GCSE Higher (9 – 4)
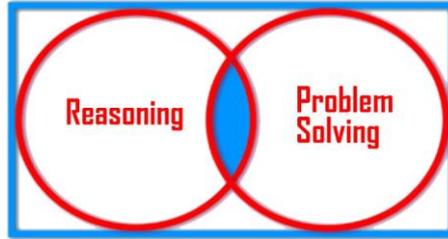

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Mathematical Reasoning Questions

(Compound Measures)

The marks shown are for guidance purposes only

1	Convert 12 m² to cm² **John's Answer** 1 m is equal to 100 cm Therefore, $12\,\text{m}^2 = 12 \times 100 = 1200\,\text{cm}^2$ Explain why John's answer is wrong and give the correct answer **[2Marks]**

2	The density of hygrogen is 0.00009 g/cm³
	What is the volume of 1.8 kg of hygrogen.
	Choose one answer
	   a) $2 \times 10^{-5}\,\text{cm}^3$
	   b) $2 \times 10^{-8}\,\text{cm}^3$
	   c) $2 \times 10^{7}\,\text{cm}^3$
	   d) $2 \times 10^{8}\,\text{cm}^3$
	
	[2Marks]

3	Answer **True** or **False**
	   a) The pressure exeated on an area of 2 m² will be equal to the pressure on an area of 200cm² if the applied is force is the same.
	
	   b) The pressure exeated by an object is directly proportional to the area the object is placed on.
	
	   c) The density of an object is inversely proportional to its volume.
	
	[3Marks]

4	Masood is riding his motor bike at 120 meters per minute Convert his speed to kilometers per hour **[3Marks]**

5	The density of a type of cement is 1440 kg/m^3
	What is the density of this type of cement in g/cm^3?
	Choose one answer
	   a) 1.44×10^3
	   b) 1.44
	   c) 1.44×10^6
	   d) 14.4
	
	[3Marks]

6	A car travels at 80 km/h
	How far will the car travel in 27 seconds? Choose one answer
	   a) 6000 m
	   b) 600 m
	   c) 60 m
	   d) 6 m
	
	[3Marks]

| 7 | Stan is driving at an average speed of 5 m/s
Which calculation below gives the time it will take Stan to travel 8km? Choose all the correct answers
   a) $80 \div 3$ minutes
   b) $8000 \div 5$ minutes
   c) $8000 \div 5 \times 60$ minutes
   d) $1600 \div 60$ minutes

                                                  [2Marks] |
| 8 | A car travels 245 km at a constant speed in 3.5 hours.

How far does it travel in 80 minutes?

<u>Amy's Answer</u>

Speed = Distance ÷ Time

Therefore, Speed = $245 \div 3.5 = 70$ km/h

Distance = Speed × Time

= $70 \times 80 = 5600$ km

Amy is wrong. Identify the error she made and correct it.

                                                  [2Marks] |

9	Here is some information about miles and kilometers
	5 miles ≈ 8 kilometers
	Bernard is travelling at 52 mph on a road which has a speed limit of 85 km/h. Is Bernard travelling above the speed limit?
	[2Marks]

10	Nathan contructs an office desk.
	The desk can withstand pressure up to 25.6 N/m^2
	A desktop computer has a base area of 1.53m^2 and weighs 45N.
	Will Nathan's desk be able to hold the computer?
	[2Marks]