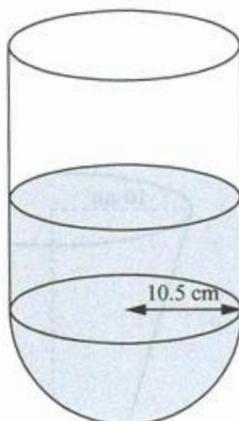


**Class Test 3** »



Answer all questions. Show your working clearly.

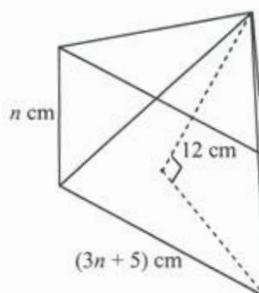
1.



A container is made of a cylinder and a hemispherical base with radius 10.5 cm. The container holds 7623 ml of water.

- (a) What is the height of the water level in the container? [3]
- (b) The current water level is half the total height of the container. Water flows into the container at the rate of 1.89 l per hour. How long will it take for the container to reach full capacity? [2]

2.



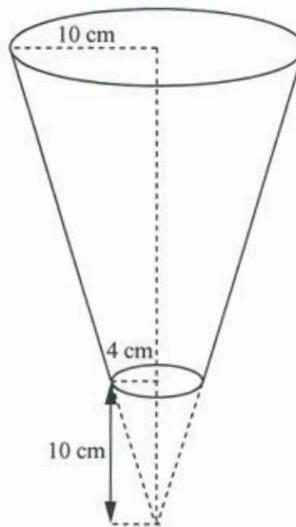
The figure shows a pyramid with a rectangular base.

- (a) Given that the volume of the figure is  $1152 \text{ cm}^3$ , find the value of  $n$ . [3]
- (b) Find the total surface area of the pyramid. [3]

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3. A pyramid has a square base with side 12 cm and vertical height 8 cm.
- (a) If the density of the pyramid is  $1.4 \text{ g/cm}^3$ , find its mass. [2]
- (b) Find the total surface area of the pyramid. [2]

4.

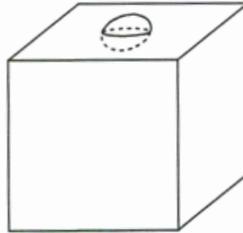


The figure shows a container in the shape of a frustum.

- (a) Find the capacity of the container. [3]
- (b) If a tap fills the container at the rate of  $1.43 \text{ m}^3$  per second, how long does it take to fill the empty container completely? Leave your answer correct to the nearest minute. [1]

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5.



A spherical ball rests on a box with a hemispherical shape carved into it. The box is a cube with side 18 cm.

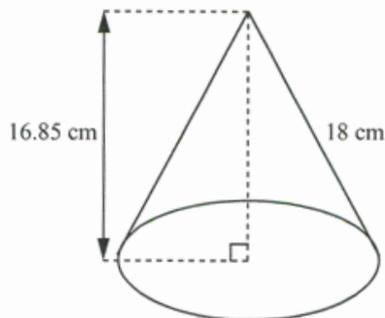
- (a) If the volume of the spherical ball is  $1437 \text{ cm}^3$ , find its radius, leaving your answer to the nearest cm. [3]
- (b) After the ball is removed, the entire surface of the box is painted. If painting costs  $7\text{¢}$  to cover each  $\text{cm}^2$  of the surface, find the total cost of painting the box. [3]

6. 84 identical spheres are added to a cylindrical tank with radius 8 cm and height 24.5 cm. 2.5 l of water is then poured into the tank to fill it completely.

- (a) Find the radius of each sphere, leaving your answer correct to the nearest cm. [3]
- (b) The spheres are painted and the paint costs \$168.96. Find out how much it costs to paint each  $\text{cm}^2$  of the surface. [2]

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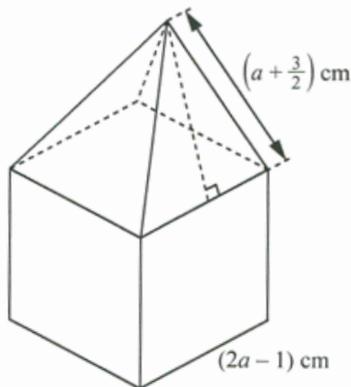
7.



This cone has a curved surface area of  $358 \text{ cm}^2$ .

- (a) (i) Calculate the radius of its base. [1]  
 (ii) Find the volume of the cone. [1]  
 (b) Find the total surface area of the cone. [1]

8.



The figure shows a structure made up of a cube and a right square pyramid. The slant height of the pyramid is  $(a + \frac{3}{2}) \text{ cm}$ .

- (a) If the total surface area of the structure is  $240 \text{ cm}^2$ , find the value of  $a$ . [4]  
 (b) (i) Find the height of the square pyramid. [1]  
 (ii) Calculate the total volume of the structure. [2]