Compound Measures - Worksheet

Skill

Group A - Speed, distance, time

Determine the value of each measure required:

1) Work out the speed when:
Distance is $50\ m$
Time is $2\ seconds$

2) Work out the speed when:
Distance is $100\ m$
Time is $5\ seconds$

3) Work out the speed when:
Distance is $450\ m$
Time is $30\ seconds$

4) Work out the distance when:
Speed is $50\ m/s$
Time is $5\ seconds$

5) Work out the distance when:
Speed is $30\ m/s$
Time is $7\ seconds$

6) Work out the distance when:
Speed is $35\ m/s$
Time is $12\ seconds$

7) Work out the time when:
Distance is $600\ m$
Speed is $10\ m/s$

8) Work out the time when:
Distance is $800\ m$
Speed is $20\ m/s$

9) Work out the time when:
Distance is $1200\ m$
Speed is $40\ m/s$

Group B - Mass, density, volume

Determine the value of each measure required:

1) Work out the mass when:
Density is $3\ g/cm^3$
Volume is $25\ cm^3$

2) Work out the mass when:
Density is $4\ g/cm^3$
Volume is $35\ cm^3$

3) Work out the mass when:
Density is $6\ g/cm^3$
Volume is $55\ cm^3$

4) Work out the density when:
Mass is $30\ g$
Volume is $10\ cm^3$

5) Work out the density when:
Mass is $50\ g$
Volume is $20\ cm^3$

6) Work out the density when:
Mass is $120\ g$
Volume is $30\ cm^3$

7) Work out the volume when:
Mass is $30\ g$
Density is $5\ g/cm^3$

8) Work out the volume when:
Mass is $300\ g$
Density is $15\ g/cm^3$

9) Work out the volume when:
Mass is $900\ g$
Density is $30\ g/cm^3$

Compound Measures - Worksheet

Group C - Pressure, force, area

Determine the value of each measure required:

1) Work out the pressure when:
Force is $12\ N$
Area is $2\ m^2$

2) Work out the pressure when:
Force is $30\ N$
Area is $3\ m^2$

3) Work out the pressure when:
Force is $36\ N$
Area is $4\ m^2$

4) Work out the force when:
Pressure is $20\ N/m^2$
Area is $4\ m^2$

5) Work out the force when:
Pressure is $30\ N/m^2$
Area is $6\ m^2$

6) Work out the force when:
Pressure is $45\ N/m^2$
Area is $9\ m^2$

7) Work out the area when:
Force is $30\ N$
Pressure is $10\ N/m^2$

8) Work out the area when:
Force is $600\ N$
Pressure is $20\ N/m^2$

9) Work out the area when:
Force is $1200\ N$
Pressure is $30\ N/m^2$

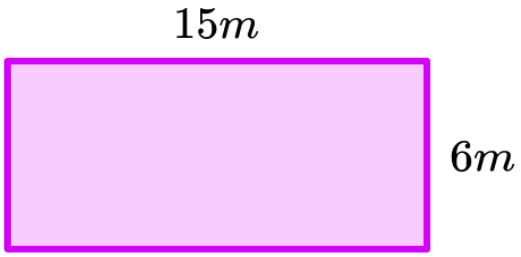
Compound Measures - Worksheet

Applied

1) **(a)** A car travels at $150\ km$ for $2\frac{1}{2}\ hours$. What is the speed of the car?

(b) A bus travels at $30\ km/h$ for $75\ minutes$. How far is the journey?

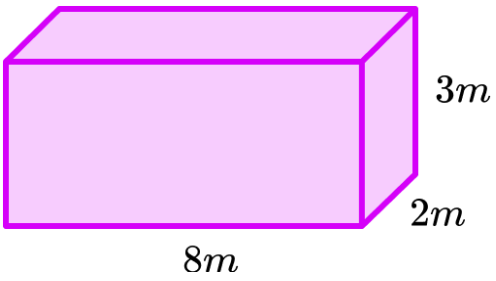
2) **(a)** What is the area of this rectangle?



Not to scale

(b) A force of $200\ N$. Calculate the pressure in N/m^2.
Give your answer correct to 3 significant figures.

3) **(a)** What is the volume of this cuboid?



Not to scale

(b) The substance the cuboid is made from has a density of $2900\ kg/m^3$.
Calculate its mass in kg.
Give your answer correct to 3 significant figures.

Compound Measures - Exam Questions

1) Sara jogs for 20 mins at a speed of 12 km/h.
Work out the distance Sue jogs.

