Oct 1 H/W + Volume/Capacity Questions 1a,b,d, 4, 5, 7 (sheet from Sept 30)

Name : _____ Score : _____

Teacher : _____ Date : _____

Converting English and Metric

1) _____ teaspoons = 6 milliliters

2) 1 gallons = _____ liters

3) _____ cubic feet = 14 cubic meters

4) _____ quarts = 11 liters

5) _____ cubic yards = 21 cubic meters

6) 5 quarts = _____ liters

7) 15.5 cups = _____ liters

8) _____ cubic inches = 8 milliliters

9) _____ cubic yards = 1.5 cubic meters

10) 12.5 cubic feet = _____ cubic meters

11) _____ cubic feet = 20.5 cubic meters

12) _____ cups = 15 liters

13) _____ cubic inches = 11.5 milliliters

14) 3 teaspoons = _____ milliliters

15) _____ quarts = 4 liters

16) 7.5 cups = _____ liters

17) 19.5 cubic inches = _____ milliliters

18) 3.5 cubic yards = _____ cubic meters

19) 17 tablespoons = _____ milliliters

20) 25 gallons = _____ liters

Geometry, Measurement and Finance 10 – Conversions & Formulas

SI Length ⟷ Imperial Length

1 cm = 10 mm
1 m. = 100 cm
1 km = 1000 m

2.54 cm = 1 in
1 m = 3.2808 ft
1 m = 1.0936 yd
1.6093 km = 1 mi

1 ft. = 12 in.
1 yd = 3 ft.
1 mi. = 1760 yd

SI (metric)... ⟷ Imperial...

1 g = 1000 mg
1 kg = 1000 g
1 t = 1000 kg

28.4 g = 1 oz
1 kg = 2.2 lbs
1 t = 1.1 tn

1 lb = 16 oz
1 tn = 2000 lb

$1\ m^3 = 1000\ L$

$1\ m = 3.2808\ ft$

SI Capacity: 1 L = 100 mL
1 kL = 1000 L

SI Volume: $1\ cm^3 = 1\ mL$
$1000\ cm^3 = 1\ L$
$1\ m^3 = 1000\ L$

TEMPERATURE CONVERSIONS...

$$C = \frac{5}{9}(F - 32)$$

$$F = \frac{9}{5}C + 32$$

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

Pythagorean Theorem...

$$c^2 = a^2 + b^2$$

SURFACE AREA FORMULAS...

$SA_{prism} = 2 \times A_{base} + \textit{Area of the rectangular lateral faces}$

$SA_{pyramid} = A_{base} + \textit{Area of the triangular lateral faces}$

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

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

$SA_{sphere} = 4\pi r^2$

VOLUME FORMULAS...

