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 relationship between measurement units such as

1 m = 1.0936 yd

1 m = 3.2808 ft

1 mi= 1.6093 km

1 in = 2.54 cm

HOMEWORK Solutions...

Name : _____ Score : _____

Teacher : _____ Date : _____

Converting English and Metric

1)	22	miles	=	35.41	kilometers
2)	12	yards	=	10.97	meters
3)	10	miles	=	16.09	kilometers
4)	12.12	miles	=	19.5	kilometers
5)	5.91	inches	=	15	centimeters
6)	9.84	yards	=	9	meters
7)	7	inches	=	17.78	centimeters
8)	3.83	yards	=	3.5	meters
9)	6.5	inches	=	16.5	centimeters
10)	5.28	miles	=	8.5	kilometers
11)	4.92	yards	=	4.5	meters
12)	4	miles	=	6.44	kilometers
13)	11	yards	=	10.06	meters
14)	2	yards	=	1.83	meters
15)	14.5	inches	=	36.83	centimeters
16)	17	inches	=	43.18	centimeters
17)	11.5	miles	=	18.51	kilometers
18)	20.23	yards	=	18.5	meters
19)	4.92	inches	=	12.5	centimeters
20)	13.05	miles	=	21	kilometers

Math-Aids.Com

12 069.75 m

7.5 mi = _____m

$$7.5\,\text{mi} \times \frac{1.6093\ \text{km}}{1\ \text{mi}} \times \frac{1000\ \text{m}}{1\ \text{km}}$$

$$= 12\,069.75\ \text{m}$$

MUST KNOW CONVERSIONS...

Imperial Conversion

1 ft = 12 in

1 yd = 3 ft

1 mi = 1760 yd

Between SI and Imperial

1 m = 1.0936 yd

1 m = 3.2808 ft

1 mi. = 1.6093 km

1 in. = 2.54 cm

MUST KNOW CONVERSIONS...

Imperial Conversion

1 ft = 12 in

1 yd = 3 ft

1 mi = 1760 yd

Metric Conversions

1 km = 1000 m

1 m = 100 cm

1 cm = 10 mm

Between SI and Imperial

1 m = 1.0936 yd

1 m = 3.2808 ft

1 mi. = 1.6093 km

1 in. = 2.54 cm

THE CONVERSION FACTORS BETWEEN SI AND IMPERIAL UNITS

SI to Imperial	*Imperial to SI*
1 mm = 0.0394 in	1 in = 25.4 mm
1 cm = 0.3937 in	1 inch = 2.54 cm
1 m = 3.2808 ft	1 ft = 0.3048 m
1 m = 1.0936 yd	1 yd = 0.9144 m
1 km = 0.6214 mi	1 mi = 1.6093 km

13. The tallest structure in Canada is the CN Tower in Toronto. It is 553.3 m tall. The tallest structure in the United States is the Willis Tower, previously known as the Sears Tower, in Chicago. It is 1451 ft. tall.

a) Determine the height of the CN Tower in feet and the height of the Willis Tower in metres.

CN: $553.3\ m \times \frac{3.2803\ ft}{1\ m} = 1815.27\ ft$

Willis: $1451\ ft \times \frac{1\ m}{3.2803\ ft} = 442.27\ m$

b) How much taller is the taller structure?

364.27 ft

111.03 m

Example 2 Converting between Miles and Kilometres

After meeting in Emerson, Manitoba, Hana drove 62 mi. south and Farrin drove 98 km north. Who drove farther?

SOLUTION

(Erase to reveal)

$6.2 \text{ mi} \times \frac{1.6093 \text{ km}}{1 \text{ mi}} \doteq 100 \text{ km}$

$98 \text{ km} \times \frac{1 \text{ mi}}{1.6093 \text{ km}} = 60.9 \text{ mi}$

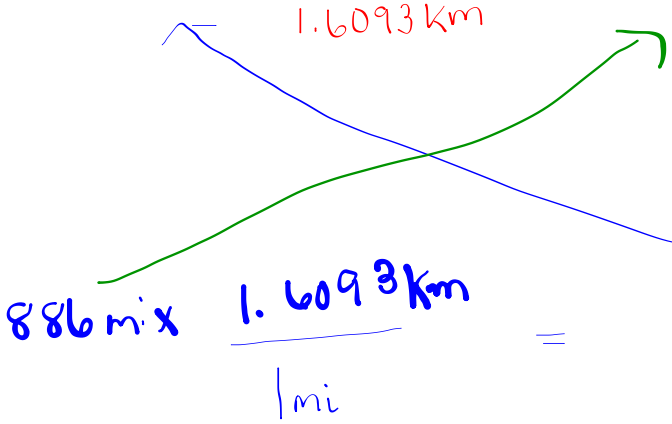
CHECK YOUR UNDERSTANDING

1.3 Relating SI and Imperial Units

TRY THIS ONE...

9. The Fraser River is approximately 1375 km long. The Tennessee River is approximately 886 mi. long. Which river is longer? Justify your answer.

$1375\ \text{km} \times \frac{1\ \text{mi}}{1.6093\ \text{km}} = 854.4\ \text{mi}$



$886\ \text{mi} \times \frac{1.6093\ \text{km}}{1\ \text{mi}} = 1425.8\ \text{km}$

Tennessee

1.3 Relating SI and Imperial Units

Example 3 Solving a Problem that Involves Unit Conversions

Alex is 6 ft. 2 in. tall. To list his height on his driver's license application, Alex needs to convert this measurement to centimetres.

