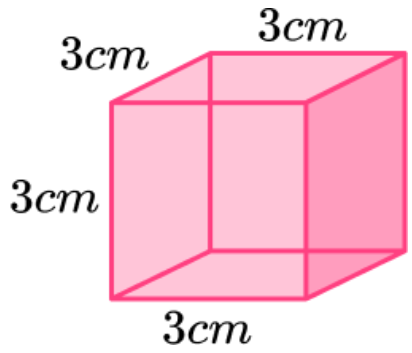
Volume and Surface Area of a Cube - Worksheet

Skill

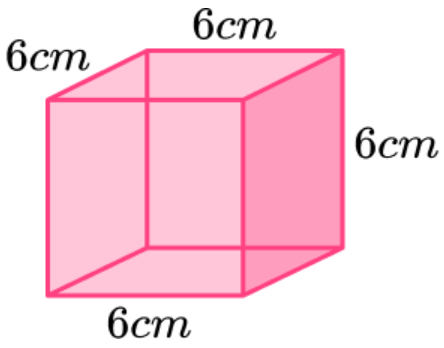
Group A - Volume of a cube

Work out the volume of each cube.

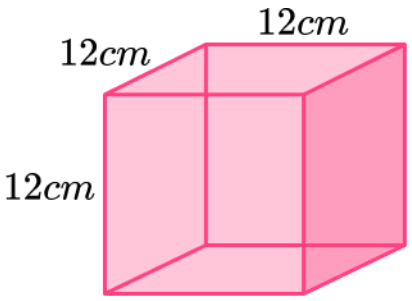
1)



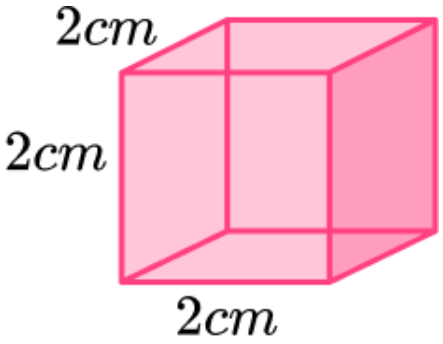
2)



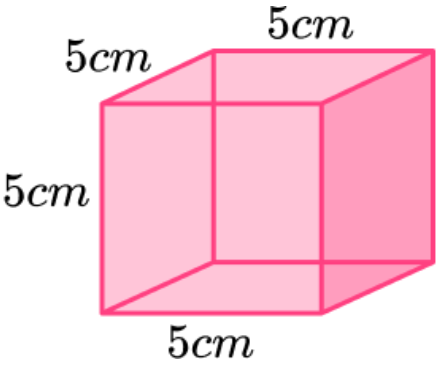
3)



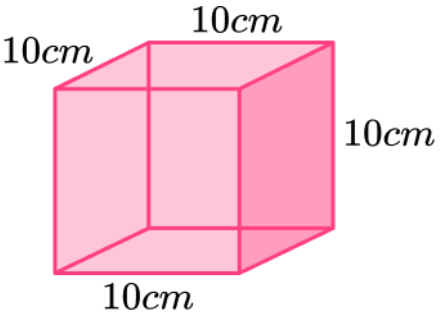
4)



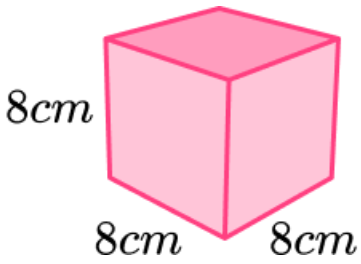
5)



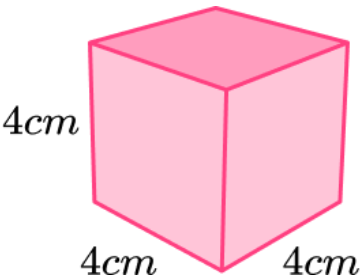
6)



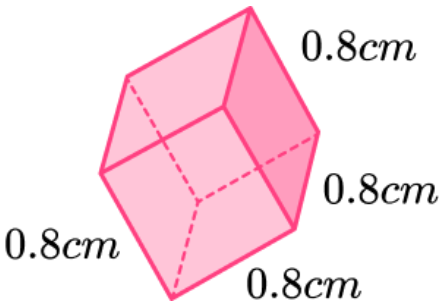
7)



