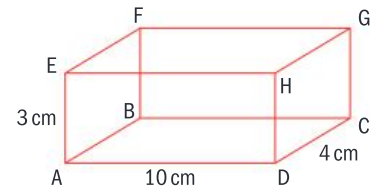


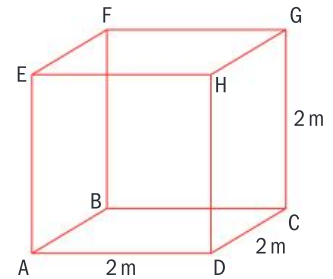
Exercise 10D

EXAM-STYLE QUESTIONS

- 1 In the cuboid ABCDEFGH, $AD = 10$ cm, $CD = 4$ cm and $AE = 3$ cm.
 - a
 - i Calculate the length of AC.
 - ii Calculate the angle that AG makes with the face ABCD.
 - b
 - i Calculate the length of AF.
 - ii Find the angle that the face AEFB makes with the line AG.

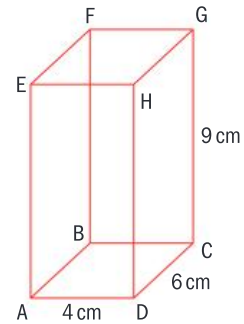


- 2 The diagram shows cube ABCDEFGH with side length 2 m.
 - a Calculate the length of BD.
 - b Find the angle that DF makes with the face ABCD.

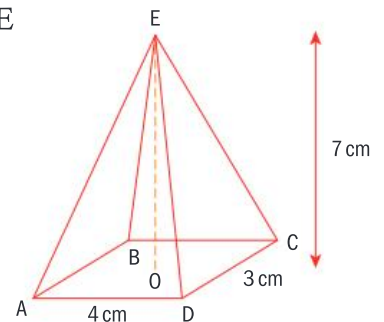


Let M be the midpoint of BF.

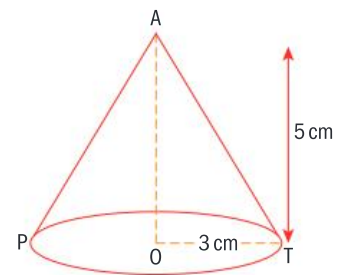
- 3 The diagram shows a cuboid ABCDEFGH, where $AD = 4$ cm, $CD = 6$ cm and $CG = 9$ cm.
 - a
 - i Calculate the length of BD.
 - ii Find the angle that AF makes with the face BFGC.
 - b Find the angle that AF makes with the face ABCD.
 - c
 - i Calculate the length of AC.
 - ii Calculate the length of FC.
 - iii Find the angle between the lines AF and FC.

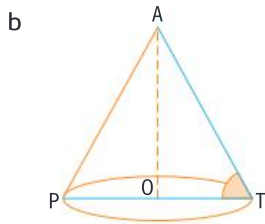
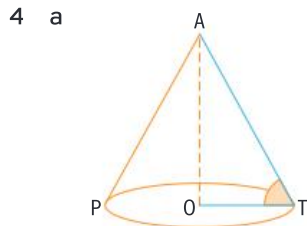
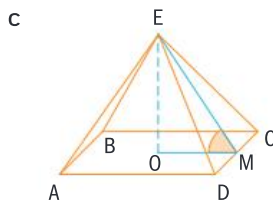
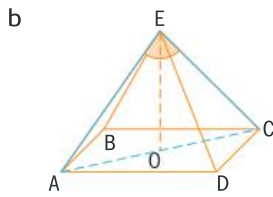


- 4 The diagram shows the rectangular-based right pyramid ABCDE with $AD = 4$ cm, $CD = 3$ cm and $EO = 7$ cm.
 - a Find the length of AC.
 - b Find the length of AE.
 - c Find angle AEC.
 - d Find the angle that AE makes with the base of the pyramid.
 - e Find the angle that the base of the pyramid makes with EM, where M is the midpoint of CD.

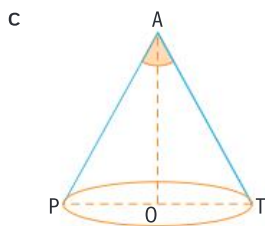


- 5 The diagram shows a cone with base center O and radius 3 cm. A is 5 cm vertically above O. T and P are on the circumference of the base and O is the midpoint of PT.
 - a Find AT, the slant height of the cone.
 - b Find the angle that AT makes with the base of the cone.
 - c Find angle PAT.





