**11** The diagram shows a block of iron in the shape of a cuboid.

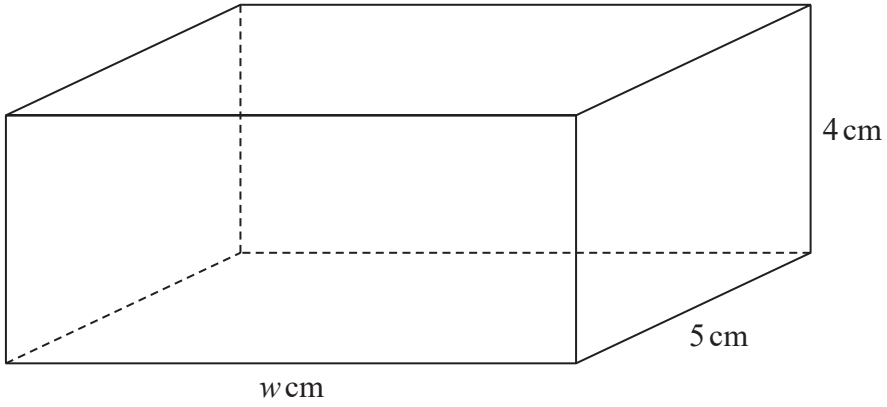



Diagram **NOT** accurately drawn

The block has length $w$ cm, width 5 cm and height 4 cm

The density of iron is 7.8 g / cm$^3$
The mass of the block is 1950 g

Work out the value of $w$

$w =$ .....

**(Total for Question 11 is 3 marks)**

**6** The diagram shows a solid cuboid made from wood.

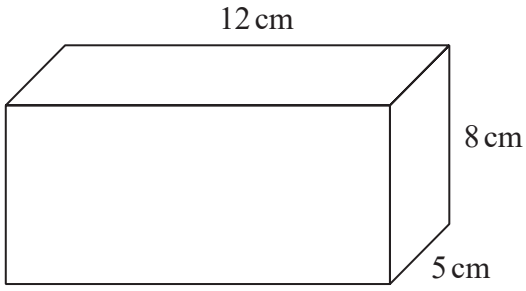



Diagram **NOT** accurately drawn

The wood has density 0.7 g/cm$^3$

Work out the mass of the cuboid.

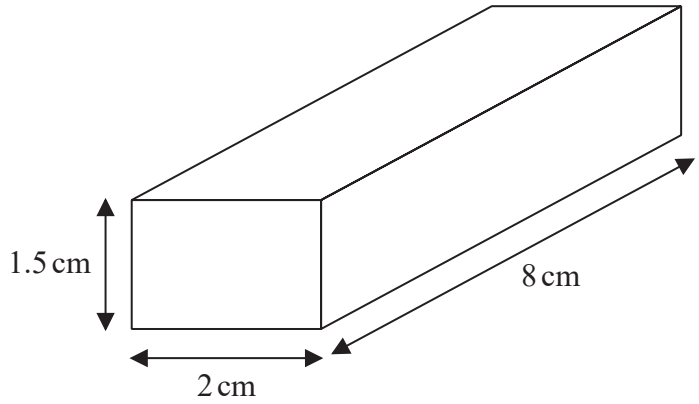
..... grams

**(Total for Question 6 is 3 marks)**

**9** Pablo made a solid gold statue.

He melted down some gold blocks and used the gold to make the statue.
Each block of gold was a cuboid, as shown below.

Diagram **NOT** accurately drawn




The mass of the statue is 5.73 kg.
The density of gold is 19.32 g/cm$^3$

Work out the least number of gold blocks Pablo melted down in order to make the statue.
Show your working clearly.

.....

**(Total for Question 9 is 5 marks)**

**8** A block of wood has a mass of 3.5 kg.
The wood has density 0.65 kg/$m^3$

(a) Work out the volume of the block of wood.
Give your answer correct to 3 significant figures.

