

## Curriculum Outcome

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

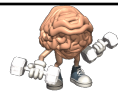
$$1 \text{ m} = 1.0936 \text{ yd}$$

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

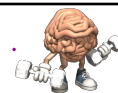
$$1 \text{ mi} = 1.6093 \text{ km}$$

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

Sep 7-2:50 PM



## Warm Up



Convert each of the following:

a)  $22 \text{ yd} = \underline{66} \text{ ft}$

$$22 \text{ yd} \times \frac{3 \text{ ft}}{1 \text{ yd}}$$

b)  $106 \text{ mi} = \underline{\quad} \text{ ft}$     559 680 ft

$$106 \text{ mi} \times \frac{1760 \text{ yd}}{1 \text{ mi}} \times \frac{3 \text{ ft}}{1 \text{ yd}}$$

c)  $158840 \text{ in} = \underline{\quad} \text{ yds}$     4 412.2 yd

$$158840 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} \times \frac{1 \text{ yd}}{3 \text{ ft}}$$

Sep 6-12:41 PM

# 4.2 - Converting Measurements



## 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?



Introduction

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 mm $\doteq$ ?	1 in. $\doteq$ ?
1 cm $\doteq$ ?	1 ft. $\doteq$ ?
1 m $\doteq$ ?	1 ft. $\doteq$
1 m $\doteq$	1 yd. $\doteq$ ?
1 km $\doteq$ ?	1 yd. $\doteq$
	1 mi. $\doteq$ ?



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

## MUST KNOW CONVERSIONS...

### Imperial Conversion

$$1 \text{ ft} = 12 \text{ in}$$

$$1 \text{ yd} = 3 \text{ ft}$$

$$1 \text{ mi} = 1760 \text{ yd}$$

### Metric Conversions

$$1 \text{ km} = 1000 \text{ m}$$

$$1 \text{ m} = 100 \text{ cm}$$

$$1 \text{ cm} = 10 \text{ mm}$$

### Between SI and Imperial

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

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

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

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

Sep 12-8:55 PM

### **PRACTICE:** Converting IMPERIAL to METRIC

Convert each measurement. Answer to the nearest tenth.

a) 16 in. to centimetres

$$16 \text{ in} \times \frac{2.54 \text{ cm}}{1 \text{ in}}$$

$$= \underline{\underline{40.64 \text{ cm}}}$$

b) 4 ft. to metres

$$4 \text{ ft} \times \frac{1 \text{ m}}{3.2808 \text{ ft}}$$

$$= \boxed{1.22 \text{ m}}$$

1.3 Relating SI and Imperial Units

## MUST KNOW CONVERSIONS...

### Imperial Conversion

$$1 \text{ ft} = 12 \text{ in}$$

$$1 \text{ yd} = 3 \text{ ft}$$

$$1 \text{ mi} = 1760 \text{ yd}$$

### Metric Conversions

$$1 \text{ km} = 1000 \text{ m}$$

$$1 \text{ m} = 100 \text{ cm}$$

$$1 \text{ cm} = 10 \text{ mm}$$

### Between SI and Imperial

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

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

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

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

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### **PRACTICE:** Converting IMPERIAL to METRIC

Convert each measurement. Answer to the nearest tenth.

c) 5 yd. to metres

$$5 \text{ yd} \times \frac{1 \text{ m}}{1.0936 \text{ yd}} = 4.57 \text{ m}$$

$$5 \text{ yd} \times \frac{3 \text{ ft}}{1 \text{ yd}} \times \frac{1 \text{ m}}{3.2808 \text{ ft}} = 4.57 \text{ m}$$

