

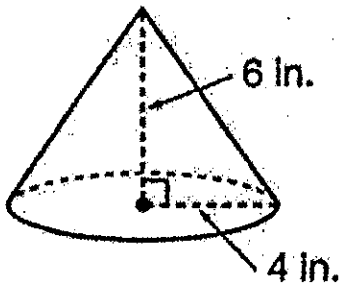
Volume of a Cone

To find the volume of a cone, we use the following formula: $V = \frac{1}{3} \pi r^2 h$

In the formula, $r =$ radius and $h =$ height

Example:

What is the volume of this cone to the nearest hundredth? Use 3.14 for π .



- What is the radius? 4
- What is the height? 6
- Then substitute!

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

$$V = \frac{1}{3} (3.14) (4)^2 (6)$$

$$V = \frac{1}{3} (3.14) (16) (6)$$

$$V = 100.48 \text{ in}^3$$

What do we do if we are given the diameter instead of the radius?

Divide the diameter by 2.

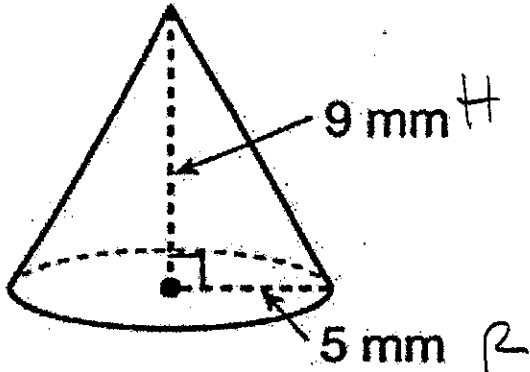
$$R = \frac{D}{2}$$



Examples: Answer the questions below using the formula for the volume of a cone. Be sure to round properly and use the correct value for π .

1) Find the volume of the cone below. Round your answer to the nearest tenth.

★ Use the π -button
 B/c they don't say what to use for π



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

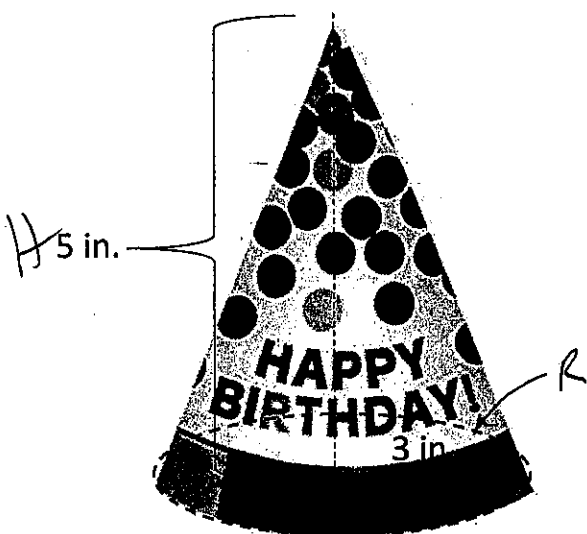
$$V = \frac{1}{3} \cdot \pi \cdot (5)^2 \cdot (9)$$

$$V = \frac{1}{3} \cdot \pi \cdot 25 \cdot 9$$

$$V = 235.6 \text{ mm}^3$$

2) A party hat is in the shape of a cone with a radius of 3 in. and a height of 5 in. What is the volume of the party hat? Leave your answer in terms of π .

