

Chapter 1 Review

1.1 1. Which imperial unit is best to measure each item below:
mile, yard, foot, or inch?

a) the distance between your locker and the front door of the school: yard feet

b) the width of a house: yard

c) the distance around a pop can: inch

2. Convert:

a) 84 ft. to yards

$$\underline{3} \text{ ft.} = 1 \text{ yd.}$$

$$84 \text{ ft.} = (\underline{84} \div \underline{3}) \text{ yd., or}$$

$$84 \text{ ft.} = \underline{\quad} \text{ yd.}$$

$$84 \text{ ft.} = \underline{28}$$

b) 9 ft. 7 in. to inches

$$1 \text{ ft.} = \underline{12} \text{ in.}$$

$$9 \text{ ft.} = \underline{9} \times \underline{12} \text{ in.}$$

$$9 \text{ ft.} = \underline{108}$$

Add the inches.

$$9 \text{ ft. 7 in.} = \underline{108} + \underline{7}$$

$$9 \text{ ft. 7 in.} = \underline{115}$$

See page 6 of the
Student Text for a
conversion chart.

1.2 3. For each object below:

- Describe how you measure it.
- Include the measuring device.
- State the imperial unit.
- State the SI unit.

a) the greatest distance around a fish bowl

Imperial unit: inch

SI unit: cm

Measuring device: tape measure

b) the width of your kitchen floor

Imperial unit: feet

SI unit: metre

Measuring device: meter stick

1.3 4. Convert:

a) 17 yd. to metres

$$1 \text{ yd.} \doteq 0.9144 \text{ m}$$

$$17 \text{ yd.} \doteq 17 \times 0.9144$$

$$17 \text{ yd.} \doteq 15.54$$

b) 68 mi. to kilometres

$$1 \text{ mi.} \doteq 1.609 \text{ km}$$

$$68 \text{ mi.} \doteq 68 \times 1.609$$

$$68 \text{ mi.} \doteq 109.41$$

See page 13 for a conversion chart.

5. Ryan drove 19 km to watch a lacrosse game. Julie drove 11 mi. to see the same game. Who drove farther?

Ryan drove: 19

Convert Julie's distance to kilometres.

$$1 \text{ mi.} \doteq 1.609$$

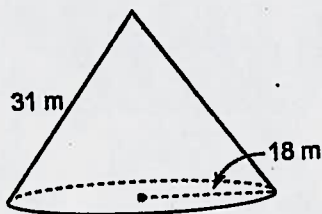
$$11 \text{ mi.} \doteq 11 \times 1.609$$

$$11 \text{ mi.} \doteq 17.7$$

Since Ryan is greater than 17.7, Ryan drove farther.

1.4 6. Find the surface area of each object, to the nearest square unit.

a) a right cone



For a cone:

$$SA = \pi r^2 + \pi rs$$

Substitute: $r = 18$ and $s = 31$

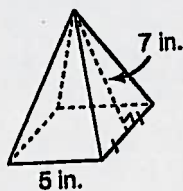
$$SA = \pi 18^2 + \pi (18 \times 31)$$

$$SA = 2770.88$$

The surface area is about: 2771

See page 27 for the formula for the surface area of a cone.

b) a square pyramid



For a square pyramid:

Area of base is: $l \times w (25)$

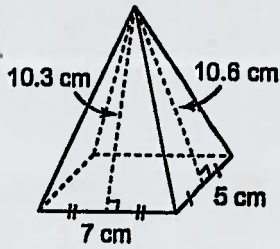
$$\text{Area of each triangular face is: } \frac{1}{2} \times 5 \times 7 = 17.5$$

$$\text{Area of all 4 faces is: } 4 \times 17.5 = 70$$

$$\text{The surface area of the pyramid is: } 25 + 70 = 95$$

The surface area is: 95 in²

7. Find the surface area of this rectangular pyramid.



For a rectangular pyramid:

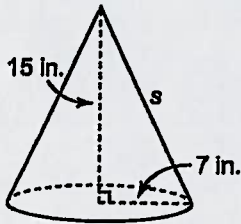
SA = area of rectangular base + area of each triangular face

$$7 \times 7 + 2\left(\frac{1}{2}\right)(7)(10.6) + 2\left(\frac{1}{2}\right)(7)(10.3)$$

$$49 + 53 + 72.1$$

The surface area of the pyramid is: 160.1

8. Is the surface area of this cone less than 500 square inches?



Find the slant height, s .

Use the Pythagorean Theorem.

$$s^2 = 15^2 + 7^2$$

$$s^2 = 274$$

$$s = 16.55$$

Find the surface area:

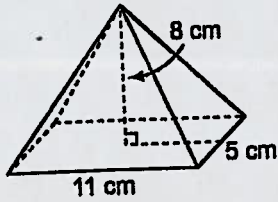
$$SA = \pi(7)^2 + \pi(7)(16.55)$$

Substitute: _____ = _____ and _____ = _____

The surface area of the cone is about: 517.89 in²

The surface area of the cone is bigger than 500 square inches.

1.5 9. Find the volume of this rectangular pyramid, to the nearest cubic centimetre.



