MAAPC20S Measurement Lesson 1

Lesson One – Imperial Measures of Length

There are two main measurement systems used today in Canada:

- Systeme Internationale d'unites (SI) or the Metric System (millimetre, centimetre, metre, kilometre)
- Imperial System (inches, feet, yard, mile)

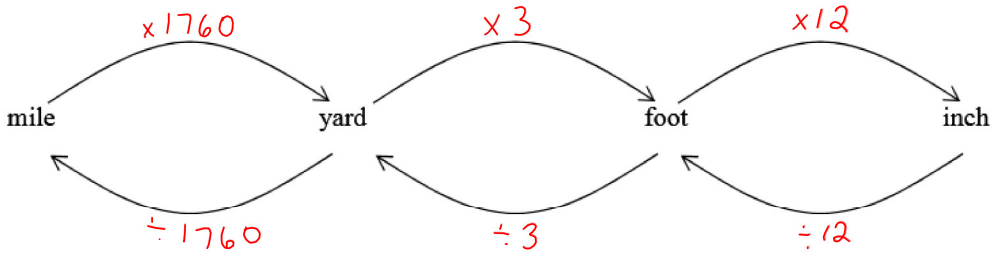
Imperial and Metric Ruler

Imperial – each inch is broken down into $\frac{1}{16}in$, with other units of measure being $\frac{1}{8}\ in, \frac{1}{4}\ in, \frac{1}{2}in$

Metric – each centimeter is broken down into 10 millimetres.

Imperial:

1 foot (1 ft or 1') = 12 inches (12 in or 12")
1 yard (1 yd) = 36 in or 3 ft
1 mile (1 mi) = 5280 ft or 1760 yd



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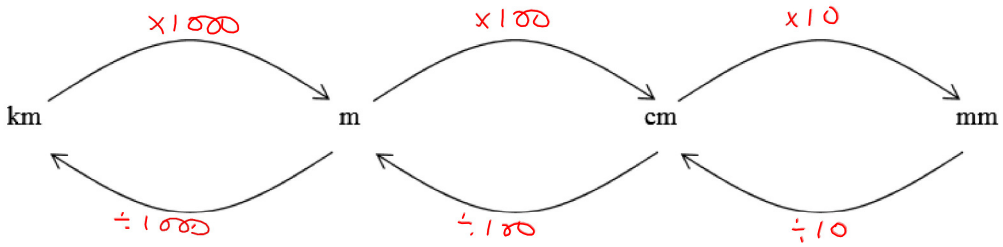
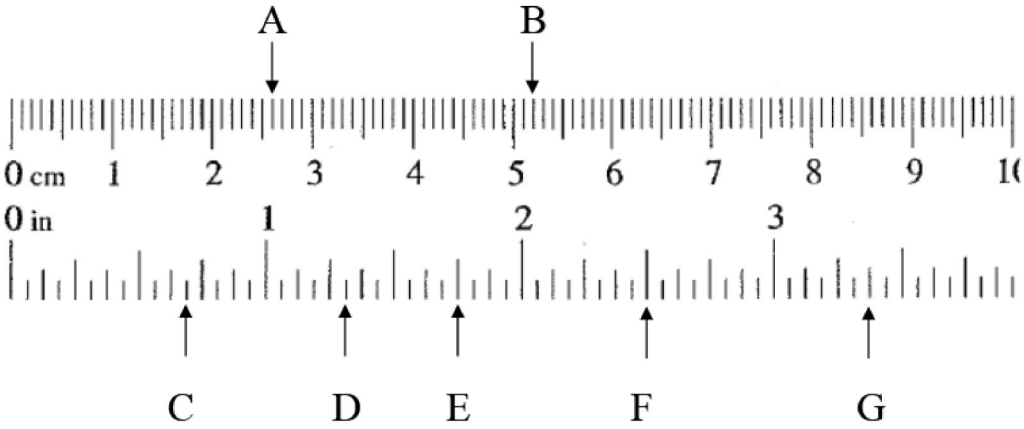
Metric:

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



Estimation: Determine the most suitable units in both the imperial and metric systems for measuring the following:

	Metric	Imperial
Your height	m and/or cm	ft and inches
Distance from Winnipeg to Steinbach	km	miles
Height of Pop Can	cm	in
Length of a Sheet of Curling Ice	m	yds
Diameter of a Dime	mm	in



A = 26mm or 2.6cm
B = 52mm or 5.2cm
C = $\frac{11}{16}$"
D = $1\frac{5}{16}$"
E = $1\frac{3}{4}$"
F = $2\frac{1}{2}$"
G = $3\frac{3}{8}$"

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Example 1 – Converting Between Imperial Units

Convert 5 yards to feet

5 yds × 3 = 15 ft

or $\frac{1}{3} = \frac{5}{x}$ $\frac{yd}{ft}$

$x = 15$ ft

Convert 51 inches to yards, feet and inches

to ft and inches

$\frac{51}{12} = 4\frac{3}{12}$

4 ft 3 in

ft to yds

$\frac{4}{3} = 1\frac{1}{3}$

1 yd 1 ft

∴ 1 yd 1 ft 3 in

3 ft 2 in + 7 ft 11 in

10 ft 13 in

+1 −12

11 ft 1 in

12 in = 1 ft

12 + 1 in

1 ft 1 in

3 mi – 250 ft

mi → ft 1 mi = 5280 ft ← from formula sheet

3 × 5280 = 15 840 ft

15 840 ft − 250 ft

15 590 ft

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Example 2 – Solving Problems Involving Converting Between Units

Ben buys baseboard for a bedroom. The perimeter of the bedroom, excluding closets and doorway, is 37 ft.

a) What length of baseboard is needed, in yards and feet?

b) The baseboard material is sold by the yard. It costs $5.99/yd. What is the cost of material before taxes?

a) $\frac{37}{3} = 12\frac{1}{3}$ yds

12 yds 1 ft

∴ Ben needs 13 yds

b) 13 x $5.99/yd = $77.87

Tyrell has 4 yd. of cord to make friendship bracelets. Each bracelet needs 8 in. of cord. How many bracelets can Tyrell make?

1 yd = 36 in ← from formula sheet

∴ 4 x 36 = 144 in

144 ÷ 8 = 18 bracelets

Example 3 – Solving a Problem Involving Scale Diagrams

On the map with a scale of 1:4 750 000, the distance between Seward and Anchorage in Alaska is 1 ¾ in. What is the distance between these two towns to the nearest mile?

1 in = 4 750 000 in

1.75 x 4 750 000 = 8 312 500 in

1 mile = 1760 x 3 x 12 in

= 63 360 in

$\frac{8\,312\,500}{63\,360} = 131.194...$

or 131 miles

or 8312500 ÷ 12 ÷ 3 ÷ 1760 = 131.194...

Assignment: Pg. 11; 3, 8, 13, 14, 17, 19

+ worksheet w/rulers