They are equal.



Isosceles

Exercise 10D

- $\sqrt{116}$ cm or 10.8 cm (3 sf)
 - 15.6°
 - 5 cm
 - 63.4°
- $\sqrt{8}$ m or 2.83 m (3 sf)
 - 35.3°
 - 19.5°
- $\sqrt{52}$ cm or 7.21 cm (3 sf)
 - 33.7°
 - 56.3°
 - $\sqrt{117}$ cm or 10.8 cm (3 sf)
 - $\sqrt{97}$ cm or 9.85 cm (3 sf)
 - 40.5°
- 5 cm
 - 7.43 cm
 - 39.3°
 - 70.3°
 - 74.1°
- $\sqrt{34}$ cm or 5.83 cm (3 sf)
 - 59.0°
 - 61.9°
- 1.26 m
 - 64.5°

Exercise 10E

- 24 cm²
 - 23.5 m²
 - 73.9 cm²
- 3.90 cm²
 - 5.20 cm
 - 52.6 cm²
- 6.5 cm
 - 16.25 cm²
 - 90 cm²
- 1000 cm
- 175 m²
 - 1.75×10^2 m
- 43.4 m²
 - 53 litres
 - US\$ 243.80 (2 dp)

Exercise 10F

- 30π cm² or 94.2 cm² (3 sf)
 - 4π cm² or 12.6 cm² (3 sf)
 - 6.75π cm² or 21.2 cm² (3 sf)
 - 4.125π m² or 13.0 m² (3 sf)
- 38π cm² or 119 cm² (3 sf)
 - 22.08π cm² or 69.4 cm² (3 sf)
- 8.92 cm (3 sf)
- 120π cm³ or 377 cm³ (3 sf)
 - 12 cm (2 sf)

Exercise 10G

- 23.4 dm³
 - 90 m³
 - 8000 cm³
 - 160 cm³
 - 12 m³
 - 210 cm³
- 5.03 m
 - 15.1 m²
 - 151 m³
- 60°
 - 10.8 cm²
 - 65.0 cm²
 - 877 cm³
- x^3
 - $3x^3$
 - $\frac{3x^3}{8}$ or $0.375x^3$
 - $10x^2$
- $25x^2$
 - $11025 = 25x^2$
 - 21
- 21 cm
 - 2205 cm²

Exercise 10H

- $75\,140\pi$ mm³ or 236 000 mm³ (3 sf)
 - $\frac{1}{6}\pi = 0.524$ cm³ (3 sf)
 - 32.7 cm³
 - 1130 cm³
 - 32.7 cm³
 - 8 dm³
- 13.6 m³
 - 13 600 dm³
 - 13 600 litres
- $V = \frac{x^2h}{3}$
 - $V = 2\pi x^3$
 - $V = 9\pi x^3$
 - $V = 4.5\pi x^3$
- 36 cm²
 - 6 cm²
 - 60°
 - 3.72 cm

- 3.63 cm
 - 36 mm
- 6750π cm³ or 21 200 cm³ (3 sf)
 - No. The second container has a volume (20 400 cm³) smaller than the first
- 1.2 cm
 - 1.25 cm
 - 28.8 cm²
 - 4.89 cm³
- number of pencils in one layer = $5.6 \div 0.7 = 8$
number of layers = $1.4 \div 0.7 = 2$
total number of pencils = $8 \times 2 = 16$
 - 27.6 cm³
 - 26%

Review exercise

Paper 1 style questions

- 5896 cm²
 - 28.56 dm³
- $\sqrt{116}$ cm or 10.8 cm (3 sf)
 - 24.9°
- $\sqrt{41}$ cm or 6.40 cm (3 sf)
 - 8.62 cm
 - 43.6°
- $\sqrt{90}$ cm or 9.49 cm (3 sf)
 - 28.5 cm²
 - 150 cm²
- 8 cm
 - 11.3 cm
 - Yes, as the greatest distance between two points in this cube is 13.9 cm (3 sf) which is bigger than 13.5 cm
- 71.8°
 - 7.60 cm
 - 49.7 cm³
- 2.71 m²
 - 9.47 m³

Paper 2 style questions

- 27.0 m
 - 93.7 m
 - 61.3°
 - US\$ 677 502
- 9 cm
 - 9.49 cm
 - 71.6°
 - 1.53 kg
- 58.3 cm³
 - 508 g