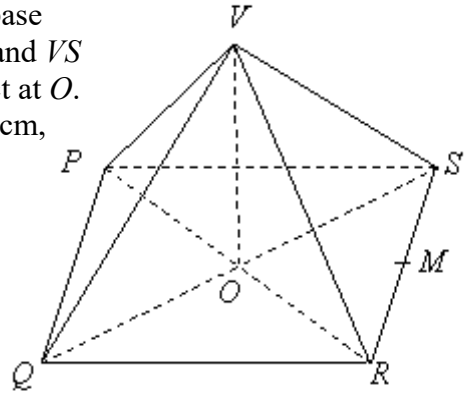


Applications of Trigonometry Simple Three-Dimensional Problems II

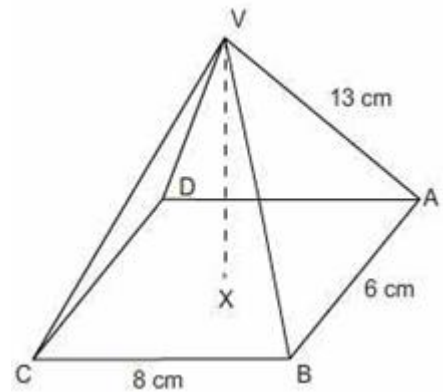
Problems

1. The diagram shows a pyramid with a rectangular base $PQRS$ and vertex V . The slant edges VP , VQ , VR and VS are all equal, and the diagonals of the base intersect at O . The midpoint of RS is M . It is given that $QR = 8$ cm, $QS = 10$ cm and $VO = 12$ cm. Calculate
- (a) VM ,
 - (b) $\angle VQO$.



Ans: (a) 12.6 cm (3 sf) (ii) 67.4° (1 dp)

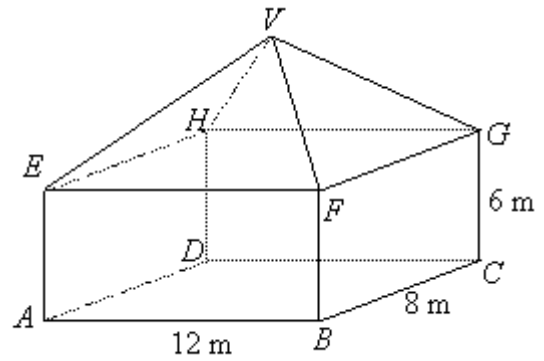
2. The diagram below shows a right pyramid on a horizontal rectangular base $ABCD$. Given that $AB = 6$ cm, $BC = 8$ cm and $VA = 13$ cm.
- (a) Find the length of AC .
 - (b) Hence, using the answer in (a), find the height of the pyramid VX .
 - (c) Find $\angle VDW$, where W is the midpoint of VX .



Ans: (a) 10 cm (b) 12 cm (b) 17.2° (1 dp)

3. The diagram shows a greenhouse made of glass. It consists of a regular pyramid, $VEFGH$, attached to a cuboid $ABCDEFGH$. The dimension of the cuboid is $12\text{ m} \times 8\text{ m} \times 6\text{ m}$ and $\angle EVF = 80^\circ$.

- (a) Calculate
- (i) VF ,
 - (ii) area of $\triangle EVF$.
- (b) Find $\angle AFC$.
- (c) Show that the height of the pyramid is 5.9 m and hence find the volume of the air trapped in the green house, round up your answer to the nearest whole number.



Ans: (a)(i) 9.33 m (3 sf) (ii) 42.9 m² (3 sf) (b) 74.4° (1 dp) (c) 765 m³