CHECK YOUR UNDERSTANDING

ft → in → cm

$\frac{6\text{ ft}}{} \times \frac{12\text{ in}}{1\text{ ft}}$

72 in
+ 2 in
74 in

$74\text{ in} \times \frac{2.54\text{ cm}}{1\text{ in}}$

187.96 cm

188 cm

$180\,cm = 5\,ft \quad 11\,in$

$180\,cm \times \frac{1\,in}{2.54\,cm} \times \frac{1\,ft}{12\,in}$

$= 5.9055\,ft$

$0.9055\,ft \times \frac{12\,in}{1\,ft}$

$\doteq 11\,in$

HOMEWORK...

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Complete the table below...

Object	mm	ft	yd	cm	in	m
Thickness of hardwood floor	19					
Height of a room		9				
Width of a football field			55			
Length of a pencil				18		
Height of a table					29	
A home run in baseball						135

1. A low bridge has a posted maximum vehicle height of 7′6″. Your truck is 2.3 m high. Will it fit under the bridge?

2. A wooden dowel is 0.75 m long. What is its length in centimetres? In inches? You need to record the length of the dowel on a sketch for a carpentry project. Which unit of measurement will you choose to label the sketch with, and why?

3. Valerie wants to apply for a driver's licence. The application asks her to state her height in cm. Valerie is 5′8″ tall. What is her height in cm?

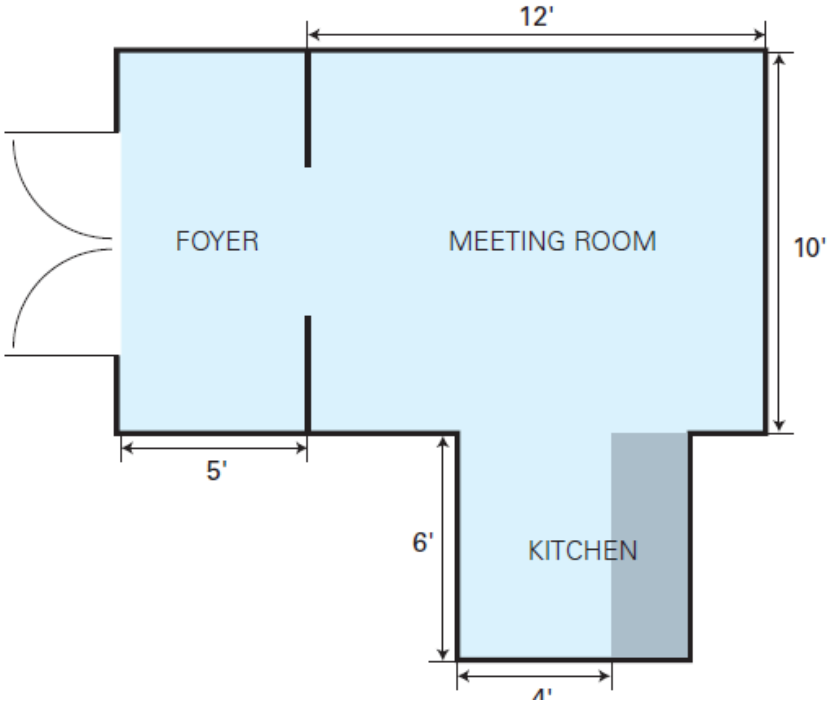
4. Sandy has been asked to give an estimate for replacing a countertop in a client's kitchen. The countertop measures 2′ × 6′ and the client wants Sandy to install 4″ × 4″ tiles that cost $3.50 each. Sandy has estimated her labour charge will be $350.00. What is the total cost of tiles and labour?

5. Moncton Recreation, Parks and Culture wants to install grass sod on a playground that measures 20 m × 40 m. Two companies have bid on the job. Company A's bid was $4.00/yd^2 installed. Company B put in a bid of $2.50/m^2 plus $2000.00 for installation. Which company should get the job based on the best price?

6. The materials for a project Justine is making call for 5 ft of twine. The store she visits to buy materials only has a metre stick marked in centimetres and millimetres for measuring. Justine thinks she needs 150 cm of twine. Is Justine's answer correct? Explain how you know.

7. Shelley is trying to decide whether to put hardwood flooring or carpet on her living room floor. The dimensions of the room are 22 ft by 16 ft. The hardwood flooring costs \$18.99/m^2 with an installation cost of \$1500.00. The carpet costs \$21.95/yd^2 with an installation cost of \$1350.00. Which type of flooring costs less?

8. Dejan was hired to lay vinyl flooring in the kitchen, meeting room, and foyer of the local Friendship Centre. He used the measurements in the diagram below to estimate the job. The flooring material comes in rolls 10 ft wide and is sold by the running foot, and Dejan needs to purchase enough flooring to ensure the pattern will match in all three rooms. He will also add 15% to his order to compensate for wastage. One running foot of vinyl flooring costs $12.50. Dejan estimates his labour charge will be $560.00. What is the total estimate for vinyl flooring and labour?



Attachments

Worksheet - Converting Measurements.docx