

Question	Answer	Marks	AO Element	Notes	Guidance
1	Honey has a larger density than water.	<b>B1</b>			
	Kerosene has a smaller density than water.	<b>B1</b>			
2(a)	160(g)	<b>B1</b>			
2(b)	(density =) mass÷volume, in any form	<b>C1</b>			
	candidate's (a) ÷ 200	<b>C1</b>			
	0.8 (g/cm <sup>3</sup> )	<b>A1</b>			
3(a)	(density =) mass ÷ volume in any form: symbols, words, numbers	<b>C1</b>			
	15.2 ÷ 1.36	<b>C1</b>			

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	11.2(g/cm <sup>3</sup> )	<b>A1</b>			accept 11
3(b)	lead	<b>B1</b>			ecf from (a)
4	density = mass / volume in any form <b>OR</b> (volume =) mass / density	<b>C1</b>			
	5000 / 7.81 <b>OR</b> 5 / 7.81 <b>OR</b> 0.64, ecf from (a)	<b>C1</b>			
	640 (cm <sup>3</sup> )	<b>A1</b>		accept $6.4 \times 10^{-4}$ if clearly stated in m <sup>3</sup>	
5(a)	267 (g)	<b>B1</b>			
5(b)	LHS goes down <b>OR</b> RHS goes up	<b>B1</b>			
5(c)	density = mass / volume, in any form e.g. words, symbols, numbers	<b>C1</b>			
	267 / 30	<b>C1</b>			
	8.9	<b>A1</b>			

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	$\text{g/cm}^3$	<b>B1</b>			
6	use of $\rho = m \div V$ in any form <b>OR</b> $m \div V$	<b>C1</b>			
	$(\rho = 6.72 \div 5.6 =) 1.2 \text{ kg/m}^3$	<b>A1</b>			
7	density = mass / volume, in words, symbols or numbers	<b>C1</b>			
	$62.4 \div 80$	<b>C1</b>			
	0.78 <b>OR</b> 780	<b>A1</b>			
	$\text{g/cm}^3$ <b>OR</b> $\text{kg/m}^3$ as appropriate	<b>B1</b>			
8	mass	<b>B1</b>			<b>NOT</b> with other quantity
9(a)	water used in measuring / graduated cylinder	<b>B1</b>			OR ALTERNATIVE METHOD: pour water into displacement can to level of spout
	volume of water known or read / recorded / taken	<b>B1</b>			place the coins / several coins in the water

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	place the coins in the water and read / record / take new level of water in cylinder	<b>B1</b>			collect overflow
	subtract readings	<b>B1</b>			measure volume of overflow water using measuring graduated cylinder
	measure mass / weigh the coins used with balance / spring balance	<b>B1</b>			

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9(b)	one from: read measuring cylinder levels at bottom of meniscus repeat volume measurement and find average place eye level with surface in measuring cylinder (to avoid parallax error) place coins one at a time to avoid air bubbles between coins avoid splashing when adding coins to water make sure coins are dry / clean use narrow / small measuring cylinder place containers on horizontal surface check zero of balance / spring balance / scales displacement can method: make sure dripping finishes before and after adding coins	<b>B1</b>			
10	$(\rho =) m/V$ in symbols or words	<b>B1</b>			
11	C	<b>1</b>			
12	B	<b>1</b>			

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13	(volume =) $48 \text{ (cm}^3\text{)}$ (2) OR (volume =) $l \times b \times h$ (1)	2			
14	(volume =) difference in candidate's readings (1) $24 \text{ (cm}^3\text{)}$ (1)	2		$24 \text{ (cm}^3\text{)}$ gains 2 marks	
15(a)	$(1100 - 400 =) 700 \text{ (g)}$	1			
15(b)	density = mass $\div$ volume <b>OR</b> $\rho = m \div V$ in any form (1) ( $\rho =$ ) $700 \div 750$ (1) ( $\rho =$ ) $0.93 \text{ (g/cm}^3\text{)}$ (1)	3			
16	density = mass $\div$ volume <b>OR</b> $\rho = \frac{m}{V}$ in any form (1) ( $\rho =$ ) $148 \div 16.6$ (1) ( $\rho =$ ) $8.9 \text{ (g/cm}^3\text{)}$ (1)	3			

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17	measuring cylinder partially filled with water (1) coil submerged in water (owtte) (1) new volume noted (1) volume of wire = difference or increase in volume(s) (1)	4			
18	(A =) lead (B=) iron (C=) aluminium	1			
19	density	1			
20	(D=) $m \div v$ in any form (1) $120 \div 16.0$ (1) $7.50 \text{ (g/cm}^3\text{)}$ (1)	3			
21	(polythene is) less dense (than water)	1			
22	balance	B1			
23	(density = ) mass / volume	B1			
24	A - $\frac{40}{50} \text{ g/cm}^3$	1			

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25	B	1			
26(a)	( $\rho = $ ) $\frac{m}{V}$ <b>OR</b> 180 ÷ 210 <b>OR</b> 0.18 ÷ 210 0.86 g/cm <sup>3</sup>	2			
26(b)	floats <b>OR</b> words to the same effect density of wood is less than density of liquid	2			
27(a)(i)	(weight is) force/pull of gravity (acting on an object)	1			
27(a)(ii)	mass x acceleration due to gravity <b>OR</b> $mg$ <b>OR</b> $350 \times 7.5$ 2600 N	2			

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27(b)	<p><math>(\rho =) m / V</math> in any form</p> <p>0.27 (kg / m<sup>3</sup>) <b>OR</b> (g / m<sup>3</sup>)</p> <p>balloon moves/floats <u>up</u></p> <p>(floats when) density of balloon less than density of atmosphere</p> <p><b>OR</b></p> <p>(sinks when) density of balloon greater than atmosphere</p> <p><b>OR</b></p> <p><math>(\rho =) m / V</math> in any form</p> <p>110 g</p> <p>balloon rises</p> <p>(floats when) mass/weight of balloon less than mass/weight of atmosphere (of same volume as balloon) <b>OR</b></p> <p>(sinks when) mass/weight of balloon greater than mass/weight of atmosphere (of same volume as balloon)</p>	4			
28(a)(i)	6500 (g)	1			
28(a)(ii)	<p>density = mass ÷ volume in any form</p> <p>1.3</p> <p>g / cm<sup>3</sup></p>	3			

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28(b)	density (of brush) is less (than) density of paint	1			
29	C - $4.5 \text{ g/cm}^3$	1			
[Total: 77]					