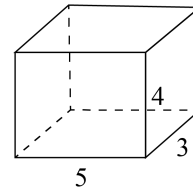


## Day 8

1 Fill in the blanks.

- (1) As shown in the figure below, a cuboid has length of 5 cm, width of 3 cm and height of 4 cm. The surface area of the cube is \_\_\_\_\_  $\text{cm}^2$  and the volume is \_\_\_\_\_  $\text{cm}^3$ .



- (2) The edge length of a cube is 3 cm. The surface area of the cube is \_\_\_\_\_  $\text{cm}^2$  and the volume of it is \_\_\_\_\_  $\text{cm}^3$ .

- (3) If the edge length of a cube is doubled, the surface area is \_\_\_\_\_ times larger and the volume is \_\_\_\_\_ times larger.

**Answer** (1) 1:94

2:60

(2) 1:54

2:27

(3) 1:4

2:8

**Solution** (1) Surface area =  $(5 \times 3 + 5 \times 4 + 3 \times 4) \times 2 = 94 \text{ cm}^2$ ;

Volume =  $5 \times 3 \times 4 = 60 \text{ cm}^3$ .

(2) Surface area =  $3^2 \times 6 = 54 \text{ cm}^2$ ;

$$\text{Volume} = 3 \times 3 \times 3 = 27 \text{ cm}^3.$$

(3) Formula:  $V = a^3$ ;  $S = 6a^2$ .

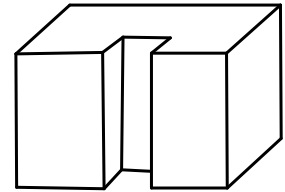
Let  $a$  be the original edge length.

$$\therefore V_1 = a^3; S_1 = 6a^2.$$

$$\therefore V_2 = (2a)^3 = 8a^3; S_1 = 6(2a)^2 = 24a^2.$$

Accordingly, the surface area is 4 times larger and the volume is 8 times larger.

- 2 As shown in the figure below, remove a cuboid in size of  $2 \times 1 \times 5$  from a larger cuboid in size of  $7 \times 4 \times 5$ . What is the surface area of the remaining part? (unit: cm)



**Answer**  $172 \text{ cm}^2$

**Solution** Surface of the original large cuboid  $= (7 \times 4 + 7 \times 5 + 4 \times 5) \times 2 = 166 \text{ cm}^2$ ;

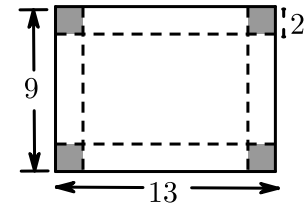
$$\text{Increase: } 5 \times 1 = 5 \text{ cm}^2;$$

$$\text{Decrease: } 2 \times 1 = 2 \text{ cm}^2;$$

$$\text{Surface area: } 166 + 5 \times 2 - 2 \times 2 = 172 \text{ cm}^2.$$

- 3 As shown in the figure below, squares with side lengths of 2 cm are cut off from the four corners of a rectangular sheet in size of 13 cm by 9 cm and an open box is

made with the remaining sheet. What is the volume of the box?



**Answer**  $90 \text{ cm}^3$

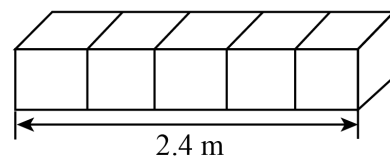
**Solution** Length of the box =  $13 - 4 = 9 \text{ cm}$ ;

Width of the box =  $9 - 4 = 5 \text{ cm}$ ;

Height of the box =  $2 \text{ cm}$ ;

Therefore, the volume of the box =  $9 \times 5 \times 2 = 90 \text{ cm}^3$ .

- 4 As shown in the figure below, cut the cuboid with length of  $2.4 \text{ m}$  into 5 small cuboids and the total surface area increases by  $96 \text{ cm}^2$ . What is the volume of the cuboid?



**Answer**  $2880 \text{ cm}^3$

**Solution** In order to cut the cuboid into 5 small cuboids, 4 cuts are made and each creates 2 new interfacing faces.

Area of the cross-section face =  $96 \div 8 = 12 \text{ cm}^2$ ;

Therefore, Volume =  $12 \times 240 = 2880 \text{ cm}^3$ .