

# Arithmetic with NumPy Arrays: Takeaways



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## Syntax

### ARITHMETIC WITH NDARRAYS

- Addition, subtraction, multiplication and division:

```
x_plus_y = x + y
x_minus_y = x - y
x_times_y = x * y
x_div_y = x / y
```

- Calculate the maximum (minimum is the same but with *min* instead of *max*):

```
x.max()
x.max(axis=0) # Max over columns
x.max(axis=1) # Max over rows
```

- Calculate the sum:

```
x.sum()
x.sum(axis=0) # Sum over columns
x.sum(axis=1) # Sum over rows
```

- Get the shape of a ndarray:

```
x.shape
```

## Concepts

- NumPy is implemented in a low-level programming language called C. This makes it possible for it to perform calculations much more quickly by using SIMD.
- SIMD is a processor feature that allows a program to make the same calculation over multiple points of data, at the same time.
- Most methods of an ndarray have a `axis` parameter. We can use this parameter to execute the methods on the columns ( `axis=0` ) or on the rows ( `axis=1` ).

## Resources

- [NumPy axis](#)
- [SIMD](#)