

# NumPy Cheat Sheet

## 1. Creating Arrays

```
np.array([1, 2, 3])
np.zeros((2, 3))
np.ones((3, 1))
np.full((2, 2), 5)
np.eye(3) # Identity matrix
```

## 2. Array Properties

```
a.shape, a.ndim, a.size, a.dtype
```

## 3. Indexing and Slicing

```
a[0, 1], a[:, 1], a[1, :], a[0:2, 1:]
```

## 4. Reshaping Arrays

```
a.reshape((4, 1))
a.flatten()
a.T
```

## 5. Math Operations

```
a + b, a - b, a * b, a / b, a ** 2
np.dot(a, b), a @ b
```

## 6. Aggregate Functions

```
np.sum(a), np.mean(a), np.min(a), np.max(a)
np.std(a), np.median(a)
```

## 7. Comparison & Boolean

```
a > b, np.where(a > b, 1, 0)
np.any(a > 2), np.all(a > 0)
```

## 8. Random Numbers

```
np.random.rand(3, 2)
np.random.randn(3)
np.random.randint(1, 10, (2, 2))
```

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## 9. Linspace & Arange

```
np.linspace(0, 10, 5)  
np.arange(0, 10, 2)
```

## 10. Stacking Arrays

```
np.vstack((a, b))  
np.hstack((a, a))
```

## 11. Useful Functions

```
np.unique(a), np.sort(a), np.argsort(a)  
np.clip(a, 0, 5), np.isnan(a), np.isinf(a)
```