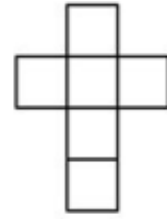


Nets and Surface Area of Cubes and Cuboids

Starter

The net of a 3-D solid is a 2-D representation of the unfolded solid.

The diagram to the right is an example of a net of a cube.

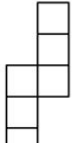
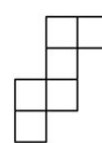
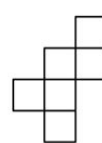
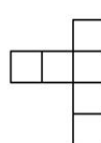
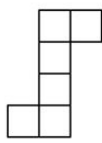
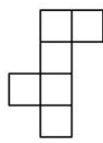
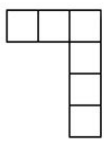


- Find the surface area of a cube whose sides are 4 cm long

Do not draw the diagrams

- Working in pairs, decide which of the following nets could fold up into a cube.

(a) (b) (c) (d) (e) (f) (g) (h)



(i)

(j)

(k)

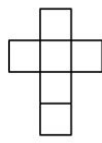
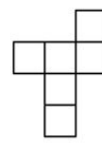
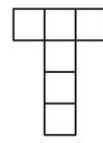
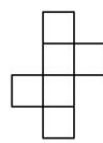
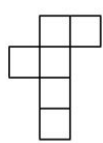
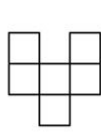
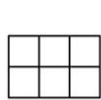
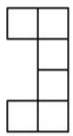
(l)

(m)

(n)

(o)

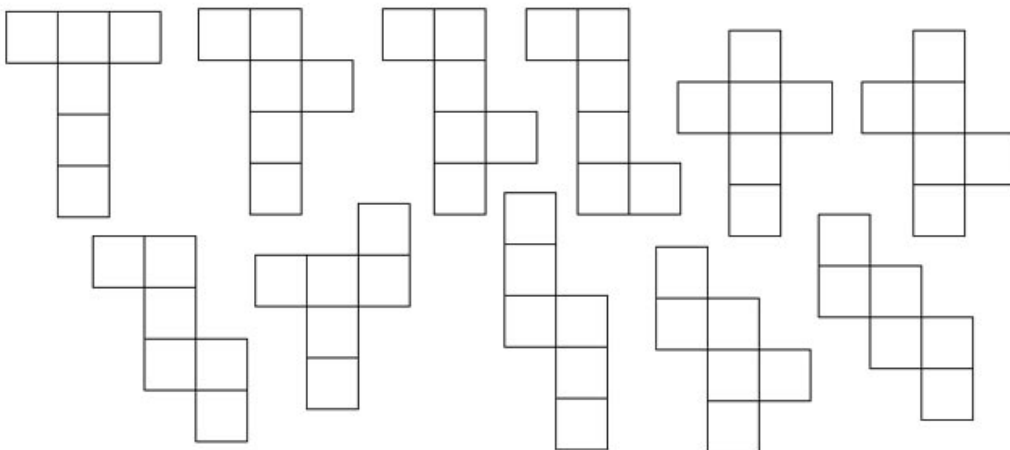
(p)



Notes

The nets of a cube

There are 11 nets of a cube — **there is no need to draw them.**



Surface area of a cube or cuboid

The **surface area** of a solid is the **sum of the areas of the faces**.

The surface area of a **cuboid** is the sum of the **6 rectangles** that make up the faces.

The dimensions of a cuboid are length by width by height. The formula for the surface area of a cuboid is:

$$\text{Surface area} = 2(\text{length} \times \text{width} + \text{length} \times \text{height} + \text{width} \times \text{height})$$

N.B. It is often better to think about the individual areas of the faces rather than just substitute numbers into a formula.

E.g. 1 Find the surface area of cuboid whose dimensions are 2 cm by 3 cm by 5 cm.

Working: There are 2 faces that are 2 cm by 3 cm: Area = $2 \times 2 \times 3 = 12$
There are 2 faces that are 3 cm by 5 cm: Area = $2 \times 3 \times 5 = 30$
There are 2 faces that are 5 cm by 2 cm: Area = $2 \times 5 \times 2 = 20$
Surface area = $12 + 30 + 20 = 62 \text{ cm}^2$.

or use the formula

$$\text{Surface area} = 2(2 \times 3 + 3 \times 5 + 5 \times 2) = 62 \text{ cm}^2.$$

E.g. 2 Find the surface area of cuboid whose dimensions are 5 cm by 11 cm by 16 cm.

E.g. 3 Two dimensions of a cuboid are 3 cm and 8 cm. Given that the surface area of the cuboid is 202 cm^2 . Find the length of the 3rd side.

E.g. 4 A cube has surface area 253.5 cm^2 . Calculate its dimensions.

[Video:](#) [Nets](#)
[Video:](#) [Surface area of a cuboid](#)
[Video:](#) [Surface area of L-shaped prism](#)

[Solutions to Starter and E.g.s](#)

Exercise

p109 Ex 6.4 Qu 1-3, 6-11

Summary

A net is a 2-D “unfolded” representation of a 3-D solid.

Surface area of a cube or cuboid — the sum of the **6 rectangles** that make up the faces.

$$\text{Surface area} = 2(\text{length} \times \text{width} + \text{length} \times \text{height} + \text{width} \times \text{height})$$

[Textbook answers \(only available during a lockdown\)](#)