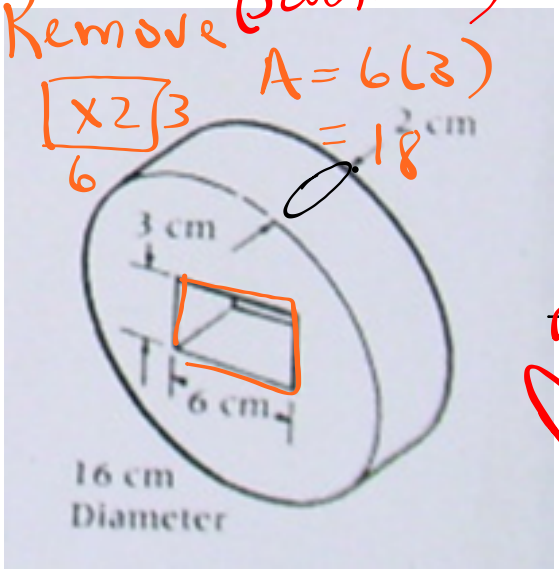
HW Questions (From Monday night)

Remove (Subtract)



x2 3 → 6

$A = 6(3)$

$= 18 \text{ cm}^2$

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

$= 2\pi(8)^2 + 2\pi(8)(2)$

$= 502.7 \text{ cm}^2$

ADD

x2 3 → 6

$A = 6(3)$

$A = 18$

x2 3 → 2

$A = 2(3)$

$A = 6$

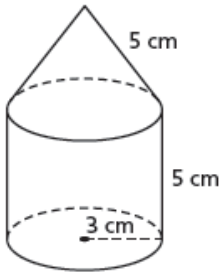
Surface Area Total

```
502.7+18(2)+6(2)
-18(2)
                514.7
```

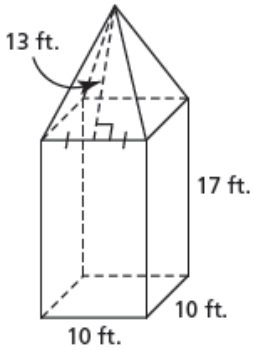
HOMEWORK...

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

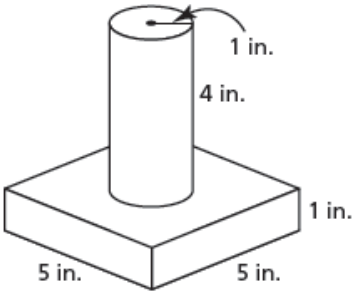
a) right cylinder and right cone



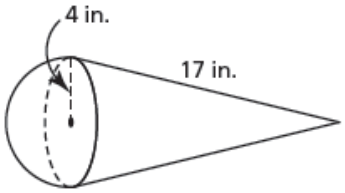
b) right square prism and right square pyramid



c) right square prism and right cylinder



d) right cone and hemisphere

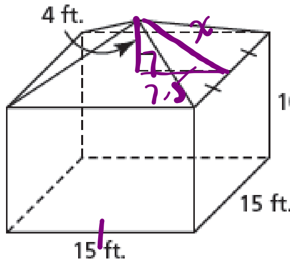


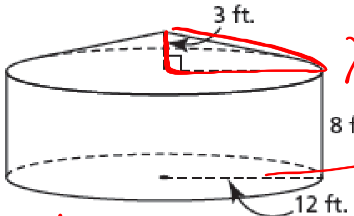
Solutions...

#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.





