

Instructions: Calculator is needed for every class and all assessments in this unit.

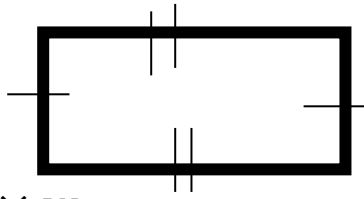
AREA:

- Squared units inside the shape
- units:  $\text{mm}^2$ ,  $\text{cm}^2$ ,  $\text{m}^2$ ,  $\text{km}^2$

### AREA FORMULAS

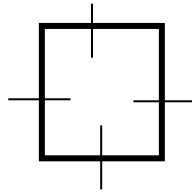
Rectangle

$$A = l \times w$$



square

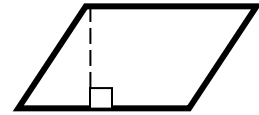
$$A = s^2$$



### AREA FORMULAS

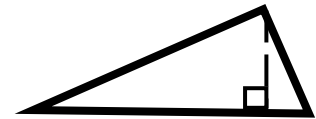
parallelogram

$$A = bh$$



Triangle

$$A = \frac{bh}{2}$$

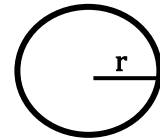


Circle

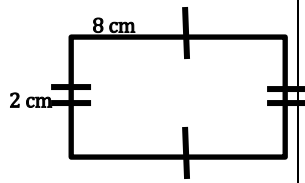
$$A = \pi r^2$$

$$\text{radius} = \frac{\text{diameter}}{2}$$

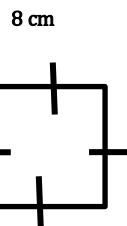
$$d = 2r$$



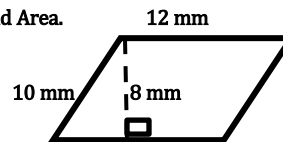
Ex. 1. Find Area.



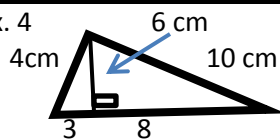
Ex. 2. Find Area of this square.



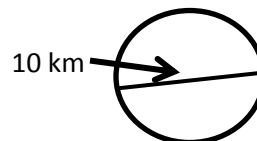
Ex3. Find Area.



Ex. 4



Ex 5. Find Area



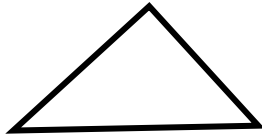
**PERIMETER**

Distance **AROUND** objects

$$P = 2l + 2w$$



$$P = s_1 + s_2 + s_3$$



**CIRCUMFERENCE:**

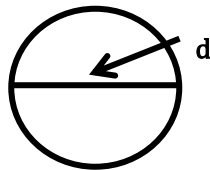
perimeter of a circle

KNOW:  $d = 2r$     $r = \frac{d}{2}$

$$C = 2\pi r$$

or

$$C = \pi d$$



Ex. 1 Find perimeter.

12 km

5 km

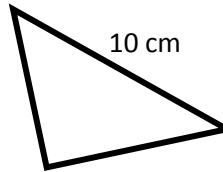


Ex. 2 Find perimeter.

6 cm

10 cm

8 cm



Ex. 3 Find circumference of a circle with radius 5 mm.

Draw diagram   Solution

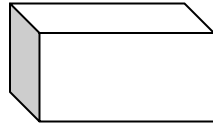
Ex. 4. Find circumference of a circle with diameter 11 cm.

Draw diagram   Solution

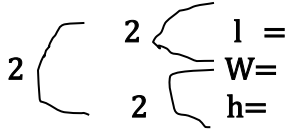
**SURFACE AREA**

**unit<sup>2</sup>**

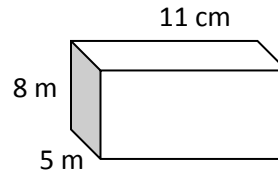
**Rectangular prism**



**S.A. =  $2lw + 2wh + 2lh$**



Ex. 1 Find surface area .



$l =$

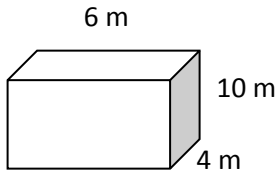
$w =$

$h =$

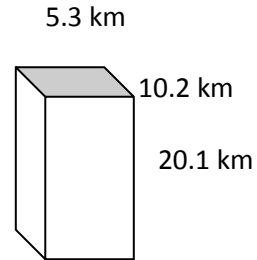
FORMULA

SOLUTION

Ex. 2 Find surface area .

