```
import numpy as np
print(np.__version__)
```

```
1.26.4
```

```
import numpy as np
```

```
A1=np.array([1,2,3,4])
print(A1)
```

```
[1 2 3 4]
```

```
type(A1)
```

```
numpy.ndarray
```

```
A1.shape
```

```
(4,)
```

```
A1.size
```

```
4
```

```
A2=np.array([[1,2,3,4],[5,6,7,8]])
print(A2)
```

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

```
type(A2)
```

```
numpy.ndarray
```

```
A2.shape
```

```
(2, 4)
```

```
A2.size
```

```
8
```

```
A2.ndim
```

```
2
```

```
A3=np.array([[[1,2,3,],[4,5,6],[7,8,9]]])
print(A3)
```

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

```
import numpy as np
z1=np.zeros(3)
z1
```

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

```
z1=np.zeros(3,dtype=int)
z1
```

```
array([0, 0, 0])
```

```
z1.shape
```

```
(3,)
```

```
z1.size
```

```
3
```

```
z1.ndim
```

```
1
```

```
type(z1)
```

```
numpy.ndarray
```

```
z2=np.zeros((3,4))
z2
```

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

```
z2=np.zeros((3,4),dtype=int)
z2
```

```
array([[0, 0, 0, 0],
       [0, 0, 0, 0],
       [0, 0, 0, 0]])
```

```
type(z2)
```

```
numpy.ndarray
```

```
z2.shape
```

```
(3, 4)
```

```
z2.size
```

```
12
```

```
z2.ndim
```

```
2
```

```
z3=np.zeros((2,3,4))
z3
```

```
array([[[0., 0., 0., 0.],
        [0., 0., 0., 0.],
        [0., 0., 0., 0.]],

       [[0., 0., 0., 0.],
        [0., 0., 0., 0.],
        [0., 0., 0., 0.]]])
```

```
z3=np.zeros((2,3,4),dtype=int)
z3
```

```
array([[[0, 0, 0, 0],
        [0, 0, 0, 0],
        [0, 0, 0, 0]],

       [[0, 0, 0, 0],
        [0, 0, 0, 0],
        [0, 0, 0, 0]]])
```

```
type(z3)
```

```
numpy.ndarray
```

```
z3.shape
```

```
(2, 3, 4)
```

```
z3.size
```

```
24
```

```
z3.ndim
```

```
3
```

```
import numpy as np
a1=np.ones(3)
a1
```

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

```
a1=np.ones(3,dtype=int)
a1
```

```
array([1, 1, 1])
```

```
type(a1)
```

```
numpy.ndarray
```

```
a1.shape
```

```
(3,)
```

```
a1.size
```

```
3
```

```
a1.ndim
```

```
1
```

```
a2=np.ones([3,4])
a2
```

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

```
a2.size
```

```
12
```

```
a2.shape
```

```
(3, 4)
```

```
a3=np.ones([4,2,3])
a3
```

```
array([[[1., 1., 1.],
        [1., 1., 1.]],

       [[1., 1., 1.],
        [1., 1., 1.]],

       [[1., 1., 1.],
        [1., 1., 1.]],

       [[1., 1., 1.],
        [1., 1., 1.]]])
```

```
import numpy as np
f1=np.full(3,9)
f1
```

```
array([9, 9, 9])
```

```
f1=np.full(3,9,dtype=float)
f1
```

```
array([9., 9., 9.])
```

```
f2=np.full([2,3],9)
f2
```

```
array([[9, 9, 9],
       [9, 9, 9]])
```

```
f3=np.full([4,2,3],10)
f3
```

```
array([[[10, 10, 10],
        [10, 10, 10]],

       [[10, 10, 10],
        [10, 10, 10]],

       [[10, 10, 10],
        [10, 10, 10]],

       [[10, 10, 10],
        [10, 10, 10]]])
```

```
a=np.array([5,10,20])
b=np.array([4,8,10])
sub=np.multiply(a,b)
print(sub)
```

```
[ 20  80 200]
```

```
a=np.array([5,10,20])
b=np.array([4,8,10])
sub=np.divide(a,b)
print(sub)
```

```
[1.25 1.25 2.  ]
```

```
a=np.array([5,10,20])
b=np.array([4,8,10])
sub=np.mod(a,b)
print(sub)
```

```
[1 2 0]
```