$V_{prism} = A_{base} \times height$

$V_{pyramid} = \dfrac{A_{base} \times height}{3}$

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

$V_{cone} = \dfrac{\pi r^2 h}{3}$

$V_{sphere} = \dfrac{4}{3}\pi r^3$

Oct 2 - H/W

Name : _____ Score : _____

Teacher : _____ Date : _____

Liquid Measure Quiz

1) 12 tsp = _____ tbsp

2) 8 cups = _____ fl oz

3) 4 pints = _____ gallon

4) _____ quart = 1/4 gallon

5) 4 cups = _____ quart

6) _____ tbsp = 1/2 cup

7) 1 gallon = _____ fl oz

8) _____ cups = 1 gallon

9) 3 tsp = _____ tbsp

10) _____ cups = 8 pints

11) _____ cups = 1 pint

12) 2 pints = _____ quarts

13) _____ pint = 8 fl oz

14) 2 cups = _____ fl oz

15) _____ cups = 2 pints

16) 1/2 quart = _____ fl oz

17) _____ tsp = 1/2 fl oz

18) _____ cup = 8 fl oz

19) _____ cup = 2 fl oz

20) 8 pints = _____ gallon

Oct 2-H/W

Name : _____ Score : _____

Teacher : _____ Date : _____

Converting English and Metric

1) _____ inches = 21 centimeters

2) 10 mph = _____ kmph

3) _____ miles = 14.5 kilometers

4) 13 gallons = _____ liters

5) _____ quarts = 3 liters

6) 9 cups = _____ liters

7) 9.5 teaspoons = _____ milliliters

8) 19.5 square inches = _____ square centimeters

9) 8 cups = _____ liters

10) _____ cubic inches = 3.5 milliliters

11) _____ cubic inches = 7.5 milliliters

12) 10.5 gallons = _____ liters

13) _____ feet = 5 meters

14) _____ cubic feet = 2 cubic meters

15) _____ teaspoons = 6 milliliters

16) _____ cubic yards = 12 cubic meters

17) _____ square inches = 1 square centimeters

18) 19 yards = _____ meters

19) 20 fluid ounces = _____ milliliters

20) 15 cubic feet = _____ cubic meters

Oct 2 - H/W

Applications...Conversions

1. A baker needs to double a recipe that requires 3 cups of milk, but he only has SI measuring utensils. How many mL of milk will he need?

2. A convenience store in the US sells 4 different sizes of slushy drinks: 12 US fl oz, 16 US fl oz, 28 US fl oz, and 40 US fl oz. What would be the equivalent sizes in millilitres? Do the millilitre sizes correspond to the drink sizes in your neighbourhood?

3. Anne-Laure is a toy manufacturer. She imported a supply of boxes from the US with the dimensions 12″ × 6″ × 8″. She needs a box for a game that measures 20 cm × 11 cm × 16 cm. Will the game fit in the boxes she imported?

4. An American tourist has crossed the Canadian border. His vehicle has a 15-US gallon capacity and he has $\frac{1}{8}$ tank of gas left. If the price of gas is \$1.10 a litre, how much will it cost him to fill his tank?

5. Everett owns and operates an auto repair shop. He wants to pour a concrete pad 24′ × 22′ × 4″ in front of the garage. J & L Concrete sells concrete for \$145.00/yd^3 and M & W Concrete sells concrete for \$165.00/m^3. How much will each company charge? Which company should Everett buy his concrete from?

SOLUTIONS...

1. 750 mL
2. 12 US fl oz = 355 mL
   16 US fl oz = 474 mL
   28 US fl oz = 829 mL
   40 US fl oz = 1184 mL
3. Yes, the game will fit in the box.
4. \$55.00
5. J & L Concrete: \$931.48;
   M & W Concrete: \$823.35.
   Everett should buy from M & W concrete.

4.2 VOLUME

BUILD YOUR SKILLS, PAGE 182

Oct 1

EXERCISE: Fill in the blanks...

a) 16 cups = 4 liters $4\ell \times \frac{1000ml}{\ell} \times \frac{1c}{250ml}$

b) 8 tablespoons = 120 milliliters $8T \times \frac{15ml}{1T}$

c) 6 quarts = 5.7 liters $6qt \times \frac{0.946\ell}{qt} = 5.7\ell$

d) 16 tsp = 5.3 tbsp $16t \times \frac{1T}{3t} = 5.3T$

e) 22.7 cups = 12 pints $12pt \times \frac{473.176ml}{pt} \times \frac{1c}{250ml} = 22.7c$

f) 10 fl oz = 1.2 cup

$10floz \times \frac{29.5735ml}{floz} \times \frac{1c}{250ml} = 1.2c$

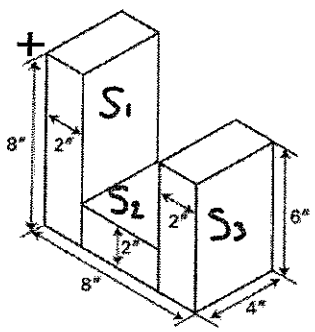
Feb 28-8:06 AM

Oct 2

Volume/Capacity Applications

EXAMPLE #1...

11. Matthew was hired to produce 25 pairs of plastic bookends using the dimensions shown in the diagram below. The bookends will be constructed using an injection mould. Determine the cost of 25 pairs of bookends if the cost of plastic is $15.25 a cubic foot.