1.3 Relating SI and Imperial Units

Exercise #4

## MUST KNOW CONVERSIONS...

### Imperial Conversion

$$1 \text{ ft} = 12 \text{ in}$$

$$1 \text{ yd} = 3 \text{ ft}$$

$$1 \text{ mi} = 1760 \text{ yd}$$

### Metric Conversions

$$1 \text{ km} = 1000 \text{ m}$$

$$1 \text{ m} = 100 \text{ cm}$$

$$1 \text{ cm} = 10 \text{ mm}$$

### Between SI and Imperial

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

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

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

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

Sep 12-8:55 PM

d) 1650 yd. to kilometres     1.51 km

$$1650 \text{ yd} \times \frac{3 \text{ ft}}{1 \text{ yd}} \times \frac{1 \text{ m}}{3.2808 \text{ ft}} \times \frac{1 \text{ km}}{1000 \text{ m}}$$

$$1650 \text{ yd} \times \frac{1 \text{ mi}}{1760 \text{ yd}} \times \frac{1.6093 \text{ km}}{1 \text{ mi}} = 1.51 \text{ km}$$

$$1650 \text{ yd} \times \frac{1 \text{ m}}{1.0936 \text{ yd}} \times \frac{1 \text{ km}}{1000 \text{ m}} = 1.51 \text{ km}$$

Sep 11-11:56 AM

## MUST KNOW CONVERSIONS...

### Imperial Conversion

$$1 \text{ ft} = 12 \text{ in}$$

$$1 \text{ yd} = 3 \text{ ft}$$

$$1 \text{ mi} = 1760 \text{ yd}$$

### Metric Conversions

$$1 \text{ km} = 1000 \text{ m}$$

$$1 \text{ m} = 100 \text{ cm}$$

$$1 \text{ cm} = 10 \text{ mm}$$

### Between SI and Imperial

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

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

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

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

Sep 12-8:55 PM

### **PRACTICE:** Converting IMPERIAL to METRIC

Convert each measurement. Answer to the nearest tenth.

f) 2 in. to millimetres

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

1.3 Relating SI and Imperial Units

Exercise #4

$$5 \text{ km} = \quad \text{ft}$$

$$5 \text{ km} \times \frac{1000 \text{ m}}{1 \text{ km}} \times \frac{3.2808 \text{ ft}}{1 \text{ m}} \\ = 16\,404 \text{ ft}$$

Sep 12-11:43 AM

# HOMework...

Worksheet - Converting Measurements.docx



Sep 14-3:13 PM

Name : \_\_\_\_\_ Score : \_\_\_\_\_  
Teacher : \_\_\_\_\_ Date : \_\_\_\_\_

**Converting English and Metric**

1 ) 22 miles = \_\_\_\_\_ kilometers  
2 ) 12 yards = \_\_\_\_\_ meters  
3 ) 10 miles = \_\_\_\_\_ kilometers  
4 ) \_\_\_\_\_ miles = 19.5 kilometers  
5 ) \_\_\_\_\_ inches = 15 centimeters  
6 ) \_\_\_\_\_ yards = 9 meters  
7 ) 7 inches = \_\_\_\_\_ centimeters  
8 ) \_\_\_\_\_ yards = 3.5 meters  
9 ) \_\_\_\_\_ inches = 16.5 centimeters  
10 ) \_\_\_\_\_ miles = 8.5 kilometers  
11 ) \_\_\_\_\_ yards = 4.5 meters  
12 ) 4 miles = \_\_\_\_\_ kilometers  
13 ) 11 yards = \_\_\_\_\_ meters  
14 ) 2 yards = \_\_\_\_\_ meters  
15 ) 14.5 inches = \_\_\_\_\_ centimeters  
16 ) 17 inches = \_\_\_\_\_ centimeters  
17 ) 11.5 miles = \_\_\_\_\_ kilometers  
18 ) \_\_\_\_\_ yards = 18.5 meters  
19 ) \_\_\_\_\_ inches = 12.5 centimeters  
20 ) \_\_\_\_\_ miles = 21 kilometers

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Feb 3-10:26 PM



## Attachments

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Worksheet - Converting Measurements.docx

Worksheet - Converting Imperial Lengths.docx