# 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 area and volume such as

1 m = 1.0936 yd

1 m = 3.2808 ft

1 mi= 1.6093 km

1 in = 2.54 cm

Section 1.3 - Converting Metric and Imperial System

Complete the table.

SOLUTIONS...

| Object | mm | ft | yd | cm | in | m |
|---|---|---|---|---|---|---|
| Thickness of hardwood floor | 19 | 0.0625 | 0.021 | 1.9 cm | 0.75 | 0.019 |
| Height of a room | 2743.2 | 9 | 3 | 274.32 | 108 | 2.74 |
| Width of a football field | 50 292 | 165 | 55 | 5029.2 | 1980 | 50.29 |
| Length of a pencil | 180 | 0.59 | 0.2 | 18 | 7.09 | 0.18 |
| Height of a table | 736.6 | 2.42 | 0.81 | 73.66 | 29 | 0.74 |
| A home run in | 135000 | 442.9 | 147.6 | 13500 | 5314.9 | 135 |

$9\text{ ft} \times \frac{12\text{ in}}{1\text{ ft}} = 108\text{ in} \times \frac{2.54\text{ cm}}{1\text{ in}}$

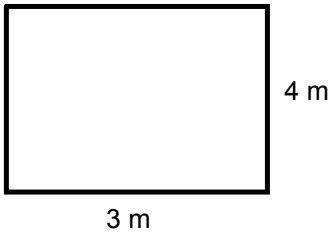
$= 274.3\text{ cm}$

$274.3\text{ cm} \times \frac{10\text{ mm}}{1\text{ cm}} = 2743\text{ mm}$

$2743\text{ mm} \times \frac{1\text{ m}}{100\text{ mm}} = 2.743\text{ m}$

$9\text{ ft} \times \frac{1\text{ yd}}{3\text{ ft}} = 3\text{ yd}$

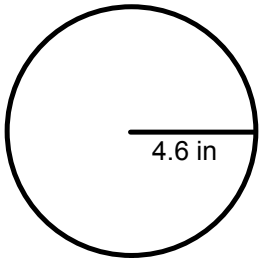
# Area




$A = b \times h$

$A = 3m \times 4m$

$A = 12\,m^2$




$A = \pi r^2$

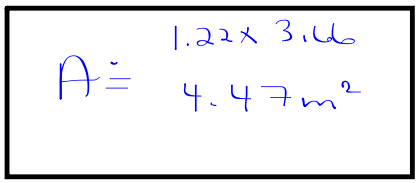
$A = \pi (4.6in)^2$

$A = 66.5in^2$

# Converting Squared Units...

## **Option #1** - Convert BEFORE area calculation.

EX #1: How many squared metres?



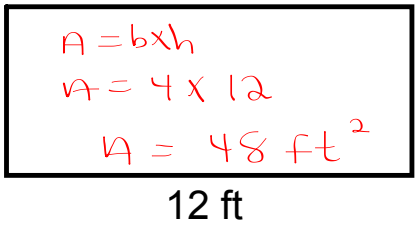

4 ft x $\frac{1\text{ m}}{3.2808\text{ ft}}$
≈ 1.22 m

| |
|---|
| 1 m = 1.0936 yd |
| 1 m = 3.2808 ft |
| 1 mi. = 1.6093 km |
| 1 in. = 2.54 cm |

12 ft x $\frac{1\text{ m}}{3.2808\text{ ft}}$

≈ 3.66 m

## **Option #2** - Convert AFTER area calculation.

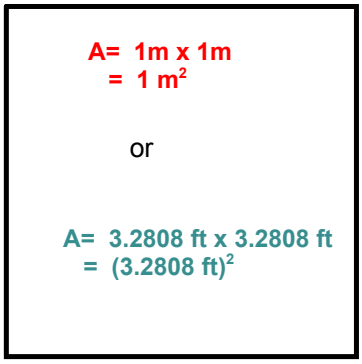



4 ft

$48\text{ ft}^2 \times \left[\frac{1\text{ m}}{3.2808\text{ ft}}\right]^2$

$\approx 4.46\text{ m}^2$

RULE: When converting squared units...
SQUARE THE CONVERTER!!!

