Curriculum Outcome

M1 Demonstrate an understanding of the Système International (SI) by describing the relationships of the units for length, <u>area, volume, capacity</u>, mass and temperature.

M2 Demonstrate an understanding of the Imperial system by: describing the relationships of the units for length, <u>area, volume, capacity,</u> mass and temperature.

M3 Solve problems, using SI and Imperial units, that involve linear measurement using estimation and measurement strategies.

Student Friendly: The relationship between area and volume such as

1 m = 1.0936 yd

1 m = 3.2808 ft

1 mi= 1.6093 km
1 in = 2.54 cm

Worksheets:

a) $523.6\,in^3$

    $8580.25\,cm^3$

b) $64\,Km^3$

    $6.4 \times 10^{16}\,cm^3$

c) $628.3\,yd^3$

$480 \quad 387 \quad 341.6\,cm^3$

d) $83.78\,cm^3$

e) $0.928\,mi$

$5.33 \times 10^{14}\,cm^3$

f) $86\,mm^3$

$0.086\,cm^3$

h) $107.5\,cm^3$

g) $48.5\,ft^3$

$1\,373\,367\,cm^3$

or

$1\,373\,417\,cm^3$

+----------------------------------

4.4 - Volume

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.

Must Know

FIGURE 4.2

Imperial Units of Volume and Capacity

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

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

SI Capacity: 1 L = 1000 mL

1 kL = 1000 L

SI Volume: $1\ cm^3 = 1$ mL

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

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½ teaspoon	2.5 mL
1 teaspoon	5 mL
1 tablespoon (3 teaspoons)	15 mL
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B

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US

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 = ____5.679____ liters

d) 16 tsp = ____5 ⅓____ tbsp

e) ____22.7____ cups = 12 US pints

f) 10 fl oz = ____1.2____ cup