Solution Book of Mathematic

Ssnior 2 Part I

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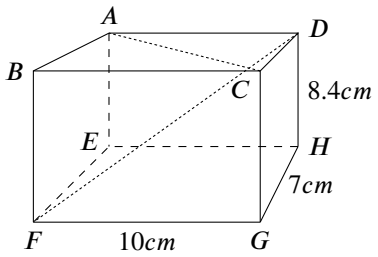
16.1 Revision Exercise 17

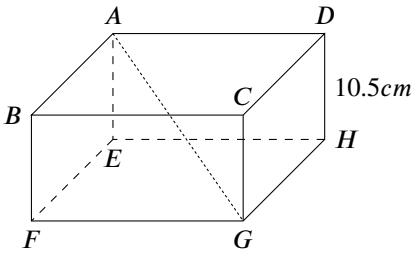
1. In the cuboid shown below, $FG = 10cm$, $GH = 7cm$, $DH = 8.4cm$, find:

   (a) The angle formed by angle AC and plane $BFGC$.

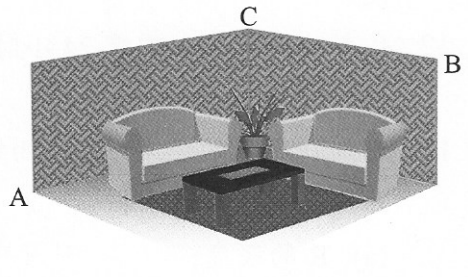
   (b) The angle formed by angle FD and plane $EFGH$.



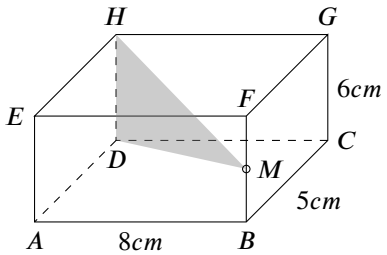
2. The diagram below shows a cuboid with volume of $400cm^3$, height of $10.5cm$, $AD = 2DC$. Find the angle formed by angle AG and plane $ADHE$.



3. The diagram below shows a reception room with a square floor with side length of $6m$. Given that the elevation angle of corner C measured from corner A is 30°, find the angle formed by the line connecting corner A and B with the floor.



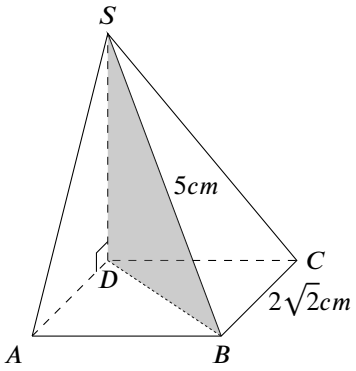
4. The diagram below shows a cuboid with length of $8cm$, width of $5cm$ and height of $6cm$, M is the midpoint of BF. Find the angle formed by plane HDM and plane $ADHE$.



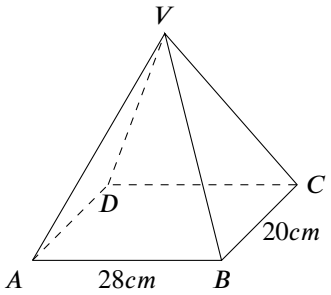
5. The diagram below shows a pyramid with a square base, its lateral edge SD is perpendicular to its base. Given that $BC = 2\sqrt{2}cm$, $SB = 5cm$. Find:

   (a) The angle formed by plane SAD and plane SBD.

   (b) The angle formed by lateral edge SA and base $ABCD$.



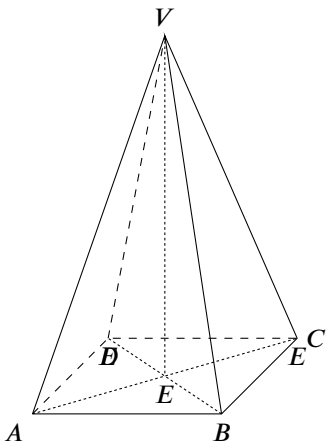
6. The diagram below shows a right prism with a rectangular base $ABCD$ with length of $28cm$ and width of $20cm$. Assume that plane VBC and the base of the pyramid forms a 60° angle. Find the angle formed by plane VAB and the base.



7. The diagram below shows a regular cuboid with a square base. Given that $VE = \frac{5}{2}AD$. Find:

   (a) The angle formed by the angle VA and the base $ABCD$.

   (b) The angle formed by plane VAD and the base.



8. Find the distance from the Panama City($9°N, 79°30'W$) to Toronto ($43°45'N, 79°30'W$). (Express your answer in nautical miles)

9. Tokyo and Adelaide are located at the same longitude, their latitude are $35°45'N$ and $35°S$ respectively. Find the distance between two cities along the parallel of latitude.

10. A plane flies $2000NM$ along the equator, Find the difference of longitude between the point of departure and the destination.

11. Location M and N are both located at the parallel of latitude 45° north to the equator with a difference in longitude of 20°. Find the distance between M and N along the parallel of latitude. (Express your answer in nautical miles)

12. Location X and Y are on the parallel of latitude 20° north to the equator, their longitude are $45°E$ and $80°E$ respectively. Find the distance between location X and Y along the parallel of latitude. (Express your answer in nautical miles)

13. A plane flies from $A(42°E)$ to $B(20°E)$ along the equator, then it flies from B due north to $C(30°N)$. Find the distance the plane flies in total.

14. Assume that A is located $1000NM$ due north of the equator, $600NM$ due east of the Greenwich Meridian, find the longitude and latitude of A.

15. A plane flies from $P(15°N, 30°E)$ $2000NM$ due south to B, find the longitude and latitude of B. Another plane flies from P $3000NM$ due east to C, find the longitude and latitude of C.

16. A plane flies from $A(130°E)$ along the equator to $B(120°30'E)$ along the equator, then flies from B due north to $C(20°45')$. Assume that the average speed of the plane is $300NM/hr$ throughout the journey, find the flight duration for the whole journey.

17. A plane flies from $A(50°N, 10°E)$ due east to $B(45°E)$.

    (a) Find the flight distance of the plane. (Express your answer in nautical miles)

    (b) Assume that the speed of the plane is $420NM/hr$ in average, find the flight duration of the plane.

18. Given that three locations P, Q and R are located on the same parallel of latitude 40° north to the equator, The longitude of P and R are $10°30'W$ and $4°30'E$, Q is located at the middle of P and R.

    (a) Find the difference of longitude between P and R.

    (b) Find the longitude of Q.

    (c) Find the distance between P and R along the parallel of latitude.

    (d) A ship sails from P to Q along the parallel of latitude with a speed of $18NM/hr$, find the sailing duration of the ship.