

SURFACE AREA AND VOLUME WORD PROBLEMS

a. Pyramid Word Problem

Surface area of Pyramid = Lateral area + Base Area

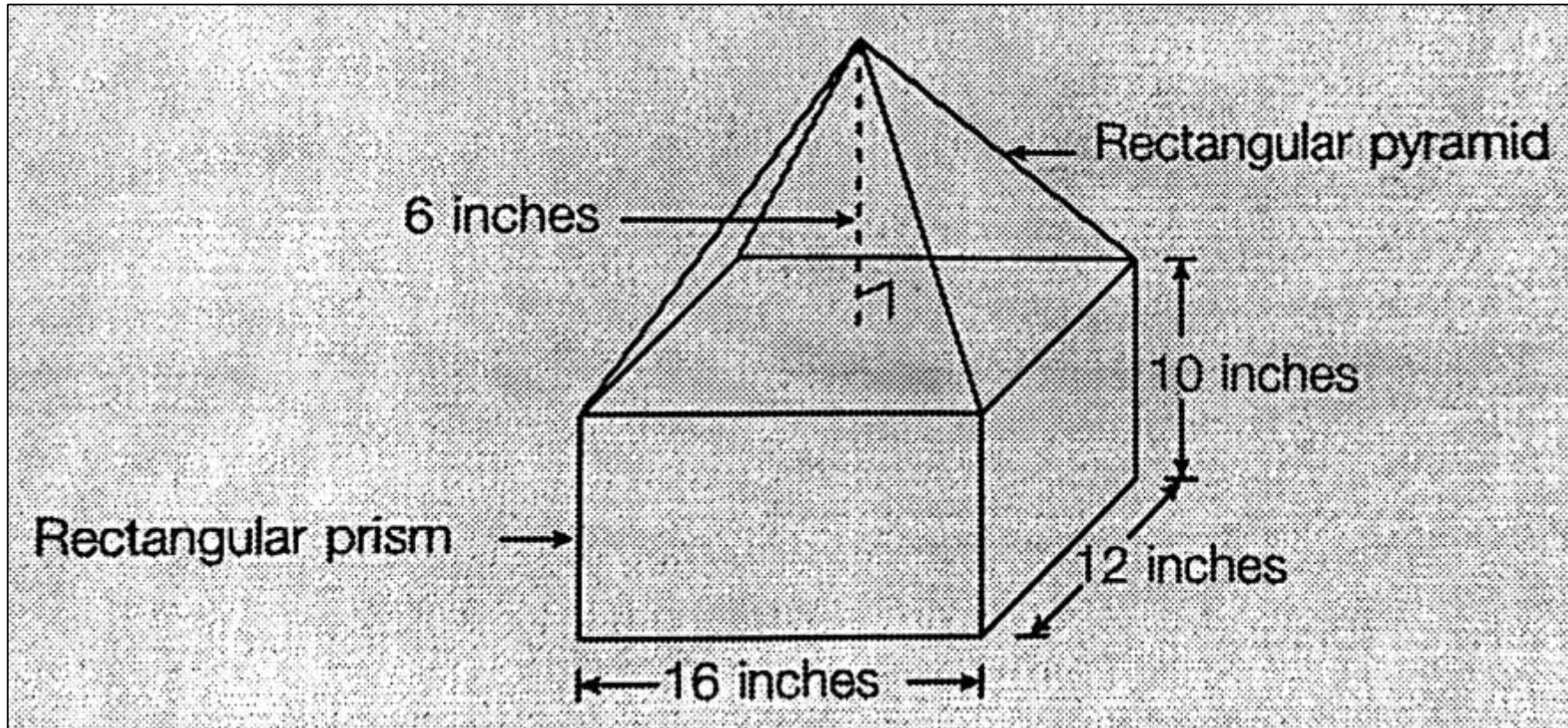
$$\text{Lateral area} = \frac{1}{2} \times \text{base length} \times \text{Slant Height}$$

$$\text{Volume of a Pyramid} = \frac{1}{3} \times \text{Base area} \times \text{Height}$$

Example 1: Use the figure below to answer the following questions.

1) What is the total painted area in square inches, if all the lateral faces are painted?

2) What is the volume of the three- dimensional figure in cubic inches?



