

Engineering Notation Worksheet

Discussion Overview

Scientists and engineers often work with very large and/or very small numbers. The ordinary practice of using commas and leading zeroes proves to be very cumbersome in this situation. Scientific notation is a more compact and less error prone method of representation. The number is split into two portions: a precision part (the mantissa) and a magnitude part (the exponent, being a power of ten). For example,

$$2300 = 2.3e3$$
$$0.0005 = 5e-4$$

The only difference between scientific notation and engineering notation is that for engineering notation the exponent is always a multiple of three. So, for the examples above, we have

$$2300 = 2.3e3$$
$$0.0005 = 0.5e-3$$

Engineering notation goes one step further by using a set of prefixes to replace the multiples of three for the exponent. The prefixes are

$e12 = \text{Tera (T)}$	$e9 = \text{Giga (G)}$	$e6 = \text{Mega (M)}$	$e3 = \text{Kilo (K)}$
$e-3 = \text{milli (m)}$	$e-6 = \text{micro } (\mu)$	$e-9 = \text{nano (n)}$	$e-12 = \text{pico (p)}$

Procedure

- Convert the following into engineering notation
 - 1,500
 - 63,200,000
 - 0.0234
 - 0.000059
 - 170
- Convert the following into normal longhand notation
 - 1.23 K
 - 2 m
 - 0.439 M
 - 54.7 T
 - 9.27 μ

Name: _____

- f. 15.6 p
3. Use the appropriate prefix for the following values to represent them in engineering notation.
- a. 4e6 volts
 - b. 3.3e-6 grams
 - c. 5.1e3 meters