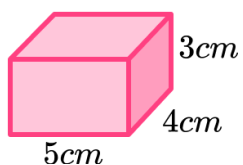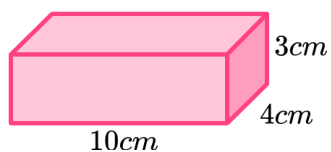# How to Calculate Volume - Worksheet

Skill

Group A - volume of a cuboid/prism/cylinder

Find the volume of each shape. For questions 9-12, give your answers to 1dp.
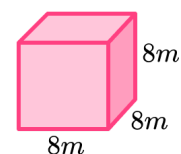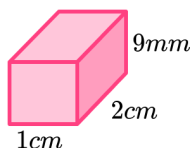
1)

$3cm$
$4cm$
$5cm$

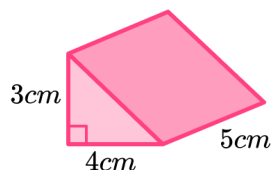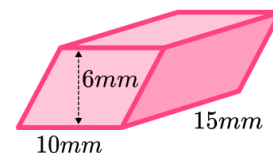2)

$3cm$
$4cm$
$10cm$

3)

$8m$
$8m$
$8m$

4)

$9mm$
$2cm$
$1cm$

5)

$3cm$
$4cm$
$5cm$

6)

$6mm$
$15mm$
$10mm$

7)

$9cm$
$7cm$
$13cm$
$20cm$

8)

$16cm$
$10cm$
$6cm$

9)

$3m$
$2m$

10)

$12cm$
$5cm$

11)

$12cm$
$5cm$

12)

$15mm$
$8cm$
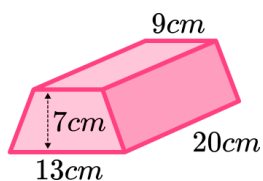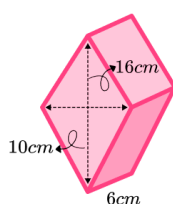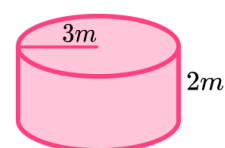
How to Calculate Volume - Worksheet

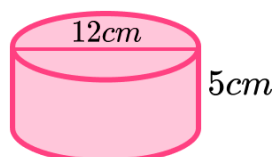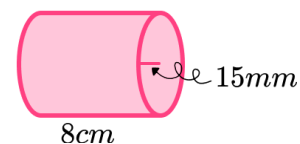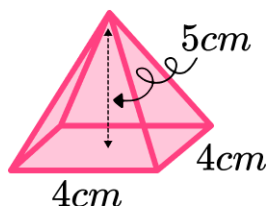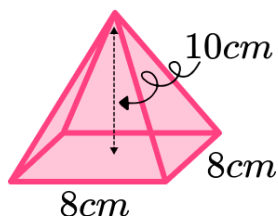**Group B - volume of a pyramid/cone/sphere**
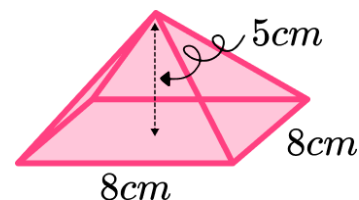
Find the volume of each shape. Give your answers to 1dp.

1)

$5cm$
$4cm$
$4cm$

2)

$10cm$
$8cm$
$8cm$

3)

$5cm$
$8cm$
$8cm$

4)

$1.5cm$
$9mm$
$9mm$

5)

$9cm$
$5cm$

6)

$6m$
$15m$

7)

$8mm$
$8mm$

8)

$0.4m$
$30cm$

9)

$20cm$

10)

$10cm$

11)

$0.8m$

12)

