

UNIT 4 *Scientific Notation*

Introduction to SIM

Learning objectives

The work in this unit is focused on one main concept, that of expressing and using numbers in *standard form* (or *scientific notation*). After completing this unit of STUDENT INSTRUCTIONAL MATERIAL (SIM) you should be able to

- express any number in standard form
- convert any number in standard form into decimal form
- undertake calculations with numbers in standard form.

Key points and principles

- In standard form, the number is expressed as $a \times 10^n$ where $1 \leq a < 10$ and n is an integer.
- Any number can be written in standard form, and it is unique.

Facts to remember

- $10^0 = 1$
- $10^{-n} = \frac{1}{10^n}$, for example, $10^{-1} = \frac{1}{10}$, etc.
- In standard form, the number is written as

$$a \times 10^n$$

where $1 \leq a < 10$ and n is an integer.

Glossary of terms

Standard form

Any number can be written uniquely in standard form (scientific notation) as

$$a \times 10^n$$

where $1 \leq a < 10$ and n is an integer.

For example, $4763 = 4.763 \times 10^3$ ($a = 4.763$, $n = 3$)

$$0.037 = 3.7 \times 10^{-2} \quad (a = 3.7, \quad n = -2)$$