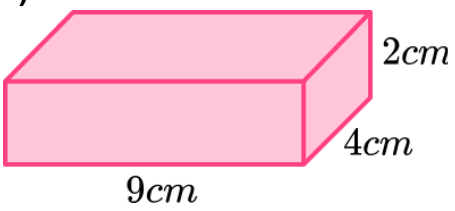
Volume and Surface Area of Cuboids - Worksheet

Skill

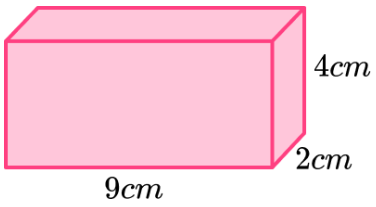
Group A - Volume

Work out the volume of each cuboid

1)



2)



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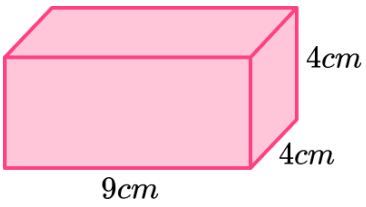

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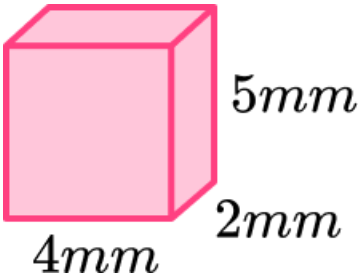
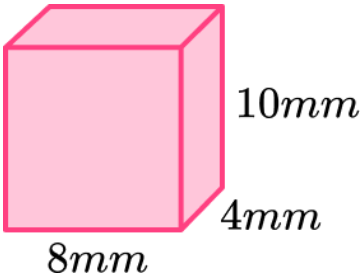


5)



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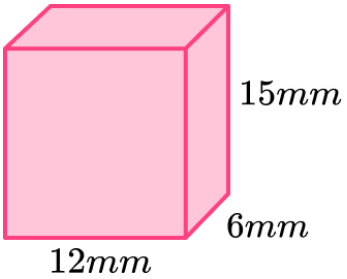

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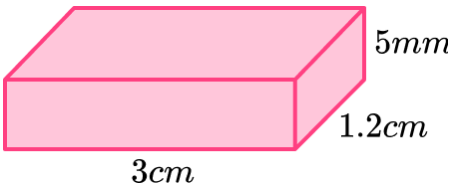
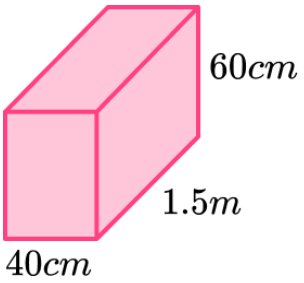


8)



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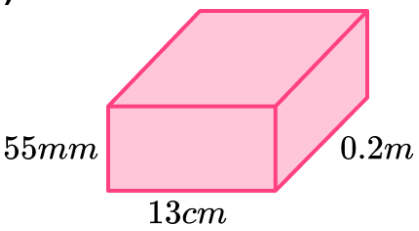

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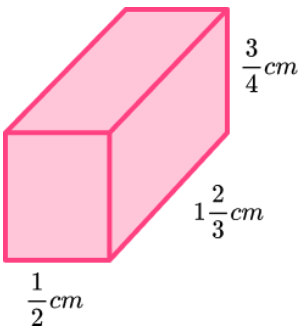

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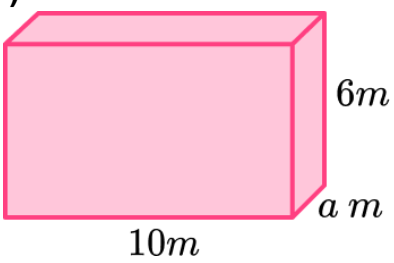
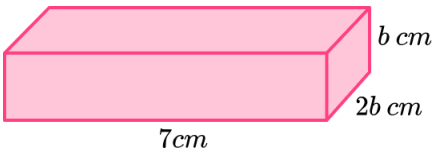


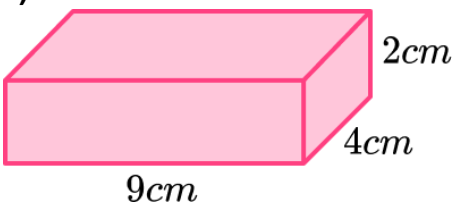
12)



Group B - Surface Area

Work out the surface area of each cuboid

1)



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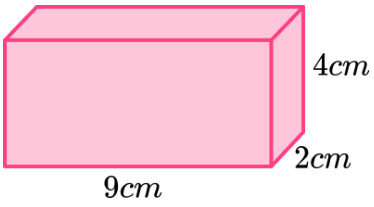

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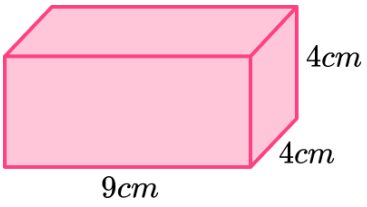

