

Worksheet 2015-7EN-00002(2)

(1) Convert the following to the unit as indicated in brackets:

(a) $30 \text{ m}^2 (\text{cm}^2)$

$$= 30 \times (100)^2 \text{ cm}^2$$

$$= 30 \times 10000$$

$$= 300\,000 \text{ cm}^2$$

(b) $55 \text{ cm}^3 (\text{mm}^3)$

$$= 55 \times 10^3 \text{ mm}^3$$

$$= 55 \times 1000$$

$$= 55\,000 \text{ mm}^3$$

(c) $2 \text{ m}^3 (\text{cm}^3)$

$$= 2 \times (100)^3 \text{ cm}^3$$

$$= 2 \times 1\,000\,000$$

$$= 2\,000\,000 \text{ cm}^3$$

(d) $15 \text{ m}^3 (\text{m}^3)$

$$= 15 \text{ m}^3$$

$$$$

$$$$

(e) $740 \text{ mm}^3 (\text{cm}^3)$

$$= 740 \div (10)^3 \text{ cm}^3$$

$$= 740 \div 1000$$

$$= 0,74 \text{ cm}^3$$

(f) $8,5 \text{ m}^3 (\text{cm}^3)$

$$= 8,5 \times (100)^3 \text{ cm}^3$$

$$= 8,5 \times 1\,000\,000$$

$$= 8\,500\,000 \text{ cm}^3$$

(g) $4\,000\,000 \text{ cm}^3 (\text{m}^3)$

$$= 4\,000\,000 \div (100)^3 \text{ m}^3$$

$$= 4 \text{ m}^3$$

$$$$

(h) $155 \text{ m}^2 (\text{mm}^2)$

$$= 155 \times (1000)^2 \text{ mm}^2$$

$$= 155 \times 1\,000\,000$$

$$= 155\,000\,000 \text{ mm}^2$$

(i) $10,75 \text{ m}^3 (\text{cm}^3)$

$$= 10,75 \times (100)^3 \text{ cm}^3$$

$$= 10\,750\,000 \text{ cm}^3$$

$$$$

$$1 \text{ l} = 1\,000 \text{ cm}^3$$

$$1 \text{ kl} = 1\,000 \text{ l}$$

(2) Calculate how many liters each of the following volumes contain:

(a) $750\,000 \text{ cm}^3$

$$= 750\,000 \div 1\,000 \text{ l}$$

$$= 750 \text{ l}$$

$$$$

(b) 7 kl

$$= 7 \times 1\,000 \text{ l}$$

$$= 7\,000 \text{ kl}$$

$$$$

(3) Calculate how many milliliters each of the following volumes contain:

(a) $9\,000 \text{ mm}^3$

$$= 9\,000 \div (10)^3 \text{ cm}^3$$

$$= 9 \text{ cm}^3$$

$$= 9 \div 1000 \text{ l} = 0,009 \text{ l}$$

(b) $0,5 \text{ m}^3$ (first convert to cm^3)

$$= 0,5 \times (100)^3 \text{ cm}^3$$

$$= 500\,000 \text{ cm}^3$$

$$= 500\,000 \div 1000 \text{ l}$$

$$= 500 \text{ l}$$

(4) Calculate the volume of the rectangular prisms with the following measurements:

(a) $L = 23 \text{ cm}$; $B = 14 \text{ cm}$ and $H = 12 \text{ cm}$

$$\begin{aligned} V &= L \times B \times H \\ &= (23 \text{ cm}) \times (14 \text{ cm}) \times (12 \text{ cm}) \\ &= 3\,864 \text{ cm}^3 \end{aligned}$$

(b) $L = B = H = 17 \text{ mm}$

$$\begin{aligned} V &= L \times B \times H \\ &= (17 \text{ mm}) \times (17 \text{ mm}) \times (17 \text{ mm}) \\ &= (17 \text{ mm})^3 \\ &= 4\,913 \text{ mm}^3 \end{aligned}$$

(c) $L = 1,1 \text{ m}$; $B = H = 0,4 \text{ m}$

$$\begin{aligned} V &= L \times B \times H \\ &= (1,1 \text{ m}) \times (0,4 \text{ m}) \times (0,4 \text{ m}) \\ &= 0,176 \text{ m}^3 \end{aligned}$$

