

4) Rounding, Chopping and Roundoff errors

To examine the problem errors, we will represent machine numbers in normal decimal floating-point form

$$\pm 0.d_1d_2 \dots d_k * 10^n$$

where

$$1 \leq d_1 \leq 9 \quad 0 \leq d_i \leq 9 \quad i=2, \dots, k$$

Numbers of this form are called k-digit decimal machine numbers.

Any real number can be represented in the normalized form

$$y = 0.d_1d_2 \dots d_k d_{k+1}d_{k+2} \dots * 10^n$$

A floating-point form of y , denoted by $fl(y)$, is obtained by terminating the mantissa at k -digits.

There are 2 ways of performing this termination

Example: $0.3257 \cdot 10^2 = 32.57$
 $0.0032 = 0.32 \cdot 10^{-2}$