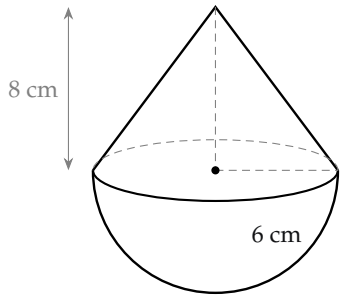
Exercise 2

Paper 2 style · Graphic display calculator

2 7 marks SL 3.1 ●●○ Typical

A solid is made of a right cone on top of a hemisphere, as shown. The cone and the hemisphere both have radius 6 cm; the height of the cone is 8 cm.



(a) Find the slant height of the cone. [2]

(b) Find the volume of the solid. [3]

(c) Find the total surface area of the solid. [2]

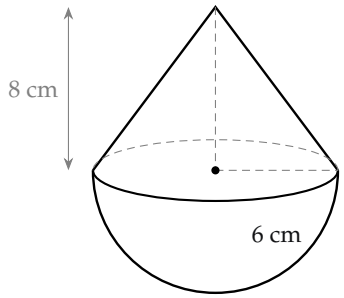
The markscheme is on the next page: try the question first. Written and verified by a practising IB mathematics teacher, produced with AI assistance; solved twice and recomputed by software. Not affiliated with or endorsed by the International Baccalaureate Organization.
© 2026 Hence

Exercise 2 — markscheme

Paper 2 style · Graphic display calculator

2 7 marks SL 3.1 ●●○ Typical

A solid is made of a right cone on top of a hemisphere, as shown. The cone and the hemisphere both have radius 6 cm; the height of the cone is 8 cm.



(a) Find the slant height of the cone. [2]

(b) Find the volume of the solid. [3]

(c) Find the total surface area of the solid. [2]

MARKSCHEME (a)

$l^2 = 6^2 + 8^2$ (M1)

$l = 10$ cm A1

Total 2 marks

MARKSCHEME (b)

cone: $\frac{1}{3}\pi \times 6^2 \times 8 = 96\pi$ (A1)

hemisphere: $\frac{2}{3}\pi \times 6^3 = 144\pi$ (A1)

$V = 754\ \text{cm}^3$ $(240\pi = 753.982\ldots)$ A1

Total 3 marks

MARKSCHEME (c)

$\pi \times 6 \times 10 + 2\pi \times 6^2$ (M1)

$415\ \text{cm}^2$ $(132\pi = 414.690\ldots)$ A1

Total 2 marks

Note The curved surfaces only.