangular prism?**



**5: Two triangles and 3 rectangles**

**What does it look like unfolded?**



# SURFACE AREA

Find the surface area by adding up the area of all 5 sides.

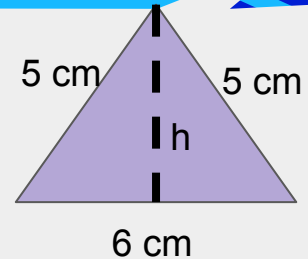
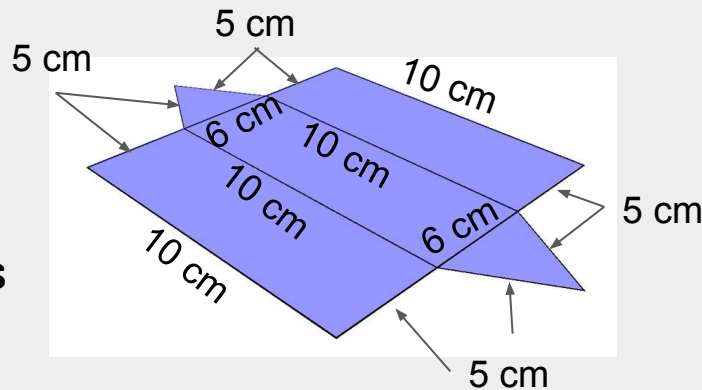
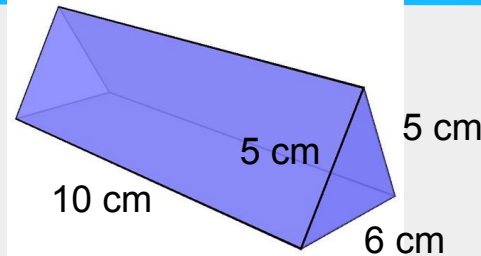
There are:

2, 5 cm x 10 cm rectangles  
=  $50 \text{ cm}^2$

1, 6 cm x 10 cm rectangle  
=  $60 \text{ cm}^2$

2, base 6, height 4 triangles  
=  $12 \text{ cm}^2$

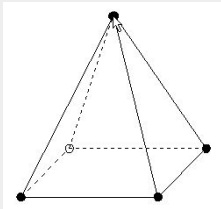
So,  $2 \times 50 + 1 \times 60 + 2 \times 12$   
=  $184 \text{ cm}^2$



