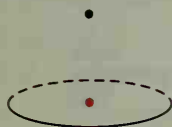
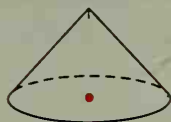


You can use the following three steps to sketch a cone.



- (1) Draw an oval and a vertex point over the center of the oval.



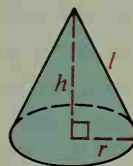
- (2) Join the vertex to the oval, as shown.



- (3) Draw in the altitude and a radius.

Sketch each cone. Copy and complete the table.

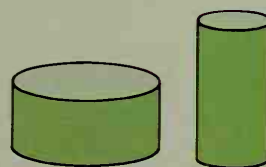
	$r$	$h$	$l$	L.A.	T.A.	$V$
9.	4	3	?	?	?	?
10.	8	6	?	?	?	?
11.	12	?	13	?	?	?
12.	?	2	6	?	?	?
13.	?	?	15	$180\pi$	?	?
14.	21	?	?	$609\pi$	?	?
15.	15	?	?	?	?	$600\pi$
16.	9	?	?	?	?	$324\pi$



17. In Exercises 9 and 10, the ratio of the radii is  $\frac{4}{8}$ , or  $\frac{1}{2}$ , and the ratio of the heights is  $\frac{3}{6}$ , or  $\frac{1}{2}$ . Use the answers you found for these two exercises to determine the ratios of the following:

a. lateral areas      b. total areas      c. volumes

18. A manufacturer needs to decide which container to use for packaging a product. One container is twice as wide as another but only half as tall. Which container holds more, or do they hold the same amount? Guess first and then calculate the ratio of their volumes.



19. A cone and a cylinder both have height 48 and radius 15. Give the ratio of their volumes without calculating the two volumes.

- B** 20. a. Guess which contains more, the can or the bottle. (Assume that the top part of the bottle is a complete cone.)  
b. See if your guess is right by finding the volumes of both.

21. A solid metal cylinder with radius 6 cm and height 18 cm is melted down and recast as a solid cone with radius 9 cm. Find the height of the cone.

