**Symbols Used in Set Theory**

A picture containing table

Description automatically generated

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| **Interval notation:** An **interval** is a connected subset of numbers.  **Interval notation** is an alternative to expressing your answer as an inequality.  Unless specified otherwise, we will be working with real numbers.   |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  | | --- | | When using interval notation, the symbol: | | |  |  | | --- | --- | | **(** | means "not included" or "open". | | | |  |  | | --- | --- | | **[** | means "included" or "closed". | | | |  |  | | --- | --- | |  | as an inequality. | |  | in interval notation. | |   The chart below will show you all of the possible ways of utilizing interval notation. |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **Interval Notation:** (description) | (diagram) | | Open Interval:   (*a, b*)  is interpreted as *a < x < b* where the endpoints are NOT included. (While this notation resembles an ordered pair, in this context it refers to the interval upon which you are working.) | (1, 5) | | Closed Interval:  [*a, b*]  is interpreted as *a < x < b*  where the endpoints are included. | [1, 5] | | Half-Open Interval:  (*a, b*]  is interpreted as *a < x < b* where a is not included, but b is included. | (1, 5] | | Half-Open Interval:  [*a, b*) is interpreted as *a < x < b* where a is included, but b is not included. | [1, 5) | | Non-ending Interval:  is interpreted as *x > a* where *a* is not included and infinity is always expressed as being "open" (not included). |  | | Non-ending Interval:  is interpreted as *x < b* where *b* is included and again, infinity is always expressed as being "open" (not included). |  | |