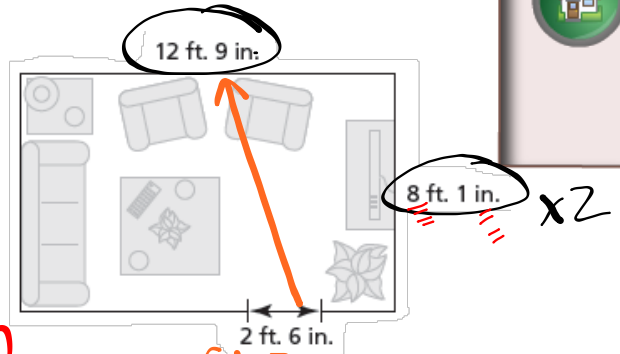


WARM-UP...

A wallpaper border is to be pasted halfway up the wall around a child's bedroom.

- a) What is the total length of border needed?
- b) The border is purchased in 12-ft. rolls. How many rolls are required?
- c) Each roll of border costs \$12.49. How much will the border cost, before taxes?



a) $36\text{ ft } 14\text{ in}$
 $39\text{ ft } 2\text{ in}$ ← ✓

14. a) $39\text{ ft. } 2\text{ in.}$ ✓
c) $\$49.96$ ← $\times 12.49$
b) 4 rolls ✓

4.2 - Converting Measurements

$$1 \text{ mi} = 1.6 \text{ km}$$

Make Connections

Two cars are driven in opposite directions from a Canada/United States border crossing.

In one hour, Hana drove 62 mi. south while Farrin drove 98 km north.

How could you determine which vehicle travelled farther from the border?

$62 \text{ mi} \times \frac{1.6 \text{ km}}{1 \text{ mi}} = 99.2 \text{ km}$
 Hana is the farthest



Each measurement in the imperial system relates to a corresponding measurement in the SI system.

This table shows some approximate relationships between imperial units and SI units.

SI Units to Imperial Units	Imperial Units to SI Units
$1 \text{ mm} \doteq \frac{4}{100} \text{ in.}$	$1 \text{ in.} \doteq 2.5 \text{ cm}$
$1 \text{ cm} \doteq \frac{4}{10} \text{ in.}$	$1 \text{ ft.} \doteq 30 \text{ cm}$ $1 \text{ ft.} \doteq 0.3 \text{ m}$
$1 \text{ m} \doteq 39 \text{ in.}$	$1 \text{ yd.} \doteq 90 \text{ cm}$
$1 \text{ m} \doteq 3 \frac{1}{4} \text{ ft.}$	$1 \text{ yd.} \doteq 0.9 \text{ m}$
$1 \text{ km} \doteq \frac{6}{10} \text{ mi.}$	$1 \text{ mi.} \doteq 1.6 \text{ km}$

Some conversions are exact; for example,
 $1 \text{ in.} = 2.54 \text{ cm}$
 $1 \text{ yd.} = 91.44 \text{ cm}$

We can use the data in the table above to convert between SI and imperial units of measure.

1.3 Relating SI and Imperial Units

THE CONVERSION FACTORS BETWEEN SI AND IMPERIAL UNITS

<i>SI to Imperial</i>	<i>Imperial to SI</i>
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

MUST KNOW CONVERSIONS...

$$1 \text{ m} = 1.0936 \text{ yd}$$

$$1 \text{ m} = 3.2808 \text{ ft}$$

$$1 \text{ mi.} = 1.6093 \text{ km}$$

$$1 \text{ in.} = 2.54 \text{ cm}$$

.

PRACTICE: Converting IMPERIAL to METRIC

Convert each measurement. Answer to the nearest tenth.

- a) 16 in. to centimetres
- b) 4 ft. to metres
- c) 5 yd. to metres
- d) 1650 yd. to kilometres
- e) 6 mi. to kilometres
- f) 2 in. to millimetres



Answers will vary depending on the conversion ratios used.

- 4. a) 40.6 cm
- b) 1.2 m
- c) 4.6 m
- d) 1.5 km
- e) 9.7 km
- f) 50.8 mm

$$a) 16 \cancel{\text{in}} \times \frac{2.54 \text{ cm}}{1 \cancel{\text{in}}} = 40.64 \text{ cm}$$

$$b) 4 \cancel{\text{ft}} \times \frac{1 \text{ m}}{3.2808 \cancel{\text{ft}}} = 1.2 \text{ m}$$

$$c) 5 \cancel{\text{yd}} \times \frac{1 \text{ m}}{1.0936 \cancel{\text{yd}}} = 4.6 \text{ m}$$

$$f) 2 \cancel{\text{in}} \times \frac{2.54 \cancel{\text{cm}}}{1 \cancel{\text{in}}} \times \frac{10 \text{ mm}}{1 \cancel{\text{cm}}} = 50.8 \text{ mm}$$

50.8 mm

$$d) 1650 \cancel{\text{yd}} \times \frac{1 \cancel{\text{mi}}}{1760 \cancel{\text{yd}}} \times \frac{1.6093 \text{ km}}{1 \cancel{\text{mi}}}$$

1.5 km

$$e) 6 \cancel{\text{mi}} \times \frac{1.6093 \text{ km}}{1 \cancel{\text{mi}}} = 9.7 \text{ km}$$

1.3 Relating SI and Imperial Units

PRACTICE: Converting METRIC to IMPERIAL

Convert each measurement.

- a) 25 mm to the nearest inch
- b) 2.5 m to the nearest foot
- c) 10 m to the nearest yard
- d) 150 km to the nearest mile

$$a) 25 \text{ mm} \times \frac{1 \text{ cm}}{10 \text{ mm}} \times \frac{1 \text{ in}}{2.54 \text{ cm}}$$

$$b) 2.5 \text{ m} \times \frac{3.2808 \text{ ft}}{1 \text{ m}}$$

$$c) 10 \text{ m} \times \frac{1.0936 \text{ yd}}{1 \text{ m}}$$

$$d) 150 \text{ km} \times \frac{1 \text{ mi}}{1.6093 \text{ km}}$$

Answers will vary depending on the conversions used.

- a) 1 in.
- b) 8 ft.
- c) 11 yd.
- d) 93 mi.

HOMework...

 Worksheet - Converting Measurements.docx

Attachments

Worksheet - Converting Measurements.docx