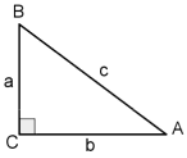
Given to you on Quizlet.

Unit Conversions (as they may appear on an exam formula sheet)

	Common Imperial	Imperial and Metric	Metric
Length	*1 mile = 1760 yards* *1 mile = 5280 feet* *1 yard = 3 feet* *1 yard = 36 inches* *1 foot = 12 inches*	*1 mile ≈ 1.609 km* *1 yard ≈ 0.9144 m* *1 foot ≈ 0.3048 m* *1 foot ≈ 30.48 cm* *1 inch ≈ 2.54 cm*	*1 km = 1000 m* *1 m = 100 cm* *1 cm = 10 mm*
Mass (Weight)	*1 ton = 2000 pounds* *1 pound = 16 ounces*	*1 pound ≈ 0.454 kg* *1 ounce ≈ 28.35 g*	*1 t = 1000 kg* *1 kg = 1000 g*
Common Abbreviations	*mile = mi* *yard = yd* *ton = ton* *feet = ft or '* *inch = in or "* *pound = lb* *ounce = oz*		*kilometre = km* *metre = m* *centimetre = cm* *millimetre = mm* *tonne (metric ton) = t* *gram = g*

Formula

Triangles	Lines
Trigonometry: $sinA = \frac{opposite}{hypotenuse}$ $cosA = \frac{adjacent}{hypotenuse}$ $tanA = \frac{opposite}{adjacent}$  Pythagorean Theorem: $a^2 + b^2 = c^2$	The equation of a line: Slope-intercept form: $y = mx + b$ Standard Form: $Ax + By + C = 0$ Point-slope form: $y - y_1 = m(x - x_1)$ Slope formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Measurement in Two Systems.

The International System of Units (SI)
(Metric System)
Système International d'unités

History:

Formally called *System Internationale* but more commonly called THE METRIC SYSTEM.

Based on the **metre.** One meter is defined as the distance light travels in 1/299792458 of a second.

Prefixes:

Prefixes are added to the base units to be used with smaller or larger measurements.

tera	1×10^{12}	1 000 000 000 000
giga	1×10^{9}	1 000 000 000
mega	1×10^{6}	1 000 000
kilo	1×10^{3}	1000
hecto	1×10^{2}	100
deca	1×10^{1}	10
BASE UNIT (metre/gram/litre)		
deci	1×10^{-1}	0.1
centi	1×10^{-2}	0.01
milli	1×10^{-3}	0.001
micro	1×10^{-6}	0.000001
nano	1×10^{-9}	0.000000001
pico	1×10^{-12}	0.000000000001

The Imperial System of Units

History:

The system used by the British Empire and therefore many Commonwealth countries for many years.

To this day much daily work in trades is still done using the imperial system. Most technical work, however, uses the metric system.

Some useful conversions:

1 inch	=	2.54 cm
1 foot	=	30.5 cm (30.48)
1 yard	=	3 feet
1 yard	=	0.915 m
1 mile	=	1760 yards
1 mile	=	1.6 km
1 kg	=	2.2 lbs
1 litre	=	1.06 quarts (US)
1 gallon (US)	=	3.79 litres

[1 gallon (UK)=4.55 litres]

The Imperial System of Units

UNIT	QUANTITY MEASURED (circle one)	REPRESENTATIVE EXAMPLE or REFERENT (a comparison you could use)	3 EXAMPLES OF OBJECTS YOU WOULD MEASURE USING THIS UNIT
INCH (in.)	MASS? VOLUME? (DISTANCE?)		1. height 2. sandwiches (subway) 3. wood 2x4 = 2" by 4"
FOOT (ft.)	MASS? VOLUME? (DISTANCE?)		1. height 2. pool length 3. depth (water)
YARD (yd.)	MASS? VOLUME? (DISTANCE?)		1. golf 2. football 3. landscaping
MILE (mi)	MASS? VOLUME? (DISTANCE?)		1. speedometer (USA) 2. running 3. travelling
GALLON (ga)	MASS? (VOLUME?) DISTANCE?	The large plastic jug of milk at the grocery store.	1. water 2. oil 3. gas

Converting Between Units Within the Imperial System

Conversion Factor: Multiplying or dividing by this number allows us to convert from one unit to another.

