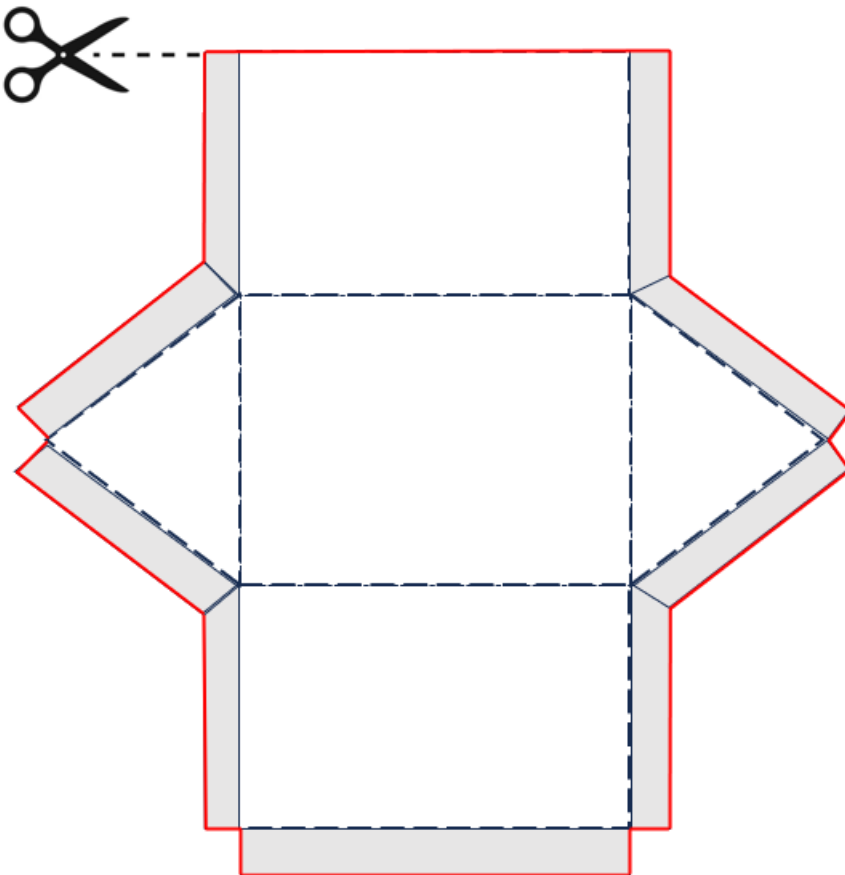


# SHARP

## Worksheet 17: Surface Area and Volume of 3D objects

### Grade 8 Mathematics

- 1) Complete the missing words to make the sentence true:
  - a) Volume is defined as the amount of \_\_\_\_\_ a 3D shape occupies.
  - b) Surface area is the total \_\_\_\_\_ of all the surfaces of a 3D shape.
  - c) \_\_\_\_\_ is the amount a 3D shape can hold.
  
- 2) The image below is a net for a triangular prism. The grey area represents the foldable flaps that you will apply glue to for this 2D net to become a 3D shape.
  - a) Shade the two identical triangles red, and the two identical rectangles in blue.
  - b) Cut around the outside edge of the shape (the red line) and assemble your triangular prism.

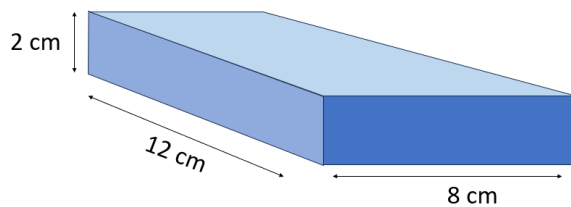


3) Match the description in column A with the correct formula in column B.  
E.g. 4F

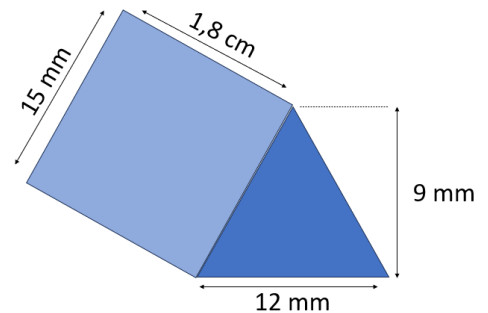
Column A - description		Column B - Formula	
1	The volume of a cube	A	$\frac{1}{2}(b \times \perp h) \times l$
2	The surface area for a rectangle	B	$l \times b \times h$
3	The volume for a triangular prism	C	$(b \times \perp h) + 2(l \times b) + (l \times b)$
4	The surface area for a cube	D	$l^3$ or $l \times b \times h$
5	The volume for a rectangular prism	E	$\pi r^2 \times h$
6	The surface area for triangular prism	F	$6 \times l \times b$
		G	$2(l \times b) + 2(l \times b) + 2(l \times b)$

4) Calculate the volume and surface area of the following shapes:

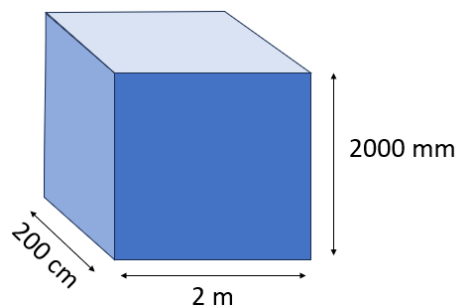
a)



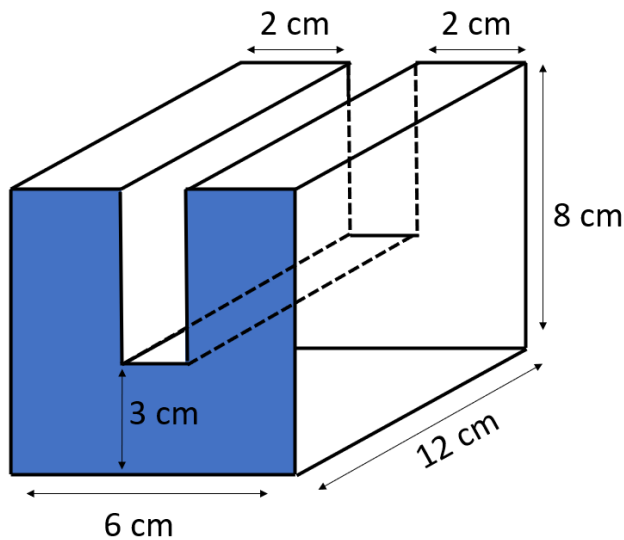
b)



c)



5) Use the shape below to answer the following questions:



- Calculate the area of the blue shaded part.
- Calculate the volume of the shape.
- How many litres of liquid could fill this shape?

6) Answer the following questions:

- If a cube has a volume of  $27m^3$ , determine the length of one of its sides.
- If the volume of a rectangular prism is  $100cm^2$  and its length is  $10cm$  and breadth  $5cm$ , determine its height.
- Determine the height of the triangle in a triangular prism if its base is  $60mm$ , its length is  $15cm$  and its volume is  $180cm^3$ .
- If the volume of a cube is  $8cm^3$ , what is the volume of the same cube in  $mm$ .