Firrhill High School National 5 Maths

NAT 5 Volume Jan Progress Check

You may use a calculator – Total Marks Available 33

Name: …….

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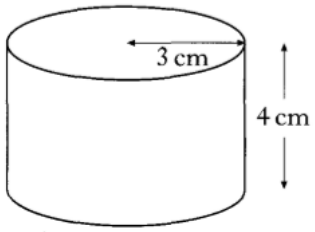
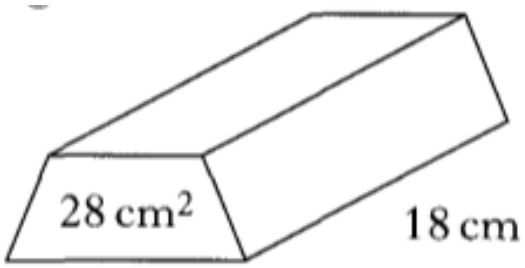
1) A cylindrical paper weight of radius 3cm and height 4cm is filled with sand.



Calculate the volume of the sand in the paper weight. Leave your answer in terms of pi.

(Q1 : 2 Marks)

2) A block of copper is prism shaped as shown. Calculate the volume of the block of copper.



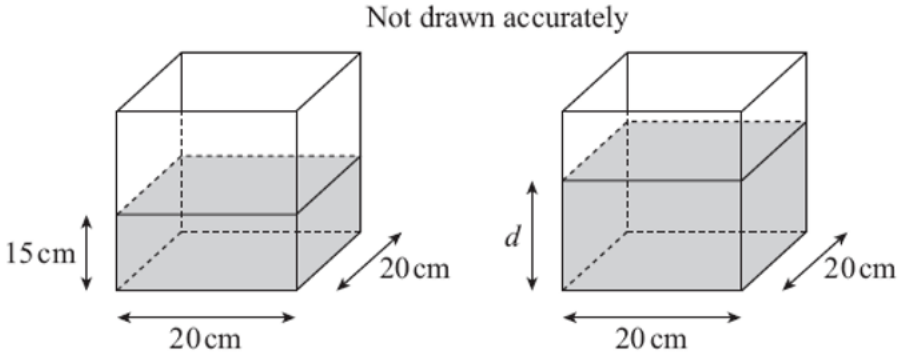
(Q2: 1 Mark)

3) A water container is in the shape of a cuboid.

Its base is 20cm by 20cm and the depth of the water in the container is 15cm.

Tony adds an extra 1000cm^3 of water to the container.

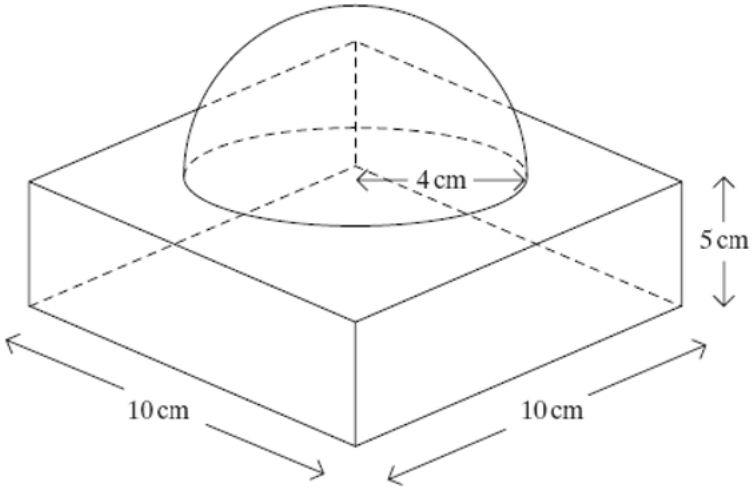
Calculate the new depth, d, of the water in centimetres.



(Q3: 4 Marks)

4) A marble ornament consists of a cuboid and hemisphere as shown. The hemisphere has a radius of 4cm. Calculate the volume of the ornament.

Leave your answer to 2 decimal places.



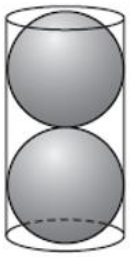
(Q4 : 5 Marks)

5) Two spheres of diameter 10cm fit tightly inside a tube.

The height of the cylinder is therefore 20cm.

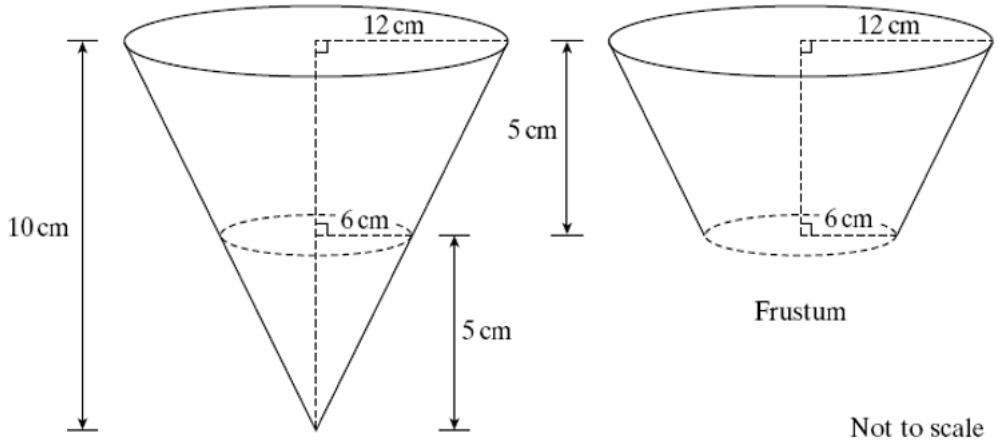
Calculate the volume inside the tube, not taken up by the spheres.

Leave your answer in terms of pi.



(Q5 : 4 Marks)

6) A cone of height 10cm has its top sections removed to create a frustum as shown in the diagram.



By first considering the volume of the full cone calculate the volume of the frustum.

Give your final answer to 3 significant figures.

(Q6: 7 Marks)

7) A rectangular based pyramid has base dimensions of 5m by 6m and a height of 9m. Calculate its volume.

(Q7 : 3 Marks)

8) A hemispherical bowl of radius 6cm has the same volume of the cone shown. Calculate the radius of the cone, r, in centimetres.

In your calculations, you should leave your answers in terms of pi.

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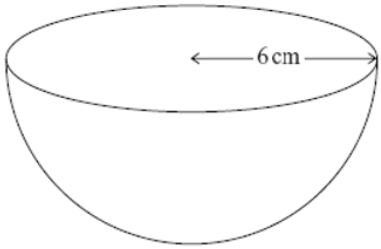
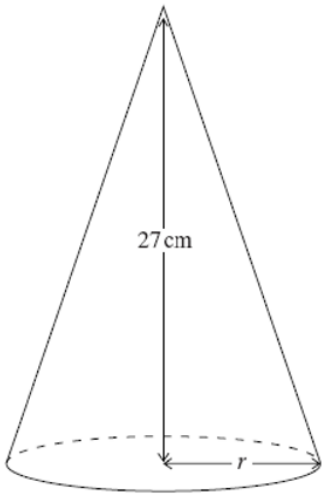
Not drawn accurately





END OF PAPER (Q8 :7 Marks)