## Element by Element Operations - Reference Sheet

In element-by-element operations, the dimensions of the arrays must match and will result in an array of the same dimensions.

Manage element-by-element computations with a period character.

| Operation | Format | Example | Period Character Use |
| :---: | :---: | :---: | :---: |
| Addition | $(A+B)$ | $\left[\begin{array}{lll}1 & 0 & 5\end{array}\right]+\left[\begin{array}{lll}1 & 3 & 2\end{array}\right]=\left[\begin{array}{lll}2 & 3 & 7\end{array}\right]$ | No period character |
| Subtraction | ( $\mathrm{A}-\mathrm{B}$ ) | $\left[\begin{array}{lll}1 & 0 & 5\end{array}\right]-\left[\begin{array}{lll}1 & 3 & 2\end{array}\right]=\left[\begin{array}{lll}0 & -3 & 3\end{array}\right]$ | No period character |
| Multiplication of a scalar and an array | ( ${ }^{*} \mathrm{~B}$ ) | 3 * $\left.\begin{array}{lll}3 & 5 & 4\end{array}\right]=\left[\begin{array}{lll}9 & 15 & 12\end{array}\right]$ | No period character |
| Multiplication of arrays | (A.* B) | $\left[\begin{array}{lll}8 & 1 & 5\end{array}\right] . *\left[\begin{array}{lll}2 & 3 & 4\end{array}\right]=\left[\begin{array}{lll}16 & 3 & 20\end{array}\right]$ | Requires period character |
| Division of an array by a scalar | ( $\mathrm{A} / \mathrm{b}$ ) | [16 10 22] / 2 = [8 5 11] | No period character |
| Division of arrays | (A ./ B) | $\left[\begin{array}{lll}24 & 25 & 35\end{array}\right] . /\left[\begin{array}{lll}8 & 5 & 7\end{array}\right]=\left[\begin{array}{lll}3 & 5 & 5\end{array}\right]$ | Requires period character |
| Division of a scalar by an array | (a./B) | 12 ./ [ 4112$]$ = $\left[\begin{array}{lll}3 & 12 & 6\end{array}\right]$ | Requires period character |
| Exponentiation of arrays |  | $\left[\begin{array}{lll}8 & 5 & 21\end{array}\right] . \wedge\left[\begin{array}{lll}2 & 3 & 1\end{array}\right]=\left[\begin{array}{lll}64 & 125 & 21\end{array}\right]$ | Requires period character |
| Exponentiation involving a scalar | $\begin{aligned} & \left(a ._{\wedge} B\right) \text { or } \\ & \left(B .^{\wedge} a\right) \end{aligned}$ | $\left.\begin{array}{l} 2 . \wedge\left[\begin{array}{lll} 4 & 2 & 7 \end{array}\right]=\left[\begin{array}{lll} 16 & 4 & 128 \end{array}\right] \\ {[3} \\ 3 \end{array} 10-1\right] . \wedge 3=\left[\begin{array}{lll} 27 & 1000 & -1 \end{array}\right]$ | Requires period character |