See page 33 for the formula for the volume of a pyramid.

For a rectangular pyramid:

$$V = \frac{1}{3} (11 \times 5) (8)$$

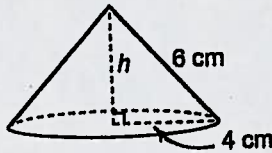
Substitute: _____ = _____, _____ = _____, _____ = _____

$$V = \frac{1}{3} (55) (8)$$

$$V = \underline{\hspace{2cm}}$$

The volume is about: 146.7 cm³

10. A bowl of sugar was knocked over. The spilled sugar formed this cone. How much sugar was in the pile?



Use the Pythagorean Theorem to find h.

$$6^2 = h^2 + 4^2$$

$$h^2 = 6^2 - 4^2$$

$$h^2 = \sqrt{36 - 16}$$

$$h = \underline{4.47}$$

Find the volume:

$$V = \frac{1}{3} (\pi \cdot 4^2) 4.47$$

Substitute: _____ = _____ and _____ = _____

$$V = \underline{\hspace{2cm}}$$

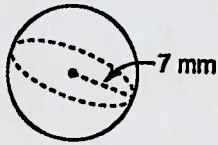
$$V = \underline{74.80}$$

There was about _____ of sugar in the pile.

See page 34 for the formula for the volume of a cone.

1.6 11. Find the surface area and volume of each object. Give the answers to the nearest whole number of units.

a) a sphere



See pages 40 and 41 for the formulas for a sphere.

For a sphere:

$$SA = 4\pi r^2$$

$$SA = \frac{4\pi}{1} 7^2$$

Substitute: =

$$SA = \underline{\hspace{2cm}}$$

The surface area is about: 615.75

$$V = \frac{4}{3}\pi r^3$$

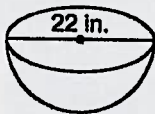
Substitute: =

$$V = \underline{\hspace{2cm}}$$

$$V = \underline{\hspace{2cm}}$$

The volume is about: 1436.76

b) a hemisphere



Radius is: 11

For a hemisphere:

$$SA = \frac{1}{2}(4\pi r^2)$$

Substitute: =

$$SA = \underline{\hspace{2cm}}$$

$$SA = \underline{\hspace{2cm}}$$

The surface area is about: 760.27

$$V = \frac{1}{2}\left(\frac{4}{3}\pi r^3\right)$$

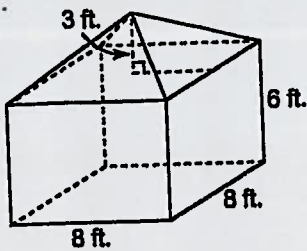
Substitute: =

$$V = \underline{\hspace{2cm}}$$

$$V = \underline{\hspace{2cm}}$$

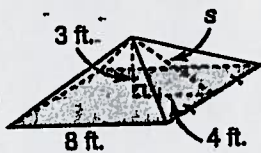
The volume is about: 2787.64

- 1.7 12. A garden shed has the shape of a square pyramid on top of a square prism. Both the pyramid and the prism have base side length 8 ft. The prism is 6 ft. high and the pyramid is 3 ft. high.



- a) Find the surface area of the shed. Do not include the base of the shed.

Let the slant height of the pyramid be s feet.



Surface area of square pyramid is the area of 4 triangular faces.

Find the slant height of the pyramid.

Use the Pythagorean Theorem.

$$s^2 = \frac{3^2 + 4^2}{1} = 9 + 16$$

$$s = \sqrt{25} = 5$$

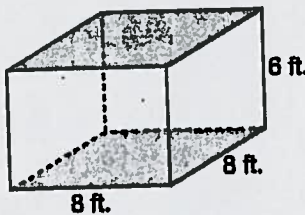
$$\text{Area of 1 triangular face is: } \frac{1}{2}(8 \times 5) = 20$$

$$\text{Area of 4 triangular faces is: } 4 \times 20 = 80$$

Add the surface areas.

$$\text{Total surface area is: } 20 + 60 = 80$$

$$\text{The surface area of the shed is: } \underline{\hspace{2cm}}$$



Surface area of square prism is the area of 4 rectangular faces.

Area of 1 rectangular face is:

$$8 \times 6 = 48$$

Area of 4 rectangular faces is:

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$4 \triangle = 4 \times 20 = 80$$

$$4 \square = 4 \times 48 = 192$$

$$\xrightarrow{\text{total}} \underline{272}$$

- b) How much space is inside the shed?

Find the volume of the shed.

Volume of square pyramid:

$$V = \frac{1}{3}(8)(8)(3)$$

$$\text{Substitute: } \underline{160}$$

$$V = \underline{\hspace{2cm}}$$

$$V = \underline{\hspace{2cm}}$$

$$\text{Total volume is: } \underline{160} + \underline{384} = \underline{544}$$

There is 544 of space in the shed.

Volume of square prism:

$$V = 8 \times 8 \times 6$$

$$\text{Substitute: } \underline{384}$$

$$V = \underline{\hspace{2cm}}$$

$$V = \underline{\hspace{2cm}}$$