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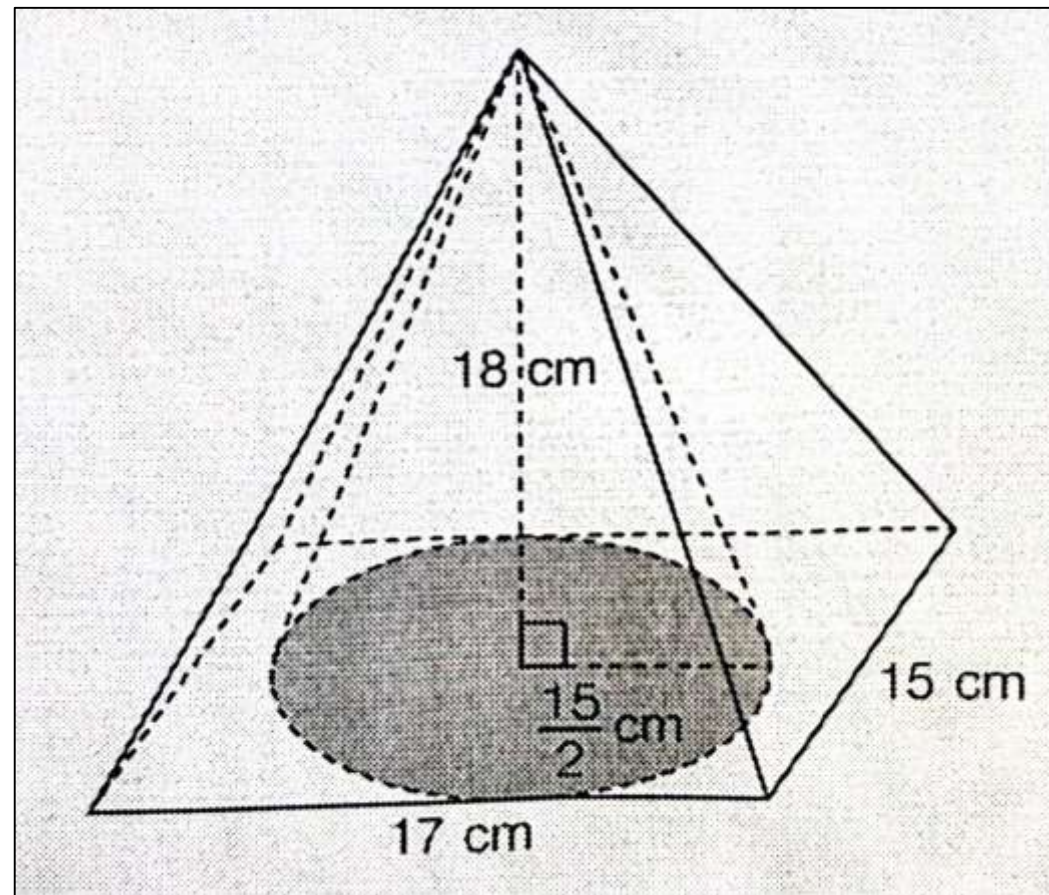
a. Cone Word Problem

$$\begin{aligned} \text{Surface area of a Cone} &= \text{Lateral area} + \text{Base Area} \\ &= \pi r \ell + \pi r^2 \end{aligned}$$

$$\text{Volume of a Cone} = \frac{1}{3} \pi r^2 h$$

- ℓ = slant height
- h = Height

Example 1: Find the volume of the biggest cone that can be put inside a rectangular pyramid and share a vertex. The pyramid is 18 centimeters high, and its rectangular base is 12 centimeters wide and 17 centimeters long. ($\pi \approx 3.14$)



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a. Sphere Word Problem

$$\text{Surface area of a Sphere} = 4\pi r^2$$

$$\text{Volume of a Sphere} = \frac{4}{3}\pi r^3$$

Where r represents the radius of the sphere

Example 1: Three spherical lead bullets with volumes of 36π , $\frac{256}{3}\pi$ and $\frac{500}{3}\pi$ cubic centimeters to smelt into a big spherical lead bullet. What is its radius?

Example 2: An oil tank is in spherical shape, with an outer radius of 1.5 metres. We will paint over the outer area of the tank, leaving an unpainted base area of 7.25 square metres. For this type of paint, 1 litre covers an area of about 2 square metres. How much paint in litres is needed to paint the oil tank? ($\pi \approx 3.14$)

Example 3: A hemispherical water bowl and a cone have the same diameter on their tops. The height of the cone is the same as the radius of the water bowl. How many times greater is the volume of the bowl than the cone's?

Example 3: Lead in the shape of a solid cylinder has a diameter of 6 centimetres and a thickness of 5 centimetres. If it is melted into spherical bullets with radius of 0.3 centimetres, what will the total number of bullets be?