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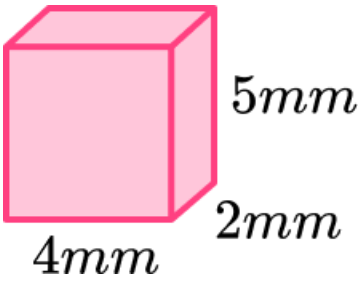

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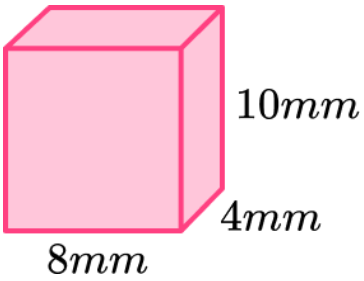

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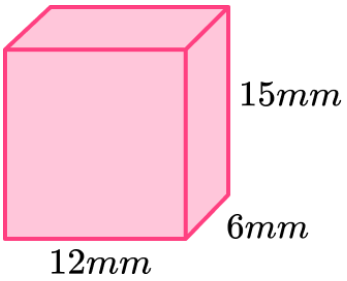

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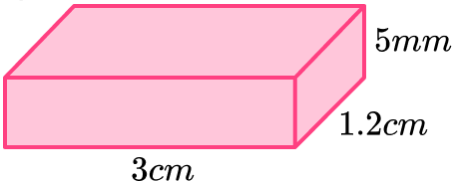

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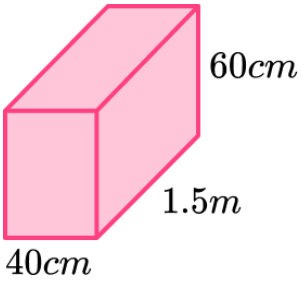

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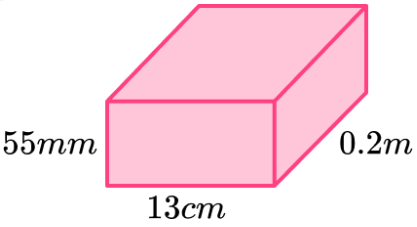

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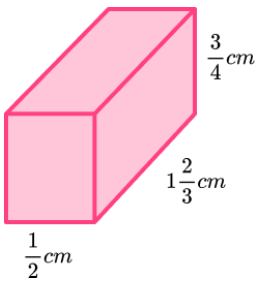

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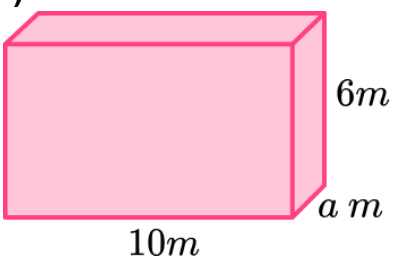

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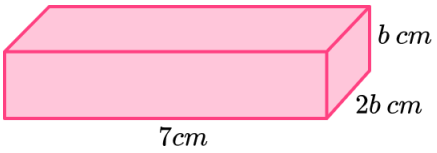
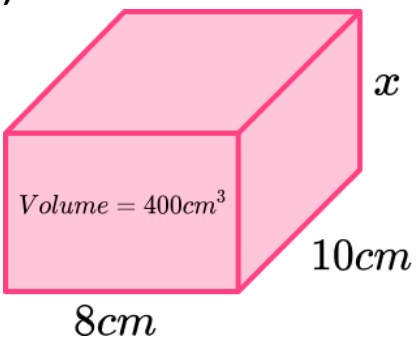


Group C - Working Backwards

Work out the value of x

1)



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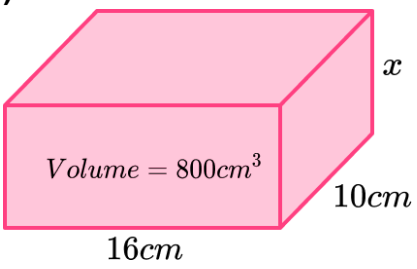
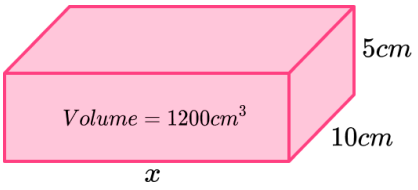


3)



