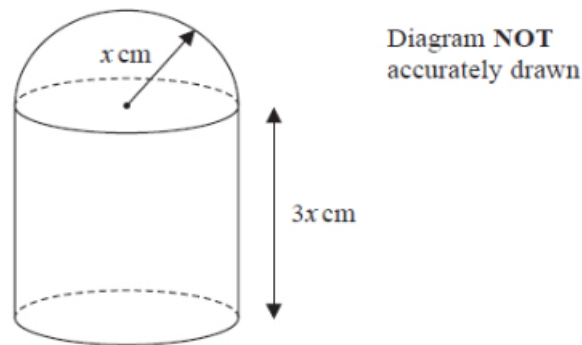


**Dr Oliver Mathematics**  
**Worked Examples**  
**Mass, Density, and Volume 3**

**From:** Edexcel GCSE Mathematics (9-1) Practice Tests Set 20: Paper 2H/3H

1. The diagram shows a solid made from a cylinder and a hemisphere. (6)  
The cylinder and the hemisphere are both made from the same metal.



The plane face of the hemisphere coincides with the upper plane face of the cylinder.

The radius of the cylinder and the radius of the hemisphere are both  $x$  cm.  
The height of the cylinder is  $3x$  cm.

The total surface area of the solid is  $81\pi$  cm<sup>2</sup>.  
The mass of the solid is 840 grams.

The following table gives the density of each of four metals.

| Metal     | Density (g/cm <sup>3</sup> ) |
|-----------|------------------------------|
| Aluminium | 2.7                          |
| Nickel    | 8.9                          |
| Silver    | 10.5                         |
| Gold      | 19.3                         |

The metal used to make the solid is one of the metals in the table.

Determine the metal used to make the solid.  
Show your working clearly.