Units of length

Imperial system

Complicated conversion factors

inch

1 foot = 12 inches

1 yard = 3 feet

1 mile = 1760 yards

Metric system

Simple conversion factors

meter (m)

1 m = 1000 mm
(millimeters)

1 mm = 1000 μm
(microns)

1 μm = 1000 nm
(nanometers)

1 km = 1000 m
(kilometers)

Scientific Notation

Provides a compact way of expressing very large and very small numbers

Large numbers

$2.0 \times 10^{6} = 2{,}000{,}000$

Move the decimal point 6 places to the right

$2.0 \times 10^{6} = 2000000.$

Small numbers

$7.0 \times 10^{-5} = 0.00007$

Move the decimal point 5 places to the left

$7.0 \times 10^{-5} = 0.00007$

Homework 1

Problem 1. Write the following quantities using scientific notation:

$1{,}340{,}000{,}000\ \text{kg} =$ _____

$0.000{,}000{,}025\ \text{s} =$ _____

Problem 2. Express the following quantities in decimal notation:

$87 \times 10^{7}\text{lb} =$ _____

$8 \times 10^{-4}\ \text{g} =$ _____

Problem 3. Carry out the following operations and express the result in scientific notation:

$(7 \times 10^{5}) \times (2 \times 10^{-4}) =$

$$\frac{5 \times 10^{5}}{5 \times 10^{-5}} =$$