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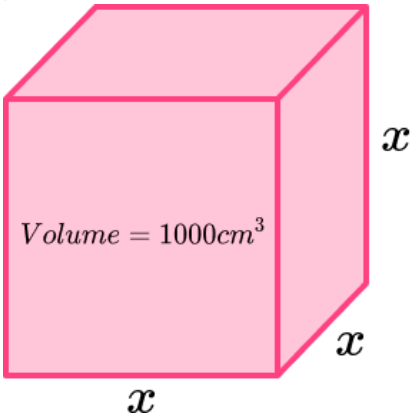
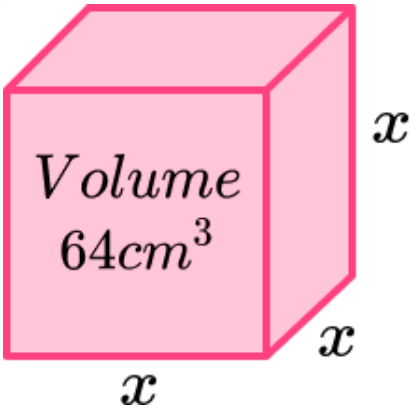


5)



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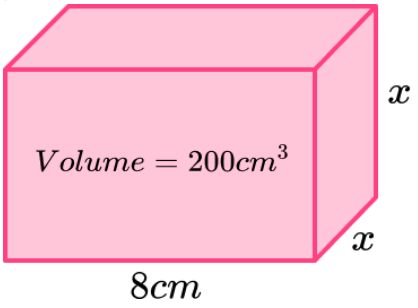

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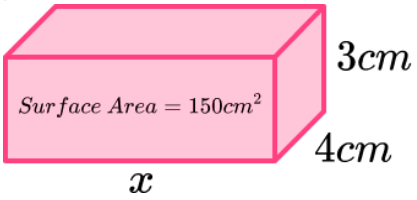

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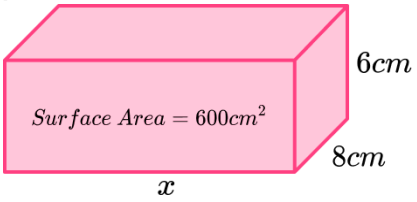

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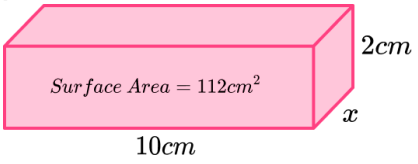

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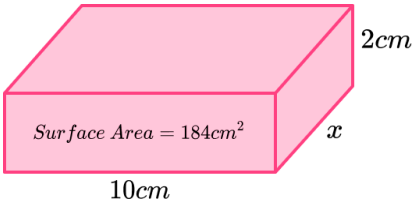

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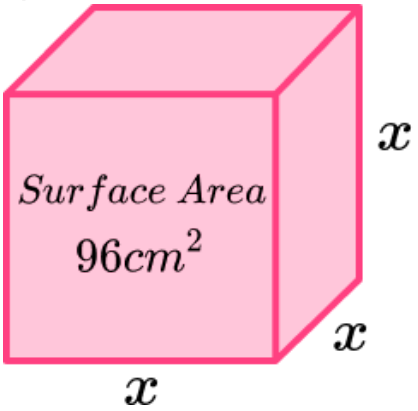

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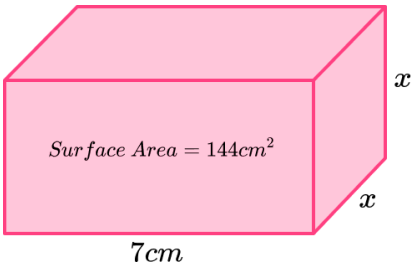
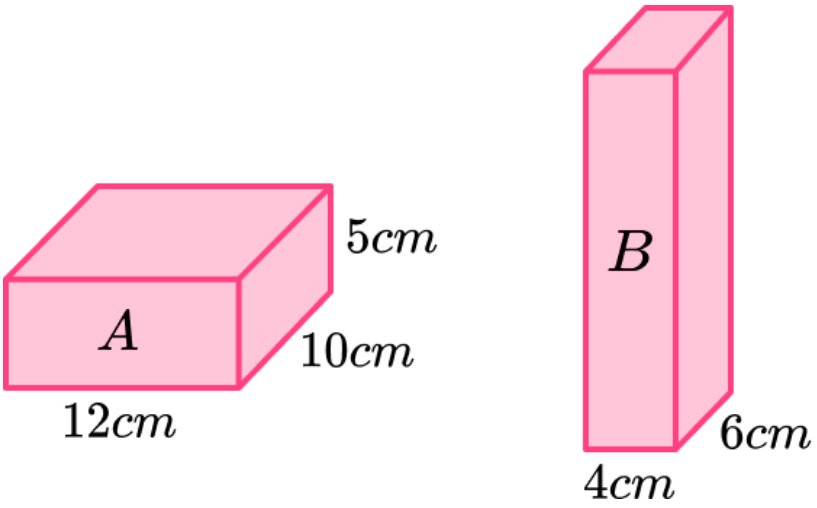


