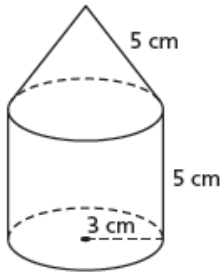


HOMWORK...

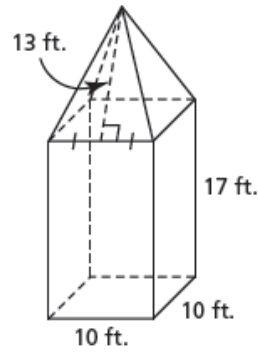


#1. Determine the surface area of each composite object to the nearest square unit.

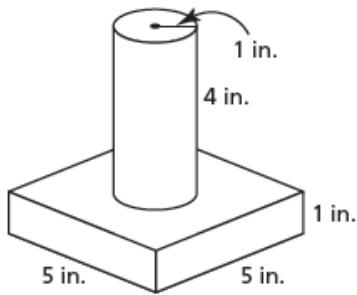
a) right cylinder and right cone



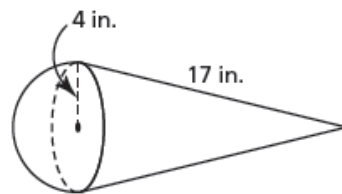
b) right square prism and right square pyramid



c) right square prism and right cylinder



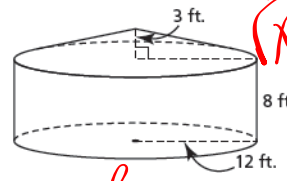
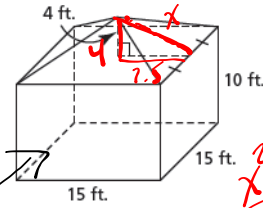
d) right cone and hemisphere



Solutions...
 #1. a) 170 cm^2 b) 1040 ft.^2
 c) 95 in.^2 d) 314 in.^2

#2. Here are two different grain storage bins.

Each storage bin has a cement base.
 The materials for the walls and roof of the square-based bin cost \$10.49 per square foot.
 The materials for the walls and roof of the circular-based bin cost \$9.25 per square foot.
 Which bin is cheaper to build? Justify your answer.



Square Prism

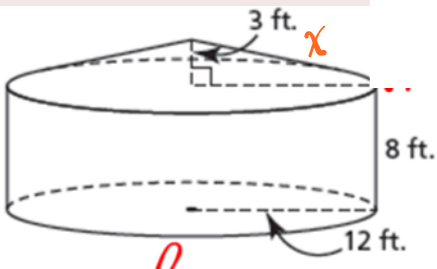
$[xy]_{10}$
 15
 $A = 15(10)$
 $A = 150$
 $SA_{\text{prism}} = 150(4)$
 $= 600 \text{ ft}^2$

Triangular Prism
 $A = \frac{15(8.5)}{2}$
 $A = 63.75$
 $SA_{\text{tri Prism}} = 63.75(4)$
 $= 255$

$x^2 = 4^2 + 7.5^2$
 $x^2 = 172.25$
 $x = 8.5$

$SA_{\text{total}} = 600 + 255$
 $= 855 \text{ ft}^2$

BEST | Cost $\Rightarrow 855 \times 10.49$
 $= \$8968.95$



$x = \sqrt{3^2 + 12^2}$

$x = 12.3$

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

$$\frac{2\pi(12)(8) + \pi(12)^2(12.3)}{1066.884865}$$
 $= 1066.9 \text{ ft}^2$

Cost $\Rightarrow 1066.9 \times 9.25$
 $= \$9868.69$

4.4 - Volume



Volume is the amount of space an object occupies. It is measured in cubic units.

Capacity is the amount of material a container holds. It is measured in cubic units or capacity units.

PROBLEMS... Different systems:

US and British units of volume are different. A US pint contains 16 US fl oz, while a British pint contains 20 British fl oz. US gallons and British gallons are also different: a US gallon equals 3.785 L, while a British gallon equals 4.54609 L.

Students can discuss the fact that an imperial cup is 284.13 mL; a metric cup is 250 mL in Canada, Australia, and New Zealand; a US legal cup is 240 mL; and a Japanese cup is 200 mL. Students can then create an international table of conversions to see what the recipe would look like in a different country.

FIGURE 4.2
Imperial Units of Volume and Capacity

<i>Unit</i>	<i>Abbreviation</i>
ounce	oz
fluid ounce	fl oz
pint	pt
quart	qt
gallon	gal

SI Units of Volume and Capacity

<i>Unit</i>	<i>Abbreviation</i>
liter	L
cubic meter	m ³

TABLE 1.5 Selected Prefixes Used in the Metric System

Prefix	Abbreviation	Meaning	Example
Giga	G	10 ⁹	1 gigameter (Gm) = 1 × 10 ⁹ m
Mega	M	10 ⁶	1 megameter (Mm) = 1 × 10 ⁶ m
Kilo	k	10 ³	1 kilometer (km) = 1 × 10 ³ m
Deci	d	10 ⁻¹	1 decimeter (dm) = 0.1 m
Centi	c	10 ⁻²	1 centimeter (cm) = 0.01 m
Milli	m	10 ⁻³	1 millimeter (mm) = 0.001 m
Micro	μ ^a	10 ⁻⁶	1 micrometer (μm) = 1 × 10 ⁻⁶ m
Nano	n	10 ⁻⁹	1 nanometer (nm) = 1 × 10 ⁻⁹ m
Pico	p	10 ⁻¹²	1 picometer (pm) = 1 × 10 ⁻¹² m
Femto	f	10 ⁻¹⁵	1 femtometer (fm) = 1 × 10 ⁻¹⁵ m

^aThis is the Greek letter mu (pronounced "mew").

