# Name: _____

| GCSE (1 - 9)<br><br>Density<br>(Higher Papers) | Solutions: |
|---|---|

These questions represent all of the times that this topic has appeared in unlocked Pearson Edexcel GCSE maths papers as of July 2023. More questions can be found at examq.co.uk

| Question | Where the question appeared |
|---|---|
| 1 | Edexcel, GCSE, Autumn 2017, Paper 3H, Q3 |
| 2 | Edexcel, GCSE, Autumn 2018, Paper 2H, Q20 |
| 3 | Edexcel, GCSE, Autumn 2019, Paper 3H, Q13 |
| 4 | Edexcel, GCSE, Autumn 2020, Paper 1H, Q13 |
| 5 | Edexcel, GCSE, Summer 2017, Paper 3H, Q6 |
| 6 | Edexcel, GCSE, Summer 2018, Paper 2H, Q21 |
| 7 | Edexcel, GCSE, Summer 2019, Paper 3H, Q13 |
| 8 | Edexcel, GCSE, Autumn 2021, Paper 2H, Q7 |
| 9 | Edexcel, GCSE, Summer 2022, Paper 1H, Q7 |

**1**

A gold bar has a mass of 12.5 kg.

The density of gold is 19.3 g/cm$^3$

Work out the volume of the gold bar.
Give your answer correct to 3 significant figures.

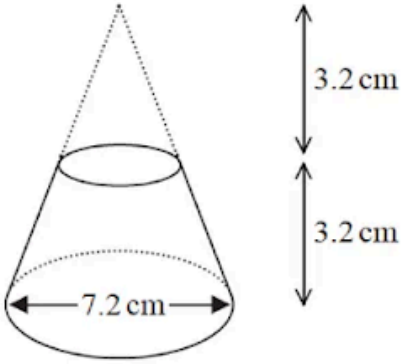
..... cm$^3$

**(Total for Question 3 is 3 marks)**

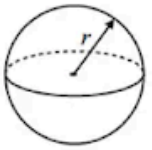
*[Edexcel, GCSE, Autumn 2017, Paper 3H, Q3]*

**2**

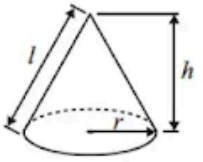
Here is a frustum of a cone.




Volume of sphere $= \frac{4}{3}\pi r^3$



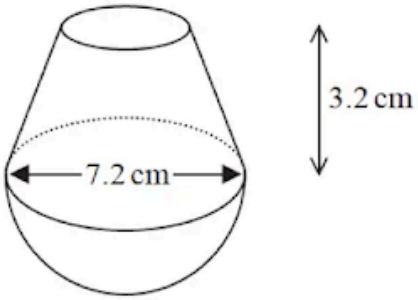

Volume of cone $= \frac{1}{3}\pi r^2 h$




The diagram shows that the frustum is made by removing a cone with height 3.2 cm from a solid cone with height 6.4 cm and base diameter 7.2 cm.

The frustum is joined to a solid hemisphere of diameter 7.2 cm to form the solid **S** shown below.

Solid **S**




The density of the frustum is 2.4 g/cm³
The density of the hemisphere is 4.8 g/cm³

Calculate the average density of solid **S**.

..... g/cm³

**(Total for Question 20 is 5 marks)**

*[Edexcel, GCSE, Autumn 2018, Paper 2H, Q20]*

**3**

Liquid A and liquid B are mixed together in the ratio 2 : 13 by volume to make liquid C.

Liquid A has density 1.21 g/cm$^3$
Liquid B has density 1.02 g/cm$^3$

A cylindrical container is filled completely with liquid C.
The cylinder has radius 3 cm and height 25 cm.

Work out the mass of the liquid in the container.
Give your answer correct to 3 significant figures.
You must show all your working.

