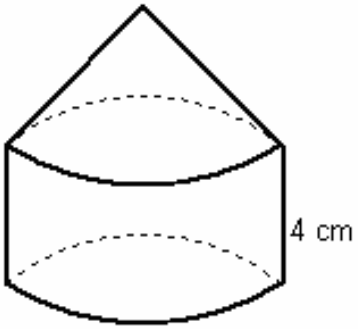
MODULE MATHEMATICS SPM
VOLUME OF SOLID GEOMETRY

1. Diagram 1 shows a solid formed by joining a cone and a cylinder.



Diameter of the cylinder = 7 cm.
The volume of the solid = 231 cm^2.

DIAGRAM 1

By using $\pi = \frac{22}{7}$, calculate the height, in cm, of the cone. [4 m]

2. Diagram 2 shows a solid cone with radius 9 cm and height 14 cm. A cylinder with radius 3 cm and height 7 cm is taken out of the solid.

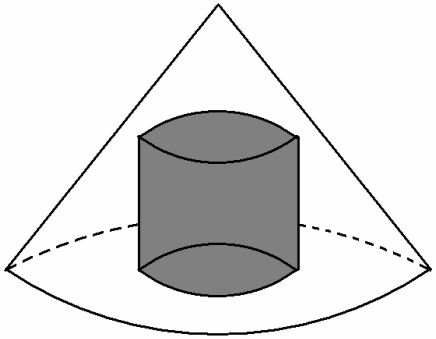


DIAGRAM 2

By using the $\pi = \frac{22}{7}$, calculate the volume, in cm^3, of the remaining solid. [4 m]

3. Diagram 3 shoes a combined solid consists of s right prism and a right pyramid which are joined at the plane EFGH. V is vertically above the base EFGH. Trapezium ABGF is the uniform cross section of the prism.

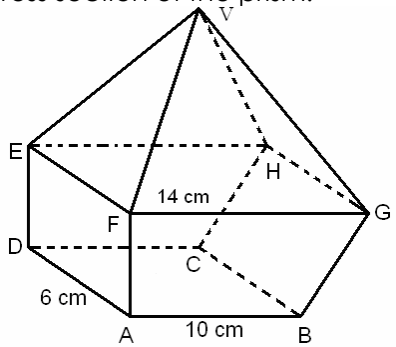


DIAGRAM 3

The height of the pyramid is 8 cm and FG =14 cm. [Use $\pi = \frac{22}{7}$]

a) Calculate the volume in cm^3, of the right pyramid.
b) It is give that the volume of the combined solid is 584 cm^3. Calculate the length, in cm, of AF.

4. Diagram 4 shows a solid, formed by joining a cylinder to a right prism. Trapezium AFGB is the uniform cross-section of the prism.

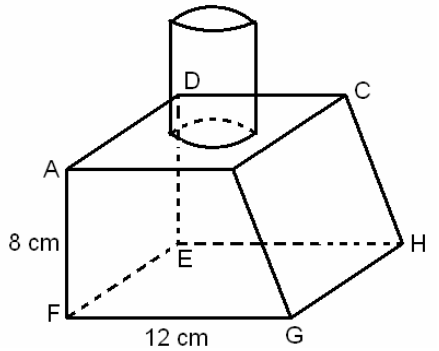


DIAGRAM 4

AB = BC = 9 cm. The height of the cylinder is 6 cm and its diameter is 7 cm.

Calculate the volume, in cm^3, of the solid. [Use $\pi = \frac{22}{7}$]

5. Diagram 5 shows a solid cylinder with radius 16 cm and height 42 cm. A cone with radius 5 cm and height 14 cm is taken out of the solid.

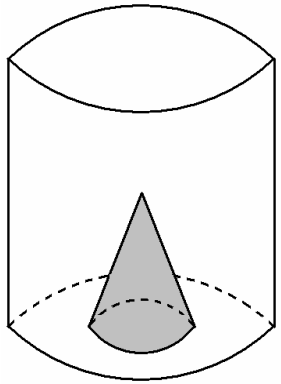


DIAGRAM 5

Calculate the volume, in cm^3 of the remaining solid. [Use $\pi = \frac{22}{7}$]

6. Diagram 6 shows a solid consisting of a right prism and a right cone. Trapezium PQVU is the uniform cross-section of the prism.

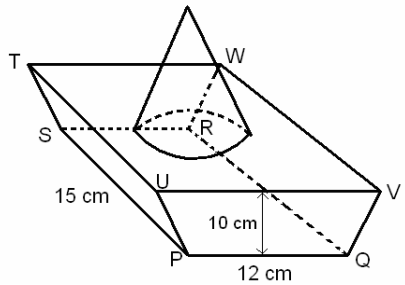


DIAGRAM 6

Take vertical height of the cone is 30 cm while the diameter of its base is 21 cm and the height of the trapezium is 10 cm.

