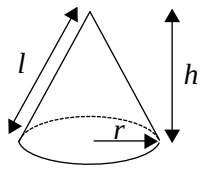
Volume and Surface Area of Cones

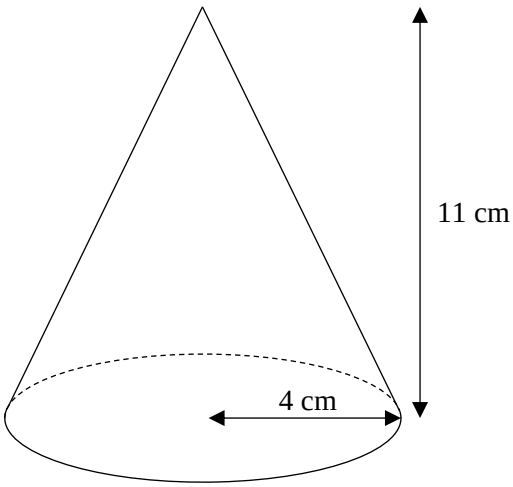
SCAN ME

REVISE THIS TOPIC

1 The diagram shows a cone.

Volume of a cone = $\frac{1}{3}\pi r^2 h$





The radius of the cone is 4 cm and the perpendicular height of the cone is 11 cm.

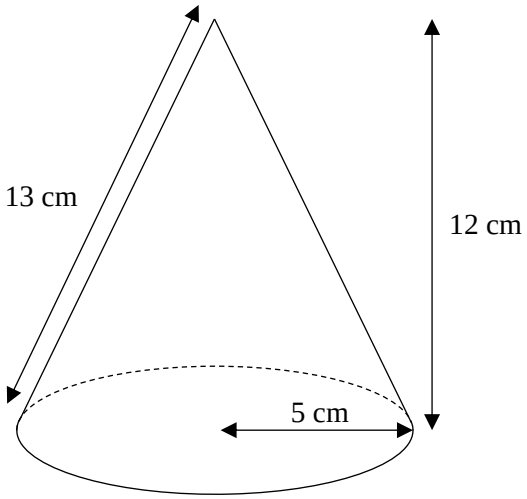
Work out the volume of the cone.
Give your answer to 1 decimal place.

$\frac{1}{3} \times \pi \times 4^2 \times 11 = 184.306769$

184.3 ..... cm^3

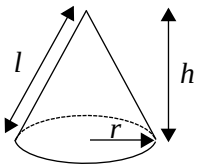
(Total for Question 1 is 2 marks)

2 The diagram shows a cone.



Volume of a cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$



(a) Work out the volume of the cone.
Give your answer to 1 decimal place.

$\frac{1}{3} \times \pi \times 5^2 \times 12 = 314.1592654$

314.2 ..... cm^3

(2)

(b) Work out the total surface area of the cone.
Give your answer to 1 decimal place.

$\pi \times 5 \times 13 = 204.2035225$

$\pi \times 5^2 = 78.53981634$

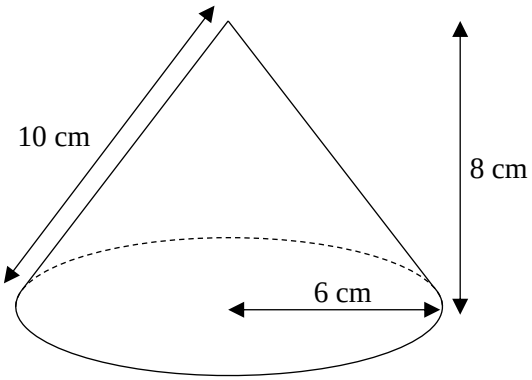
$204.2... + 78.5... = 282.7433388$

282.7 ..... cm^2

(3)

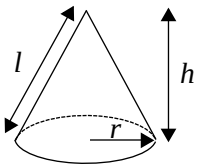
(Total for Question 2 is 5 marks)

3 The diagram shows a cone.



Volume of a cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$



(a) Work out the volume of the cone.
Give your answer to 1 decimal place.

$\frac{1}{3} \times \pi \times 6^2 \times 8 = 301.5928947$

301.6 ..... cm^3

(2)

(b) Work out the total surface area of the cone.
Give your answer to 1 decimal place.

$\pi \times 6 \times 10 = 188.4955592$

$\pi \times 6^2 = 113.0973355$

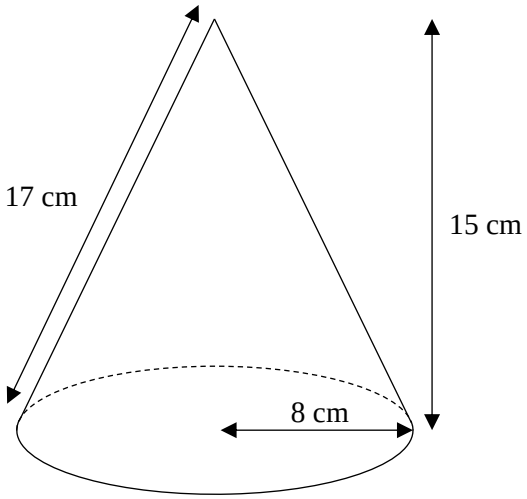
$188.49... + 113.09... = 301.5928947$

301.6 ..... cm^2

(3)

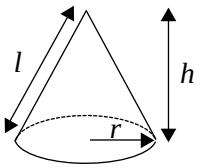
(Total for Question 3 is 5 marks)

4 The diagram shows a cone.



Volume of a cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$



(a) Work out the volume of the cone.
Give your answer to 1 decimal place.

