Course: MFM2P Gr. 10 Applied **Lesson: 2**

Unit: Measurement Systems and Similar Triangles **Topic: Imperial Measure**

- ***homework check:*** **FM10 p. 4 # 1 - 5**

- ***note:*** **Imperial Measure**

The metric system is Canada's official measurement system and is based on multiples of ten. The imperial system of measurement is based on British units and requires memorizing the different ways and multiples in order to change measurements. Use of conversion charts/tables is necessary in order to convert measures with which we are unfamiliar. Refer to the conversion charts/tables in your handout to complete the following examples. **Keep this handout in a safe place in order to use it throughout the unit!**

a) How many ounces are in 4.5 gallons?

From the volume/capacity chart:

1 gallon(gal) = 8 pints(pt)

1 pt = 20 ounces (oz)

$4.5 \times 8 =$

$= 36\,pt$

$36 \times 20 =$

$= 720oz$

There are 720 ounces in 4.5 gallons.

b) How many tablespoons are in 7.3 quarts?

From the imperial liquid/capacity chart:

2 tablespoons(tbls) = 1 oz

20 oz = 1 pint

2 pt = 1 quart

$7.2 \times 2 =$

$= 14.6\text{pints}$

$14.6 \times 20 =$

$= 292oz$

$292 \times 2 =$

$= 584tbsp$

c) How much will Carrie pay for flooring her room that is 16ft by 20ft if flooring costs $12.95 / square yd?

Area of room:

$16 \times 20 =$

$= 320\,ft^2$

From Imperial/USA Area chart:

9 square feet = 1 square yd

$$\frac{320}{9} =$$

$$= 35.6 yd^2$$

Cost:

$$35.6 \times 12.95 =$$

$$= \$461.02$$

The room costs $461.02 to floor.

- ***homework:*** **<u>FM 10</u> p. 9 # 2, 4, 6, 8, 10, 12, 15 - 17**

Metric Imperial Conversion Charts/Tables

Metric length		
10 millimeters	=	1 centimeter
10 centimeters	=	1 decimeter
10 decimeters	=	1 meter
10 meters	=	1 decameter
10 decameters	=	1 hectometer
10 hectometers	=	1 kilometer (1000 meters)

Imperial/USA Length		
12 inches	=	1 foot
3 feet	=	1 yard
22 yards	=	1 chain
10 chains	=	1 furlong
8 furlongs	=	1 mile (5280 feet)

Metric area		
100 square mm	=	1 square centimeter
10000 square cm	=	1 square meter
100 square m	=	1 are
10 ares	=	1 hectare
100 hectares	=	1 square kilometer
1 square kilometer	=	1000000 square meters

Imperial/USA area		
144 square inches	=	1 square foot
9 square feet	=	1 square yard
4840 square yards	=	1 acre
640 acres	=	1 square mile

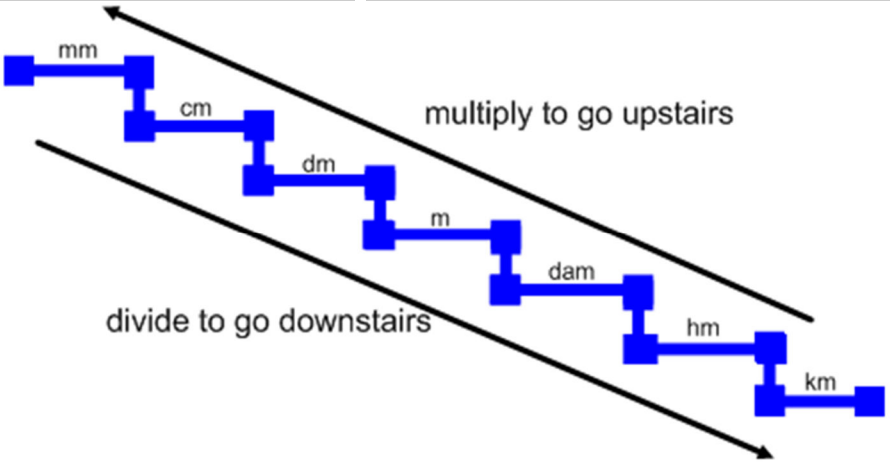
Metric mass		
1000 grams	=	1 kilogram
1000 kilograms	=	1 ton