Conversions in Capacity: SI vs Metric

CONVERTING COMMON COOKING UNITS	
<i>Imperial</i>	<i>SI</i>
¼ teaspoon	1.25 mL
½ teaspoon	2.5 mL
1 teaspoon	5 mL
1 tablespoon (3 teaspoons)	15 mL
1 cup	250 mL
1 pint	568.2614 mL
1 quart (2 pt)	1.1365 L
1 gallon (4 qt)	4.5461 L

CONVERTING US IMPERIAL TO SI UNITS	
<i>US Imperial</i>	<i>SI</i>
1 fl oz	29.5735 mL
1 pt = 16 fl oz	473.176 mL or 0.473 L
1 qt = 2 pt	946.352 mL or 0.946 L
1 gal = 4 qt	3785.4 mL or 3.785 L

NOTE: 1 L = 1000 mL
 1 kL = 1000 L
 1 cm³ = 1 mL

British

US

FORMULA/TABLE Sheet???

GMF 10 – Conversions & Formulas for Chapter 4

IMPORTANT CONVERSIONS...

SI Length		Imperial Length	
1 cm = 10 mm 1 m. = 100 cm 1 km = 1000 m	1 m = 1.0936 yd 1 mi. = 1.6093 km 1 in. = 2.54 cm	1 ft. = 12 in. 1 yd = 3 ft. 1 mi. = 1760 yd	SI Capacity: 1 L = 1000 mL 1 kL = 1000 L SI Volume: 1 cm ³ = 1 mL

CONVERTING COMMON COOKING UNITS	
<i>Imperial</i>	<i>SI</i>
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1 gal = 4 qt	3785.4 mL or 3.785 L

IMPORTANT SURFACE AREA FORMULAS...

$SA_{prism} = \text{Add area of all the faces}$

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

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

$SA_{pyramid} = A_{base} + (\text{area of the triangular faces})$

IMPORTANT VOLUME FORMULAS...

$V_{prism} = lwh$

$V_{cylinder} = \pi r^2 h$

EXAMPLES: Fill in the blanks...

a) 16 cups = 4 liters

$$\frac{4000 \text{ mL}}{4 \text{ L}} \times \frac{1 \text{ cup}}{250 \text{ mL}} =$$

b) 8 tablespoons = 120 milliliters

$$8 \text{ tbs} \times \frac{15 \text{ mL}}{1 \text{ tbs}} =$$

c) 6 US quarts = 5.7 liters

$$6 \text{ US qt} \times \frac{0.946 \text{ L}}{1 \text{ US qt}} =$$

d) 16 tsp = 5 1/3 tbsp

$$16 \text{ tsp} \times \frac{1 \text{ tbs}}{3 \text{ tsp}} =$$

e) 22.7 cups = 12 US pints

f) 10 fl oz = 1.2 cup

$$12 \text{ US pts} \times \frac{473.176 \text{ mL}}{1 \text{ pt}} \times \frac{1 \text{ cup}}{250 \text{ mL}} =$$

$$10 \text{ fl oz} \times \frac{29.5735 \text{ mL}}{1 \text{ fl oz}} \times \frac{1 \text{ cup}}{250 \text{ mL}} =$$

MORE EXAMPLES: Fill in the blanks...

a) 15.3 in³ = 250 mL

$$250 \text{ mL} \times \frac{1 \text{ cm}^3}{1 \text{ mL}} \times \frac{1 \text{ in}^3}{2.54^3 \text{ cm}^3}$$

b) 4 L = 1.1 US gal

$$4 \text{ L} \times \frac{1 \text{ US gal}}{3.785 \text{ L}}$$

c) 2.5 m³ = 2500 L

$$2.5 \text{ m}^3 \times \frac{100^3 \text{ cm}^3}{1 \text{ m}^3} \times \frac{1 \text{ mL}}{1 \text{ cm}^3} \times \frac{1 \text{ L}}{1000 \text{ mL}}$$

d) 20 US pints = _____ US quarts


e) _____ L = 12 Brit gal

f) 20 fl oz = _____ mL

HOMEWORK...

NOTE: Use US Imperial for pt, qt & gal

 Worksheet - Converting Volumes Imp_Metric.docx

 Worksheet - Converting Capacity in Imp.docx

Surface Area Quiz on Friday!

 GMF_10_-_Chp._4_Tables_and_Formulas.docx

*Do the
even #s*

Attachments

GMF_10_-_Chp._4_Tables_and_Formulas.docx

Worksheet - Converting Capacity in Imp.docx

Worksheet - Converting Volumes Imp_Metric.docx