.....km
(3 marks)

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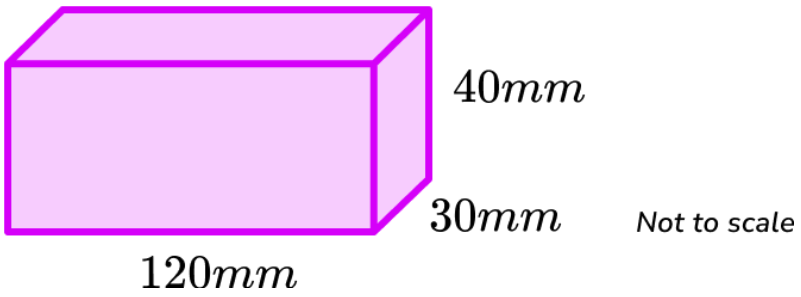
3) **(a)** Jai has a metal bar. It is a cuboid with dimensions 120 mm by 30 mm by 40 mm:



Calculate the volume of the metal bar. Give your answer in cm^3.

.....cm^3
(3)

Compound Measures - Exam Questions

(b) The metal has a mass of $1120\ g$.
Here is a table of densities of metals.

Metal	Density (g/cm³)
Steel	7.8
Lead	11.3
Gold	19.3

Jai thinks the bar is made from gold.
Is he correct?

.....

(3)

(5 marks)

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3) A force of $480\ N$ is applied to an area. The pressure exerted is $16\ N/m^2$. Calculate the area.

.....m^2

(2 marks)

Compound Measures - Exam Questions

4) **(a)** Ben drives 64 km from Town A to Town B at an average speed of 80 km/h.

How long did the journey take?

.....

(2)

(b) Ben then drives 35 km from Town B to Town C in 30 minutes.

Calculate the average speed for his total drive from Town A to Town C in kilometres per hour.

Give your answer to 3 significant figures

.....

(2)

(4 marks)

Compound Measures - Answers

	Question	Answer
	Skill Questions	
Group A	Determine the value of each measure required: **1)** Work out the speed when: Distance is $50\ m$, Time is $2\ seconds$ **2)** Work out the speed when: Distance is $100\ m$, Time is $5\ seconds$ **3)** Work out the speed when: Distance is $450\ m$, Time is $30\ seconds$ **4)** Work out the distance when: Speed is $50\ m/s$, Time is $5\ seconds$ **5)** Work out the distance when: Speed is $30\ m/s$, Time is $7\ seconds$ **6)** Work out the distance when: Speed is $35\ m/s$, Time is $12\ seconds$ **7)** Work out the time when: Distance is $600\ m$, Speed is $10\ m/s$ **8)** Work out the time when: Distance is $800\ m$, Speed is $20\ m/s$ **9)** Work out the time when: Distance is $1200\ m$, Speed is $40\ m/s$	**1)** $50 \div 2 = 25\ m/s$ **2)** $100 \div 5 = 20\ m/s$ **3)** $450 \div 30 = 15\ m/s$ **4)** $50 \times 5 = 250\ m$ **5)** $30 \times 7 = 210\ m$ **6)** $35 \times 12 = 420\ m$ **7)** $600 \div 10 = 60\ s$ **8)** $800 \div 20 = 40\ s$ **9)** $1200 \div 40 = 30\ s$

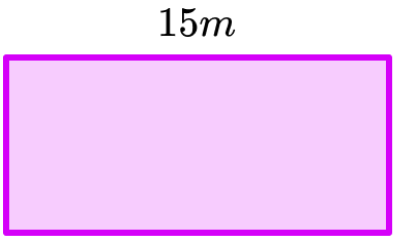
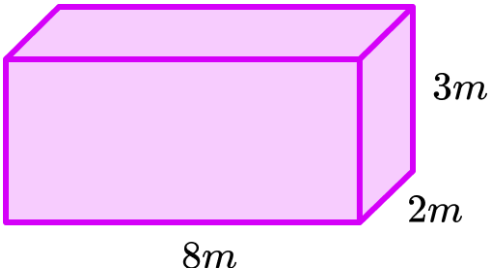
Compound Measures - Answers

Group B	Determine the value of each measure required: **1)** Work out the mass when: Density is $3\ g/cm^3$, Volume is $25\ cm^3$	**1)** $3 \times 25 = 75\ g$
	2) Work out the mass when: Density is $4\ g/cm^3$, Volume is $35\ cm^3$	**2)** $4 \times 35 = 140\ g$
	3) Work out the mass when: Density is $6\ g/cm^3$, Volume is $55\ cm^3$	**3)** $6 \times 55 = 330\ g$
	4) Work out the density when: Mass is $30\ g$, Volume is $10\ cm^3$	**4)** $30 \div 10 = 3\ g/cm^3$
	5) Work out the density when: Mass is $50\ g$, Volume is $20\ cm^3$	**5)** $50 \div 20 = 2.5\ g/cm^3$
	6) Work out the density when: Mass is $120\ g$, Volume is $30\ cm^3$	**6)** $120 \div 30 = 4\ g/cm^3$
	7) Work out the volume when: Mass is $30\ g$, Density is $5\ g/cm^3$	**7)** $30 \div 5 = 6\ cm^3$
	8) Work out the volume when: Mass is $300\ g$, Density is $15\ g/cm^3$	**8)** $300 \div 15 = 20\ cm^3$
	9) Work out the volume when: Mass is $900\ g$, Density is $30\ g/cm^3$	**9)** $900 \div 30 = 30\ cm^3$

