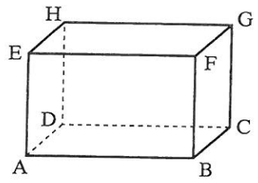
31 → THREE-DIMENSIONAL GEOMETRY

EXERCISE 31.1H

1 Calculate the length of the diagonal of a cuboid measuring 6 cm by 10 cm by 5 cm.

2 The length of the diagonal of a cube is 6.8 cm. Find the length of a side of this cube.

3 In this cuboid, AB = 10 cm, BC = 6 cm and CG = 8 cm.

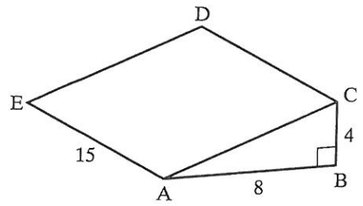


Calculate
(a) angle GDC.
(b) the length of EG.
(c) the length of HB.
(d) angle BHD.

4 A pyramid is 8 cm high and has a square base of side 6 cm.
Its sloping edges are all of equal length.
Calculate the length of a sloping edge.

5 The length of each sloping edge of a square-based pyramid is 12 cm.
The sides of the base are each 10 cm.
Calculate the height of the pyramid.

6 ABCDEF is a triangular wedge.
The faces ABFE, BCDF and ACDE are rectangles.



(a) Calculate the length AD.
(b) Calculate $D\hat{A}C$.

7 A is 30 m due south of a church tower.
From A, the elevation of the top of the tower is 51°.
(a) Calculate the height of the tower.
From B, which is due west of the tower, the angle of elevation of the top of the tower is 35°.
(b) Calculate how far B is from the tower.
(c) Calculate the distance AB, assuming that A and B are on the same level as the base of the tower.

8 A pyramid VABCD has a square base ABCD of side 6 cm.
O is the centre of the base.
(a) Show that AO = $\sqrt{18}$ cm.
Angle VAO, the angle between a sloping edge and the base, is 62°.
(b) Calculate the height VO.
(c) Calculate the length of a sloping edge of the pyramid.