$12mm$

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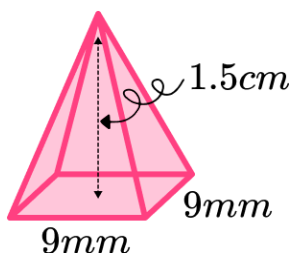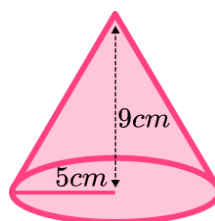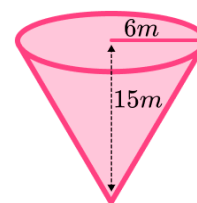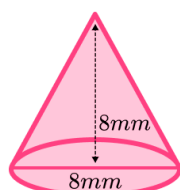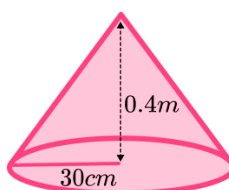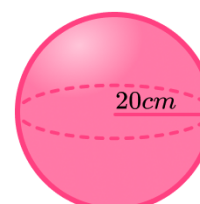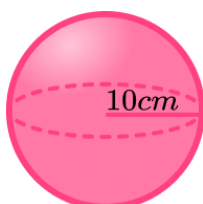
2
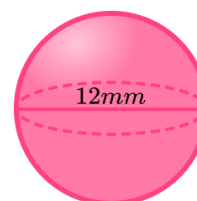
How to Calculate Volume - Worksheet

Group C - volume of a composite solid

Find the volume of each shape . Give your answers to 1dp.

1)

$7cm$

$8cm$

$8cm$

$8cm$

$8cm$

2)

$7m$

$3m$

$4m$

3)

$5cm$

$7cm$

$3cm$

$9cm$

$11cm$

4)

$6cm$

$10cm$

$7cm$

$12cm$

$4cm$

5)

$8mm$

$7mm$

$9mm$

$11mm$

6)

$20mm$

7)

$20mm$

$16mm$

8)

$18m$
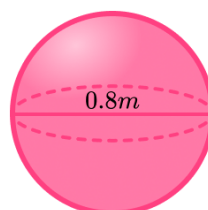
$20m$

9)

$12cm$

$11cm$

$18cm$

$5cm$

10)

$8cm$

$r = 6cm$

11)

$10cm$

$3cm$

$3cm$

$10cm$

$7cm$

12)

$11cm$

$5cm$

$22cm$

$12cm$

THIRD SPACE
LEARNING
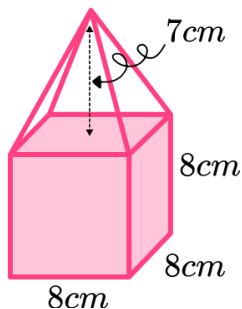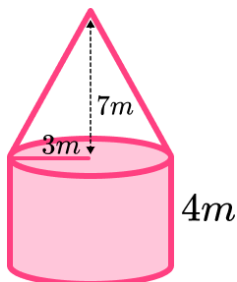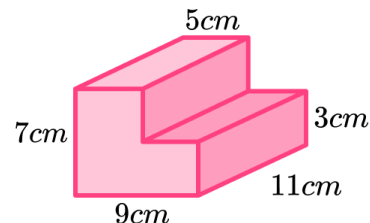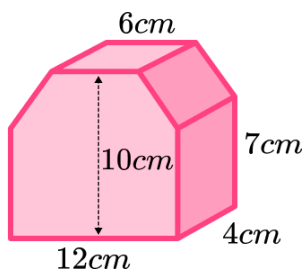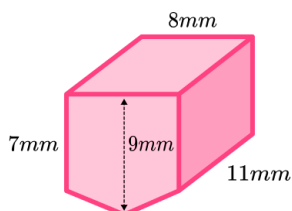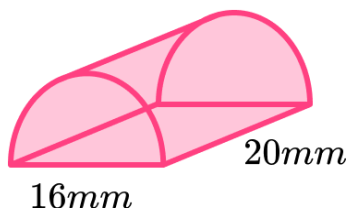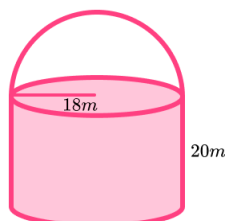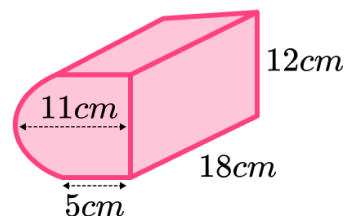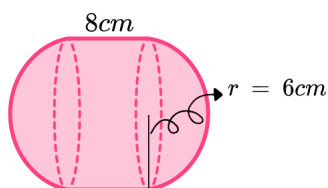
How to Calculate Volume - Worksheet

Applied

1)   Sheila has a container in the shape of a cylinder.

6cm

16cm

Sheila has 2 litres of orange juice. Will Sheila's orange juice fit in her container?
(1 litre = 1000cm^3)

2) **(a)**   Ben says that if a cube is enlarged by scale factor 2, its volume doubles. Show that Ben is incorrect.