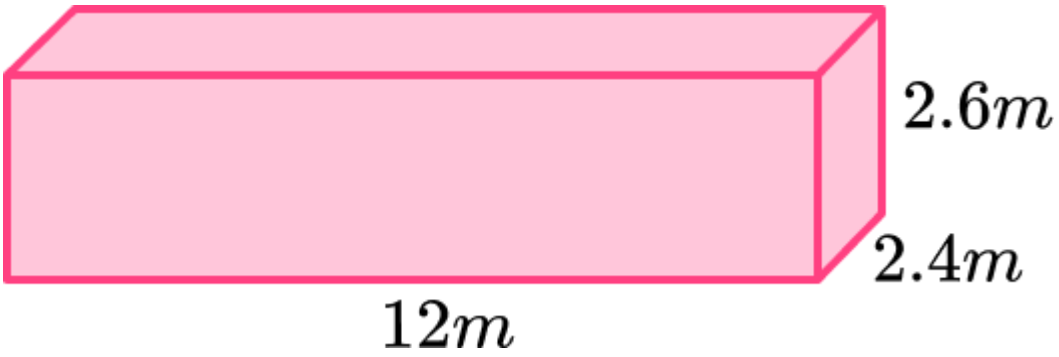
Volume and Surface Area of Cuboids - Worksheet

Applied

1) These two cuboids have the same volume. What is the height of cuboid B?

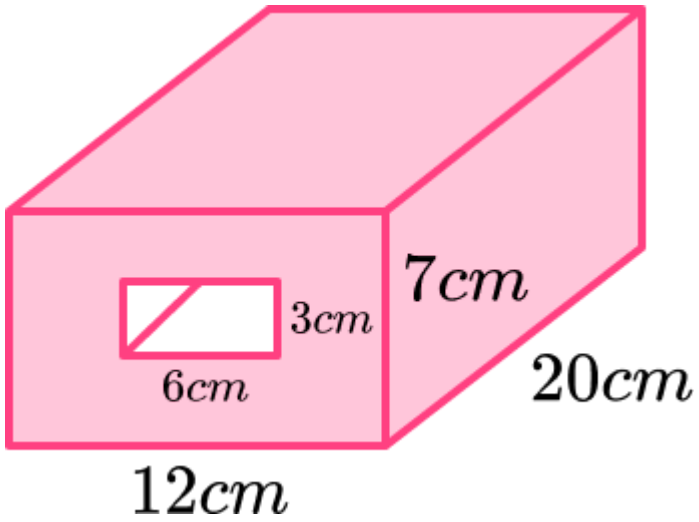


2) The outside of a shipping container is to be painted.



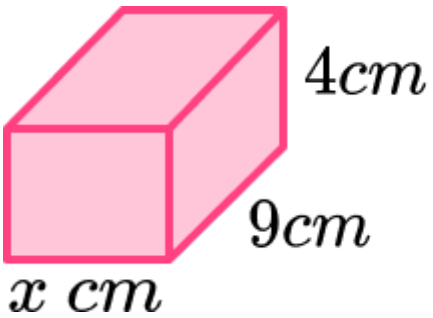
$1\ litre$ of paint will cover $12m^2$. How much paint is required to paint the whole container?

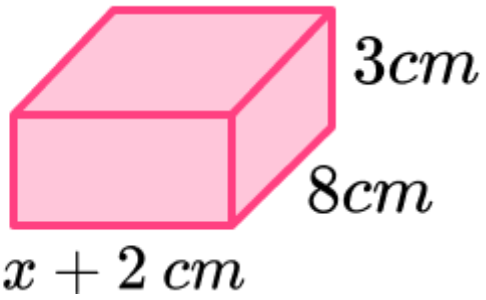
3) **(a)** Here is a cuboid with a hole through the centre. Work out the volume of the shaded shape.



(b) The shape is made from aluminium, which has a density of $2.7 g/cm^3$. What is the weight of the shape?

4) The cuboids have the same surface area. Work out the value of x.





Volume and Surface Area of Cuboids - Exam Questions

1) **(a)** Work out the volume of a cube with side length $8cm$.

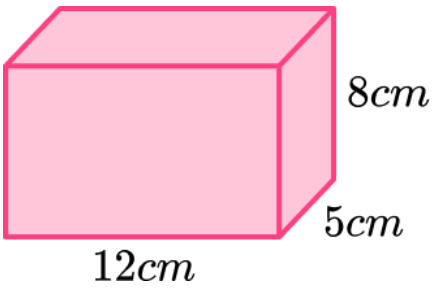
.....
(2)

(b) Work out the surface area of a cube with side length $8cm$.

.....
(2)
(4 marks)

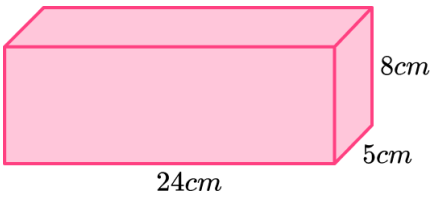
---

2) **(a)** Work out the surface area of the cuboid:



.....
(2)

(b) Lucy says that the surface area of this cuboid will be twice as big as that of the cuboid above. Is she correct? Show how you decide.

