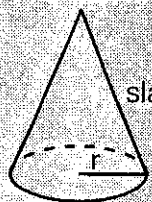


Surface Area of Cones

A cone's surface area is made up of one circular base and a triangular-shaped sector.

Remember: A cone has a slant height, similar to that in pyramids.



slant height

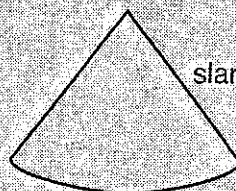
A CONE'S SURFACE:



circle

circle area:

$$A = \pi r^2$$



slant height

circumference

triangular sector area

$$A = \frac{1}{2} \text{base} \times \text{height}$$

$$A = \frac{1}{2} \text{circumference} \times \text{slant height}$$

$$A = \frac{1}{2} (2\pi r) (\text{slant height})$$

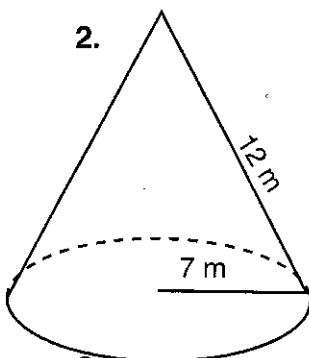
total surface area = $\pi r^2 + \frac{1}{2}(2\pi r)$ (slant height)
OR
 = $\pi r^2 + \pi r$ (slant height)

Find the total surface area of the cones described below. Use the decoder to find the answer to the question.

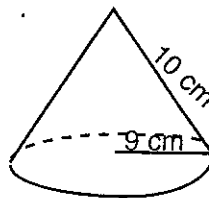
1.



2.



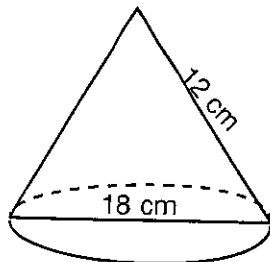
3.



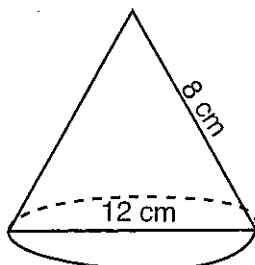
4.



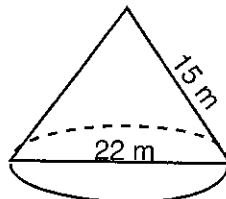
5.



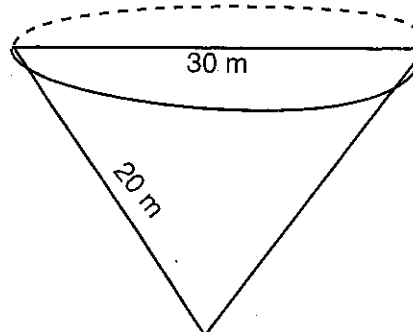
6.



7.



8.



Who was the author of "Conic Sections," a work containing propositions about curves that are created by slicing a cone with a plane?

$24\pi \text{ cm}^2$	$84\pi \text{ cm}^2$	$44\pi \text{ cm}^2$	$171\pi \text{ cm}^2$	$286\pi \text{ m}^2$	$133\pi \text{ m}^2$	$525\pi \text{ m}^2$	$189\pi \text{ cm}^2$
A	I	L	N	O	P	S	U

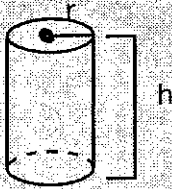
4 2 7 1 1 7 3 6 5 8

Volume of Cylinders and Cones

The volume of a cylinder is found by multiplying the area of the circular base by the height of the cylinder.

$$V = (\text{area of base}) (\text{height})$$

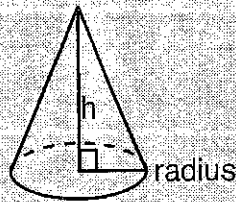
$$V = \pi r^2 h$$



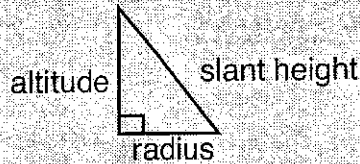
The volume of a cone is found by taking $\frac{1}{3}$ of the product of the area of the base and the height (altitude)

$$V = \frac{1}{3} (\text{area of base}) (\text{height})$$

$$V = \frac{1}{3} \pi r^2 h$$



Recall the right triangle created by the radius, altitude, and slant height.



Use the Pythagorean Theorem to find the needed measurements when they are not given.

Find the volume of the figure described. Follow your answers through the maze.

- | | |
|---|--|
| 1. cylinder with radius 8 m; height 12 m | 11. cylinder with diameter 10 m; height 8 m |
| 2. cone with radius 6 m; altitude 10 m | 12. cylinder with diameter 20 m; height 20 m |
| 3. cylinder with radius 5 m; height 10 m | 13. cylinder with diameter 18 m; height 5 m |
| 4. cone with radius 12 cm; altitude 16 cm | 14. cone with diameter 6 cm; altitude 4 cm |
| 5. cylinder with radius 18 cm; height 20 cm | 15. cone with diameter 10 cm; altitude 9 cm |
| 6. cone with radius 9 m; altitude 7 m | 16. cone with diameter 16 m; altitude 6 m |
| 7. cylinder with radius 3 cm; height 2 cm | 17. cylinder with diameter 4 m; height 2 m |
| 8. cone with radius 5 m; altitude 12 m | 18. cone with radius 4 cm; slant height 5 cm |
| 9. cylinder with radius 11 cm; height 7 cm | 19. cylinder with diameter 8 m; height 12 m |
| 10. cone with radius 15 cm; altitude 10 cm | 20. cone with radius 12 cm; slant height 13 cm |