1.7 Solving Problems Involving Objects

Square Prism

$A = 15(10)$
$A = 150$

$x^2 = 4^2 + 7.5^2$
$\sqrt{x^2} = \sqrt{72.25}$
$x = 8.5$

$A = \frac{15(8.5)}{2}$
$A = 63.75$

$SA_{total} = 150(4) + 63.75(4)$
$= 855 \text{ ft}^2$

Cost ⇒ 855 × 10.49
$8968.95

Better

$x = \sqrt{3^2 + 12^2}$
$x = 12.4$

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

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

$SA_{total} = 2\pi(12)(8) + \pi(12)(12.4)$
$= 1070.7 \text{ ft}^2$

Cost ⇒ 1070.7 × 9.25
$9903.56

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

Unit	*Abbreviation*
ounce	oz
fluid ounce	fl oz
pint	pt
quart	qt
gallon	gal

SI Units of Volume and Capacity	
Unit	*Abbreviation*
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) $= 1 \times 10^9$ m
Mega	M	10^6	1 megameter (Mm) $= 1 \times 10^6$ m
Kilo	k	10^3	1 kilometer (km) $= 1 \times 10^3$ 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) $= 1 \times 10^{-6}$ m
Nano	n	10^{-9}	1 nanometer (nm) $= 1 \times 10^{-9}$ m
Pico	p	10^{-12}	1 picometer (pm) $= 1 \times 10^{-12}$ m
Femto	f	10^{-15}	1 femtometer (fm) $= 1 \times 10^{-15}$ m

[a]This is the Greek letter mu (pronounced "mew").

Conversions in Capacity: SI vs Metric

CONVERTING COMMON COOKING UNITS

Imperial	*SI*
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

British

CONVERTING US IMPERIAL TO SI UNITS

US Imperial	*SI*
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

US

NOTE: 1 L = 1000 mL
1 kL = 1000 L
1 cm^3 = 1 mL

FORMULA/TABLE Sheet???

GMF 10 – Conversions & Formulas for Chapter 4

IMPORTANT CONVERSIONS...

SI Length ⟷ Imperial Length

SI Length		Imperial Length
1 cm = 10 mm	1 m = 1.0936 yd	1 ft. = 12 in.
1 m. = 100 cm	1 mi. = 1.6093 km	1 yd = 3 ft.
1 km = 1000 m	1 in. = 2.54 cm	1 mi. = 1760 yd

SI Capacity: 1 L = 1000 mL
1 kL = 1000 L
SI Volume: 1 cm^3 = 1 mL

1m = 3.2808 ft

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British

IMPORTANT SURFACE AREA FORMULAS...

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

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

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

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

IMPORTANT VOLUME FORMULAS...

$V_{prism} = lwh$

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

EXAMPLES: Fill in the blanks...

a) 16 cups = 4 liters

b) 8 tablespoons = 120 milliliters

c) 6 US quarts = 5.7 liters

d) 16 tsp = $5\frac{1}{3}$ tbsp $\frac{16}{3} = 5\frac{1}{3}$

e) 22.7 cups = 12 US pints

f) 10 fl oz = 1.2 cup

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

a) $4\ \text{L} \times \frac{1000\ \text{mL}}{1\ \text{L}} \times \frac{1\ \text{cup}}{250\ \text{mL}}$

b) $8\ \text{tbsp} \times \frac{15\ \text{mL}}{1\ \text{tbsp}}$

c) $6\ \text{US gts} \times \frac{0.946\ \text{L}}{1\ \text{gts}}$

d) $16\ \text{tsp} \times \frac{1\ \text{tbsp}}{3\ \text{tsp}}$

e) $12\ \text{US pts} \times \frac{473.176\ \text{mL}}{1\ \text{pts}} \times \frac{1\ \text{cup}}{250\ \text{mL}}$

MORE EXAMPLES: Fill in the blanks...

a) 15.3 in^3 = 250 ~~mL~~ cm^3

b) 4 L = 1.1 US gal

c) 2.5 m^3 = 2500 L

d) 20 US pints = _____ US quarts

e) _____ L = 12 Brit gal

f) 20 fl oz = _____ mL

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

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

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

HOMEWORK...

NOTE: Use US Imperial for pt, qt & gal

Worksheet - Converting Volumes Imp_Metric.docx

Worksheet - Converting Capacity in Imp.docx

Do the even #'s

Surface Area Quiz on Monday

GMF_10_-_Chp._4_Tables_and_Formulas.docx

Attachments

GMF_10_-_Chp._4_Tables_and_Formulas.docx

Worksheet - Converting Capacity in Imp.docx

Worksheet - Converting Volumes Imp_Metric.docx