Name: SOLUTIONS

GCSE (1 - 9)

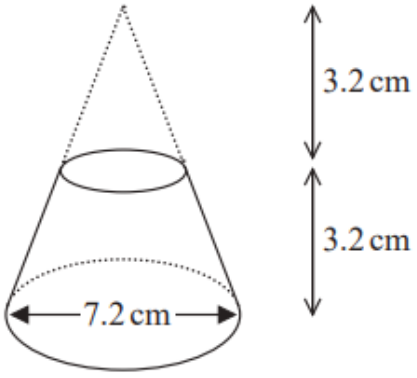
Volume of a Frustum

These questions represent all of the times that this topic has appeared in unlocked Pearson Edexcel GCSE maths papers.

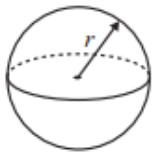
Question	Where the question appeared
1	Edexcel, GCSE, Autumn 2018, Paper 2H, Q20

1

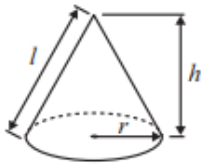
Here is a frustum of a cone.



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

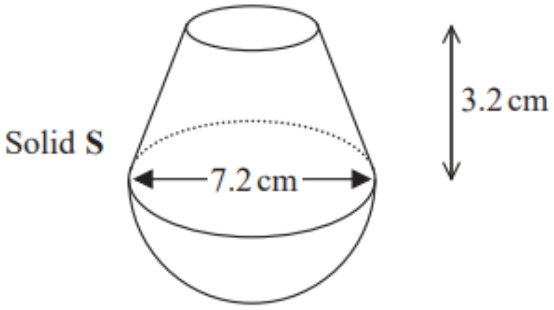


Volume of cone $= \frac{1}{3}\pi r^2 h$

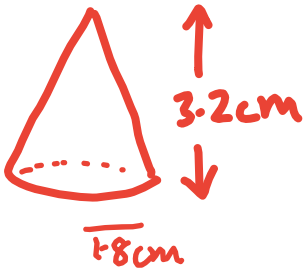


The diagram shows that the frustum is made by removing a cone with height 3.2 cm from a solid cone with height 6.4 cm and base diameter 7.2 cm.

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



Small Cone



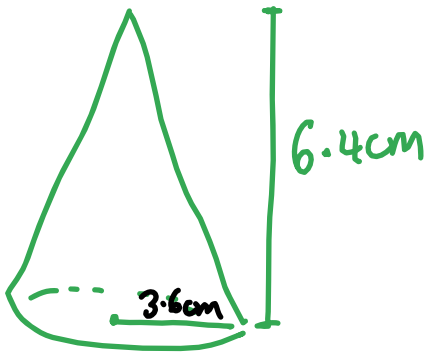
Vol $= \frac{1}{3}\pi \times 1.8^2 \times 3.2$

Vol $= 10.857$

The density of the frustum is 2.4 g/cm^3
The density of the hemisphere is 4.8 g/cm^3

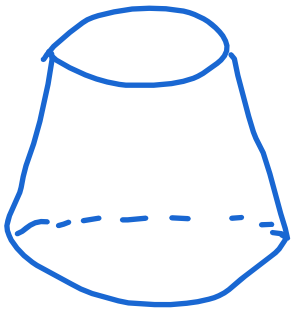
Calculate the average density of solid **S**.

Large Cone



Volume $= \frac{1}{3} \times \pi \times 3.6^2 \times 6.4$

$= 86.858\ cm^3$



Volume of frustum $= 86.858 - 10.857 = 76.001 cm^3$

Mass of frustum $= 76.001 \times 2.4 = 182.404 g$



Volume of hemisphere $= \frac{4}{3}\pi(3.6)^3 \div 2 = 97.716 cm^3$

Mass of hemisphere $= 97.716 \times 4.8 = 469.037 g$

Total Mass $= 182.404 + 469.037 = 651.44$

Total Volume $= 76.001 + 97.716 = 173.72$

..... g/cm³

Average Density $= \frac{651.44}{173.72} = 3.75 g/cm^3$

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