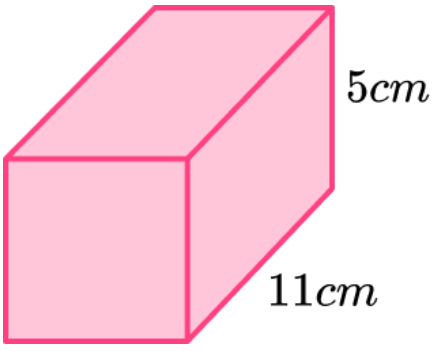


.....
(2)
(4 marks)

---

3) **(a)** The volume of this cuboid is $220cm^3$.

Work out the length of the cuboid.



.....
(2)

(b) Work out the surface area of the cuboid.

.....

(2)

(4 marks)

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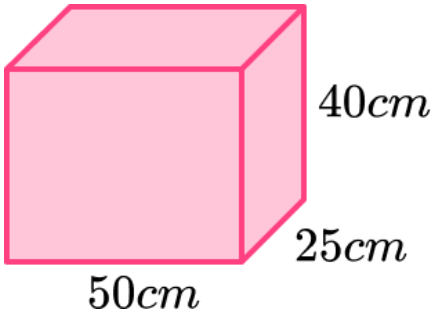
4) The fuel tank from Gary's car is pictured below:

.....

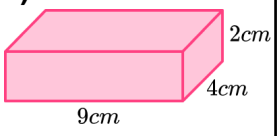
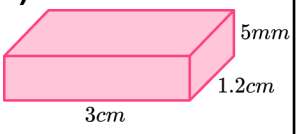
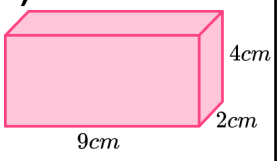
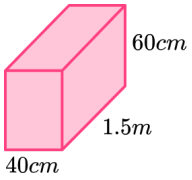
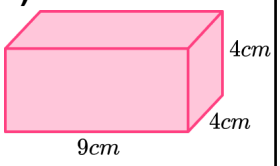
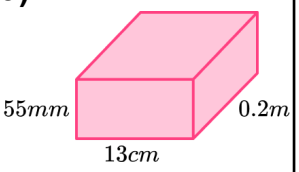
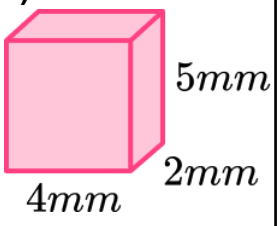
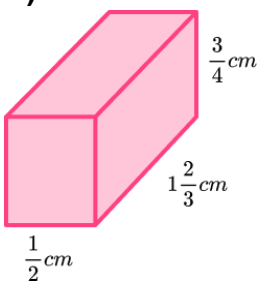
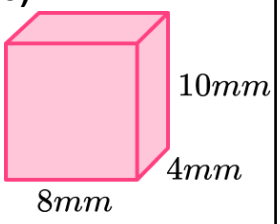
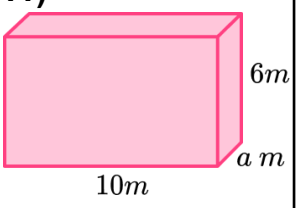
(5 marks)

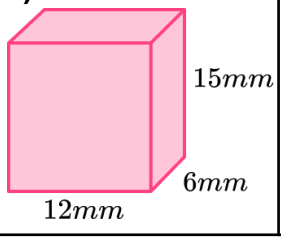
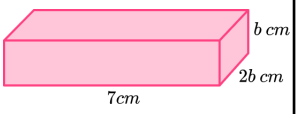
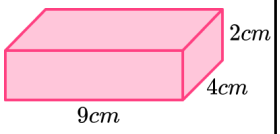
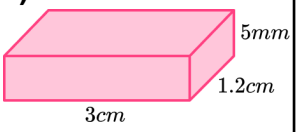
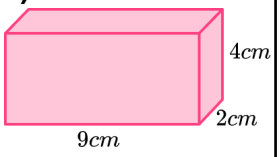
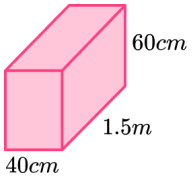
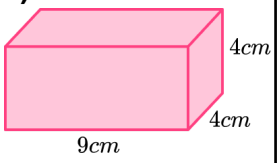
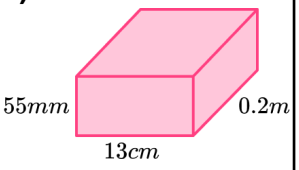
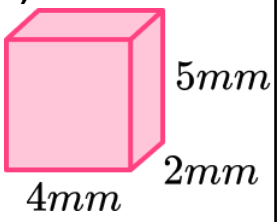
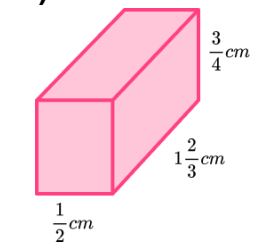
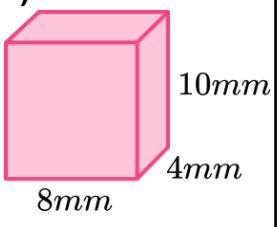
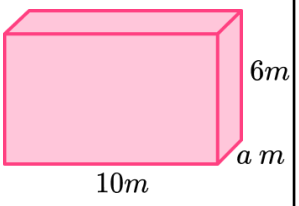
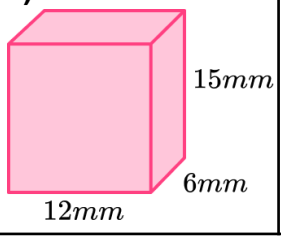
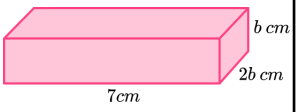