Eg. Convert 57 inches to feet.

$$57\ inches \times \frac{1\ foot}{12\ inches} = \frac{57}{12}\ feet$$

$4\frac{9}{12} = 4\frac{3}{4}$ feet

Use the numbers in the table on page 5.

$\frac{1\ foot}{12\ inches}$

The unit on top is the one you are converting to!

1 foot = 12 inches

equivalence statement

Conversion factors can be "flipped"

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

One Unit Conversions

Convert the following. Answer in exact form (fraction or non-rounded decimal). (4 decimal places)

1. 3 yd. = 9 feet.

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

   $\frac{3 \times 3}{1} = 9$

2. 15 yd. = _____ feet.

3. 12.5 yd. = _____ feet.

4. 12 ft. = 4 yards.

   $12\ ft \times \frac{1\ yd}{3\ ft} = 4\ yd.$

   $\frac{12 \times 1}{3}$

5. 2.25 ft. = _____ inches.

   $2.25\ ft. \times \frac{12\ in}{1\ ft} = 27\ in$

6. 136 ft. = _____ yards.

7. 8 ft. = _____ inches.

8. 2.75 ft. = _____ inches.

9. 4.8 ft = _____ inches.

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

10. 36 in. = 3 feet.

    $36\ in \times \frac{1\ ft}{12\ in} = 3\ ft$

    $\frac{36 \times 1}{12}$

11. 140 in. = _____ feet.

12. 2016 in = _____ feet.

13. 2 mi. = _____ yards.

14. 4.2 mi. = _____ feet.

15. 1500 yd. = _____ miles.

16. 5250 yd. = _____ inches.

17. 160 oz. = _____ pounds.

18. 220oz. = _____ pounds.

19. 4 lb. = _____ ounces.

20. 2.25 lb. = _____ ounces.

21. 6000 lb. = _____ tons.

HW Q's.

1 yd = ? ft

22. Mr.S placed 32 yard sticks end to end across his front yard. Find the width of his yard in feet.

    $32\ yd = \_\_\_\ ft$

    $32\ yd \times \frac{3\ ft}{1\ yd} = 96\ ft$

    32×3

23. Maisy can fit 8 blocks of butter in her backpack. Butter is sold in 1 pound blocks. How many ounces does Maisy carry?

24. Auntie Dee is making a frame for a photograph. The outer dimensions are 3 ft. by 5 ft. How many inches of frame must she purchase?

25. Mr. J wants to update his living room with crown moulding. The room is rectangular and measures 180 in. by 260 in. Moulding is sold by the foot and costs $2.19 per linear foot. What is the cost of moulding required (not including any taxes)?

Convert each of the following measurements to the indicated units.

26. 140 feet to yards and feet.

Recall: 3 yd = 1 ft

$140\text{ ft} \times \frac{1\text{ yd}}{3\text{ ft}}$

$= \frac{140}{3}\text{ yd}$

$= 46\frac{2}{3}\text{ yd}$

140 ft = 46yd and 2 ft.

27. 256 feet to yards and feet.

28. 356 inches to yards, feet and inches

= 9 yd 2 ft 8 in

① $356\text{ in} \times \frac{1\text{ yd}}{36\text{ in}} = \frac{356}{36}\text{ yd}$ mixed # $9\frac{32}{36}$ yd

9 × 36 = 324
356 − 324 = 32

② $\frac{32}{36}\text{ yd} = \frac{8}{9}\text{ yd} \times \frac{3\text{ ft}}{1\text{ yd}} = \frac{24}{9}\text{ ft} = 2\frac{6}{9}\text{ ft}$ (÷4 on both; 8 × 3 / 9)

③ $\frac{6}{9}\text{ ft} = \frac{2}{3}\text{ ft} \times \frac{12\text{ in}}{1\text{ ft}} = 8\text{ in}$ (÷3 on both; 2 × 12 / 3)

29. 142 inches to feet and inches.

30. 204 inches to yards and feet.

31. 84260 ounces to tons, pounds and ounces.

Homework #1-31 (p. 11+12) Sept 10

Quiz Thurs - rounding
- sci. notation
- unit conversions < imperial / metric