In [5]:
```python
import numpy as np

arr_1d = np.arange(1, 11)
print("1D Array:")
print(arr_1d)

arr_2d = arr_1d.reshape(2, 5)
print("\n2D Array (2x5):")
print(arr_2d)

flattened = arr_2d.flatten()
print("\nFlattened Array:")
print(flattened)
```

```
1D Array:
[ 1  2  3  4  5  6  7  8  9 10]

2D Array (2x5):
[[ 1  2  3  4  5]
 [ 6  7  8  9 10]]

Flattened Array:
[ 1  2  3  4  5  6  7  8  9 10]
```

In [6]:
```python
import numpy as np
matrix1 = np.random.randint(1, 51, size=(3, 3))
matrix2 = np.random.randint(1, 51, size=(3, 3))

print("Matrix 1:")
print(matrix1)
print("\nMatrix 2:")
print(matrix2)

print("\nAddition:")
print(matrix1 + matrix2)

print("\nSubtraction:")
print(matrix1 - matrix2)

print("\nMultiplication:")
print(matrix1 * matrix2)

print("\nDivision:")
print(matrix1 / matrix2)
```

```
Matrix 1:
[[13 37 26]
 [25 31  8]
 [18  2 40]]

Matrix 2:
[[10 33 47]
 [46 13  5]
 [22 45 39]]

Addition:
[[23 70 73]
 [71 44 13]
 [40 47 79]]

Subtraction:
[[  3   4 -21]
 [-21  18   3]
 [ -4 -43   1]]

Multiplication:
[[ 130 1221 1222]
 [1150  403   40]
 [ 396   90 1560]]

Division:
[[1.3        1.12121212 0.55319149]
 [0.54347826 2.38461538 1.6       ]
 [0.81818182 0.04444444 1.02564103]]
```

In [8]:
```python
import numpy as np

arr = np.arange(1, 26).reshape(5, 5)
print("5x5 Array:")
print(arr)

print("\nFirst row:")
print(arr[0, :])

print("\nSecond column:")
print(arr[:, 1])

print("\nSubmatrix (rows 1-3, columns 2-4):")
print(arr[1:4, 2:5])

identity = np.eye(5)
print("\n5x5 Identity Matrix:")
print(identity)
```

```
5x5 Array:
[[ 1  2  3  4  5]
 [ 6  7  8  9 10]
 [11 12 13 14 15]
 [16 17 18 19 20]
 [21 22 23 24 25]]

First row:
[1 2 3 4 5]

Second column:
[ 2  7 12 17 22]

Submatrix (rows 1-3, columns 2-4):
[[ 8  9 10]
 [13 14 15]
 [18 19 20]]

5x5 Identity Matrix:
[[1. 0. 0. 0. 0.]
 [0. 1. 0. 0. 0.]
 [0. 0. 1. 0. 0.]
 [0. 0. 0. 1. 0.]
 [0. 0. 0. 0. 1.]]
```

In [4]:
```python
import numpy as np

even_numbers = np.arange(10, 51, 2)
print("Even numbers between 10 and 50:")
print(even_numbers)
```

```
Even numbers between 10 and 50:
[10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50]
```

In [ ]: