Mass, Density, Volume - Worksheet

Skill

Group A - Mass

Work out the mass:

1) Density = 2 g/cm^3
Volume = 25 cm^3

2) Density = 2 g/cm^3
Volume = 35 cm^3

3) Density = 2 g/cm^3
Volume = 43 cm^3

4) Density = 3 g/cm^3
Volume = 20 cm^3

5) Density = 3 g/cm^3
Volume = 40 cm^3

6) Density = 3 g/cm^3
Volume = 75 cm^3

7) Density = 5 g/cm^3
Volume = 30 cm^3

8) Density = 5 g/cm^3
Volume = 40 cm^3

9) Density = 5 g/cm^3
Volume = 48 cm^3

10) Density = 8 g/cm^3
Volume = 12 cm^3

11) Density = 8 g/cm^3
Volume = 30 cm^3

12) Density = 8 g/cm^3
Volume = 52 cm^3

Group B - Density

Work out the density:

1) Mass = 50 g
Volume = 25 cm^3

2) Mass = 100 g
Volume = 25 cm^3

3) Mass = 350 g
Volume = 25 cm^3

4) Mass = 120 g
Volume = 40 cm^3

5) Mass = 500 g
Volume = 40 cm^3

6) Mass = 800 g
Volume = 40 cm^3

7) Mass = 200 g
Volume = 50 cm^3

8) Mass = 350 g
Volume = 50 cm^3

9) Mass = 725 g
Volume = 50 cm^3

10) Mass = 210 g
Volume = 70 cm^3

11) Mass = 560 g
Volume = 70 cm^3

12) Mass = 735 g
Volume = 70 cm^3

Mass, Density, Volume - Worksheet

Group C - Volume

Work out the volume:

1) Mass = $15\ g$
Density = $5\ g/cm^3$

2) Mass = $35\ g$
Density = $5\ g/cm^3$

3) Mass = $60\ g$
Density = $5\ g/cm^3$

4) Mass = $360\ g$
Density = $12\ g/cm^3$

5) Mass = $360\ g$
Density = $4\ g/cm^3$

6) Mass = $360\ g$
Density = $6\ g/cm^3$

7) Mass = $480\ g$
Density = $4\ g/cm^3$

8) Mass = $480\ g$
Density = $6\ g/cm^3$

9) Mass = $480\ g$
Density = $16\ g/cm^3$

10) Mass = $1200\ g$
Density = $6\ g/cm^3$

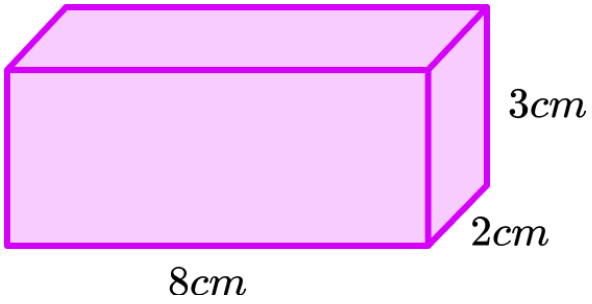
11) Mass = $1200\ g$
Density = $15\ g/cm^3$

12) Mass = $1200\ g$
Density = $20\ g/cm^3$

Mass, Density, Volume - Worksheet

Applied

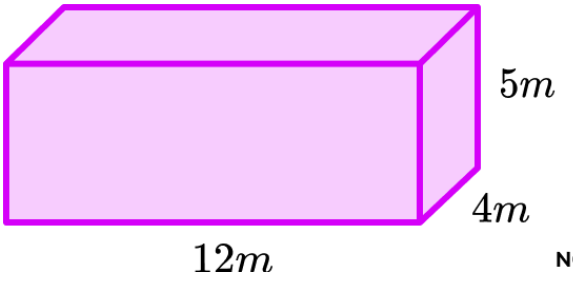
1) This cuboid block is made of steel.



(a) What is the volume of the cuboid?

(b) The density of steel is $7.8\ g/cm^3$.
Calculate the mass of the block of steel.

2) This cuboid block is made of granite.



NOT to scale

(a) What is the volume of the cuboid?

(b) The mass of the the block is $636\ kg$.
Calculate the density of the granite block.