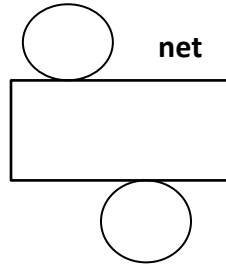
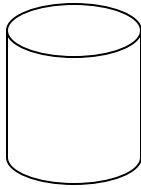


Ex. 3 Find surface area. Round to nearest tenth.



**SURFACE AREA**

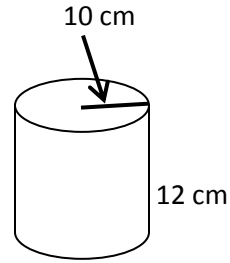
Cylinder



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

2 circles      curved surface

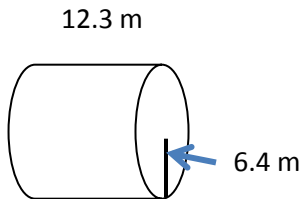
EX.1 Find the surface area. Round to nearest tenth.



FORMULA

SOLUTION

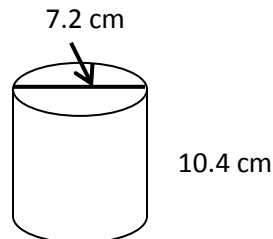
EX.2 Find the surface area. Round to nearest tenth.



FORMULA

SOLUTION

EX.3 Find the surface area. Round to nearest tenth.



FORMULA

SOLUTION

**Surface Area of triangular prism**

unit<sup>2</sup>

$$A_{1 \text{ triangle}} = \frac{bh_{\text{triangle}}}{2}$$

$$= \frac{(16)(6)}{2}$$

$$= 48$$

$$A_{2 \text{ triangles}} = 2 \times 48$$

$$= 96$$

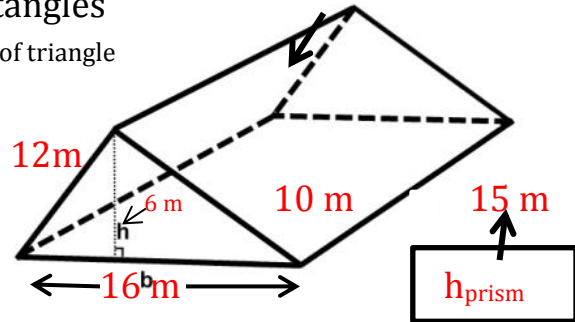
**Area of rectangles**

$$A = h_{\text{prism}} \times \text{sidelength of triangle}$$

①  $15 \times 12$   
= 180

②  $15 \times 16$   
= 240

③  $15 \times 10$   
= 150



$$\text{S.A.} = 96 + 180 + 240 + 150$$

$$= 666 \text{ m}^2$$

**Fin the surface area. Round to nearest tenth.**

**AREA TRIANGLES**

$$A_{1 \text{ triangle}} =$$

$$=$$

$$=$$

$$A_{2 \text{ triangles}} = 2 \times \underline{\hspace{2cm}}$$

$$=$$

$$\text{S.A.} =$$

$$= \underline{\hspace{2cm}} \text{ m}^2$$

**AREA RECTANGLES**

$$A = h_{\text{prism}} \times \text{sidelength of triangle}$$

①

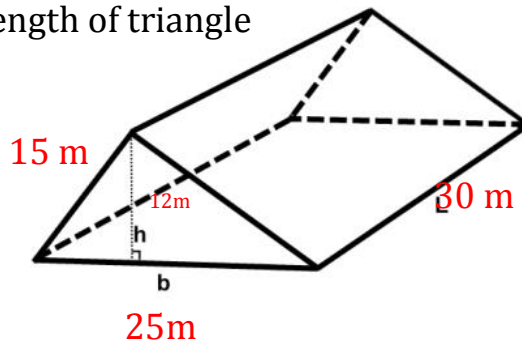
$$=$$

②

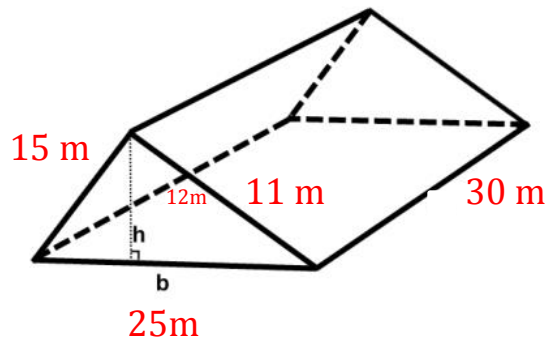
$$=$$

③

$$=$$

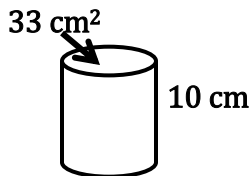


Ex. 2 Find the Surface Area. Round answer to nearest tenth.