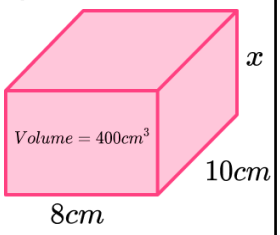
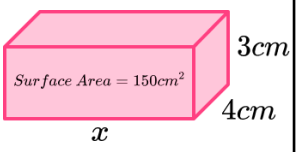
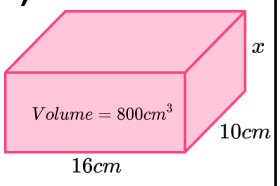
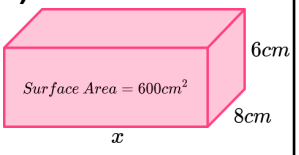
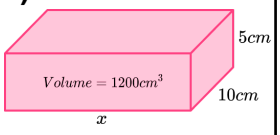
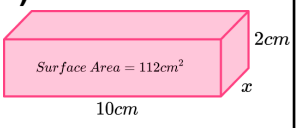
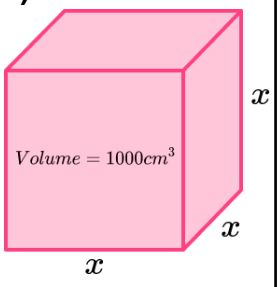
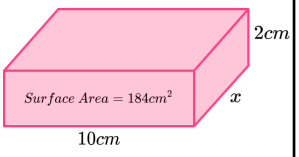
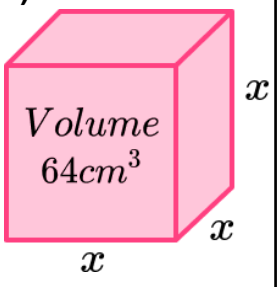
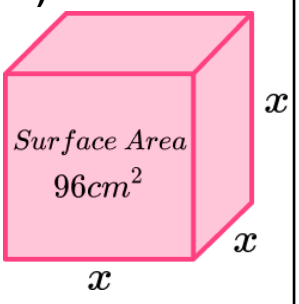
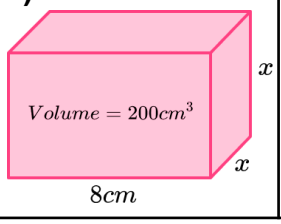
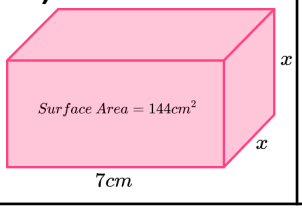
The tank is currently ¼ full.
Gary wants to fill the tank.
Fuel costs £1.30 per litre
$(1l = 1000cm^3)$.

How much will it cost Gary to fill his tank?

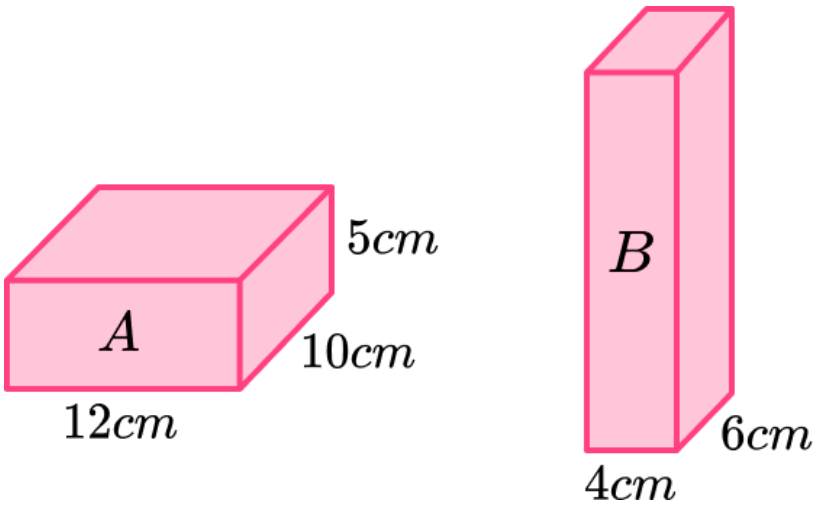
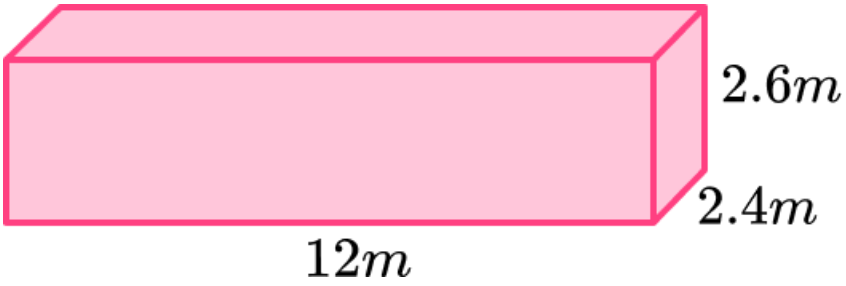
Volume and Surface Area of Cuboids - Answers

