**End of Unit Test** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Volume and Surface Area - HIGHER**

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Calculator allowed

**1.**  This building block is in the shape of a cuboid. The block contains one steel cylindrical rod of length 90 cm. The radius of the rod is 4 cm. The rest of the block is concrete. Work out the volume of concrete in the block.

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Answer ......................................................................cm3

**(Total 5 marks)**

 **2.** A pyramid has a square base of side 10 cm a height of 30 cm

 

It is cut horizontally at a height of 15 cm. The top pyramid is removed to leave this frustum.

You are given the formula:

Volume of pyramid = $\frac{1}{3}$ × area of base × vertical height

Calculate the volume of the frustum.

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Answer ................................................................. cm3

**(Total 3 marks)**

**3.** A hemisphere and a cone each have radius 9 cm. They are joined together to make a toy.



Work out the total volume of the toy.

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Answer ............................................................................ cm3

**(Total 4 marks)**

**4.** A sphere has a radius of *x* cm. A cuboid has edges of length *x* cm, width 2*x* cm and height 2*x* cm. Show clearly that the sphere has the larger volume.



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 **(Total 3 marks)**

**5.** The volume of the sphere is equal to the volume of the cone.



Work out the value of *r*. Do **not** use trial and improvement. You **must** show your working.

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Answer ........................................................................... units

**(Total 5 marks)**

 **(Total for test = 20 marks)**