$\frac{1}{3} \times \pi \times 8^2 \times 15 = 1005.309649$

1005.3 ..... cm^3

(2)

(b) Work out the total surface area of the cone.
Give your answer to 1 decimal place.

$\pi \times 8 \times 17 = 427.2566009$

$\pi \times 8^2 = 201.0619298$

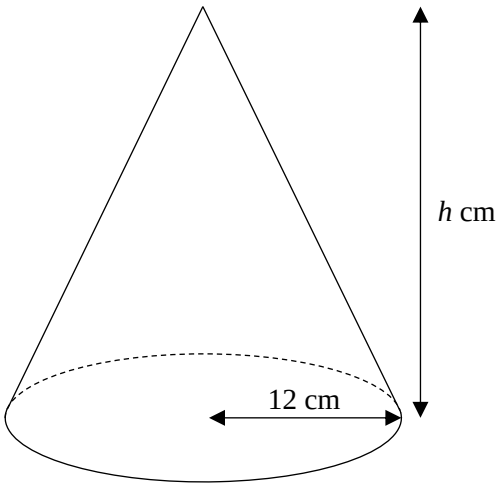
$427.2... + 201.0... = 628.3185307$

628.3 ..... cm^2

(3)

(Total for Question 4 is 5 marks)

5 The diagram shows a cone.



The volume of the cone is 3000 cm^3

Work out the value of h, the height of the cone.
Give your answer to 1 decimal place.

$\frac{1}{3} \times \pi \times 12^2 \times h = 3000$

$48\pi h = 3000$

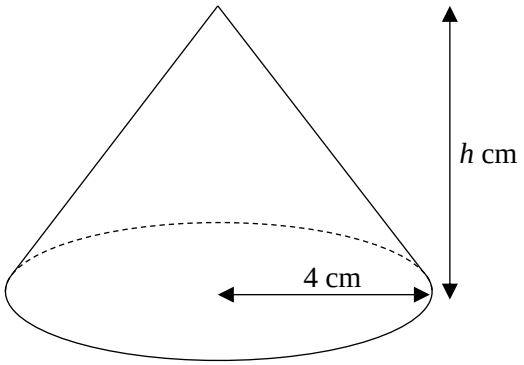
$h = \frac{3000}{48\pi}$

$h = 19.894367 89$

$h =$ 19.9 cm

(Total for Question 5 is 3 marks)

6 The diagram shows a cone.



The volume of the cone is 90 cm^3

Work out the value of h, the height of the cone.
Give your answer to 1 decimal place.

$\frac{1}{3} \times \pi \times 4^2 \times h = 90$

$\frac{16\pi h}{3} = 90$

$16\pi h = 270$

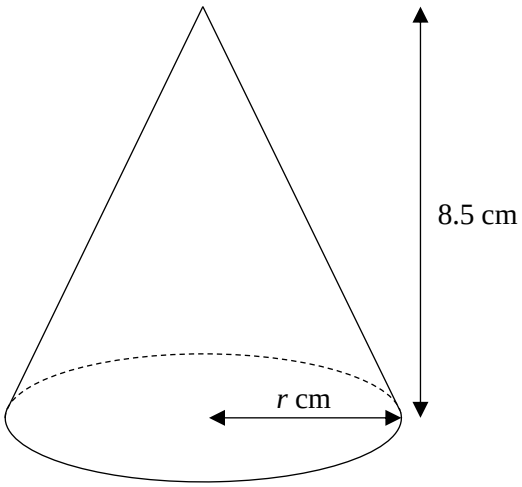
$h = \frac{270}{16\pi}$

$h = 5.371479329$

$h =$ 5.4 cm

(Total for Question 6 is 3 marks)

7 The diagram shows a cone.



The volume of the cone is 120 cm^3

Work out the value of r, the radius of the base of the cone.
Give your answer to 1 decimal place.

$\frac{1}{3} \times \pi \times r^2 \times 8.5 = 120$

$\frac{17\pi r^2}{6} = 120$

$17\pi r^2 = 720$

$r^2 = \frac{720}{17\pi}$

$r^2 = 13.481...$

$r = \sqrt{13.481...}$

$r = 3.6716971\dot{4}$

$r =$ 3.7 cm

(Total for Question 7 is 4 marks)