(b)   Jacob says that doubling one length of a cuboid whilst keeping the others the same will double the volume of the cuboid. Is Jacob correct? Show how you decide.

3)   These two cuboids have the same volume. Work out the value of x.

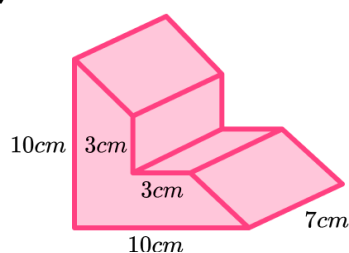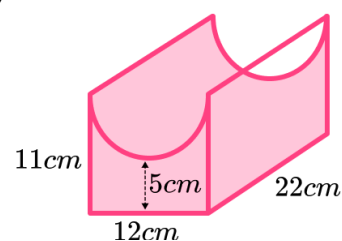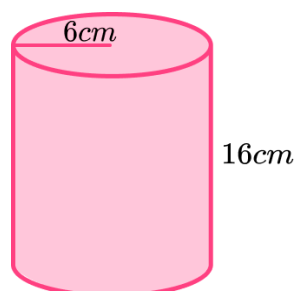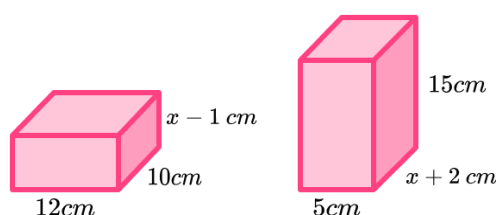$x - 1\ cm$

10cm

12cm

15cm

$x + 2\ cm$

5cm

4) **(a)**   The top has been cut off of this cone to create a frustum. Work out the volume of the frustum.

5.5mm

18mm

9mm

11mm
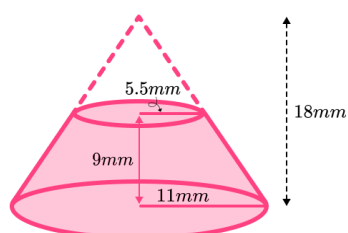
(b)   The frustum has a density of 3.1g/cm^3. Calculate the weight of the frustum.

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4

How to Calculate Volume - Exam Questions

1) Work out the volume of the pyramid

....

(2)

12*cm*

10*cm*

10*cm*
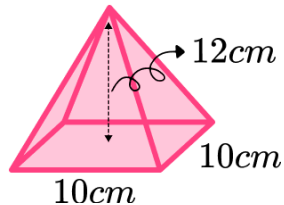
(2 marks)

---

2) **(a)** An oil tank is in the shape of a cylinder.
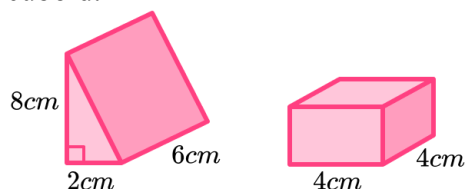
....

(4)

0.7*m*

1.5*m*
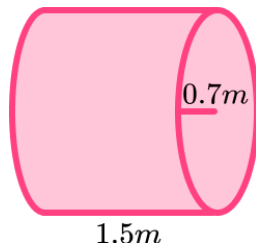
The tank currently has 300 litres of oil in it. How many more litres of oil will fit in the tank?
$(1m^3=1000L)$

(b) Oil costs 45p per litre. How much will it cost to fill the tank?

....

(1)

(5 marks)

---

3) These two shapes have the same volume. Work out the height of the cuboid.

....

(4)

8*cm*

6*cm*

2*cm*

4*cm*

4*cm*

How to Calculate Volume - Exam Questions

4) **(a)** Work out the volume of the prism
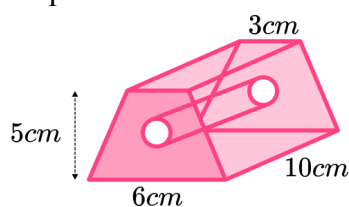
....

(2)
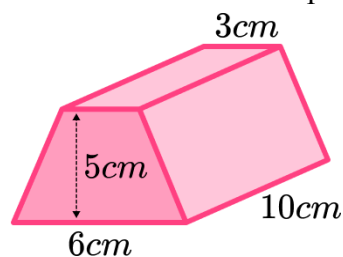
(b) A circular hole of diameter 1.6cm is drilled through the centre of the prism. Find the volume of the shape that remains.