(d) $L = 130 \text{ mm}$; $B = 5 \text{ cm}$ and $H = 0,6 \text{ m}$

$$L = 130 \text{ mm} = 13 \text{ cm}$$

$$H = 0,6 \text{ m} = 60 \text{ cm}$$

$$\therefore V = L \times B \times H$$

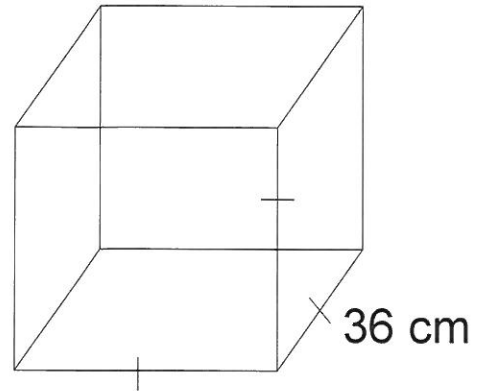
$$\begin{aligned} &= (13 \text{ cm}) \times (5 \text{ cm}) \times (60 \text{ cm}) \\ &= 3\,900 \text{ cm}^3 \end{aligned}$$

(5) Consider the prism:

(a) Which type of prism is this?

(b) Calculate the volume of the prism.

(c) How many liters does the prism contain?



(a) Cube - all measurements are the same!

$$(b) V = L \times B \times H$$

$$= (L)^3$$

$$= (36 \text{ cm})^3$$

$$= 46\,656 \text{ cm}^3$$

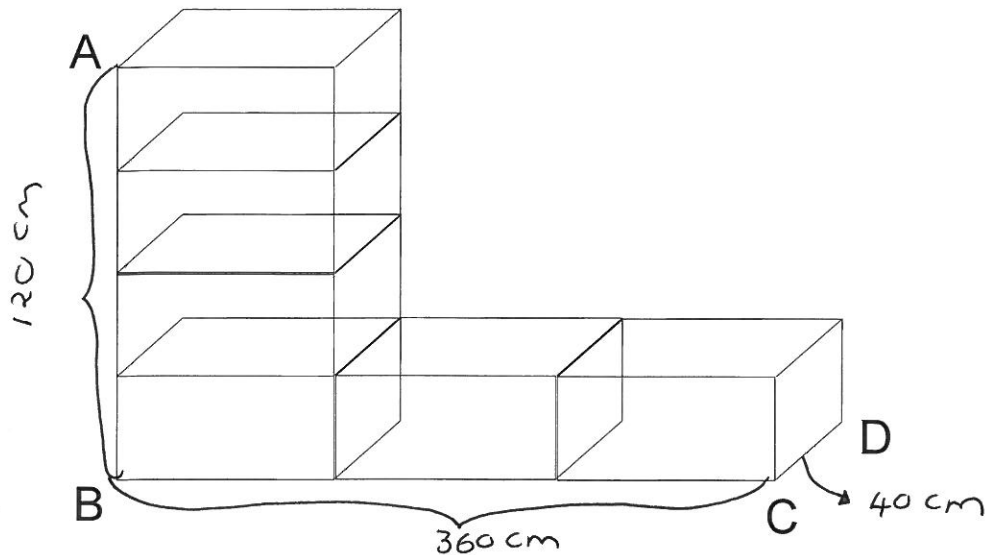
$$(c) 46\,656 \text{ cm}^3$$

$$= 46\,656 \div 1000 \text{ l}$$

$$= 46,656 \text{ l}$$

(6) The figure consists of a number of bars of the same size.

AB = 120 cm ; CD = 40 cm and BC = 360 cm



(a) Calculate the length, breadth and height of each bar.

(b) Calculate the volume of one bar.

Show all calculations!

(c) Calculate the volume of the figure.

(d) Convert the volume to mm^3 .

(a) length of one bar = $360 \div 3 = 120 \text{ cm}$

Breadth of one bar = 40 cm

Height of one bar = $120 \div 4 = 30 \text{ cm}$

(b) Volume of one bar = $L \times B \times H$
 $= (120 \text{ cm}) \times (40 \text{ cm}) \times (30 \text{ cm})$
 $= 144\,000 \text{ cm}^3$

(c) Total volume = $6 \times 144\,000 \text{ cm}^3$ (6 bars)
 $= 864\,000 \text{ cm}^3$

(d) $864\,000 \text{ cm}^3$
 $= 864\,000 \times (10)^3 \text{ mm}^3$
 $= 864\,000\,000 \text{ mm}^3$