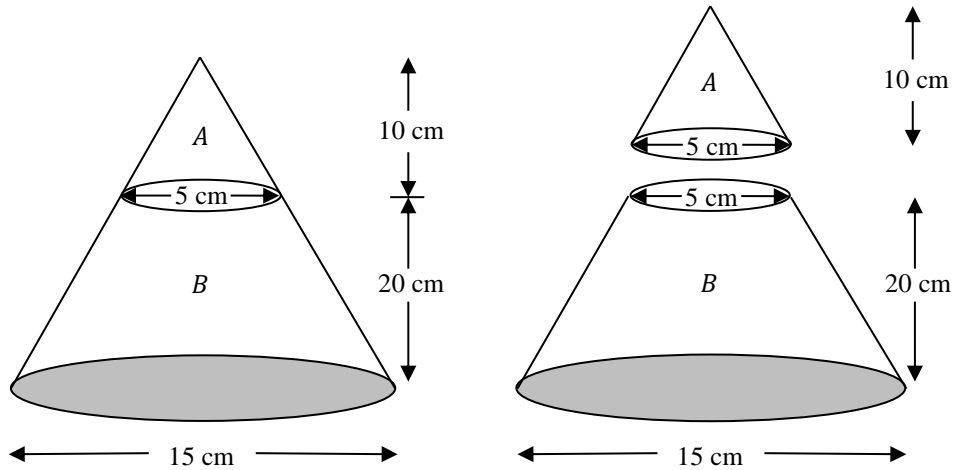


Solids and Volumes (Frustum)

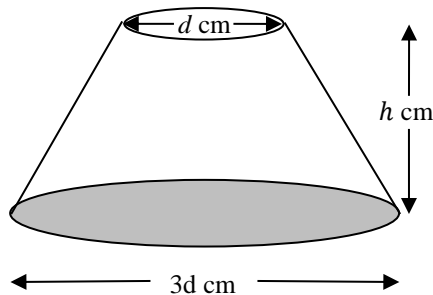
1. The diagram represents a large cone of height 30 cm and base diameter 15 cm.



The large cone is made by placing a small cone *A* of height 10 cm and base diameter 5 cm on top of a frustum *B*.

(a) Calculate the volume of the frustum *B*. Give your answer correct to 3 significant figures.

The diagram shows a frustum. The diameter of the base is $3d$ cm and the diameter of the top is d cm.



The height of the frustum is h cm.

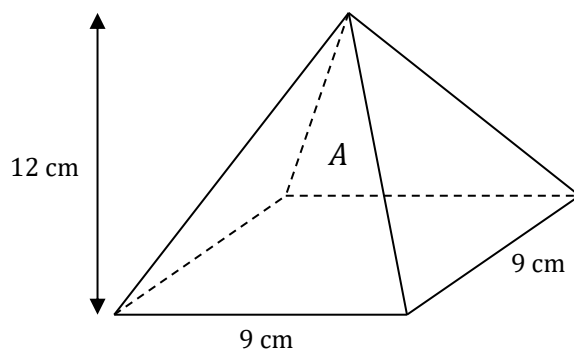
The formula for the curved surface area, S cm², of the frustum is $S = 2\pi d\sqrt{h^2 + d^2}$

(b) Rearrange the formula to make h the subject.

Two mathematically similar frustums have heights of 20 cm and 30 cm. The surface area of the smaller frustum is 450 cm².

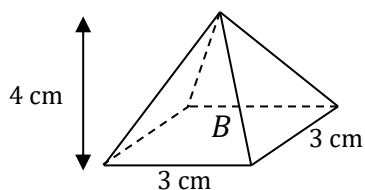
(c) Calculate the surface area of the larger frustum.

2. The diagram shows a square based pyramid *A*.



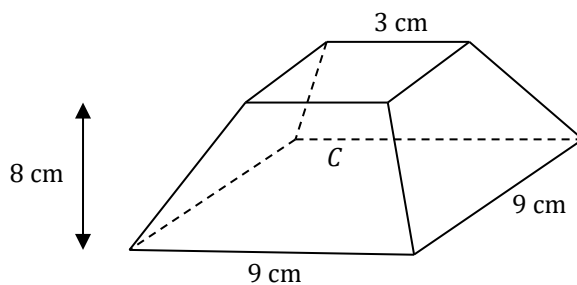
(a) Find the volume of the square based pyramid *A*.