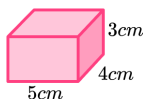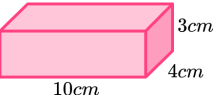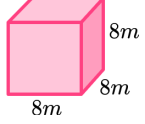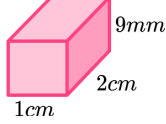.....................

(3)

(5 marks)

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6
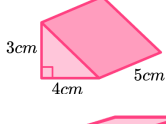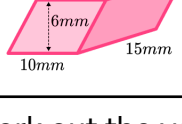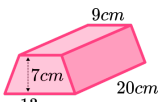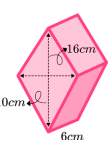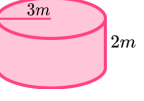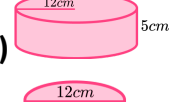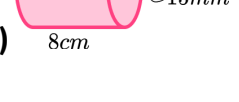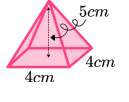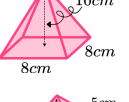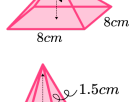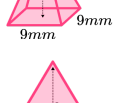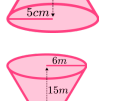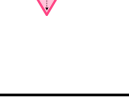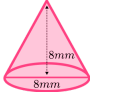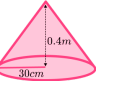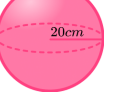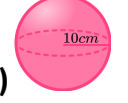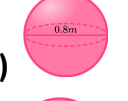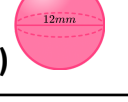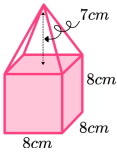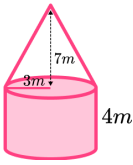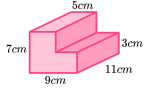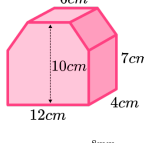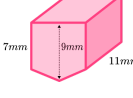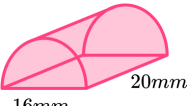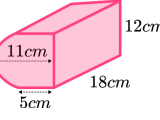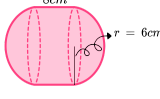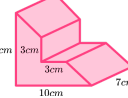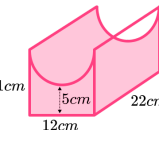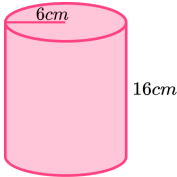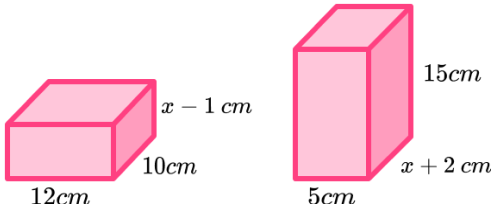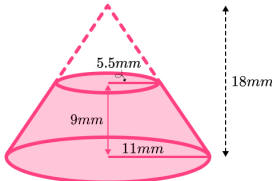
How to Calculate Volume - Answers

	Question	Answer	
Group A	Skill Questions		
	Work out the volume of each shape		
		1) 60cm^3	**7)** 1540cm^3
		2) 120cm^3	**8)** 480cm^3
		3) 512m^3	**9)** 56.5m^3
		4) 1.8cm^3/ 1800mm^3	**10)** 2261.9cm^3
		5) 30cm^3	**11)** 565.5cm^3
		6) 900mm^3	**12)** 56.5cm^2/ 56548.7mm^2
	Work out the volume of each shape		
Group B		**1)** 26.7cm^3	**7)** 134.0mm^3
		2) 213.3cm^3	**8)** 37699.1cm^3/ 0.04m^3
		3) 106.7cm^3	**9)** 33510.3cm^3
		4) 405mm^3/ 0.4cm^3	**10)** 4188.8cm^3
		5) 235.6cm^3	**11)** 0.268m^3
		6) 565.5m^3	**12)** 904.8mm^3