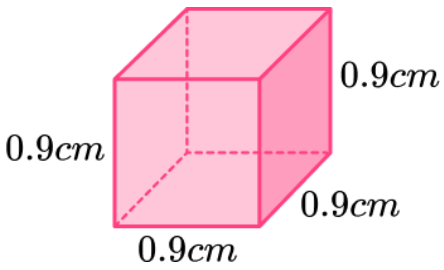
8)



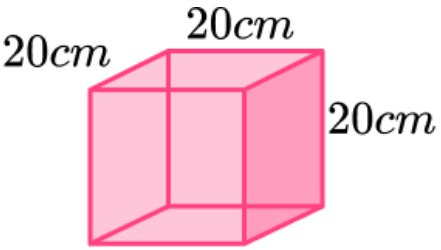
9)



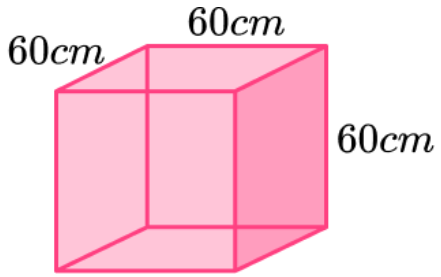
10)



11)



12)

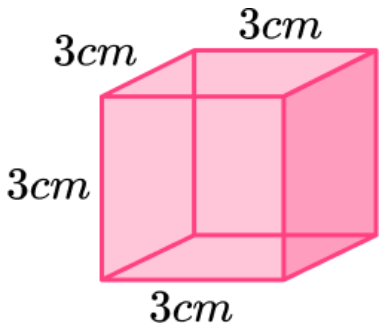


Volume and Surface Area of a Cube - Worksheet

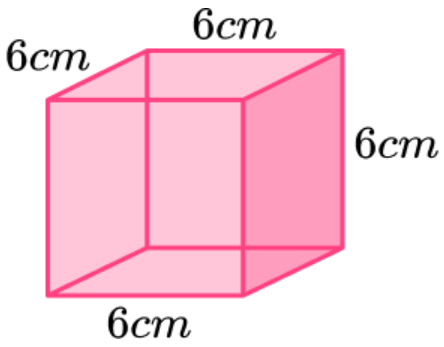
Group B - Surface area of a cube

Work out the total surface area of each cube:

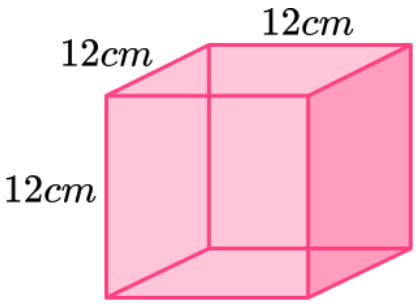
1)



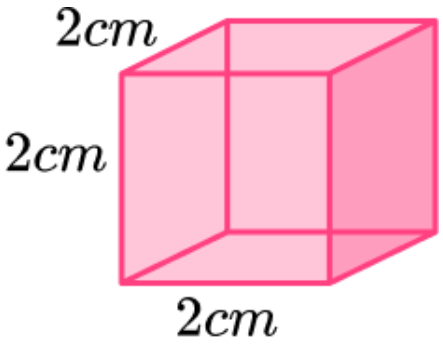
2)



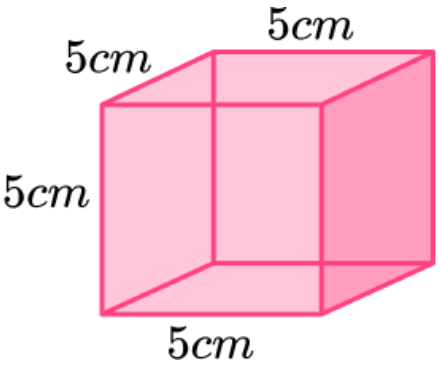
3)