..... $m^3$

**(3)**

**9** The density of gold is 19.3 g/cm$^3$
A gold bar has volume 150 cm$^3$

Work out the mass of the gold bar.

..... g

**(Total for Question 9 is 2 marks)**

**7** The diagram shows a solid cylinder made from iron.

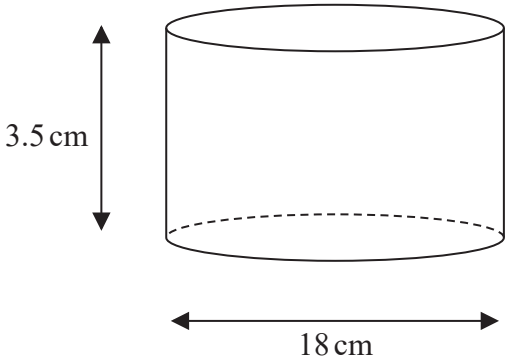



Diagram **NOT** accurately drawn

The cylinder has diameter 18 cm and height 3.5 cm
The mass of the cylinder is 7.04 kg

Work out the density of the iron.
Give your answer in g/cm$^3$ correct to 2 significant figures.

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

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

**6** The diagram shows a solid wooden cylinder.

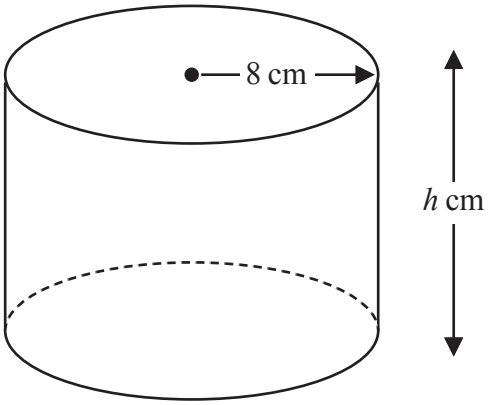



Diagram **NOT** accurately drawn

The cylinder has radius 8 cm and height $h$ cm.
The volume of the cylinder is 1208 $cm^3$

(a) Work out the value of $h$
Give your answer correct to the nearest whole number.

$h =$ .....

**(2)**

The density of the wood is 1.25 $g/cm^3$

(b) Work out the mass of the cylinder.
Give your answer in kilograms.

..... kilograms

**(2)**

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

**25** A solid sphere has a radius of 2.8 centimetres, correct to 1 decimal place.
The sphere has a mass of $M\pi$ grams, where $M = 260$ correct to 2 significant figures.

Work out the upper bound for the density of the sphere.
Give your answer in g / cm$^3$ correct to 2 decimal places.
Show your working clearly.

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

**(Total for Question 25 is 4 marks)**

**11** A solid metal sphere has radius 1.5 cm.
The mass of the sphere is 109.6 grams.

Work out the density of the sphere.
Give your answer correct to 3 significant figures.

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

**(Total for Question 11 is 3 marks)**

**21** The diagram shows a solid made from a cylinder and a hemisphere.
The cylinder and the hemisphere are both made from the same metal.

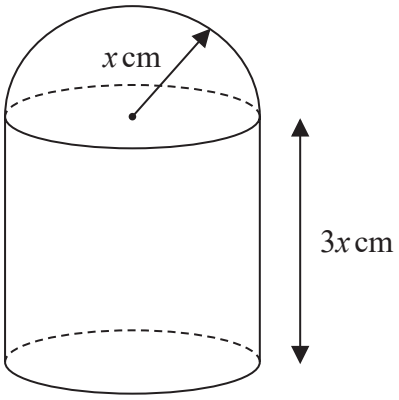



Diagram **NOT** accurately drawn

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$^2$
The mass of the solid is 840 grams.