**VOLUME = BASE x HEIGHT<sub>prism</sub>**

**VOLUME = BASE x HEIGHT**  
(units mm<sup>3</sup>, cm<sup>3</sup>, mL)



$$V = \text{BASE} \times \text{height}$$

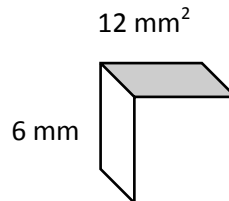
$$= 33 \text{ cm}^2 \times 10 \text{ cm}$$

$$= \boxed{330 \text{ cm}^3}$$

**Volume** is the contents **INSIDE** the 3D shape  
Ex **soup** in a can

Remember **1 cm<sup>3</sup> = 1 mL**

Ex. 1 Find the volume.



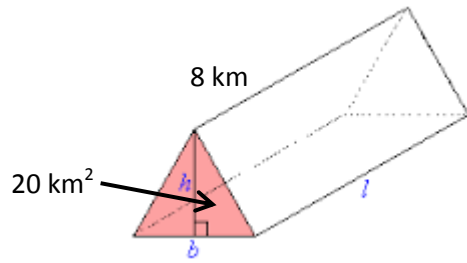
$$V = \text{BASE} \times \text{height}$$

$$= 12 \text{ mm}^2 \times 6 \text{ mm}$$

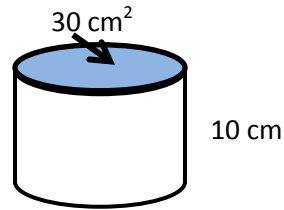
$$= \boxed{72 \text{ mm}^3}$$

**SA** – covering outside object  
**Volume** – space inside object

Ex. 2. Find volume. Round to nearest tenth.



Ex. 3. Find volume. Round to nearest tenth.



**REMEMBER:**  $\pi \cong 3.14$  for any calculation involving a circle.

Ex. 4 Find the volume. Round to nearest tenth.

**CYLINDER**

$r = \underline{\hspace{1cm}}$   
 $h = \underline{\hspace{1cm}}$

$V = \text{BASE} \times \text{HEIGHT}$   
 $V = \pi r^2 h$

Ex. Find the volume. Round to nearest tenth.

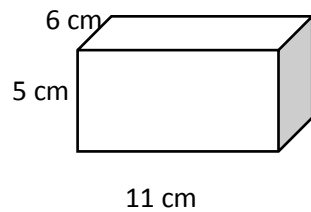
$r = \underline{\hspace{1cm}}$   
 $h = \underline{\hspace{1cm}}$

Volume = BASE x HEIGHT  
 $V = \pi r^2 h$

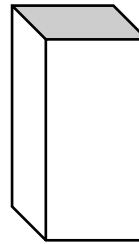
Ex. 6. Find the volume. Round to nearest tenth.

$$V = \text{BASE} \times \text{HEIGHT}$$

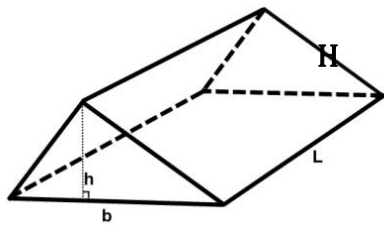
$$V = lwh$$



Ex. 6. Find the volume. Round to nearest tenth

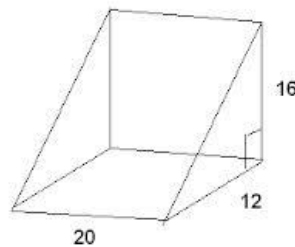


Ex. Find volume. Round answer to nearest tenth.



$$V = \frac{\text{base} \times \text{height}_{\text{triangle}}}{2} \times \text{HEIGHT}_{\text{prism}}$$

Ex. Find volume. Round meters to nearest tenth.



$$V = \frac{lwh}{2}$$

For **NETS** (faces, vertices, edges)– **SEE first handout** given in unit.