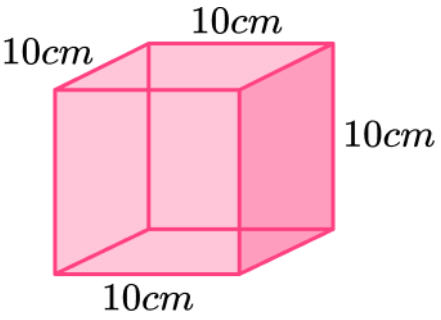
4)



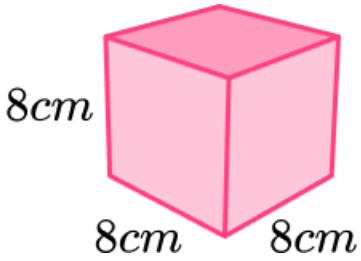
5)



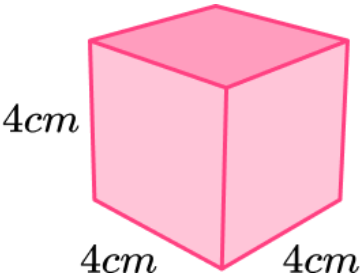
6)



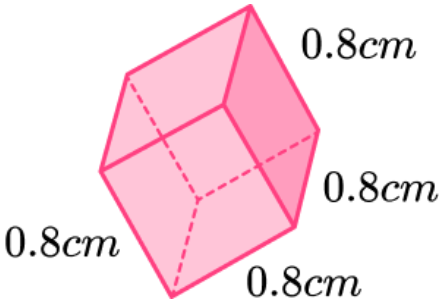
7)



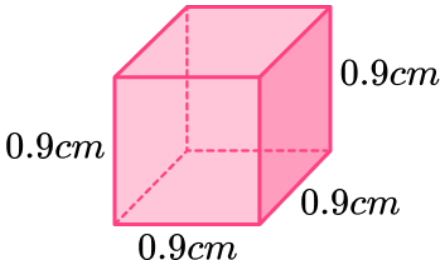
8)



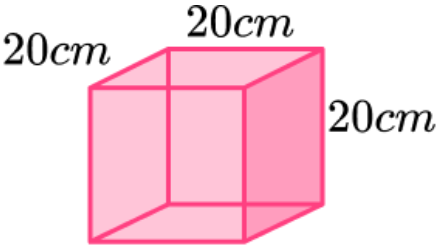
9)



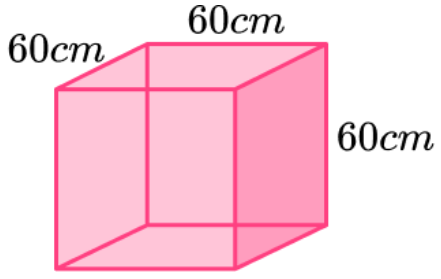
10)



11)



12)



Volume and Surface Area of a Cube - Worksheet

Group C - Finding a missing length given the volume or surface area

Find the missing length given the volume or surface area:

1) volume $= 512cm^3$

2) surface area $= 1176cm^2$

3) volume $= 125mm^3$

4) volume $= 2197cm^3$

5) surface area $= 1734mm^2$

6) volume $= 3873m^3$

7) volume $= 6738m^3$

8) surface area $= 53m^2$

9) surface area $= 2905cm^2$

10) surface area $= 387m^2$

11) volume $= 15mm^3$

12) surface area $= 1579m^2$

Volume and Surface Area of a Cube - Worksheet

Applied

1) **(a)** Calculate the surface area of a cube with side length $\frac{1}{2}m$.

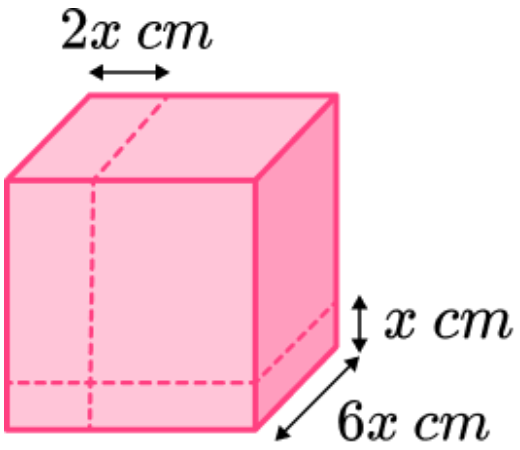
(b) Convert your answer to cm.