The diagram below shows a smaller square based pyramid.



(b) Find the volume of the square based pyramid *B*.

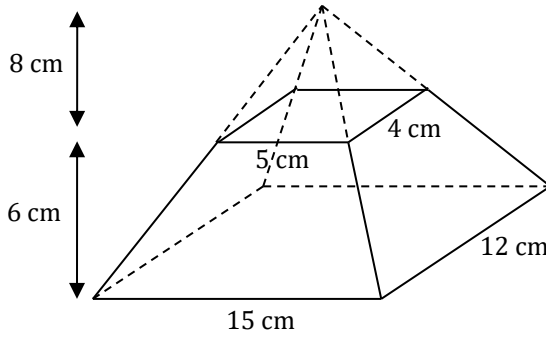
A frustum *C* is created by removing the pyramid *B* from the top of the pyramid *A*.



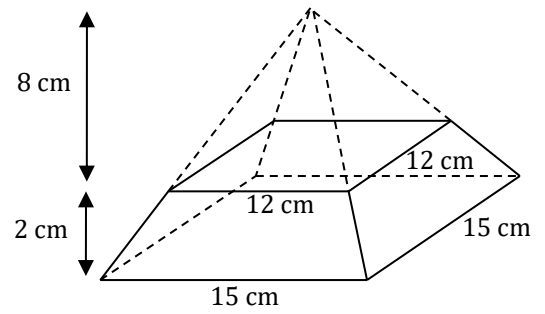
(c) Find the volume of the frustum.

3. Find the volume of the following frustums.

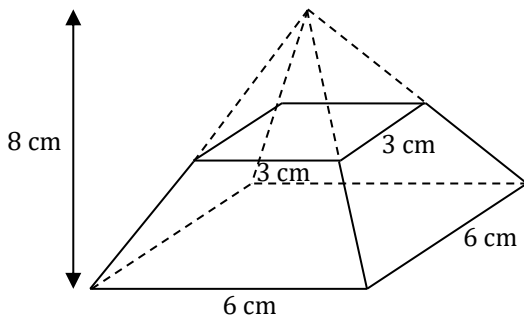
(a)



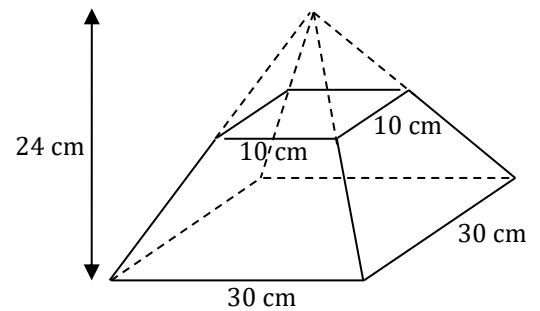
(b)



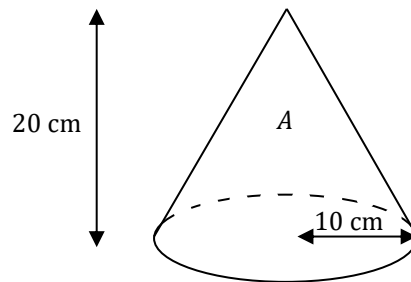
(c)



(d)

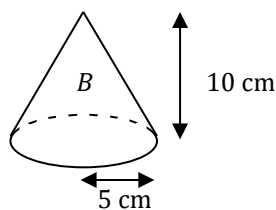


4. The diagram shows a cone A.



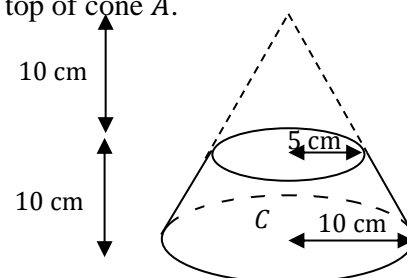
(a) Find the volume of the cone A.

The diagram below shows a smaller cone B.



