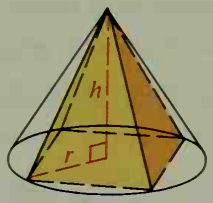
30. An equilateral triangle with 6 cm sides is rotated about an altitude. Draw a diagram and find the volume of the solid formed.

31. A square is rotated in space about a side s. Describe the solid formed and find its volume in terms of s.

32. A cylinder with height 10 and radius 6 is inscribed in a square prism. Make a sketch. Then find the volume of the prism.

33. A regular square pyramid with base edge 4 cm is inscribed in a cone with height 6 cm. What is the volume of the cone?

34. A regular square pyramid is inscribed in a cone with radius 4 cm and height 4 cm.
a. What is the volume of the pyramid?
b. Find the slant heights of the cone and the pyramid.



Exs. 33, 34

35. A cone is inscribed in a regular square pyramid with slant height 9 cm and base edge 6 cm. Make a sketch. Then find the volume of the cone.

36. The lateral area of a cone is three-fifths the total area. Find the ratio of the radius and the slant height.

C **37.** A regular hexagonal pyramid with base edge 6 and height 8 is inscribed in a cone. Find the lateral areas of the cone and the pyramid.

38. A 120° sector is cut out of a circular piece of tin with radius 6 in. and bent to form the lateral surface of a cone. What is the volume of the cone?

39. In $\triangle ABC$, $AB = 15$, $AC = 20$, and $BC = 25$. The triangle is rotated in space about $\overline{BC}$. Find the volume of the solid formed.

40. An equilateral triangle with sides of length s is rotated in space about one side. Show that the volume of the solid formed is $\frac{1}{4}\pi s^3$.

Challenge

A piece of wood contains a square hole, a circular hole, and a triangular hole, as shown. Explain how one block of wood in the shape of a cube with 2 cm edges can be cut down so that it can pass through, and exactly fit, all three holes.