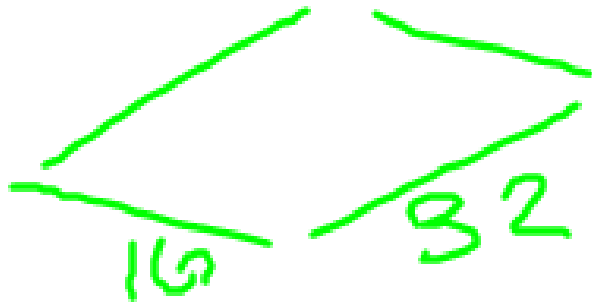


2. A rectangular swimming pool that is 32' by 16' lost a depth of about 1" of water due to evaporation. To the nearest cubic foot, what was the volume of water lost?



$$l = 32'$$

$$w = 16'$$

$$h = 1''$$

$$V = l \times w \times h$$

$$V = 16 \times 32 \times 0.0833$$

$$V = 42.6 \text{ ft}^3$$

$$V = 43 \text{ ft}^3$$

$$16 \text{ in} \times \frac{1 \text{ in}}{12 \text{ in}} = \frac{1}{12} = 0.0833 \text{ ft}$$

6. A meeting room in an office building has no windows. The room measures 8.5 m by 5.3 m by 3.2 m.

a) Calculate the volume of air in the room.

b) A circulation system draws approximately 3 m³ of air per minute. How long does it take to change all the air in the room?

$$\begin{aligned} a) \quad V &= l \cdot w \cdot h \\ &= (8.5 \text{ m})(5.3 \text{ m})(3.2 \text{ m}) \end{aligned}$$

$$V = 144.16 \text{ m}^3$$

$$b) \quad \frac{144.16 \text{ m}^3}{3 \text{ m}^3} = 48.05 \text{ min}$$

It takes approx. 48 min.

8. The surface area of a box is 108 cm^2 . The volume of the box is 72 cm^3 . Explain why surface area is measured in square units and volume is measured in cubic units.

S.A. has 2 dimensions

Vol. has 3 dimensions

9. Which scenario involves surface area and which involves volume? Explain how you know.

a) the amount of foam chips needed to fill a carton



b) the amount of spray paint needed to cover a vase

S.A.

3.2

Volume and Capacity

capacity

- the greatest amount that a container can hold
- measured in cubic units or units³



Capacity is how much a container **COULD** hold

Volume is how much a container **ACTUALLY** has

The imperial system using ounces, cups, pints, quarts, and gallons

Unit	Fluid Ounces	Cups	Pints	Quarts	Gallons
1 fluid ounce	1	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{32}$	$\frac{1}{128}$
1 cup	8	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{16}$
1 pint	16	2	1	$\frac{1}{2}$	$\frac{1}{8}$
1 quart	32	4	2	1	$\frac{1}{4}$
1 gallon	128	16	8	4	1

The SI system uses millilitres (mL) and litres (L)

$$1 \text{ L} = 1000 \text{ mL}$$

Sometimes we are going to need to convert between the two systems...

Imperial Unit	<u>Approximate SI Equivalent</u>
1 fluid ounce	30 mL
1 cup	250 mL
1 pint	500 mL
1 quart	1 L
1 gallon	4 L

SI Unit	<u>Approximate Imperial Equivalent</u>
10 millilitres	1/3 Fl ounce
250 millilitres	1 cup
500 millilitres	1 pint
1 litre	1 qt
2 litres	1/2 gallon

Convert Between Units

When travelling in the United States, you buy fuel by the gallon. Josh is in Minnesota. He filled up his rental car with gas. The display on the gas pump read 14.738 gallons.

- Approximately how many quarts of fuel did Josh purchase?
- Why might Josh want to know the number of quarts of gas that he purchased?



14.738 gallons
gallons \rightarrow quarts
big \rightarrow small

$$14.738 \times 4 = 58.952 \text{ qt.}$$

b) 1 qt = 4