→ symbol
 (Do not multiply by π)



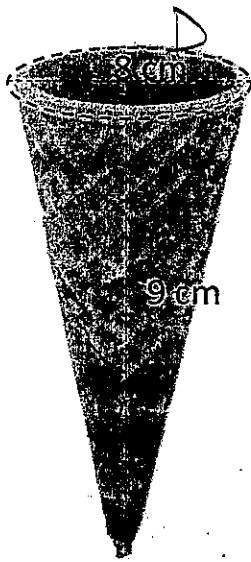
$$V = \frac{1}{3} \pi r^2 h$$

$$V = \frac{1}{3} \cdot \pi \cdot (3)^2 \cdot 5$$

$$V = \frac{1}{3} \cdot \pi \cdot 9 \cdot 5$$

$$V = 15 \pi \text{ in}^3$$

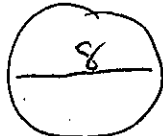
3) How much ice cream can fit inside a cone that has a diameter of 8 cm. and a height of 9 cm. Use 3.14 for π .



$$R = \frac{D}{2}$$

$$R = \frac{8}{2}$$

$$R = 4$$



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

$$V = \frac{1}{3} \cdot (3.14) (4)^2 \cdot 9$$

$$V = \frac{1}{3} \cdot (3.14) (16) \cdot 9$$

$$V = 150.72 \text{ cm}^3$$

write everything in display b/c it doesn't say what to round to

4) At the school carnival, popcorn is given out in paper treat cones like the one shown. Approximately how many cubic inches can each cone hold? Round your answer to the nearest whole number.



$$R = \frac{D}{2}$$

$$R = \frac{6}{2}$$

$$R = 3$$

$$R = 3$$



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

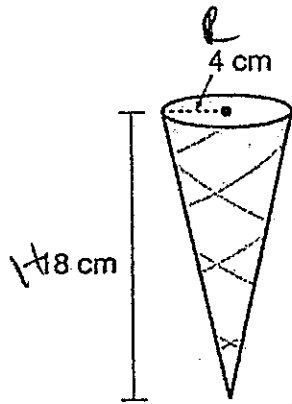
$$V = \frac{1}{3} \cdot (\pi) \cdot (3)^2 \cdot 10$$

$$V = \frac{1}{3} \cdot (\pi) \cdot 9 \cdot 10$$

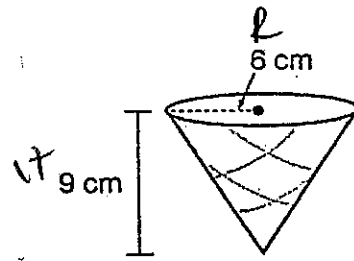
$$V = 94 \text{ in}^3$$

USE the (π) button b/c they didn't say what to use

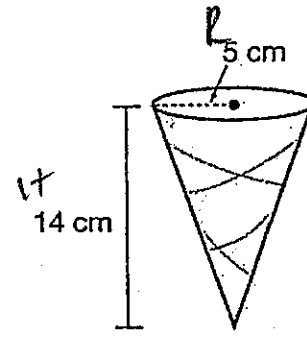
5) Isabella can choose one of three different cones for her ice cream. The dimensions of the cones are shown below.



Cone A



Cone B



Cone C

Isabella wants to choose the cone that holds the largest volume greatest amount of ice cream. Which cone should she choose? Cone C

Explain your answer Cone C has the greatest volume
therefore it can hold the most amount
of ice cream

Show your work:

★ USE the π button
 ★ write everything in the display
 B/c they don't say what to round to

Cone A	Cone B	Cone C
$V = \frac{1}{3} \pi r^2 h$ $V = \frac{1}{3} \cdot \pi \cdot (4)^2 \cdot 18$ $V = \frac{1}{3} \cdot \pi \cdot 16 \cdot 18$ $V = 301.5928947 \text{ cm}^3$	$V = \frac{1}{3} \pi r^2 h$ $V = \frac{1}{3} \cdot \pi \cdot (6)^2 \cdot 9$ $V = \frac{1}{3} \cdot \pi \cdot 36 \cdot 9$ $V = 339.2920066 \text{ cm}^3$	$V = \frac{1}{3} \pi r^2 h$ $V = \frac{1}{3} \cdot \pi \cdot (5)^2 \cdot 14$ $V = \frac{1}{3} \cdot \pi \cdot 25 \cdot 14$ $V = 366.5191429 \text{ cm}^3$