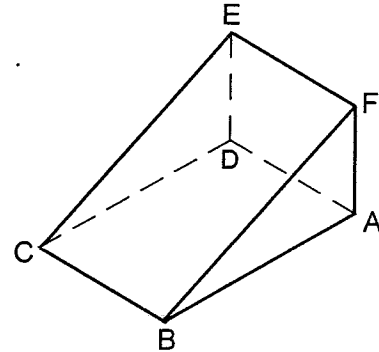


Trigonometry

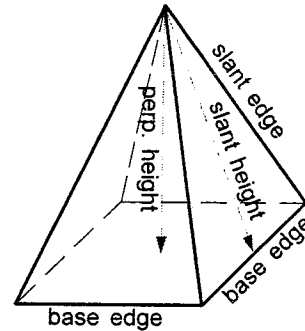
Pythagorean problems in 3-dimensions.
Drawings are NOT to scale.

- Find the length of the space-diagonal of cuboid measuring 4 metres by 5 metres by 7 metres.
- What is the greatest length of a thin rod, which must measure an exact number of centimetres, and can fitted into a cuboidal box measuring 14 cm by 8 cm by 5 cm?

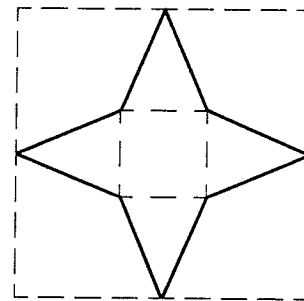
- The drawing on the right represents a wooden wedge. Face ABCD is in the horizontal plane, face ADEF is in the vertical plane. BCEF is the sloping face. BC is 10 cm; AB is 14 cm; AF is 4 cm. If an insect set out to walk up the sloping face, starting from C, it would find that the steepest slope was along the line CE; while the least slope was along the line CF. What is the difference in lengths between the lines of the least and the steepest slopes?



- A right pyramid has a square base with an edge-length of 15 cm, and a perpendicular height of 20 cm. Calculate its slant height.
- What is the perpendicular height of a right square-based pyramid having a base-edge of length 9.8 cm and a slant height of 13.6 cm?
- A square-based pyramid has a base-edge of length 53 mm and a slant height of 117 mm. Find the length of one its slant edges.
- The great pyramid of Gizeh (built about 2500 BC) has a square base which measures 226 metres along each edge, and a perpendicular height of 144 metres. What is the length of one of its slant edges?



- The net of a pyramid can be cut from a square piece of card as shown in the drawing on the right. What size of square would be needed to cut out the net of a square-based pyramid having a base-edge of 10 cm and a perpendicular height of 15 cm? The necessary square can be made smaller if the net is rotated through 45° relative to the square. What size of square would be needed for the above pyramid in that case?



- This table gives some details of 3 different right-cones. Calculate the missing values shown as (a) (b) (c)

	base radius	perpendicular height	slant height
Cone 1	5.4 cm	7.3 cm	(a)
Cone 2	2.1 cm	(b)	10.3 cm
Cone 3	(c)	13.6 cm	19.7 cm