$V_{S_1} = lwh = (2)(4)(8) = 64in^3$

$V_{S_2} = lwh = (2)(4)(4) = 32in^3$

$V_3 = lwh = (2)(6)(4) = 48in^3$

$V_T = (64+32+48) \times 50 = 7200in^3$

$Cost = \$15.25 \times \left(\frac{ft}{12in}\right)^3 \times 7200in^3$

$= \$63.54$

$7200in^3 \times \left(\frac{1ft}{12in}\right)^3$

$= 4.17 \times 15.25$

$\$63.54$

Conversions in Volume: SI vs Metric

Ex #1: Convert 89 250 cm^3 to m^3.

$$89\,250\,cm^3 \times \left(\frac{m}{100\ cm}\right)^3 = 0.089250\,m^3$$

Oct 2

Ex #2: Convert 12 m^3 to yd^3.

$$12\,m^3 \times \left(\frac{1.0936\ yd}{m}\right)^3 = 15.7\,yd^3$$

Ex #3: Convert 2000 ft^3 to m^3.

$$2000\,ft^3 \times \left(\frac{1\ yd}{3\ ft}\right)^3 \times \left(\frac{1\ m}{1.0936\ yd}\right)^3 = 56.6\,m^3$$

Sep 20-9:50 PM

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

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

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

EXERCISE: Fill in the blanks...

a) __16__ cups = 4 liters

$$4\,l \times \frac{1000\ ml}{l} \times \frac{1\ c}{250\ ml}$$

b) 8 tablespoons = _____ milliliters

c) 6 quarts = _____ liters

d) 16 tsp = _____ tbsp

e) _____ cups = 12 pints

f) 10 fl oz = _____ cup

EXAMPLE #2...

The gas tank of Rory's car can hold 60 litres of gas.

a) Rory is travelling in Colorado, USA, and needs to fill up his tank. The cost of gas is $3.49/gallon. How much will it cost him to fill up, assuming the tank is completely empty?

b) If Rory took the same car to England, where gas costs $8.01/gal, how much would it cost him to fill up the tank?

Oct 2

$$60\,l \times \frac{1\ gal}{3.785\ l} \times \frac{\$3.49}{1\ gal} = \$55.32$$

England

$$60\,l \times \frac{1\ gal}{4.5461\ l} \times \frac{\$8.01}{1\ gal} = \$105.72$$

Mar 3-8:14 AM

EXAMPLE #3...

Gwen is following a recipe for pancakes that calls for 10 cups of flour, $1\frac{1}{4}$ cups of sugar, and 2.5 tsp of baking soda. What will the total volume of the dry goods be in mL if she makes a double batch?

Oct 2

$$11.25c \times \frac{250\ ml}{1\ c} = 2812.5\ ml$$

$$2.5t \times \frac{5\ ml}{t} = 12.5\ ml$$

$$V_T = (2812.5 + 12.5)2$$
$$= 5650\ ml$$

EXAMPLE #4...

A new Nissan car is advertising a fuel consumption rating of 8.2 L / 100 km. The imperial system uses a rating of miles/gallon. Determine the fuel consumption of the car in mi/gal.

$$\frac{8.2\ l}{100\ Km}$$

$$\frac{100\ Km}{8.2\ l} \times \frac{1\ mi}{1.6093\ Km} \times \frac{3.785\ l}{1\ gal} = 28.7\ mi/gal$$

Sep 20-10:42 PM

HOMEWORK

Textbook

Page 182 1-~~8~~ 6 ✓

Melanie

Curriculum Outcome

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

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

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

Student Friendly: The relaonship between area and volume such as

1 m = 1.0936 yd

1 m = 3.2808

1 mi= 1.6093 km
1 in = 2.54 cm

Sep 7-2:50 PM

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: 1L = 1000 mL

1 kL = 1000 L

SI Volume: 1 cm^3 = 1 mL

FORMULA/TABLE Sheet???

