Python NumPY Cheat Sheet

Become Data Analyst With Me!

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Basics

```
import numpy as np              # Import Numpy
a = np.array([1, 2, 3])         # Create 1D array
b = np.array([[1, 2], [3, 4]])  # Create 2D array
```

View Array Info

```
a.shape                         # Shape (rows, cols)
a.ndim                          # Number of dimensions
a.size                          # Total number of elements
a.dtype                         # Data type
a.itemsize                      # Size of each element
a.nbytes                        # Total bytes
```

Create Arrays

```
np.zeros((2, 3))                # 2x3 array of zeros
np.ones((3, 2))                 # 3x2 array of ones
np.full((2, 2), 7)              # Full array
np.eye(3)                       # Identity matrix
np.arange(0, 10, 2)             # Even spaced values
np.linspace(0, 1, 5)            # Linearly spaced
```

Reshape & Slice

```
a.reshape(3, 1)      # Change shape
a.flatten()          # Flatten to 1D
a[0]                 # First element
a[1:3]               # Slice from index 1 to 2
a[:, 1]              # Second column
a[1:, :2]            # Subarray slice
```

Math Operations

```
a + b                # Element-wise addition
a - b                # Subtraction
a * b                # Multiplication
a / b                # Division
np.dot(a, b)         # Matrix multiplication
a.T                  # Transpose
```

Where & Conditionals

```
np.where(a > 5)      # Indices where condition is met
a[a > 5]             # Filtered values
np.any(a > 0)        # Any condition true
np.all(a < 10)       # All condition true
```

Statistical Functions

```
np.sum(a)          # Sum
np.mean(a)         # Mean
np.std(a)          # Standard deviation
np.min(a)          # Minimum
np.max(a)          # Maximum
np.median(a)       # Median
np.argmax(a)       # Index of max
```

Random Module

```
np.random.rand(2, 2)          # Uniform random
np.random.randn(3, 3)         # Normal dist
np.random.randint(0, 10, 5)   # Random ints
np.random.seed(42)            # Reproducible
```

Modify & Combine

```
np.concatenate([a, b])        # Join arrays
np.stack((a, b), axis=0)      # Stack vertically
np.split(a, 3)                # Split array
np.unique(a)                  # Unique values
np.sort(a)                    # Sort array
```

Top Tips to Master NumPy

- Start with real data — practice makes perfect
- Break problems into small array tasks
- Use .shape, .dtype, and .ndim often
- Learn through plotting (combine with Matplotlib)
- Build mini projects (e.g., Netflix ratings, weather data)
- Explore Kaggle datasets with NumPy
- Practice + Notes + Ask Questions = Growth