..... g

**(Total for Question 13 is 4 marks)**

*[Edexcel, GCSE, Autumn 2019, Paper 3H, Q13]*

**4**

Liquid **A** and liquid **B** are mixed to make liquid **C**.

Liquid **A** has a density of 70 kg/m$^3$
Liquid **A** has a mass of 1400 kg

Liquid **B** has a density of 280 kg/m$^3$
Liquid **B** has a volume of 30 m$^3$

Work out the density of liquid **C**.

..... kg/m$^3$

**(Total for Question 13 is 3 marks)**

*[Edexcel, GCSE, Autumn 2020, Paper 1H, Q13]*

**5**

The density of apple juice is 1.05 grams per $cm^3$.

The density of fruit syrup is 1.4 grams per $cm^3$.

The density of carbonated water is 0.99 grams per $cm^3$.

25 $cm^3$ of apple juice are mixed with 15 $cm^3$ of fruit syrup and
280 $cm^3$ of carbonated water to make a drink with a volume of 320 $cm^3$.

Work out the density of the drink.
Give your answer correct to 2 decimal places.

..... $g/cm^3$

**(Total for Question 6 is 4 marks)**

*[Edexcel, GCSE, Summer 2017, Paper 3H, Q6]*

**6**

Jackson is trying to find the density, in g/cm$^3$, of a block of wood.
The block of wood is in the shape of a cuboid.

He measures
the length as 13.2 cm, correct to the nearest mm
the width as 16.0 cm, correct to the nearest mm
the height as 21.7 cm, correct to the nearest mm

He measures the mass as 1970 g, correct to the nearest 5 g.

By considering bounds, work out the density of the wood.
Give your answer to a suitable degree of accuracy.

You must show all your working and give a reason for your final answer.

**(Total for Question 21 is 5 marks)**

*[Edexcel, GCSE, Summer 2018, Paper 2H, Q21]*

**7**

The density of ethanol is 1.09 g/cm³
The density of propylene is 0.97 g/cm³

60 litres of ethanol are mixed with 128 litres of propylene to make 188 litres of antifreeze.

Work out the density of the antifreeze.
Give your answer correct to 2 decimal places.

..... g/cm³

**(Total for Question 13 is 4 marks)**

*[Edexcel, GCSE, Summer 2019, Paper 3H, Q13]*

**8**

Liquid **A** has a density of 1.8 g/cm$^3$
Liquid **B** has a density of 1.2 g/cm$^3$

80 cm$^3$ of liquid **A** is mixed with 40 cm$^3$ of liquid **B** to make 120 cm$^3$ of liquid **C**.

Work out the density of liquid **C**.

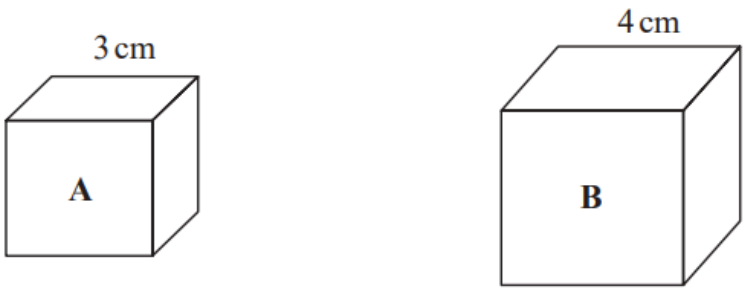
..... g/cm$^3$

**(Total for Question 7 is 3 marks)**

*[Edexcel, GCSE, Autumn 2021, Paper 2H, Q7]*

**9**

Here are two cubes, **A** and **B**.




Cube **A** has a mass of 81 g.

Cube **B** has a mass of 128 g.

Work out

the density of cube **A** : the density of cube **B**

Give your answer in the form $a : b$, where $a$ and $b$ are integers.

.....

**(Total for Question 7 is 3 marks)**

*[Edexcel, GCSE, Summer 2022, Paper 1H, Q8]*