2) A cube has a surface area of $54cm^2$.
Find the side length, x, of the cube.

3) The cube on the TV show 'The Cube' is a cube with each side measuring $5m$.
Work out the volume of the cube.

4) A cube has a volume of $1000cm^3$.
Work out the surface area of the cube.

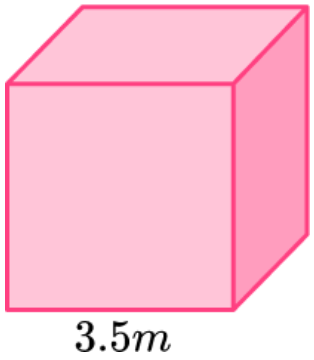
5) A cube is cut into four cuboids.



Write the volume of the smallest cuboid as a fraction of the volume of the cube.
Give your answer in its simplest form.

Volume and Surface Area of a Cube - Exam Questions

1) Here is a cube.



What is the total surface area of the cube?

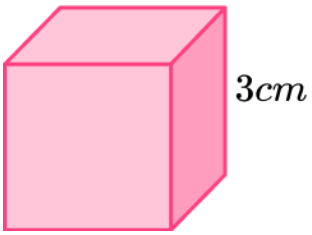
State the units with your answer.

.....

(3 marks)

---

2) The diagram shows a cube of side length $3cm$.



Luke says

"The volume of any solid made with six of these cubes is $54cm^3$,"

Is Luke correct?
You must show your working.

.....

(3 marks)

Volume and Surface Area of a Cube - Exam Questions

3) A cube has an edge length of 0.8 metres.

Work out the total surface area of the cube.

Give your answer in square centimetres.

.....

(4 marks)

---

4) **(a)** The volume of a cube is $343m^3$.

What is the length of the sides of the cube?

.....

(2)

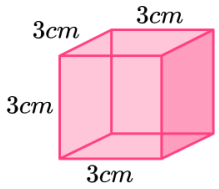
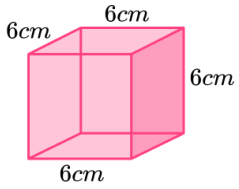
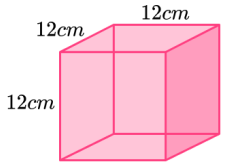
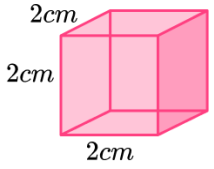
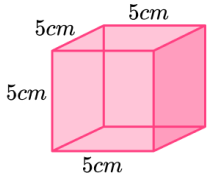
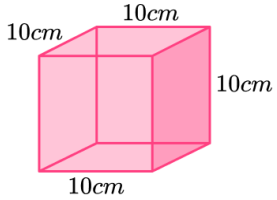
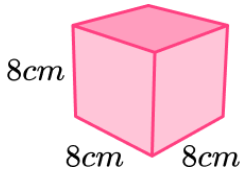
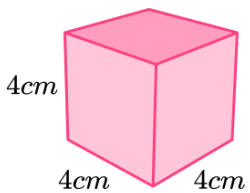
(b) Calculate the total surface area of the cube.

.....

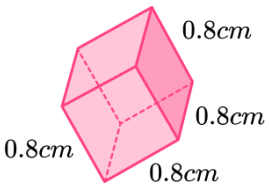
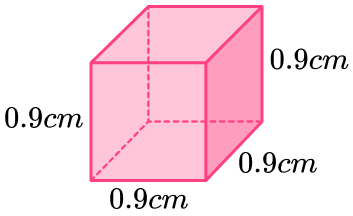
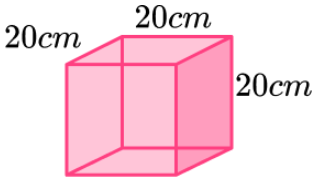
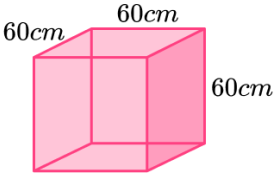
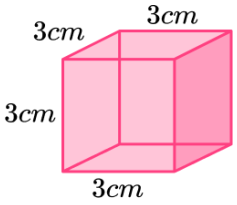
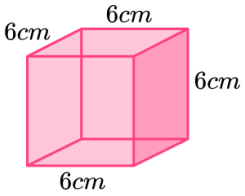
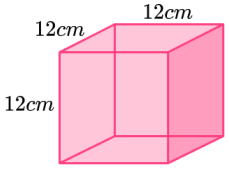
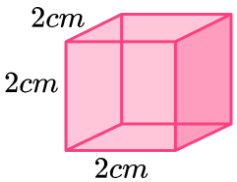
(2)

