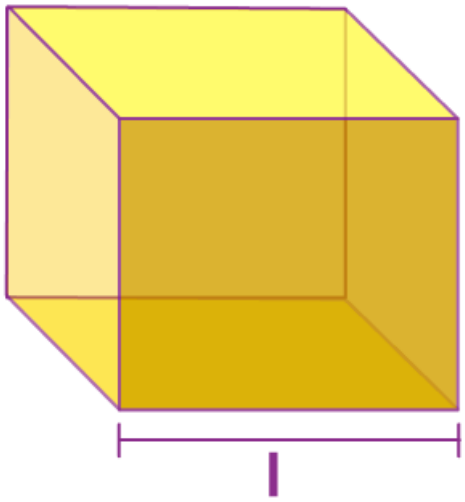
Cube questions and solutions are provided here to help students learn various methods of solving questions related to a three-dimensional shape called a cube. Students can get solved questions on the cube and some additional questions for practice in this article. Thus, working on cube questions will boost your skills in geometry, and help to understand how to relate geometrical shapes with real-life examples.

What is a cube?

In geometry, a cube is a three-dimensional shape with six square faces. A cube contains six faces, eight vertices, and twelve edges. The below figure shows the shape of a cube with the edge "l".



Cube formulas

Lateral surface area (LSA) of a cube = $4l^2$

Total surface area (TSA) of a cube = $6l^2$

Volume of a cube = l^3

Length of the longest diagonal of a cube = $l\sqrt{3}$

Click here to get more information about the cube and its properties.

Cube Questions and Answers

1. Find the volume of a cube whose edge is 17 units.

Solution:

Given,

Edge of the cube = l = 17 units

Volume of a cube = l^3

= 17^3

$= 17 \times 17 \times 17$

$= 4913$

Therefore, the volume of the cube is 4913 cubic units.

2. A cube of volume 216 cm^3 is divided into small cubes of edge 2 cm each. Find the number of small cubes formed.

Solution:

Given,

Volume of cube = 216 cm^3

Edge of a small cube = $l = 2$ cm

Volume of a small cube = $l^3 = 2^3 = 8$ cm^3

Number of cubes = volume of the original cube/volume of a small cube

$= 216/8$

$= 27$

Thus, 27 small cubes of edge 2 cm can be formed from the cube of volume 216 cm^3.

3. What is the lateral surface area of a cube whose edge is given as 9 cm?

Solution:

Given,

Edge of a cube = $l = 9$ cm

As we know,

The lateral surface area of cube = $4l^2$

$= 4 \times 9^2$

$= 4 \times 81$

$= 324$ cm^2

Therefore, the LSA of the cube is 324 cm^2.

4. Find the volume of a cube whose length of the longest diagonal is $12\sqrt{3}$ cm.

Solution:

Let "l" be the edge of a cube.

Given,

Length of the longest diagonal = $12\sqrt{3}$ cm

i.e., $l\sqrt{3} = 12\sqrt{3}$

$\Rightarrow l = 12$ cm

The volume of the cube = l3

$= 12^3$

$= 12 \times 12 \times 12$

$= 1728$

Hence, the volume of the cube is 1728 cm^3.

5. The total surface area of a cube is 150 m^2. Calculate the volume of the cube.

Solution:

Let l be the edge of a cube.

Given,

The total surface area of the cube = 150 m^2

That means $6l^2 = 150$

$l^2 = 150/6$

$l^2 = 25$

$l = 5$ m

Thus, the volume of the cube = $l^3 = 5^3 = 5 \times 5 \times 5 = 125$ m^3.

6. The lateral surface area of a cube is 256 cm^2. Find the edge and volume of the cube.

Solution:

Let l be the edge of a cube.

Given,

Lateral surface area of the cube = 256 cm^2

That means $4l^2 = 256$

$l^2 = 256/4$

$l^2 = 64$

$l = 8$

So, the edge of the cube is 8 cm.

Also, the volume of the cube = $l^3 = 8^3 = 8 \times 8 \times 8 = 512$ cm^3.

7. A cubical box has an edge of 12.5 cm, and the edge of another cubical box is 9 cm. Find the difference between the LSA of these two cubical boxes.

Solution:

Given,

Edge of a cubical box = 12.5 cm

Edge of another cubical box = 9 cm

We know that the LSA of a cube with edge "l" = $4l^2$

Difference between LSA of two cubical boxes = $4 \times (12.5)^2 - 4 \times (9)^2$

$= 4[12.5 \times 12.5 - 9 \times 9]$

$= 4(156.25 - 81)$

$= 4 \times 75.25$

$= 301\ cm^2$

8. If the total surface area of a cube is 600 square units, then find the length of the longest diagonal of this cube.

Solution:

Let a be the edge of the cube.

The total surface area of the cube = 600 square units

As we know, TSA = $6a^2$

So, $6a^2 = 600$

$a^2 = 600/6$

$a^2 = 100$

$a = 10$

Thus, the edge of the cube is 10 units.

Length of the longest diagonal = $a\sqrt{3} = 10\sqrt{3}$ units.

9. A cube has a TSA of 486 cm^2. Find its lateral surface area.

Solution:

Let l be the edge of the cube.

Given,

Total surface area of the cube = 486 cm^2

So, $6l^2 = 486$

$l^2 = 486/6$

$l^2 = 81$

$a = 9$

Therefore, the edge of the cube = 9 cm.

Now, the lateral surface area = $4l^2$

$= 4 \times 9^2$

$= 4 \times 81$

$= 324\ cm^2$

Hence, the LSA of the cube is 324 cm^2.

10. The ratio of edges of two cubes is 3 : 5. If the volume of the first cube is 729 cm^3, find the volume of the second cube.

Solution:

Given,

Ratio of edges of two cubes = 3 : 5

Let 3x and 5x be the edges of cubes.

We know that the volume of a cube with edge "a" = a^3

Volume of the first cube = $(3x)^3$

$27x^3 = 729\ cm^3$ (given)

$x^3 = 729/27$

$x^3 = 27$

$x = 3$

So, the edge of the first cube = $3x = 3 \times 3 = 9$ cm

Edge of the second cube = $5x = 5 \times 3 = 15$

Volume of the second cube = $15^3 = 15 \times 15 \times 15 = 3375\ cm^3$

Practice Questions on Cube

1. What is the length of the longest diagonal of a cube of side $7\sqrt{3}$ units?
2. Find the volume of the cube of edge 7 cm.
3. If the ratio of edges of two cubes is 6 : 11, then find the ratio of their volumes.
4. How do you find the total surface area of a cube with an edge of 19 m?
5. The cube-shaped box is filled to the brim with 2 litres of milk. Find the edge and surface of the box.