UK shows United Kingdom Measure

Imperial/USA weight		
16 ounces	=	1 pound
14 pounds	=	1 stone (UK)
8 stones (UK)	=	1 hundredweight (UK)
1 hundredweight (UK)	=	112 pounds (UK)
100 pounds	=	1 hundredweight (USA)

Metric capacity		
10 milliliters	=	1 centilitre
10 centiliters	=	1 decilitre
10 deciliters	=	1 litre
1000 liters	=	1 cubic meter

Imperial liquid capacity		
2 teaspoons	=	1 dessertspoon
3 teaspoons	=	1 tablespoon
2 tablespoons	=	1 fluid ounce
5 fluid ounces	=	1gill
2 gills	=	1 cup
2 cups	=	1 pint
1 pint	=	20 fluid ounces
2 pints	=	1 quart
4 quarts	=	1 gallon



Metric Imperial Conversion Charts/Tables

Length

Metric			Imperial
1 millimetre [mm]		→	0.03937 in
1 centimetre [cm]	10 mm	→	0.3937 in
1 metre [m]	100 cm	→	1.0936 yd
1 kilometre [km]	1000 m	→	0.6214 mile

Imperial			Metric
1 inch [in]		→	2.54 cm
1 foot [ft]	12 in	→	0.3048 m
1 yard [yd]	3 ft	→	0.9144 m
1 mile	1760 yd	→	1.6093 km
1 int nautical mile	2025.4 yd	→	1.853 km

Area

Metric			Imperial
1 sq cm [cm^2]	100 mm^2	→	0.1550 in^2
1 sq m [m^2]	10,000 cm^2	→	1.1960 yd^2
1 hectare [ha]	10,000 m^2	→	2.4711 acres
1 sq km [km^2]	100 ha	→	0.3861 $mile^2$

Imperial			Metric
1 sq inch [in^2]		→	6.4516 cm^2
1 sq foot [ft^2]	144 in^2	→	0.0929 m^2
1 sq yd [yd^2]	9 ft^2	→	0.8361 m^2
1 acre	4840 yd^2	→	4046.9 m^2
1 sq mile [$mile^2$]	640 acres	→	2.59 km^2

Temperature

To convert from Celsius to Fahrenheit, first multiply by 9/5, then add 32.
To convert from Fahrenheit to Celsius, first subtract 32, then multiply by 5/9

Volume/Capacity

Metric			Imperial
1 cu cm [cm^3]		→	0.0610 in^3
1 cu decimetre [dm^3]	1,000 cm^3	→	0.0353 ft^3
1 cu metre [m^3]	1,000 dm^3	→	1.3080 yd^3
1 litre [L]	1 dm^3	→	1.76 pt
1 hectolitre [hl]	100 L	→	21.997 gal

Imperial			Metric
1 cu inch [in^3]		→	16.387 cm^3
1 cu foot [ft^3]	1,728 in^3	→	0.0283 m^3
1 fluid ounce [fl oz]		→	28.413 mL
1 pint [pt]	20 fl oz	→	0.5683 L
1 gallon [gal]	8 pt	→	4.5461 L

Mass

Metric			Imperial
1 milligram [mg]		→	0.0154 grain
1 gram [g]	1,000 mg	→	0.0353 oz
1 kilogram [kg]	1,000 g	→	2.2046 lb
1 tonne [t]	1,000 kg	→	0.9842 ton

Imperial			Metric
1 ounce [oz]	437.5 grain	→	28.35 g
1 pound [lb]	16 oz	→	0.4536 kg
1 stone	14 lb	→	6.3503 kg
1 hundredweight [cwt]	112 lb	→	50.802 kg
1 long ton (UK)	20 cwt	→	1.016 t