

## Surface Area and Volume Worksheet

1. Find the volume of a cube with side length 6 cm.

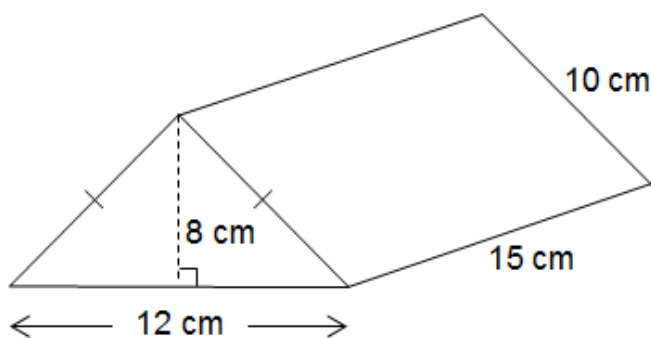
$$V = a^3$$

$$V = 6^3$$

$$= 216 \text{ cm}^3$$

Indicated a sound understanding of the volume of a cube and provided the correct units

2. Find the surface area of this triangular prism.



$$A_1 = b \times h$$

$$= (15 \times 10) \times 3$$

$$= \cancel{540 \text{ cm}^3} 450 \text{ cm}^3$$

$$A_2 = \frac{1}{2} \times b \times h$$

$$= \left( \frac{1}{2} \times 12 \times 8 \right) \times 2$$

$$= 96 \text{ cm}^3$$

$$\text{Total SA} = \cancel{A} \times h$$

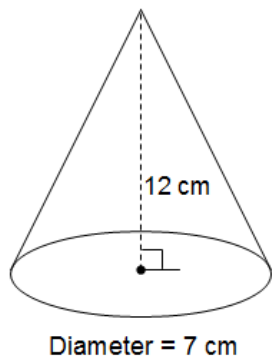
$$= \cancel{540} + 96$$

$$= 546 \times 8$$

$$\text{Total SA} = 4368 \text{ cm}^3$$

Demonstrated an understanding of how to calculate the area of a triangle and rectangle, but incorrectly calculated the area of the base of the triangular prism and the total surface area

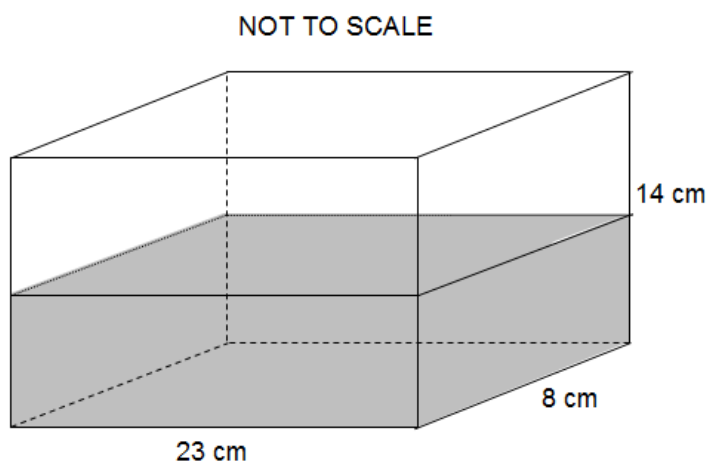
3. Find the volume of this cone to the nearest  $\text{cm}^3$ .



$$\begin{aligned}
 V &= \frac{1}{3}\pi r^2 h \\
 &= \frac{1}{3} \times \pi \times 3.5^2 \times 12 \\
 &= 153.938 \\
 &= \cancel{154.0} 154 \text{ cm}^3
 \end{aligned}$$

Correctly calculated the volume of the cone to the nearest  $\text{cm}^3$

- 4.



1000 mL of water is poured into the container shown in the diagram above.

- (a) What is the volume of the container?

$$\begin{aligned}
 V &= Ah \\
 A &= b \times h \\
 &= 23 \times 14 \\
 &= 322 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 V &= 322 \times 8 \\
 V &= 2576 \text{ cm}^3
 \end{aligned}$$

Correctly calculated the volume of the container in  $\text{cm}^3$

- (b) What volume of water is required to fill the container?

$$= 1000 - 322$$

$$= 678 \text{ mL}$$

### Grade Commentary

Frances has demonstrated a sound knowledge and understanding of surface area and volume concepts. Appropriate strategies have been used to solve familiar problems and measurement units for volume have been correctly used. Frances attempted to apply knowledge and appropriate processes in the calculation of the surface area of the triangular prism. This work sample demonstrated characteristics of work typically produced by a student performing at a grade C6 level.