[Take $\pi = \frac{22}{7}$]

a) Calculate the volume, in cm^3, of the cone.

b) Given that the volume of the whole solid is 5925 cm^3 calculate the length of UV.

7. Diagram below shows a solid pyramid of height 26 cm and a square base with sides 12 cm in length. A cylinder with radius 3.5 cm and height 9 cm is taken out of the solid.

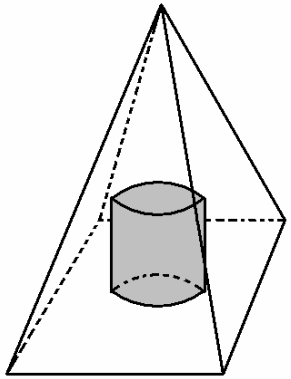


DIAGRAM 7

Calculate the volume, in cm^3, of the remaining solid. (Use $\pi = \frac{22}{7}$)

8. Diagram 8 shows a solid cylinder with a height of 30 cm. Two cones of height 15 cm each are cut out of the solid. The diameter of the cylinder is equal to the diameters of the cones, which is 14 cm.

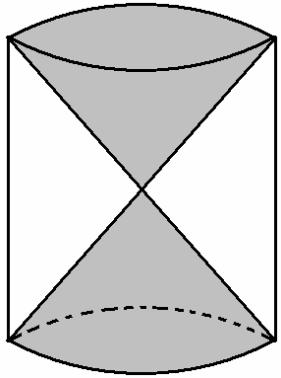


DIAGRAM 8

Calculate the volume, in cm^3, of the remaining solid. (Use $\pi = \frac{22}{7}$)

9. The diagram 9 shows a solid formed by removing a hemisphere from a cylinder. The diameters of the cylinder and the hemisphere are 8 cm. The length of the cylinder is 7 cm.

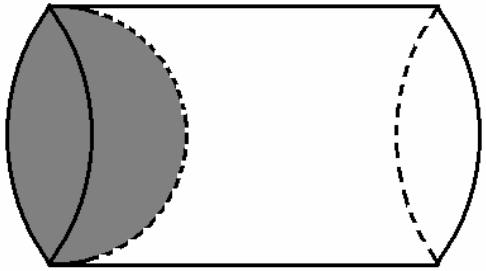


DIAGRAM 9

Using $\pi = \frac{22}{7}$, calculate the volume, in cm^3, of the remaining solid.

10. The diagram 10 shows a right pyramid rest on a right pyramid rest on a right prism. Vertex V is 12 cm vertically above the base ABCD. Trapezium ABGF is the uniform cross-section of the prism AB = BC = 6cm.

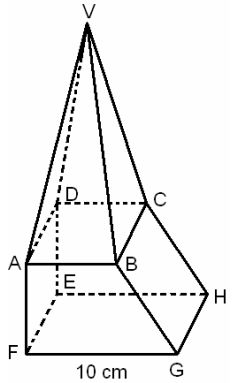


DIAGRAM 10

a) Calculate the volume, in cm^3, of the right pyramid.

b) Given that the volume of the combined solid is 384 cm^3, calculate the height, in cm, of AF.

11. The diagram 11 shoes a conical container filled with water. The base of the cone lies on a horizontal table. The volume of the water is $821\frac{1}{3}$ cm^3.

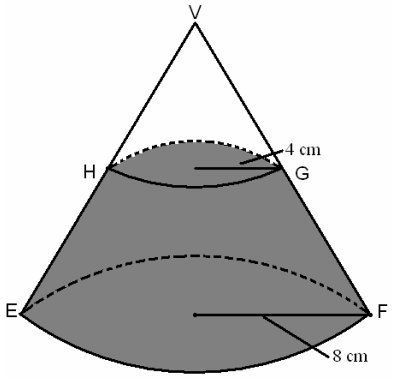
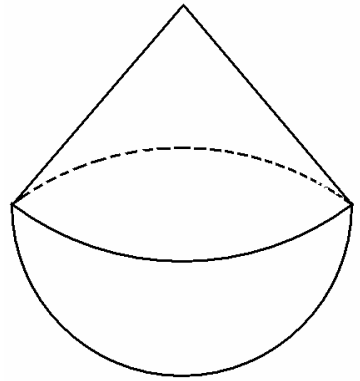


DIAGRAM 11

Using $\pi = \frac{22}{7}$, calculate the height, in cm, of the water in the container.

12. The diagram 12 shows a solid formed by joining a hemisphere and cone. The diameters of the hemisphere and the cone are 14 cm. The volume of the solid is $1129\frac{1}{3}$ cm^3



Using $\pi = \frac{22}{7}$, calculate the height, in cm, of the cone.