

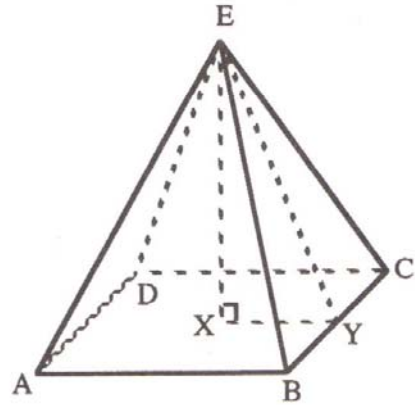
**Apply site surveys and set out procedures  
to building and construction projects**

WA-SIN W5904 - (BCGBC4018A)

**Right triangles in three dimensions**

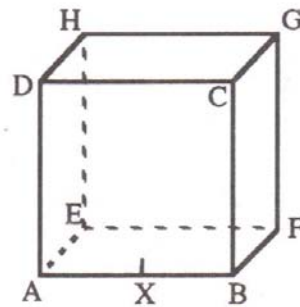
- A square based pyramid  $ABCDE$  has 4 congruent isosceles triangles as faces.  $X$  is the centre of the base. If  $AB = 15$  cm and  $AE = 25$  cm, find

  - the perpendicular height of each triangular face (eg  $EY$ )
  - the altitude  $EX$  of the pyramid
  - $\angle EYX$
  - $\angle EBX$
  - $\angle EBC$
  - the volume of the pyramid
  - the total surface area of the pyramid



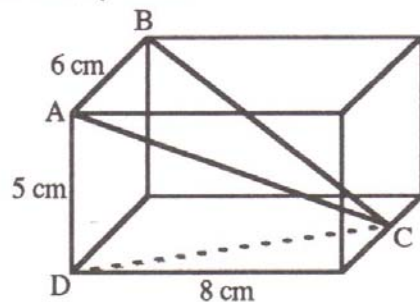
- What is the longest piece of straight rod that will fit into a rectangular box  $3\text{ m} \times 2\text{ m} \times 1.5\text{ m}$ ?
- A cube  $ABCDEFGH$  of side length 4 cm has  $X$  the mid-point of  $AB$ , as shown. Determine:

(a) length $AF$	(d) $\angle GAF$
(b) length $AG$	(e) $\angle AXD$
(c) $\angle ABD$	(f) $\angle XGF$



- Recalculate the answers from exercise 3 for a cube of side length 5 cm. Would the angles in parts (c) to (f) be the same in any cube?
- For the wire framework (which is a rectangular prism with  $C$  the mid-point of the edge shown) determine:

  - length  $AC$  (find  $CD$  first)
  - $\angle ACD$
  - all angles in the isosceles  $\triangle ABC$ .  
(Draw a perpendicular from  $C$  to  $AB$ .)



- The wedge shown has  $\angle ACB = 90^\circ$  and a rectangular base. Find the slopes and the angles of inclination of the lines  $AB$  and  $AE$ .
  - Recalculate these slopes and angles of inclination if  $AD = 5$  cm,  $AC = 12$  cm and  $BC = 5$  cm.

