```
import numpy as np
my_list = [1,2,3]
print(my_list)
print(np.array(my_list))
```

```
[1, 2, 3]
[1 2 3]
```

ARRAY

```
my__matrix = [[1,2,3],[4,5,6],[5,6,7]]
print(my__matrix)
np.array(my__matrix)
print(np.array(my__matrix))
```

```
[[1, 2, 3], [4, 5, 6], [5, 6, 7]]
[[1 2 3]
 [4 5 6]
 [5 6 7]]
```

ARANGE

```
print(np.arange(0,10))
```

```
[0 1 2 3 4 5 6 7 8 9]
```

(start,end,step)

```
print(np.arange(0,11,2))
```

```
[ 0  2  4  6  8 10]
```

first 50 odd numbers

```
print(np.arange(1,102,2))
```

```
[  1   3   5   7   9  11  13  15  17  19  21  23  25  27  29  31  33  35
  37  39  41  43  45  47  49  51  53  55  57  59  61  63  65  67  69  71
  73  75  77  79  81  83  85  87  89  91  93  95  97  99 101]
```

zeros and one

```
print(np.zeros(3))
print(np.zeros((6,9)))
print(np.ones(4))
print(np.ones((4,5)))
```

```
[0. 0. 0.]
[[0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0.]
 [0. 0. 0. 0. 0. 0. 0. 0. 0.]]
[1. 1. 1. 1.]
[[1. 1. 1. 1. 1.]
 [1. 1. 1. 1. 1.]
 [1. 1. 1. 1. 1.]
 [1. 1. 1. 1. 1.]]
```

linspace

```
print(np.linspace(0,10,3))
print(np.linspace(0,10,50))
print(np.linspace(0,100,25))
```

```
[ 0.  5. 10.]
[ 0.         0.20408163  0.40816327  0.6122449   0.81632653  1.02040816
  1.2244898   1.42857143  1.63265306  1.83673469  2.04081633  2.24489796
  2.44897959  2.65306122  2.85714286  3.06122449  3.26530612  3.46938776
  3.67346939  3.87755102  4.08163265  4.28571429  4.48979592  4.69387755
  4.89795918  5.10204082  5.30612245  5.51020408  5.71428571  5.91836735
  6.12244898  6.32653061  6.53061224  6.73469388  6.93877551  7.14285714
  7.34693878  7.55102041  7.75510204  7.95918367  8.16326531  8.36734694
  8.57142857  8.7755102   8.97959184  9.18367347  9.3877551   9.59183673
  9.79591837 10.        ]
[  0.           4.16666667   8.33333333  12.5         16.66666667
  20.83333333  25.          29.16666667  33.33333333  37.5
  41.66666667  45.83333333  50.          54.16666667  58.33333333
  62.5         66.66666667  70.83333333  75.          79.16666667
  83.33333333  87.5         91.66666667  95.83333333 100.        ]
```

eye

```
print(np.eye(7))
```

```
[[1. 0. 0. 0. 0. 0. 0.]
 [0. 1. 0. 0. 0. 0. 0.]
 [0. 0. 1. 0. 0. 0. 0.]
 [0. 0. 0. 1. 0. 0. 0.]
 [0. 0. 0. 0. 1. 0. 0.]
 [0. 0. 0. 0. 0. 1. 0.]
 [0. 0. 0. 0. 0. 0. 1.]]
```

random

```
print(np.random.rand(2))
print(np.random.rand(5))
print(np.random.rand(9,6))
```

```
[0.30160144 0.52338387]
[0.17063218 0.26969031 0.17887535 0.40317868 0.27306894]
[[0.22233918 0.86011142 0.10840603 0.80096299 0.35031617 0.71631727]
 [0.85013458 0.43544886 0.89391423 0.53944382 0.58714311 0.62215957]
 [0.53464679 0.10084083 0.27839162 0.51432901 0.84466857 0.68865843]
 [0.13008782 0.2019548  0.92522635 0.58885789 0.008993   0.3107725 ]
 [0.16376755 0.35250049 0.63684531 0.08132963 0.43483021 0.51063504]
 [0.68960336 0.88407456 0.21692006 0.36932451 0.45621371 0.25153908]
 [0.86874309 0.61967015 0.03733998 0.62018179 0.49722556 0.98158612]
 [0.23244678 0.82851059 0.2719779  0.98531127 0.23788167 0.54222285]
 [0.17472004 0.35486877 0.61619385 0.35191477 0.11744611 0.31014775]]
```

randn

```
print(np.random.randn(2))
print(np.random.randn(5,5))
```

```
[0.38698164 1.58476002]
[[-0.4298131  -0.45088193 -0.75718991 -1.11547846  0.92749545]
 [ 0.78729561 -1.25939437  1.49706641 -0.93625744 -0.61563294]
 [-1.41492705  1.6626254   2.04964129  0.45007995  1.35176538]
 [-1.3912906  -0.82914664  0.5539546   1.10067095  0.75331385]
 [-0.57543807 -0.4048335   0.66545773  0.73585152 -0.68521313]]
```

randint

```
print(np.random.randint(1,100))
print(np.random.randint(1,100,10))
```

```
71
[65 25 95  2 55  8 71 64 47 94]
```

array attributes and methods

```
arr=np.arange(25)
ranarr=np.random.randint(0,50,10)
print(arr)
print(ranarr)
```

```
[ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
 24]
[34 49 41 45 33 45  7 17 18 36]
```

reshape

```
print(arr.reshape(5,5))
```

```
[[ 0  1  2  3  4]
 [ 5  6  7  8  9]
 [10 11 12 13 14]
 [15 16 17 18 19]
 [20 21 22 23 24]]
```

max min argmax argmin

```
print(ranarr)
print(ranarr.max())
print(ranarr.argmax())
print(ranarr.min())
print(ranarr.argmin())
```

```
[34 49 41 45 33 45  7 17 18 36]
49
1
7
6
```

shape

```
print(arr.shape)
print(arr.reshape(1,25))
print(arr.reshape(1,25).shape)
print(arr.reshape(25,1))
print(arr.reshape(25,1).shape)
```

```
(25,)
[[ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
  24]]
(1, 25)
[[ 0]
 [ 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, 1)
```

dtype data type

```
print(arr.dtype)
```

```
int64
```