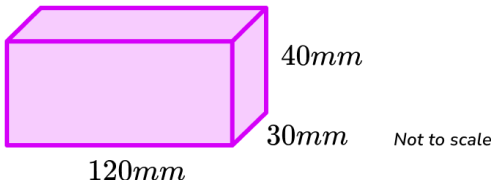
Compound Measures - Answers

Group C	Determine the value of each measure required: **1)** Work out the pressure when: Force is $12\ N$, Area is $2\ m^2$	**1)** $12 \div 2 = 6\ N/m^2$
	2) Work out the pressure when: Force is $30\ N$, Area is $3\ m^2$	**2)** $30 \div 3 = 10\ M/m^2$
	3) Work out the pressure when: Force is $36\ N$, Area is $4\ m^2$	**3)** $36 \div 4 = 9\ N/m^2$
	4) Work out the force when: Pressure is $20\ N/m^2$, Area is $4\ m^2$	**4)** $20 \times 4 = 80\ N$
	5) Work out the force when: Pressure is $30\ N/m^2$, Area is $6\ m^2$	**5)** $30 \times 6 = 180\ N$
	6) Work out the force when: Pressure is $45\ N/m^2$, Area is $9\ m^2$	**6)** $45 \times 9 = 405\ N$
	7) Work out the area when: Force is $30\ N$, Pressure is $10\ N/m^2$	**7)** $30 \div 10 = 3\ m^2$
	8) Work out the area when: Force is $600\ N$, Pressure is $20\ N/m^2$	**8)** $600 \div 20 = 30\ m^2$
	9) Work out the area when: Force is $1200\ N$, Pressure is $30\ N/m^2$	**9)** $1200 \div 30 = 40\ m^2$

Compound Measures - Answers

	Question	Answer
	Applied Questions	
1)	**a)** A car travels at $150\ km$ for $2\frac{1}{2}\ hours$. What is the speed of the car? **b)** A bus travels at $30\ km/h$ for $75\ minutes$. How far is the journey?	**a)** $150 \div 2.5 = 60\ km/h$ **b)** $30 \times 1.25 = 37.5\ km$
2)	**a)** What is the area of this rectangle?  *Not to scale* **b)** A force of $200\ N$. Calculate the pressure. Give your answer to 3 significant figures.	**a)** $Area = 15 \times 6 = 90\ m^2$ **b)** $Pressure = 200 \div 90$ $= 2.22222... = 2.22\ N/m^2$
3)	**a)** What is the volume of this cuboid?  *Not to scale* **b)** The substance the cuboid is made from has a density of $2900\ kg/m^3$. Calculate its mass in kg. Give your answer correct to 3 significant figures.	**a)** $Volume = 8 \times 2 \times 3 = 48\ m^3$ **b)** $Mass = 2900 \times 48$ $= 139\,200 = 139\,000\ kg$

Compound Measures - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	Sara jogs for 20 mins at a speed of $12\ km/h$. Work out the distance Sue jogs.	$20\ minutes = \frac{1}{3}\ hour$ $= 12 \times \frac{1}{3}$ $= 4\ km$	**(1)** **(1)** **(1)**
2) (a)	Jai has a metal bar. It is a cuboid with dimensions $120\ mm$ by $30\ mm$ by $40\ mm$.  Calculate the volume of the metal bar. Give your answer in cm^3.	**(a)** $120\ mm = 12\ cm$ **or** $40\ mm = 4\ cm$ **or** $30\ mm = 3\ cm$ $Volume = 12 \times 4 \times 3$ $= 144\ cm^3$	 **(1)** **(1)** **(1)**
(b)	The metal bar has a mass of $1120\ g$. Here is a table of densities of metals. **Metal** / **Density (g/cm³)** Steel — 7.8 Lead — 11.3 Gold — 19.3 Jai thinks the bar is made from gold. Is he correct?	$1120 \div 144$ $= 7.777\ldots\ g/cm^3$ No - the metal bar is not made from gold.	**(1)** **(1)** **(1)**
3)	A force of $480\ N$ is applied to an area. The pressure exerted is $16\ N/M^2$. Calculate the area.	$Area = 480 \div 16$ $= 30\ m^2$	**(1)** **(1)**

Compound Measures - Mark Scheme

4) (a)	Ben drives 64 km from Town A to Town B at an average speed of 80 km/h. How long did the journey take?	**(a)** $64 \div 80$ 0.8 *hours* **or** *48 minutes*	**(1)** **(1)**
(b)	Ben then drives 35 km from Town B to Town C in 30 minutes. Calculate the average speed for his total drive from Town A to Town C in kilometres per hour. Give your answer to 3 significant figures	**(b)** $\frac{64+35}{0.8+0.5} = \frac{99}{1.3}$ $= 76.153... = 76.2\ km/h$	**(1)** **(1)**