NumPy :

import numpy as np

1. Create a NumPy array of integers from 10 to 50 (inclusive).

arr1 = np.arange(10, 51)

print(arr1)

2. Create a 3x3 NumPy array of all True values.

arr2 = np.full((3, 3), True)

print(arr2)

3. Create a 5x5 identity matrix.

arr3 = np.eye(5)

print(arr3)

4. Generate an array of 10 random float numbers between 0 and 1.

arr4 = np.random.rand(10)

print(arr10)

5. Create a 1D array of 15 numbers equally spaced between 0 and 5.

arr5 = np.linspace(0, 5, 15)

print(arr5)

6. Reshape an array of 12 elements into a 3x4 matrix.

arr6 = np.arange(12).reshape(3, 4)

print(arr6)

7. Replace all even numbers in the array [1, 2, 3, 4, 5, 6] with -1.

arr7 = np.array([1, 2, 3, 4, 5, 6])

arr7[arr7 % 2 == 0] = -1

print(arr7)

8. Extract all odd numbers from a 1D array ranging from 0 to 20.

arr8 = np.arange(0, 21)

odd\_numbers = arr8[arr8 % 2 != 0]

print(arr8)

9. Create a 2D array of shape (4, 5) and calculate the sum of each column.

arr9 = np.arange(20).reshape(4, 5)

column\_sums = arr9.sum(axis=0)

print(arr9)

10. Create two 3x3 arrays and perform element-wise multiplication.

arr10\_a = np.arange(9).reshape(3, 3)

arr10\_b = np.ones((3, 3))

result10 = arr10\_a \* arr10\_b

print(arr10)

11. Create an array from 1 to 100 and count how many numbers are divisible by both 3 and 5.

arr11 = np.arange(1, 101)

count = np.sum((arr11 % 3 == 0) & (arr11 % 5 == 0))

print(arr11)

12. Normalize a NumPy array: subtract its mean and divide by its standard deviation.

arr12 = np.array([1, 2, 3, 4, 5])

normalized = (arr12 - np.mean(arr12)) / np.std(arr12)

print(arr12)