**Symbols Organizer**

| Symbol | Name | Definition | Purpose | Alternate Versions |  |
| --- | --- | --- | --- | --- | --- |
| + | Plus sign | Indicates operation of addition; property of being positive; related to the process of accumulation. | Execute sum of two or more quantities; designates positive. |  |  |
| – | Minus sign | Operation of subtraction; finding a quantity which when added to one of two given quantities will give the other; property of being negative. | Executes additive inverse of two quantities; designates negative. |  |  |
| × | Multiplication sign | For real numbers, the “manyness” of the combining of two or more sets; for integers, the set of objects obtained by combining A sets, each of which contains B objects. | Executes the product. | •( ) ( )(adjacency)\* |  |
| ÷ | Division sign | The inverse operation to multiplication; the quotient *a/b* of two numbers *a* and *b* is the number *c,* such that the product of *b* and *c* equals *a*, if *c* exists and has only one value. | Executes the quotient; implies numerator divided by denominator | – |  |
| ^ | Exponent | The number placed at the right and above a symbol (superscript). The value assigned is the power and indicates the number of times the symbol is to be taken as a factor. | Multiplies the symbol (base) by itself in accordance with its value. | *xn*multiplies *x* by itself *n* times |  |

| Symbol | Name | Definition | Purpose | Alternate Versions |  |
| --- | --- | --- | --- | --- | --- |
| *xn* | Subscript | The smaller letter or number written below and right or left of the given number and used as a mark of distinction to identify that symbol as unique from others. | Identification |  |  |
| π | Pi | Designates the ratio of the circumference of a circle to its diameter; it is not a true ratio, but a transcendental irrational number. | Representation |  |  |
| *e* | E | The base of natural logarithms, the limit of .As *n* increases without limit. Its approximate numerical value is 2.182818284… and is an irrational and transcendental number. | Representation |  |  |
| ! | Factorial | The product of all the positive integers less than or equal to the given integer. The factorial has the unusual property in that 0! = 1! = 1. | Operation; frequently used in probability to enumerate outcomes. | ⏐*n* |  |
| ∴ | Three dots | Therefore | Transition to conclusion |  |  |
| *m* | m | Slope | Change in *y* divided by change in *x* |  |  |
| Δ | Delta | Change, by addition or subtraction, of a variable. | Representation |  |  |
| ∍ | Lunate epsilon | Such that | Transition to a condition |  |  |
| ø | Empty set symbol | The empty set; one that has no elements and no cardinality. | Representation | {} |  |
| ε | Epsilon, lowercase | The object is a member of the set. | Representation |  |  |
| ∩ | Intersection of sets | The members in common between two or more sets. | Representation |  |  |
| ∪ | Union of sets | The members of both sets together. | Representation |  |  |
| ~ | Tilde | Negation of, as in not… | Representation |  |  |
| *f(x)* | Function | Expression to follow is a function of *x*; changes to the variable *x* change the value of the function in accordance with the expression. | Representation |  *f(x), g(x), h(x)* |  |
| ⏐ ⏐ | Absolute value | For real numbers, the value of the expression without regard for sign. | Representation | abs( ) |  |
| ≠ | Not equal | One does not equal the other. | Representation |  |  |
| < | Less than | Quantity on the left is less than the quantity on the right. | Representation |  |  |
| > | Greater than | Quantity on the left is greater than the quantity on the right. | Representation |  |  |
| ≤ | Less than or equal to | Quantity on the left is less than or equal to the quantity on the right. | Representation |  |  |
| ≥ | Greater than or equal to | Quantity on the left is greater than or equal to the quantity on the right. | Representation |  |  |
| ≈ | Approximately equal | Two quantities are close to each other in value. | Representation |  |  |
| √ | Square root | The number which when multiplied by itself, equals the given number. | Representation | Exponent  |  |
|  | *n*th root | The number which when multiplied by itself n times, equals the given number. | Representation |  |  |
| ≅ | Congruent | In geometry, having the same size and shape. | Representation |  |  |
| ~ | Similar | In geometry, having the same shape. | Representation | ~ |  |
|  | Parallel | Lines in the same plane that do not intersect |  |  |  |
| ⊥ | Perpendicular | Lines intersecting at 90 degree angle |  |  |  |