```
import numpy as np

#creating an array of 10 zeros
np.zeros(10)

array([0., 0., 0., 0., 0., 0., 0., 0., 0., 0.])

#create an array of 10 ones
np.ones(10)

array([1., 1., 1., 1., 1., 1., 1., 1., 1., 1.])

#create an array of 10 fives
np.ones(10)*5

array([5., 5., 5., 5., 5., 5., 5., 5., 5., 5.])

#create an array of integers from 10 to 50
np.arange(10,51)

array([10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25,
26,
       27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42,
43,
       44, 45, 46, 47, 48, 49, 50])

#create an array of all even integers from 10 to 50
np.arange(10,51,2)

array([10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40,
42,
       44, 46, 48, 50])

#create a 3x3 matrix with values ranging from 0 to 8
np.arange(0,9).reshape(3,3)

array([[0, 1, 2],
       [3, 4, 5],
       [6, 7, 8]])

#create a 3x3 identity matrix
np.eye(3)

array([[1., 0., 0.],
       [0., 1., 0.],
       [0., 0., 1.]])

#use Numpy to generate a random number between 0 and 1
np.random.rand(1)

array([0.8500745])
```

```
#use Numpy to generate an array of 25 random numbers sampled from
standard normal distribution
np.random.rand(25)
```

```
array([0.57589564, 0.4248568 , 0.40306374, 0.55142344, 0.58266789,
       0.82365828, 0.25793289, 0.7887792 , 0.83728822, 0.38089782,
       0.45506652, 0.93201012, 0.87191229, 0.70499646, 0.4319196 ,
       0.69395967, 0.01524248, 0.60117282, 0.47489599, 0.89408548,
       0.56749194, 0.77649297, 0.00309318, 0.44841211, 0.94525116])
```

```
#create following matrix:
np.arange(0.01,1.01,0.01).reshape(10,10)
```

```
array([[0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09, 0.1 ],
       [0.11, 0.12, 0.13, 0.14, 0.15, 0.16, 0.17, 0.18, 0.19, 0.2 ],
       [0.21, 0.22, 0.23, 0.24, 0.25, 0.26, 0.27, 0.28, 0.29, 0.3 ],
       [0.31, 0.32, 0.33, 0.34, 0.35, 0.36, 0.37, 0.38, 0.39, 0.4 ],
       [0.41, 0.42, 0.43, 0.44, 0.45, 0.46, 0.47, 0.48, 0.49, 0.5 ],
       [0.51, 0.52, 0.53, 0.54, 0.55, 0.56, 0.57, 0.58, 0.59, 0.6 ],
       [0.61, 0.62, 0.63, 0.64, 0.65, 0.66, 0.67, 0.68, 0.69, 0.7 ],
       [0.71, 0.72, 0.73, 0.74, 0.75, 0.76, 0.77, 0.78, 0.79, 0.8 ],
       [0.81, 0.82, 0.83, 0.84, 0.85, 0.86, 0.87, 0.88, 0.89, 0.9 ],
       [0.91, 0.92, 0.93, 0.94, 0.95, 0.96, 0.97, 0.98, 0.99, 1.  ]])
```

```
#create an array of 20 linearly spaced points between 0 and 1
np.linspace(0,1,20)
```

```
array([0.        , 0.05263158, 0.10526316, 0.15789474, 0.21052632,
       0.26315789, 0.31578947, 0.36842105, 0.42105263, 0.47368421,
       0.52631579, 0.57894737, 0.63157895, 0.68421053, 0.73684211,
       0.78947368, 0.84210526, 0.89473684, 0.94736842, 1.        ])
```

```
#Numpy indexing and selection
mat=np.arange(1,26).reshape(5,5)
```

```
mat
```

```
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]])
```

```
mat[2:,1:]
```

```
array([[12, 13, 14, 15],
       [17, 18, 19, 20],
       [22, 23, 24, 25]])
```

```
mat[3,4]
```

```
20
```

```
mat[:3,1:2]
```

```
array([[ 2],
       [ 7],
       [12]])
```

```
mat[4,:]
```

```
array([21, 22, 23, 24, 25])
```

```
mat[3:,:]
```

```
array([[16, 17, 18, 19, 20],
       [21, 22, 23, 24, 25]])
```

```
#Get the sum of all values in mat
mat.sum()
```

```
325
```

```
#Get the standard deviation of values in mat
mat.std()
```

```
7.211102550927978
```

```
#Get the sum of all columns in mat
mat.sum(axis=1)
```

```
array([ 15,  40,  65,  90, 115])
```