3) **(a)** The density of milk is $1.03\ g/cm^3$.
A jug of milk weighs $1.5\ kg$.
Calculate the volume in cm^3 to the nearest cubic centimetre.

(b) $1\ litre\ =\ 1000\ cm^3$.
What is the volume in litres?

Mass, Density, Volume - Exam Questions

1) A block of wood has a mass of $900\ g$ and a volume of $600\ cm^3$.

What is the density of the block of wood?

.....g/cm^3

(2 marks)

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2) A block of copper has a mass of $14.7\ kg$.
The density of copper is $8.6\ g/cm^3$.

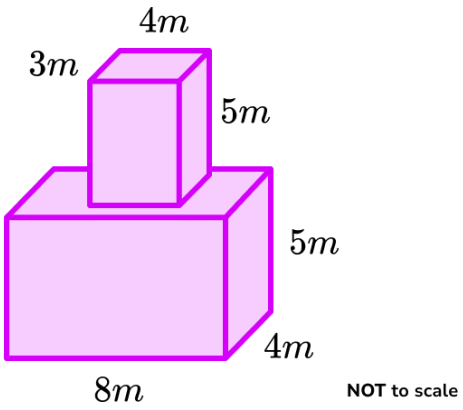
Work out the volume of the copper block.
Give your answer correct to 3 significant figures.

.....cm^3

(3 marks)

Mass, Density, Volume - Exam Questions

3) A sculpture is formed from one cuboid on top of another cuboid.



The upper cuboid measures 3m by 4m by 5m.
The lower cuboid measures 8m by 4m by 5m.

The sculpture is made from stone.

The stone has a density of $2.3\ g/cm^3$.

Calculate the total mass of the sculpture in tonnes.

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(5 marks)

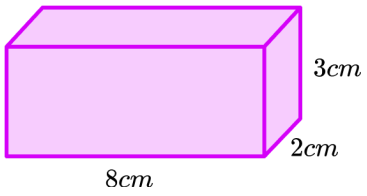
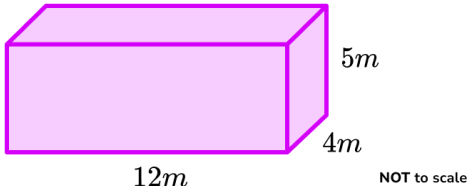
Mass, Density, Volume - Answers

	Question	Answer
	Skill Questions	
Group A	Work out the mass: **1)** Density = 2 g/cm^3, Volume = 25 cm^3 **2)** Density = 2 g/cm^3, Volume = 35 cm^3 **3)** Density = 2 g/cm^3, Volume = 43 cm^3 **4)** Density = 3 g/cm^3, Volume = 20 cm^3 **5)** Density = 3 g/cm^3, Volume = 40 cm^3 **6)** Density = 3 g/cm^3, Volume = 75 cm^3 **7)** Density = 5 g/cm^3, Volume = 30 cm^3 **8)** Density = 5 g/cm^3, Volume = 40 cm^3 **9)** Density = 5 g/cm^3, Volume = 48 cm^3 **10)** Density = 8 g/cm^3, Volume = 12 cm^3 **11)** Density = 8 g/cm^3, Volume = 30 cm^3 **12)** Density = 8 g/cm^3, Volume = 52 cm^3	**1)** 50 g **2)** 70 g **3)** 86 g **4)** 60 g **5)** 120 g **6)** 225 g **7)** 150 g **8)** 200 g **9)** 240 g **10)** 96 g **11)** 240 g **12)** 416 g
Group B	Work out the density: **1)** Mass = 50 g, Volume = 25 cm^3 **2)** Mass = 100 g, Volume = 25 cm^3 **3)** Mass = 350 g, Volume = 25 cm^3 **4)** Mass = 120 g, Volume = 40 cm^3 **5)** Mass = 500 g, Volume = 40 cm^3 **6)** Mass = 800 g, Volume = 40 cm^3 **7)** Mass = 200 g, Volume = 50 cm^3 **8)** Mass = 350 g, Volume = 50 cm^3 **9)** Mass = 725 g, Volume = 50 cm^3 **10)** Mass = 210 g, Volume = 70 cm^3 **11)** Mass = 560 g, Volume = 70 cm^3 **12)** Mass = 735 g, Volume = 70 cm^3	**1)** 2 g/cm^3 **2)** 4 g/cm^3 **3)** 14 g/cm^3 **4)** 3 g/cm^3 **5)** 12.5 g/cm^3 **6)** 20 g/cm^3 **7)** 4 g/cm^3 **8)** 7 g/cm^3 **9)** 14.5 g/cm^3 **10)** 3 g/cm^3 **11)** 8 g/cm^3 **12)** 10.5 g/cm^3