(4 marks)

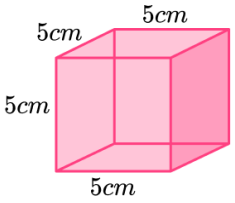
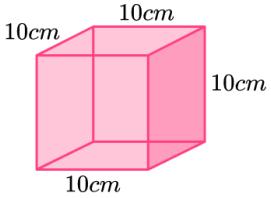
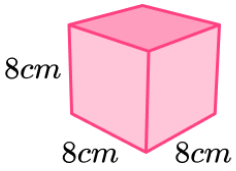
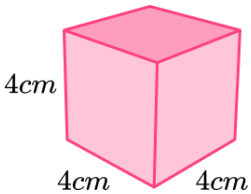
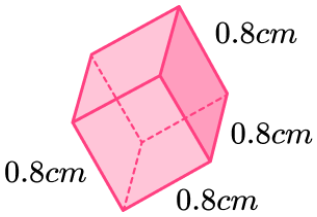
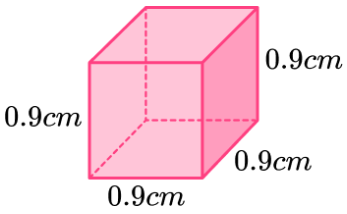
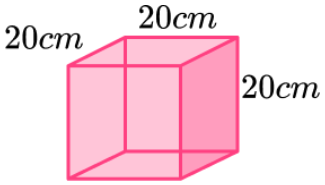
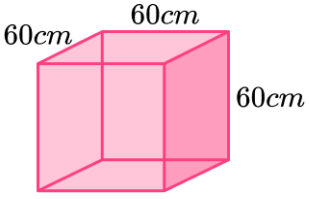
Volume and Surface Area of a Cube - Answers

	Question	Answer
	Skill Questions	
Group A	Work out the volume:	
	1) 	**1)** $27cm^3$
	2) 	**2)** $216cm^3$
	3) 	**3)** $1728cm^3$
	4) 	**4)** $8cm^3$
	5) 	**5)** $125cm^3$
	6) 	**6)** $1000cm^3$
	7) 	**7)** $512cm^3$
	8) 	**8)** $64cm^3$

Volume and Surface Area of a Cube - Answers

Group A contd	**9)** 	**9)** $0.512cm^3$
	10) 	**10)** $0.729cm^3$
	11) 	**11)** $8000cm^3$ or $0.008m^3$
	12) 	**12)** $216\,000cm^3$ or $0.216m^3$
Group B	Work out the total surface area: **1)** 	**1)** $54cm^2$
	2) 	**2)** $216cm^2$
	3) 	**3)** $864cm^2$
	4) 	**4)** $24cm^2$

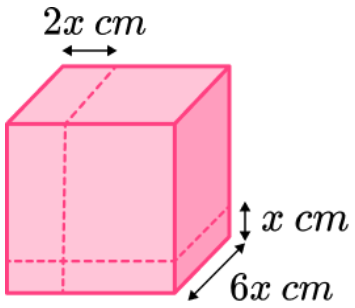
Volume and Surface Area of a Cube - Answers

Group B contd	**5)** 	**5)** $150cm^2$
	6) 	**6)** $600cm^2$
	7) 	**7)** $384cm^2$
	8) 	**8)** $96cm^2$
	9) 	**9)** $3.84cm^2$
	10) 	**10)** $4.86cm^2$
	11) 	**11)** $2400cm^2$ or $0.24m^2$
	12) 	**12)** $21\,600cm^2$ or $2.16m^2$

