

Volume: Further problem solving with spheres, cones and pyramids

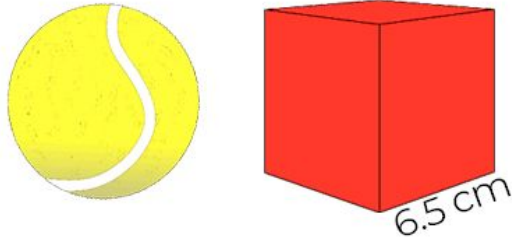
Maths

Mr Chan



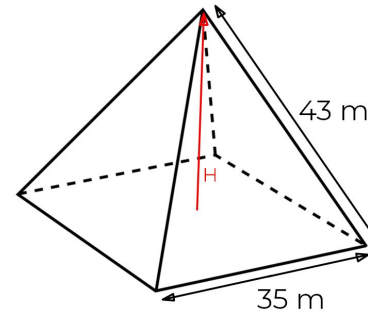
Volume: Further problem solving with spheres, cones and pyramids

1. A tennis ball fits perfectly inside a cube of side length 6.5 cm.



When the ball is placed inside the cube, work out the volume of empty space inside the cube.

2. The diagram shows a square based pyramid with a base width of 35 m and a slope height of 43 m.

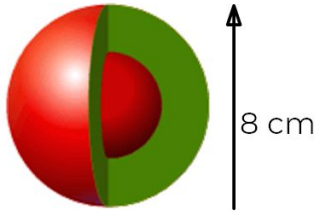


- Work out the perpendicular height of the pyramid.
- Work out the volume of the pyramid.



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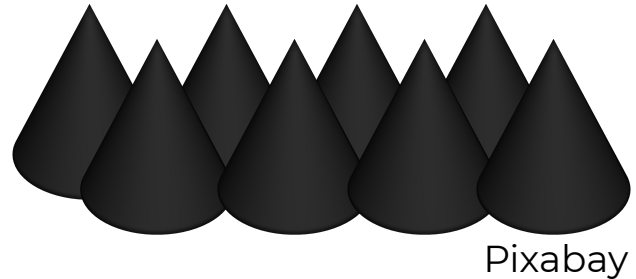
3. A small red sphere is enclosed in a larger red sphere as shown.



The small sphere has a diameter of 4 cm and the large sphere has a diameter of 8 cm.

Work out the volume of the large hollow sphere.

4. Dan has eight solid metal cones. Each cone has a height of 4.5 cm. The total volume of all eight cones is $27\pi \text{ cm}^3$.



Work out the radius of each cone.

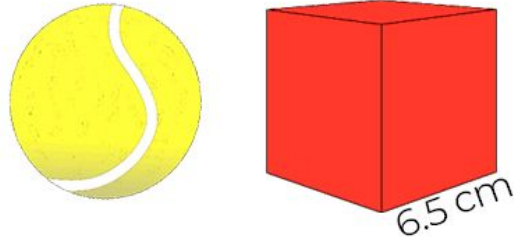


Answers



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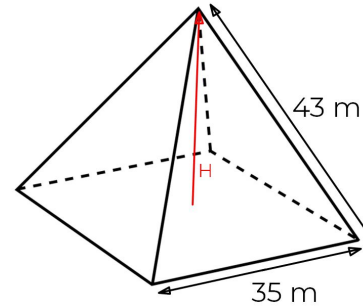
1. A tennis ball fits perfectly inside a cube of side length 6.5 cm.



When the ball is placed inside the cube, work out the volume of empty space inside the cube.

$$130.9 \text{ cm}^3$$

2. The diagram shows a square based pyramid with a base width of 35 m and a slope height of 43 m.



a) Work out the height (H) of the pyramid. 35.2 m

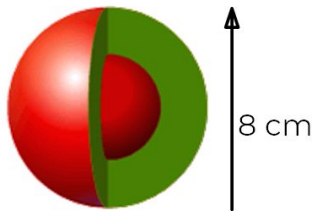
b) Work out the volume of the pyramid.

$$14,373.3 \text{ m}^3$$



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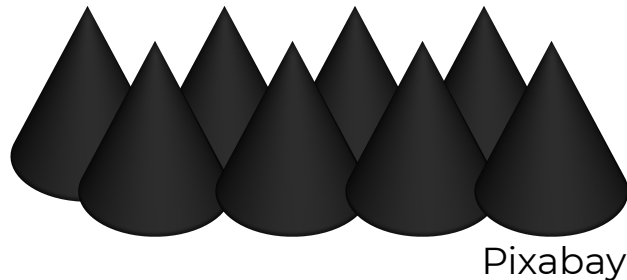
3) A small red sphere is enclosed in a larger red sphere as shown.



The small sphere has a diameter of 4 cm and the large sphere has a diameter of 8 cm.

Work out the volume of the large hollow sphere. 234.6 cm^3

4. Dan has eight solid metal cones. Each cone has a height of 4.5 cm. The total volume of all eight cones is $27\pi \text{ cm}^3$.



Work out the radius of each cone.
 $\text{Each cone radius} = 1.5 \text{ cm}$