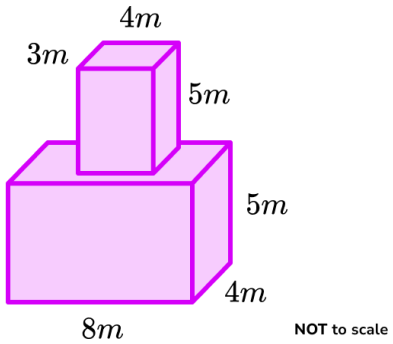
Mass, Density, Volume - Answers

Group C	Work out the volume:	
	1) Mass = 15 g, Density = 5 g/cm^3	**1)** 3 cm^3
	2) Mass = 35 g, Density = 5 g/cm^3	**2)** 7 cm^3
	3) Mass = 60 g, Density = 5 g/cm^3	**3)** 12 cm^3
	4) Mass = 360 g, Density = 12 g/cm^3	**4)** 30 cm^3
	5) Mass = 360 g, Density = 4 g/cm^3	**5)** 90 cm^3
	6) Mass = 360 g, Density = 6 g/cm^3	**6)** 60 cm^3
	7) Mass = 480 g, Density = 4 g/cm^3	**7)** 120 cm^3
	8) Mass = 480 g, Density = 6 g/cm^3	**8)** 80 cm^3
	9) Mass = 480 g, Density = 16 g/cm^3	**9)** 30 cm^3
	10) Mass = 1200 g, Density = 6 g/cm^3	**10)** 200 cm^3
	11) Mass = 1200 g, Density = 15 g/cm^3	**11)** 80 cm^3
	12) Mass = 1200 g, Density = 20 g/cm^3	**12)** 60 cm^3

Mass, Density, Volume - Answers

	Question	Answer
	Applied Questions	
1)	This cuboid block is made of steel.  **a)** What is the volume of the cuboid? **b)** The density of steel is $7.8\ g/cm^3$. Calculate the mass of the block of steel.	**a)** $Volume = 48\ cm^3$ **b)** $Mass = 374.4\ g$
2)	This cuboid block is made of granite.  **a)** What is the volume of the cuboid? **b)** The mass of the the block is $636\ kg$. Calculate the density of the granite block.	**a)** $Volume = 240\ m^3$ **b)** $Density = 2.65\ kg/m^3$
3)	**a)** The density of milk is $1.03\ g/cm^3$. A jug of milk weighs $1.5\ kg$. Calculate the volume in cm^3 to the nearest cubic centimetre. **b)** $1\ litre = 1000\ cm^3$. What is the volume in litres?	**a)** $Volume = 1456\ cm^3$ **b)** $Volume = 1.456\ litres$

Mass, Density, Volume - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	A block of wood has a mass of $900\ g$ and a volume of $600\ cm^3$. What is the density of the block of wood?	$900 \div 600$ $= 1.5\ g/cm^3$	**(1)** **(1)**
2)	A block of copper has a mass of $14.7\ kg$. The density of copper is $8.6\ g/cm^3$. Work out the volume of the copper block. Give your answer correct to 3 significant figures.	$14.7\ kg = 14\,700\ g$ $14\,700 \div 8.6 = 1709.3...$ $1710\ cm^3$	**(1)** **(1)** **(1)**
3)	A sculpture is formed from one cuboid on top of another cuboid.  The upper cuboid measures 3 m by 4 m by 5 m. The lower cuboid measures 8 m by 4 m by 5 m. The sculpture is made from stone. The stone has a density of $2300\ kg/m^3$. Calculate the total mass of the sculpture in tonnes.	$V = 3 \times 4 \times 5 = 60\ m^3$ **or** $V = 8 \times 4 \times 5 = 160\ m^3$ $Total\ volume = 220\ m^3$ $M = 220 \times 2300$ $= 506\,000\ kg$ $= 506\ tonnes$	**(1)** **(1)** **(1)** **(1)** **(1)**