

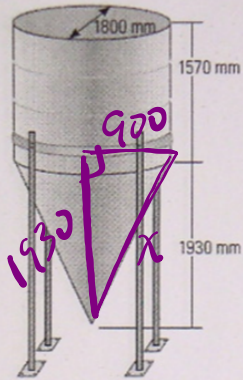
SURFACE AREA, VOLUME, AND CAPACITY

Review

Now that you have finished this chapter, you should be able to:

- Explain, using examples, the difference between volume and surface area.
 - Explain, using examples and nets, the relationship between area and surface area.
 - Estimate and calculate the surface area and volume of a three-dimensional object.
 - Explain, using examples, the difference between volume and capacity.
 - Convert a volume in one unit of measure, such as cm^3 , to another unit of measure, such as m^3 .
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- Describe the relationship between the volumes of cones and cylinders with the same base and height.
 - Describe the relationship between the volumes of pyramids and prisms with the same base and height.
 - Explain the effect a change in dimensions of a three-dimensional object has on its surface area and volume.

6. A steel storage silo for livestock feed pellets is shown below.



$r = 900$

$SA_{cylinder} = 2\pi r^2 + 2\pi rh$

$= \frac{\pi(900)^2}{1570} + 2\pi(900) \cdot 1570$
 11422830.89 mm^3

$SA_{cone} = \pi r^2 + \pi r s$

$= \frac{\pi(900)(2129.5)}{6021019.4}$

- a) What area of sheet steel is needed to fabricate the silo? Include a top cover.
- b) What is the area in square metres?

$x^2 = \sqrt{1930^2 + 900^2}$

$x = \sqrt{(1930^2 + 900^2)}$
 2129.530465

$SA_{TOTAL} \Rightarrow 11422830.89 + 6021019.4$

$17443850.293 \text{ mm}^2$

b) $17443850.29 \text{ mm}^2 \times \frac{1 \text{ m}}{1000 \text{ mm}}$

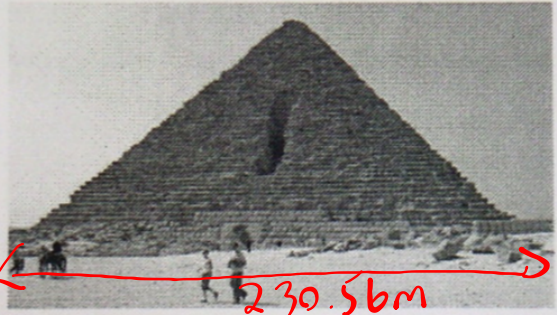
$= 17.4 \text{ m}^2$

(10)

10. The Great Pyramid at Giza in Egypt is 138.75 m high. Each side of the base has a length of 230.56 m.

a) Neglecting the volume of the inner chambers, what is the volume of stone used to build the pyramid?

b) Limestone weighs around 2.56 metric tonnes per cubic metre (1 metric tonne equals 1000 kg). Estimate the weight of the pyramid in tonnes.



Three main pyramids compose the Pyramids of Giza. The Great Sphinx is located nearby.

a)
$$V_{\text{pyramid}} = \frac{A_{\text{base}} \times \text{Height}}{3}$$

$$= \frac{230.56^2 \times 138.75}{3}$$

b)
$$2458553.5 \times 2.56$$

$$= 6293896.9 \text{ t}$$

$$= \frac{230.56^2 \times 138.75}{3}$$

$$= 2458553.504$$

$$= 2458553.5 \text{ m}^3$$

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b) $\frac{30067.7}{2250}$
 $\Rightarrow 13.4 \text{ kg}$

4. A bulk food bin in a supermarket, as shown in the diagram, contains coffee beans. The bottom has a sliding gate so that the beans can be poured into bags.

a) What is the volume of the bin?
 b) One kilogram of coffee beans has a volume of 2250 cm^3 . How many kilograms of coffee beans does the bin hold?

$$V_{(1)} = 25^2 \times 40 = 25000 \text{ cm}^3$$

$$V_{(2)} = \frac{25^2 \times 25}{3} = 5208.3 \text{ cm}^3$$

$$V_{(3)} = \frac{7.5^2 \times 7.5}{3} = 140.625$$

$V_{\text{Total}} \Rightarrow 30067.7 \text{ cm}^3$

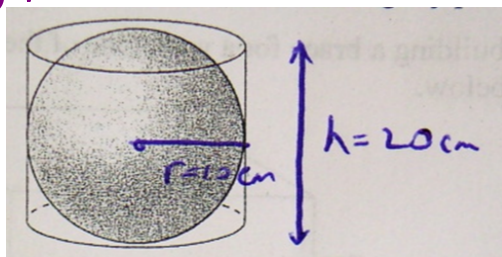
UNIT TEST is on FRIDAY!

- Sample Test

[Chapter 6 Sample Test.pdf](#) → omit #8

[Chapter 6 Sample Test Answers.pdf](#)

#5. Add these measurements



Attachments

Chapter 6 Sample Test Answers.pdf

Chapter 6 Sample Test.pdf