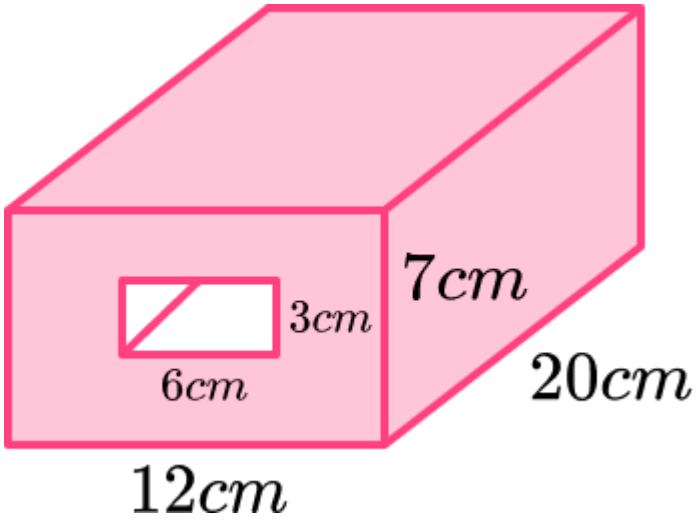
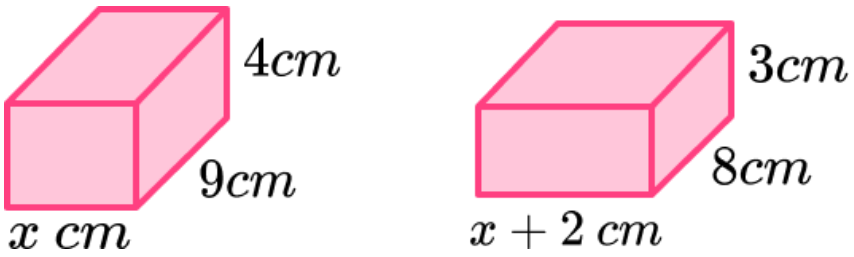
	Question		Answer	
Group A	Skill Questions			
	Work out the volume of each cuboid			
	1) 	**7)** 	**1)** $72cm^3$	**7)** $1.8cm^3$ **or** $1800mm^3$
	2) 	**8)** 	**2)** $72cm^3$	**8)** $360000cm^3$ **or** $0.36m^3$
	3) 	**9)** 	**3)** $144cm^3$	**9)** $1430cm^3$
	4) 	**10)** 	**4)** $40mm^3$	**10)** $\frac{5}{8}cm^3$
	5) 	**11)** 	**5)** $320mm^3$	**11)** $60a\ m^3$

	6) 	**12)** 	**6)** $1080mm^3$	**12)** $14b^2\ cm^3$
	Work out the surface area of each cuboid			
Group B	**1)** 	**7)** 	**1)** $124cm^2$	**7)** $11.4cm^2$ or $1140cm^2$
	2) 	**8)** 	**2)** $124cm^2$	**8)** $34800cm^2$ or $3.48m^2$
	3) 	**9)** 	**3)** $176cm^2$	**9)** $883cm^2$
	4) 	**10)** 	**4)** $76mm^2$	**10)** $\frac{59}{12}cm^2$
	5) 	**11)** 	**5)** $304mm^2$	**11)** $32a + 120\ m^2$
	6) 	**12)** 	**6)** $684mm^2$	**12)** $4b^2 + 42b\ cm^2$