MORE EXAMPLES: Fill in the blanks...

a) _____ in^3 = 250 mL

b) 4 L = _____ US gal

c) 2.5 m^3 = _____ L

d) 20 US pints = _____ US quarts

e) _____ L = 12 Brit gal

f) 20 fl oz = _____ mL

Oct 2

Sep 24-11:27 AM

a) _____ in^3 = 250 mL

$$250\,\cancel{mL} \times \frac{1\ cm^3}{1\ \cancel{mL}} \times \left[\frac{1\ in}{2.54\ cm}\right]^3$$

$$\boxed{= 15.3\ in^3}$$

b) 4 L = _____ US gal

$$4L \times \frac{1\ gal}{3.785\ L} = 1.1\ us\ gal.$$

c) 2.5 m^3 = 2500 L

$$2.5\,m^3 \times \left[\frac{100\ cm}{1\ m}\right]^3 \times \frac{1\ ml}{1\ cm^3} \times \frac{1\ L}{1000\ ml}$$

d) 20 US pints = _____ US quarts

$$20\ pt \times \frac{1\ qt}{2\ pt} = 10\ qt$$

0652

Sep 29-11:20 AM

e) _____ L = 12 Brit gal

$$12\ gal \times \frac{4.546\ L}{1\ gal} = 54.6\ L$$

f) 20 fl oz = _____ mL

$$20\ fl.oz \times \frac{29.573\ ml}{1\ fl.oz} = 591\ ml.$$

Name : _____ Score : _____
Teacher : _____ Date : _____

Converting English and Metric

British
US

1) _____ teaspoons = 6 milliliters
B 2) 1 gallons = liters
3) _____ cubic feet = 14 cubic meters
US 4) 2 quarts = milliliters
5) _____ cubic yards = 21 cubic meters
B 6) 2 gallons = liters
B 7) 15.5 cups = liters
8) _____ cubic inches = 8 milliliters
9) _____ cubic yards = 1.5 cubic meters
10) 12.5 cubic feet = _____ cubic meters
11) _____ cubic feet = 20.5 cubic meters
B 12) 2 cups = 5 liters
13) _____ cubic inches = 11.5 milliliters
14) 3 teaspoons = _____ milliliters
B 15) 2 quarts = 1 liters
16) 7.5 cups = _____ liters
17) 19.5 cubic inches = _____ milliliters
18) 3.5 cubic yards = _____ cubic meters
19) 17 tablespoons = _____ milliliters
US 20) 2 fl oz = milliliters

Geometry, Measurement & Finance 10 MathAids.Com

Sep 29-9:18 AM

Name : _____ Score : _____
Teacher : _____ Date : _____

Liquid Measure Quiz

British
US

1) 12 tsp = _____ tbsp
B 2) 8 cups = _____ fl oz
B 3) 2 pints = _____ gallon
US 4) _____ quart = 1/4 gallon
B 5) 4 cups = _____ quart
6) _____ tbsp = 1/2 cup
US 7) _____ gallon = _____ fl oz
B 8) _____ cups = 1 gallon
B 9) 3 tsp = _____ tbsp
B 10) _____ cups = 8 pints
B 11) _____ cups = 1 pint
US 12) 2 pints = _____ quarts
US 13) 1 gallon = 2 quarts
US 14) 1/2 cup = _____ tbsp
B 15) _____ cups = 2 pints
16) 1/2 quart = _____ fl oz
17) _____ tsp = 1/2 fl oz
18) _____ cup = 8 fl oz
19) _____ cup = 2 fl oz
20) 8 pints = _____ gallon

Geometry, Measurement & Finance 10 MathAids.Com

SOLUTIONS...

Worksheet - Converting Capacity in Imp.docx

Name : _____ Score : ____

Teacher : _____ Date : ____

Liquid Measure Quiz

1) 12 tsp = 4 tbsp

2) 8 cups = 64 fl oz

3) 4 pints = 1/2 gallon

4) 1 quart = 1/4 gallon

5) 4 cups = 1 quart

6) 8 tbsp = 1/2 cup

7) 1 gallon = 128 fl oz

8) 16 cups = 1 gallon

9) 3 tsp = 1 tbsp

10) 16 cups = 8 pints

11) 2 cups = 1 pint

12) 2 pints = 1 quarts

13) 1/2 pint = 8 fl oz

14) 2 cups = 16 fl oz

15) 4 cups = 2 pints

16) 1/2 quart = 16 fl oz

17) 3 tsp = 1/2 fl oz

18) 1 cup = 8 fl oz

19) 1/4 cup = 2 fl oz

20) 8 pints = 4 gallon

Geometry, Measurement & Finance 10 © Math

Sep 21-4:44 PM