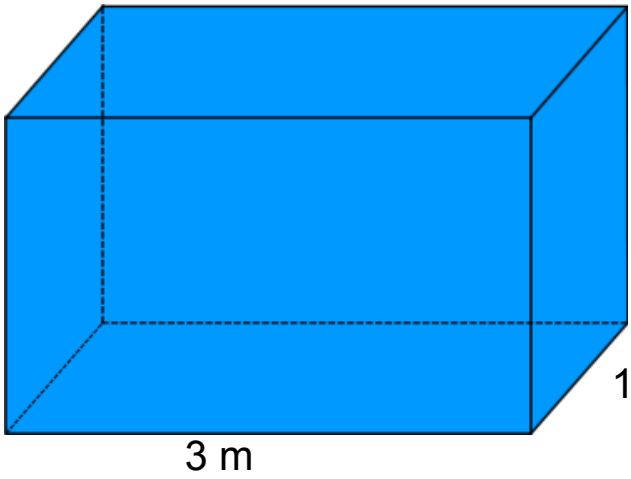



1 m = 3.2808 ft

$1m^2 = 3.2808^2 ft$

# What about cubed units???

EX #2: How many cubic yards?




$V = b \times h \times w$

$V = (2m) \times (1.5m) \times (3m)$

$V = 9m^3$

$1m = 1.0936\,yd$

**RULE: When converting cubed units...**
**CUBE THE CONVERTER!!!**

$9m^3 \times \left[\frac{1.0936\,yd}{1\,m}\right]^3 = 11.77\,yd^3$

# MORE EXAMPLES...

1) $22\ m^2 =$ _____ $ft^2$

2) $1.75\ mi^2 =$ 4.53 $km^2$

$1.75\ mi^2 \times \left[\frac{1.6093}{1\ mi}\right]^2 =$

3) $2400\ cm^2 =$ 372 $in^2$

$2400\ cm^2 \times \left[\frac{1\ in}{2.54\ cm}\right]^2$

4) $750\ yd^2 =$ _____ $m^2$

5) $315\ yd^3 =$ _____ $m^3$

6) $15\ m^3 =$ _____ $ft^3$

7) $0.5\ mi^3 =$ _____ $km^3$

8) $2450\ mm^3 =$ 0.15 $in^3$

$2450\ mm^3 \times \left[\frac{1\ cm}{10\ mm}\right]^3 \times \left[\frac{1\ in}{2.54\ cm}\right]^3$

=

# MUST KNOW use the related 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

10 mm = 1 cm

# HOMEWORK...

Worksheet - Converting Squared and Cubed Units.docx

## Questions: 1-10

Name : _____ Score : _____

Teacher : _____ Date : _____

**Converting English and Metric**

1 ) _____ cubic feet = 21 cubic meters
2 ) 13.5 square yards = _____ square meters
3 ) _____ square yards = 22 square meters
4 ) 7 feet = _____ meters
5 ) 17.5 yards = _____ meters
6 ) _____ cubic yards = 11 cubic meters
7 ) 1 feet = _____ meters
8 ) 10 inches = _____ centimeters
9 ) _____ cubic yards = 10.5 cubic meters
10 ) _____ cubic feet = 9.5 cubic meters
11 ) _____ miles = 21.5 kilometers
12 ) 17 feet = _____ meters
13 ) _____ square yards = 2.5 square meters
14 ) _____ square inches = 8 square centimeters
15 ) _____ square inches = 6 square centimeters
16 ) 4.5 yards = _____ meters
17 ) 2 square feet = _____ square meters
18 ) 3 cubic feet = _____ cubic meters
19 ) _____ yards = 15 meters
20 ) 25 inches = _____ centimeters

Quiz - Converting Measurements Math-Aids.Com

## Attachments

Worksheet - Converting Squared and Cubed Units.docx