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1.1 Symbols, Scientific Notation, and Significant Figures

It is important that you learn to use symbols, rather than numerical values, in doing calculations. Letters near the end of the alphabet, such as x , y , and z , are used for unknown variables. Letters such as a , b , and c are often used for given constant quantities. Greek letters are used for angular variables. Subscripts are used to provide added information. For example, the position of an object at time t_1 is labeled as x_1 , and its position at time t_2 is x_2 . Commonly encountered symbols are listed below:

- $a = b$ means a is equal to b .
- $a \neq b$ means a is not equal to b .
- $a > b$ means a is greater than b , and $a \geq b$ means a is greater than or equal to b .
- $a \gg b$ means a is much greater than b .
- $a < b$ means a is less than b , and $a \leq b$ means a is less than or equal to b .
- $a \ll b$ means a is much less than b .
- $a \propto b$ means a is proportional to b .
- $a \approx b$ means a is approximately equal to b .
- $a \sim b$ means a is of the order of magnitude of b ; that is, a and b are equal to within a factor of 10 or so.
- $n! = 1 \cdot 2 \cdot 3 \cdot 4 \cdots n$.
- $y(x)$ means the quantity y depends on the value of x ; that is, y is a function of x .
- $\sum x_i = x_1 + x_2 + x_3 + \cdots + x_n$.

The Greek letter \sum is used here because it corresponds to the letter S, which stands for "sum."