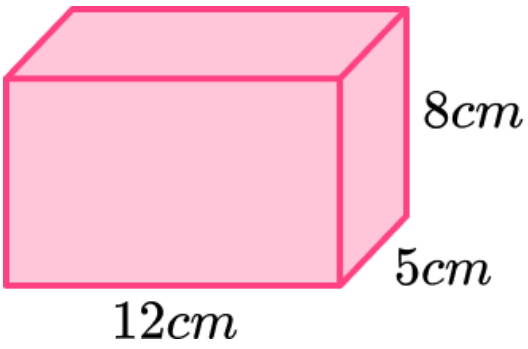
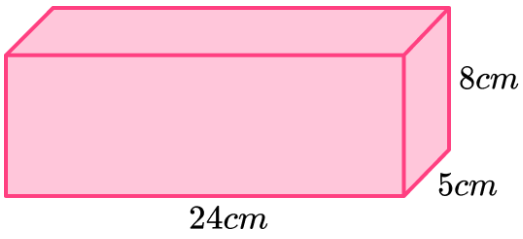
	Work out the value of x			
Group C	**1)** 	**7)** 	**1)** $5cm$	**7)** $9cm$
	2) 	**8)** 	**2)** $5cm$	**8)** $18cm$
	3) 	**9)** 	**3)** $24cm$	**9)** $3cm$
	4) 	**10)** 	**4)** $10cm$	**10)** $6cm$
	5) 	**11)** 	**5)** $4cm$	**11)** $4cm$
	6) 	**12)** 	**6)** $5cm$	**12)** $4cm$

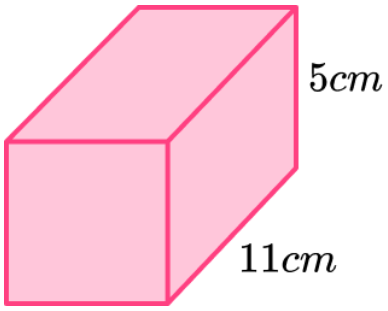
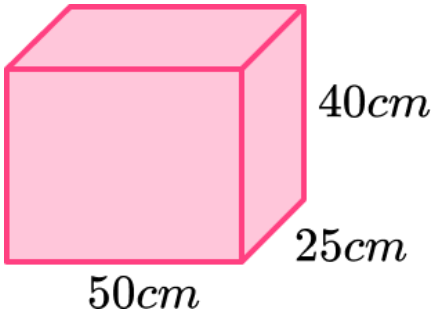
Volume and Surface Area of Cuboids - Answers

	Question	Answer
	Applied Questions	
1)	These two cuboids have the same volume. What is the height of cuboid B?  	$25cm$
2)	The outside of a shipping container is to be painted.  1 $litre$ of paint will cover $12m^2$. How much paint is required to paint the whole container?	$11.04\ litres$
3)	**a)** Here is a cuboid with a hole through the centre. Work out the volume of the shaded shape.	**a)** $1320cm^3$

	b)  The shape is made from aluminium, which has a density of $2.7 g/cm^3$. What is the weight of the shape in kg?	**b)** $3.564kg$
4)	The cuboids have the same surface area. Work out the value of x.  	5

Volume and Surface Area of Cuboids - Mark Scheme

	Question	Answer	
	Exam Questions		
1) (a)	Work out the volume of a cube with side length $8cm$.	**(a)** $8 \times 8 \times 8$ **(1)** $512cm^3$ **(1)**	**(2)**
(b)	Work out the surface area of a cube with side length $8cm$.	**(b)** $8 \times 8 = 64$ **(1)** $64 \times 6 = 384cm^2$ **(1)**	**(2)**
2) (a)	Work out the surface area of the cuboid:  	**(a)** $12 \times 5 = 60$ $12 \times 8 = 96$ $5 \times 8 = 40$ **(1)** $60 + 60 + 96 + 96 + 40 + 40 = 392cm^2$ **(1)**	**(2)**
(b)	Lucy says that the surface area of this cuboid will be twice as big as that of the cuboid above. Is she correct? Show how you decide  	**(b)** No **(1)** Either: Calculate surface area: $120 + 120 + 192 + 192 + 40 + 40 = 704cm^2$ 704 is not double 392 Or Only 4 of the surfaces are doubled - the left side and right side remain the same **(1)**	**(2)**

3) **(a)**	The volume of this cuboid is $220cm^3$. Work out the length of the cuboid.  	**(a)** $55 \times l = 220$ **(1)** $l = 4cm$ **(1)**	**(2)**
(b)	Work out the surface area of the cuboid.	**(b)** $4 \times 5 = 20$ $11 \times 5 = 55$ $4 \times 11 = 44$ **(1)** $20 + 20 + 55 + 55 + 44 + 44 = 238cm^2$ **(1)**	**(2)**
4)	The fuel tank from Gary's car is pictured below:  The tank is currently $\frac{1}{4}$ full. Gary wants to fill the tank. Fuel costs £1.30 per litre $(1l = 1000cm^3)$. How much will it cost Gary to fill his tank?	Volume of fuel tank: $50 \times 25 \times 40 = 50000cm^3$ **(1)** $50000cm^3 = 50l$ **(1)** $\frac{1}{4}$ of $50 = 12.5$ **(1)** $50 - 12.5 = 37.5$ **(1)** $37.5 \times £1.30 = £48.75$ **(1)**	**(5)**