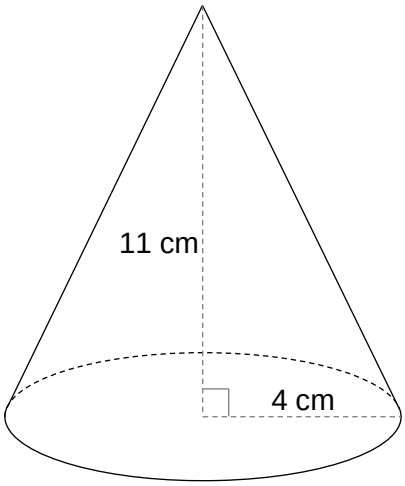
Volume and Surface Area of Cones

SCAN ME

REVISE THIS TOPIC

1 Here is a cone.



Volume of cone = $\frac{1}{3}\pi r^2 h$ where r is the radius and h is the perpendicular height

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

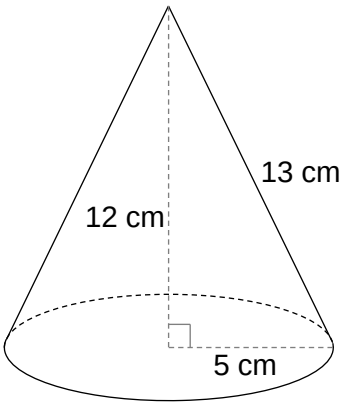
[2 marks]

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

Answer 184.3 cm^3

2

2 Here is a cone.



Volume of cone = $\frac{1}{3}\pi r^2 h$ where r is the radius and h is the perpendicular height

2 (a) Work out the volume of the cone.
Give your answer to 1 decimal place. **[2 marks]**

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

Answer 314.2 cm^3

Curved surface area of a cone = πrl where r is the radius and l is the slant height

2 (b) Work out the total surface area of the cone.
Give your answer to 1 decimal place. **[3 marks]**

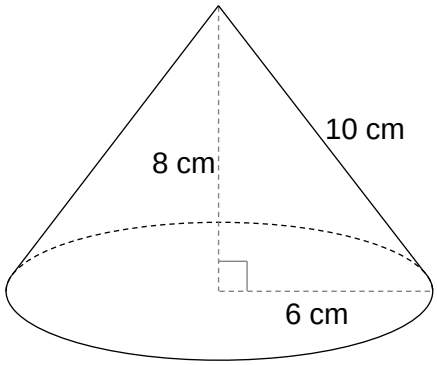
$\pi \times 5 \times 13 = 204.2035225$

$\pi \times 5^2 = 78.53981634$

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

Answer 282.7 cm^2

3 Here is a cone.



Volume of cone = $\frac{1}{3}\pi r^2 h$ where r is the radius and h is the perpendicular height

3 (a) Work out the volume of the cone.
Give your answer to 1 decimal place. **[2 marks]**

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

Answer 301.6 cm^3

Curved surface area of a cone = πrl where r is the radius and l is the slant height

3 (b) Work out the total surface area of the cone.
Give your answer to 1 decimal place. **[3 marks]**

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

$\pi \times 6^2 = 113.0973355$

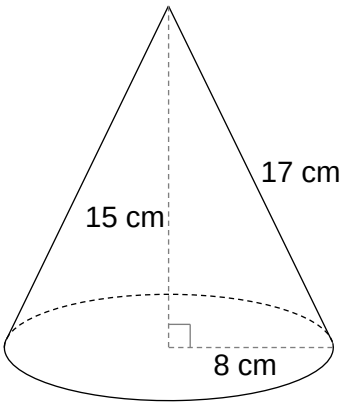
$188.49... + 113.09... = 301.5928947$

Answer 301.6 cm^2

10

Turn over ►

4 Here is a cone.



Volume of cone = $\frac{1}{3}\pi r^2 h$ where r is the radius and h is the perpendicular height

4 (a) Work out the volume of the cone.
Give your answer to 1 decimal place. **[2 marks]**

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

Answer 1005.3 cm^3

Curved surface area of a cone = πrl where r is the radius and l is the slant height

4 (b) Work out the total surface area of the cone.
Give your answer to 1 decimal place. **[3 marks]**

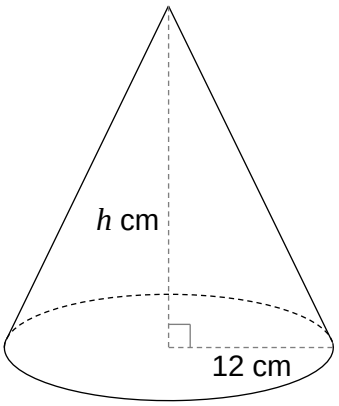
$\pi \times 8 \times 17 = 427.2566009$

$\pi \times 8^2 = 201.0619298$

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

Answer 628.3 cm^2

5 Here is a cone.



Volume of cone = $\frac{1}{3}\pi r^2 h$ where r is the radius and h is the perpendicular height

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. **[3 marks]**

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

$48\pi h = 3000$

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

$h = 19.894367\ldots$

$h =$ 19.9 cm

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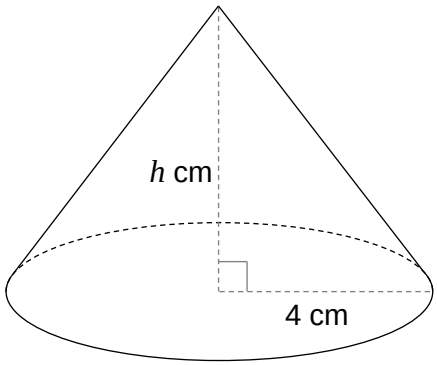
6 Here is a cone.



Volume of cone = $\frac{1}{3}\pi r^2 h$ where r is the radius and h is the perpendicular height

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. **[3 marks]**

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

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

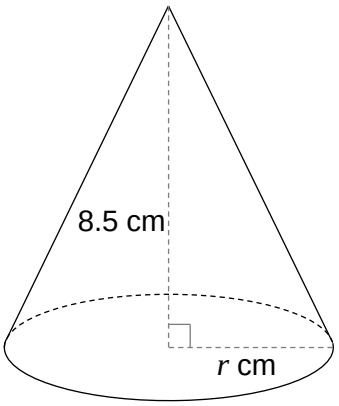
$16\pi h = 270$

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

$h = 5.371479329$

$h =$ 5.4 cm

7 Here is a cone.



Volume of cone = $\frac{1}{3}\pi r^2 h$ where r is the radius and h is the perpendicular height

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. **[4 marks]**

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

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

$17\pi r^2 = 720$

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

$r^2 = 13.481\ldots$

$r = \sqrt{13.481\ldots}$

$r = 3.671697\ldots$

$r =$ 3.7 cm

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