$$h^2 = 5^2 - 3^2$$
$$h^2 = 25 - 9$$
$$h^2 = 16$$
$$h = 4$$

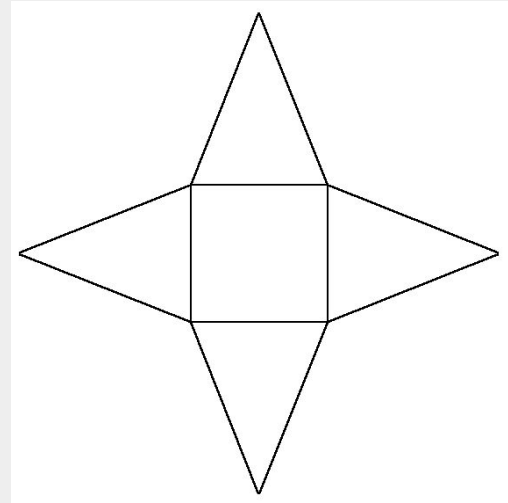
# ***SQUARE BASED PYRAMID***

**How many sides on a square based pyramid?**



**5: 4 triangles  
and 1 square**

**What does it look like unfolded?**



# SURFACE AREA

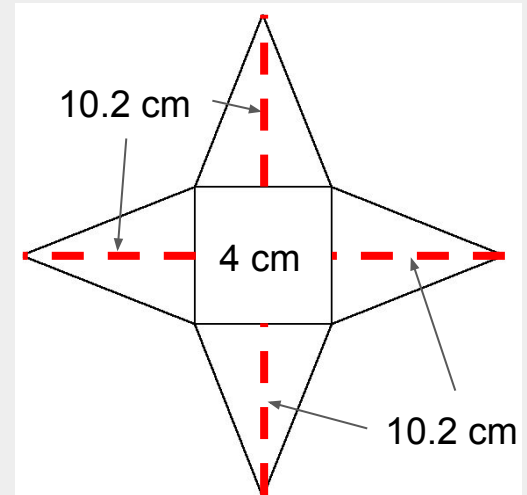
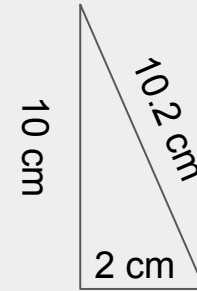
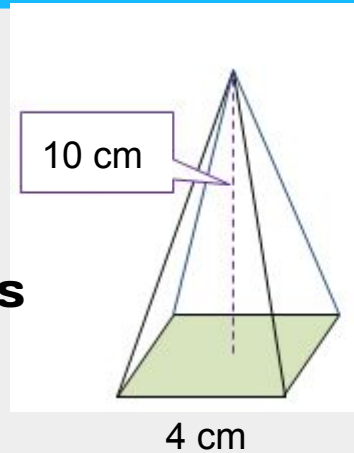
Find the surface area by adding up the area of all 5 sides.

There are:

4, base 4, height 10.2 triangles  
=  $20.4 \text{ cm}^2$

1, 4 cm x 4 cm square  
=  $16 \text{ cm}^2$

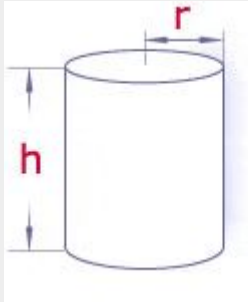
So,  $4 \times 20.4 + 1 \times 16$   
=  $97.6 \text{ cm}^2$





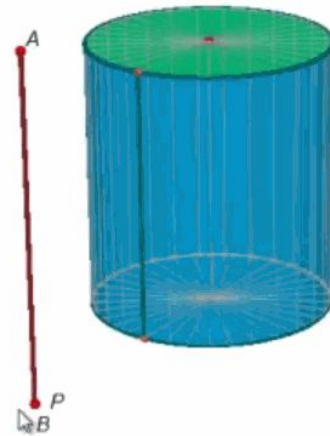
# CYLINDER

How many sides on a cylinder?



3, Two circles and a rectangle

What does it look like unfolded?



# SURFACE AREA

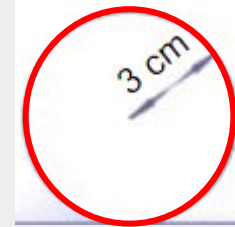
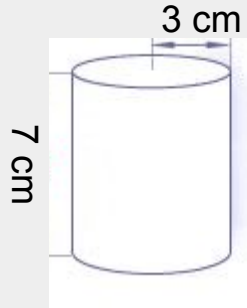
Find the surface area by adding up the area of all 3 sides.

There are:

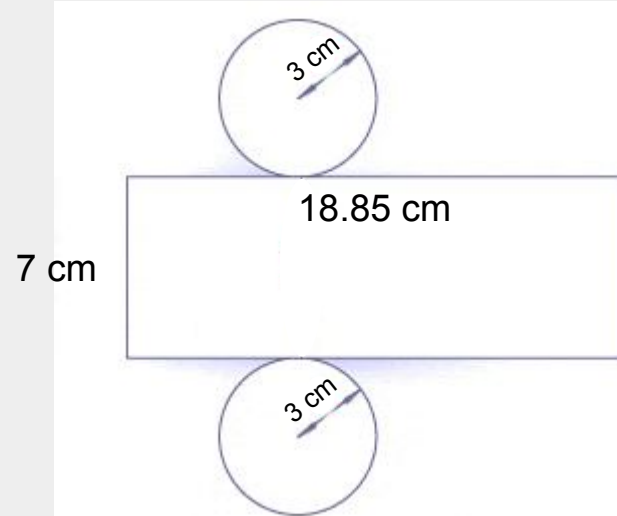
2, circles with radius 3  
=  $28.27 \text{ cm}^2$

1, 7 cm x 18.85 cm rectangle  
=  $131.95 \text{ cm}^2$

So,  $2 \times 28.27 + 1 \times 131.95$   
=  $188.49 \text{ cm}^2$



$$\begin{aligned} C &= 2\pi r \\ &= 2 \times 3.14 \times 3 \\ &= 18.85 \end{aligned}$$



# **FORMULAE**

**Not all of the surface areas have easy to remember formulas, but the two that do are:**

**Rectangular Prism:  $SA = 2(LW + LH + WH)$**

**Cylinder:  $SA = 2\pi r^2 + 2\pi rh$**