THIRD SPACE LEARNING
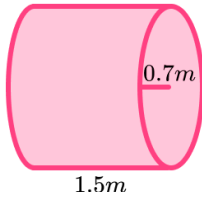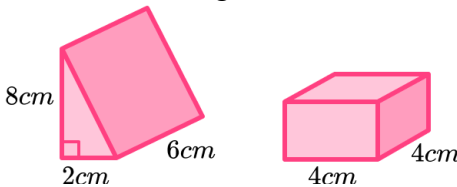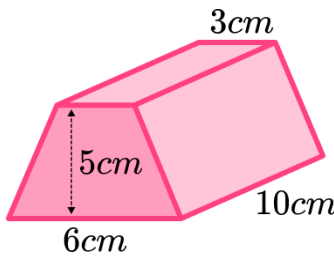
How to Calculate Volume - Answers
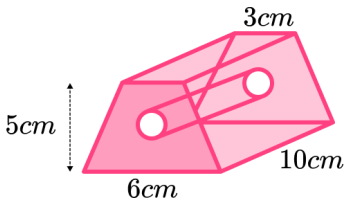
	Question		Answer	
Group C	Skill Questions			
	Work out the volume of each shape			
			1) 661.3cm^3 **2)** 179.1cm^3 **3)** 517cm^3 **4)** 444cm^3 **5)** 704mm^3 **6)** 16755.2mm^3	**7)** 2010.6mm^3 **8)** 32572.0m^3 **9)** 2097.9cm^3 **10)** 1809.6cm^3 **11)** 318.5cm^3 **12)** 1659.9cm^3

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THIRD SPACE
LEARNING

How to Calculate Volume - Answers

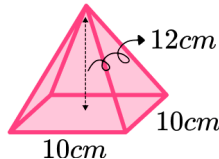|	Question	Answer
	Applied Questions	
1)	Sheila has a container in the shape of a cylinder. 6cm 16cm Sheila has 2 litres of orange juice. Will Sheila's orange juice fit in her container? (1 litre = 1000cm^3)	Volume=1809.6cm^3 It will not fit.
2)	**a)** Ben says that if a cube is enlarged by scale factor 2, its volume doubles. Show that Ben is incorrect. **b)** Jacob says that doubling one length of a cuboid whilst keeping the others the same will double the volume of the cuboid. Is Jacob correct? Show how you decide.	**a)** Using an example, show the volume increases by scale factor 8 **b)** Yes
3)	These two cuboids have the same volume. Work out the value of x. 15cm $x - 1\ cm$ 10cm 12cm $x + 2\ cm$ 5cm	x=6
4)	**a)** The top has been cut off of this cone to create a frustum. Work out the volume of the frustum. 5.5mm 18mm 9mm 11mm The frustum has a density of 3.1g/cm^3. **b)** Calculate the weight of the frustum.	a) 1995.7mm^3 b) 6.2g

How to Calculate Volume - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	Work out the volume of the pyramid 12cm 10cm 10cm	(1 mark) Area of base: $10 \times 10 = 100$ (1 mark) Volume: $\frac{1}{3} \times 100 \times 12 = 400cm^3$	**(2)**
2) (a)	An oil tank is in the shape of a cylinder. 0.7m 1.5m The tank currently has 300 litres of oil in it. How many more litres of oil will fit in the tank? Give your answer to the nearest litre. $(1m^3=1000l)$	(a) (1 mark) Volume: $\pi \times 0.7^2 \times 1.5$ (1 mark) Volume $= 2.309m^3$ (1 mark) $2.309m^3=2309l$ (1 mark) $2309-300=2009l$	**(4)**
(b)	Oil costs 45p per litre. How much will it cost to fill the tank?	(b) (1 mark) $2009 \times 0.45 = £904.05$	**(1)**
3)	These two shapes have the same volume. Work out the height of the cuboid. 8cm 2cm 6cm 4cm 4cm	(1 mark) Area of triangle: $\frac{1}{2} \times 2 \times 8 = 8$ (1 mark) Volume of prism: $8 \times 6 = 48$ (1 mark) $4 \times 4 \times h = 48$ (1 mark) $h = 3cm$	**(4)**
4) (a)	Work out the volume of the prism 3cm 5cm 6cm 10cm	(a) (1 mark) Area of trapezium: $\frac{1}{2}(3 + 6) \times 5 = 22.5$ (1 mark) Volume: $22.5 \times 10 = 225cm^3$	**(2)**

(b)	A circular hole of diameter 1.6cm is drilled through the centre of the prism. Find the volume of the shape that remains.	(b)	(1 mark) Volume of cylinder: $\pi \times 0.8^2 \times 10$ (1 mark) Volume=20.11cm³ (1 mark) Remaining volume: 225-20.11=204.9cm³	(3)