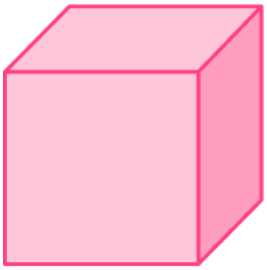
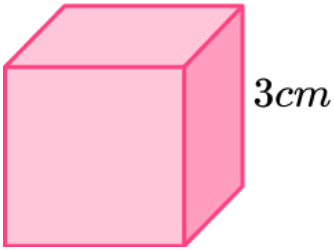
Volume and Surface Area of a Cube - Answers

Group C	Find the missing length given the volume or surface area: **1)** volume $= 512cm^3$ **2)** surface area $= 1176cm^2$ **3)** volume $= 125mm^3$ **4)** volume $= 2197cm^3$ **5)** surface area $= 1734mm^2$ **6)** volume $= 3873m^3$ **7)** volume $= 6738m^3$ **8)** surface area $= 53m^2$ **9)** surface area $= 2905cm^2$ **10)** surface area $= 387m^2$ **11)** volume $= 15mm^3$ **12)** surface area $= 1579m^2$	**1)** $8cm$ **2)** $14cm$ **3)** $5mm$ **4)** $13cm$ **5)** $17mm$ **6)** $15.7m$ (3sf) **7)** $18.9m$ (3sf) **8)** $2.97m$ (3sf) **9)** $22.0cm$ (3sf) **10)** $8.03m$ (3sf) **11)** $2.47mm$ (3sf) **12)** $16.2m$ (3sf)

Volume and Surface Area of a Cube - Answers

	Question	Answer
	Applied Questions	
1)	**a)** Calculate the surface area of a cube with side length $\frac{1}{2}m$. **b)** Convert your answer to cm.	**a)** $1.5m^2$ **b)** $15\,000cm^2$
2)	A cube has a surface area of $54cm^2$. Find the side length, x, of the cube.	$3cm$
3)	The cube on the TV show 'The Cube' is a cube with each side measuring $5m$. Work out the volume of the cube.	$125m^3$
4)	A cube has a volume of $1000cm^3$. Work out the surface area of the cube.	$600cm^2$
5)	A cube is cut into four cuboids.  Write the volume of the smallest cuboid as a fraction of the volume of the cube. Give your answer in its simplest form.	Volume of large cube: $216x^3$ Volume of small cuboid: $12x^3$ $\frac{1}{18}$

Volume and Surface Area of a Cube - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	Here is a cube.  $3.5m$ What is the total surface area of the cube? State the units with your answer.	$3.5 \times 3.5 \ (= 12.25)$ $12.25 \times 6 \ (= 73.5)$ $73.5m^3$	**(1)** **(1)** **(1)**
2)	The diagram shows a cube of side length $3cm$.  $3cm$ Luke says "The volume of any solid made with six of these cubes is $54cm^3$" Is Luke correct? You must show your working.	$3 \times 3 \times 3 = 27$ $27 \times 6 = 162$ No (with workings)	**(1)** **(1)** **(1)**
3)	A cube has an edge length of 0.8 metres. Work out the total surface area of the cube. Give your answer in square centimetres.	$0.8 \times 0.8 \ (= 0.64)$ $0.64 \times 6 \ (= 3.84)$ 3.84×100^2 $38400 \ cm^2$ Alternatively $0.8 \times 100 \ (= 80)$ $80 \times 80 \ (= 6400)$ 6400×6 $38400 \ cm^2$	**(1)** **(1)** **(1)** **(1)** **(1)** **(1)** **(1)** **(1)**

Volume and Surface Area of a Cube - Mark Scheme

4)	**(a)**	The volume of a cube is $343m^3$. What is the length of the sides of the cube?	**(a)** $\sqrt[3]{343}$ $7m$	**(1)** **(1)**
	(b)	Calculate the total surface area of the cube.	**(b)** $7 \times 7 \times 6$ $294cm^2$	**(1)** **(1)**