(b) Find the volume of the smaller cone B.

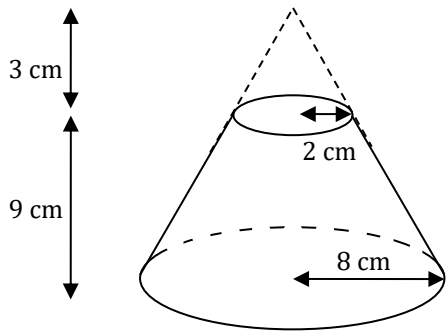
A frustum is created by removing cone B from the top of cone A.



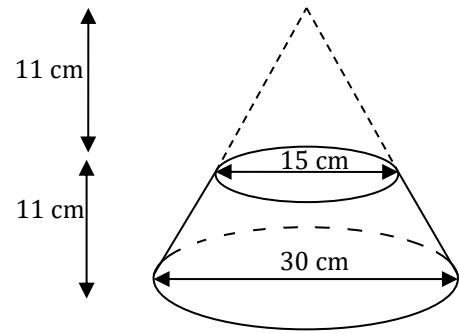
(c) Find the volume of the frustum.

5. Find the volume of the following frustum.

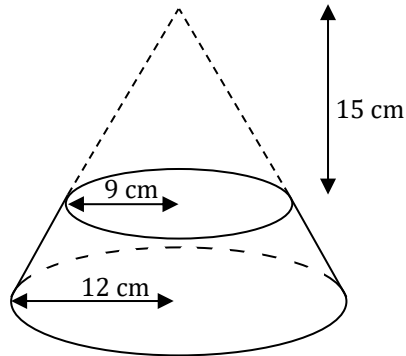
(a)



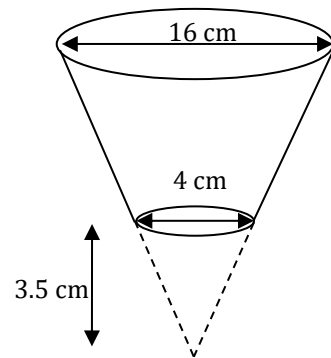
(b)



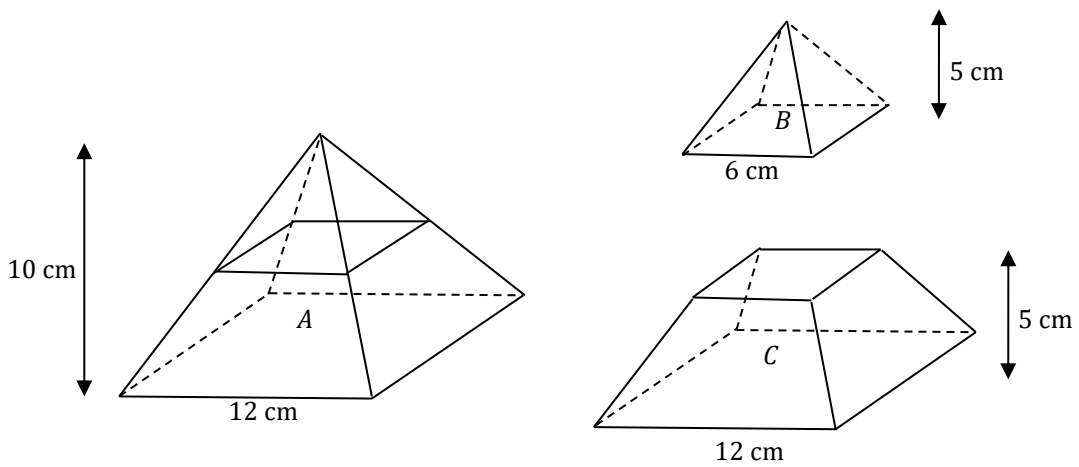
(c)



(d)



6. The diagram shows a square based Pyramid *A* which is divided into Pyramid *B* and Frustum *C*.



(a) Find the volume of pyramid *A*

(b) Find the volume of pyramid *B*

(c) Find the volume of the frustum *C*

(d) Given that Pyramid *A* and Pyramid *B* are similar, show that the volume of *B* is one-eighth of the volume of *A*.