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

| Metal | Density (g/cm$^3$) |
|---|---|
| Aluminium | 2.7 |
| Nickel | 8.9 |
| Gold | 19.3 |
| Silver | 10.5 |

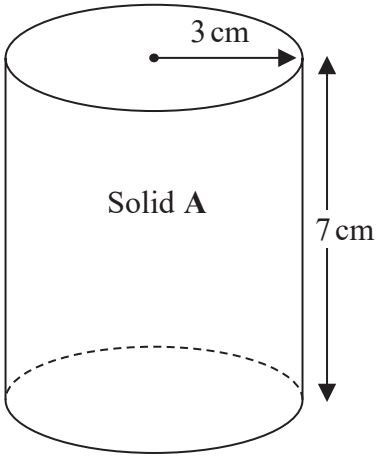
The metal used to make the solid is one of the metals in the table.

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

.....

**(Total for Question 21 is 6 marks)**

**10** The diagram shows two solids, **A** and **B**, made from two different metals.



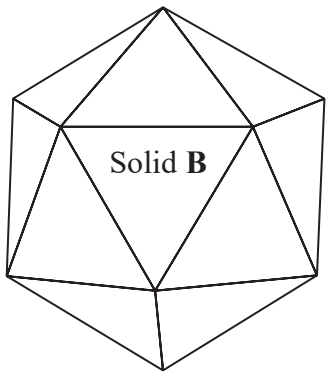




Diagram **NOT** accurately drawn

Solid **A** is in the shape of a cylinder with radius 3 cm and height 7 cm
Solid **A** has a mass of 2000 g

Solid **B** has a mass of 3375 g
Solid **B** has a volume of 450 $cm^3$

All of the metal from Solid **A** and Solid **B** is melted down to make a uniform Solid **C**

Given that there is no change to mass or volume during this process

work out the density of Solid **C**
Give your answer correct to one decimal place.

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

**(Total for Question 10 is 3 marks)**

**22** A 3-D shape consists of a hollow sphere made of metal.

The diagram shows a cross section drawn through the centre, $O$, of the sphere.

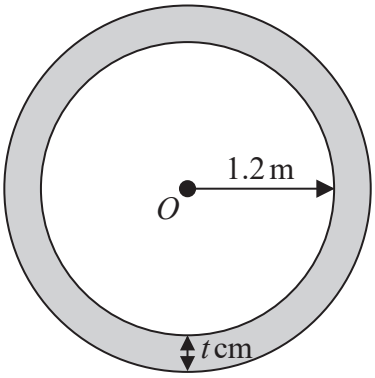



Diagram **NOT** accurately drawn

The internal radius of the sphere is 1.2 m.
The thickness of the metal is $t$ cm.

The density of the metal is 2700 kg per $m^3$

The mass of the 3-D shape is 1980 kg.

Work out the value of $t$.
Give your answer correct to 2 significant figures.

$t =$ .....

**(Total for Question 22 is 5 marks)**

**15** Platinum nuggets are in the shape of a solid cylinder.


Diagram **NOT** accurately drawn

The radius of each cylinder is 2.5 cm.
The length of each cylinder is 15 cm.

The density of platinum is 21.5 g/cm$^3$

The greatest mass that Jacques can carry is 30 kg.

Can Jacques carry 5 platinum nuggets at the same time?
You must show all your working.

**(Total for Question 15 is 5 marks)**

**10** A solid aluminium cylinder has radius 10 cm and height $h$ cm.

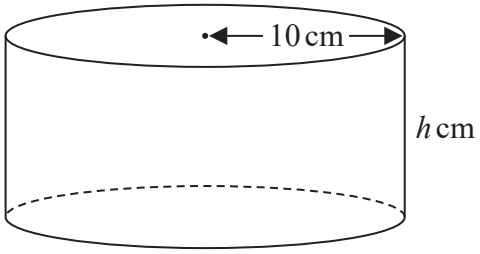



Diagram **NOT** accurately drawn

The mass of the cylinder is 5.4 kg.
The density of aluminium is 0.0027 kg/cm$^3$

Calculate the value of $h$.
Give your answer correct to one decimal place.

$h$ = .....

**(Total for Question 10 is 5 marks)**