Selected Symbols for Basic Mathematical/Statistical Modeling

These are the key mathematical symbols (other than +, −, ·, /, =, etc.) used in "Mathematical Models & Linear Statistical Models: Basic Concepts & Computations".

Concept	Symbol	Definition	Examples
Floor	$\lfloor \ldots \rfloor$	Rounding down (towards $-\infty$) of a non-integral real number, to the next integer value.	$\lfloor 1.75 \rfloor = 1$ $\lfloor -1.75 \rfloor = -2$ $\lfloor 1 \rfloor = 1$
Ceiling	$\lceil \ldots \rceil$	Rounding up (towards ∞) of a non-integral real number, to the next integer value.	$\lceil 1.75 \rceil = 2$ $\lceil -1.75 \rceil = -1$ $\lceil 1 \rceil = 1$
Exponent	b^n (superscript)	Number of times (not necessary integral) a base b is multiplied by itself in a product.	$x^2 = x \cdot x$ $3^4 = 3 \cdot 3 \cdot 3 \cdot 3 = 81$
Enumeration	s_i (subscript)	Numbered terms of an ordered sequence.	$\boldsymbol{S} = \{s_1, s_2, s_3, \ldots\}$ $\boldsymbol{F} = \{1, 1, 2, 3, 5, \ldots\}$ ($\boldsymbol{F}$ is Fibonacci sequence.)
Sum	$\sum$	Sum of terms in a sequence. $\sum_{i=m}^{n} s_i = s_m + s_{m+1} + \ldots + s_n$ (If the bounds m and n are well understood, they are often omitted from the $\sum$ operator notation.)	$\sum_{i=1}^{4} f_i = f_1 + f_2 + f_3 + f_4$ $= 1 + 1 + 2 + 3$ (Sum of 1st 4 terms of Fibonacci sequence.)
Product	$\prod$	Product of terms in a sequence. $\prod_{i=m}^{n} s_i = s_m \cdot s_{m+1} \cdot \ldots \cdot s_n$	$\prod_{i=3}^{5} \frac{i}{i+1} = \frac{3}{4} \cdot \frac{4}{5} \cdot \frac{5}{6}$ $= \frac{1}{2}$
Factorial	$n!$	$n! = \prod_{i=1}^{n} i$ $= 1 \cdot 2 \cdot \ldots \cdot n$ $0! = 1$	$5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5$ $= 120$
Euler's number	e	Base of natural logarithms. $e = \sum_{i=0}^{\infty} \frac{1}{n!}$ $= \frac{1}{0!} + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \ldots$ $\approx 2.71828\ldots$	