```
In [1]:
         import numpy as np
 In [3]: arr = np.array([[[2,3,4],[5,6,7],[8,9,0]]])
 In [4]:
         arr
         array([[[2, 3, 4],
 Out[4]:
                 [5, 6, 7],
                  [8, 9, 0]]])
 In [5]: arr.shape
         (1, 3, 3)
 Out[5]:
 In [6]:
         arr.size
 Out[6]:
 In [7]:
         arr.ndim
 Out[7]:
 In [9]: arr.dtype
         dtype('int32')
 Out[9]:
In [10]: arr = np.array([[[1,2,3]]])
In [11]:
         arr
         array([[[1, 2, 3]]])
Out[11]:
In [12]: arr.shape
         (1, 1, 3)
Out[12]:
In [13]:
         arr.size
         3
Out[13]:
         arr = np.array([[1,2,3],[34,56,-87]])
In [17]:
In [18]:
         arr
         array([[ 1, 2,
                              3],
Out[18]:
                [ 34, 56, -87]])
In [19]:
         arr = np.array([[[2,3,4],[5,6,7],[8,9,0]]])
In [20]:
         arr
         array([[[2, 3, 4],
Out[20]:
                  [5, 6, 7],
                  [8, 9, 0]]])
In [23]: arr [0] [0] [1]
```

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```
In [30]: arr = np.array([[5,6,7]])
  In [31]: arr
            array([[5, 6, 7]])
   Out[31]:
  In [32]:
             arr[0][1]
             6
  Out[32]:
   In [331:
            arr = np.array([[[2,3,4],[5,6,7],[8,9,0]]])
  In [34]:
             array([[[2, 3, 4],
  Out[34]:
                     [5, 6, 7],
                     [8, 9, 0]]])
  In [36]: arr[0][2][2]
   Out[36]:
   In [37]: # sum
             a = arr.sum()
  In [38]:
  Out[38]:
   In [40]:
             arr.sum(axis = 0)
             array([[2, 3, 4],
  Out[40]:
                    [5, 6, 7],
                    [8, 9, 0]])
             arr.sum(axis = 1)
   In [41]:
             array([[15, 18, 11]])
  Out[41]:
  In [42]: arr = np.array ([[[1,2,3]]])
   In [43]:
             arr.sum(axis = 0)
            array([[1, 2, 3]])
  Out[43]:
   In [44]:
             arr.sum(axis = 1)
            array([[1, 2, 3]])
  Out[44]:
             arr = np.array([[[56, 78, 89], [34, 98, 67], [23, 34, 54]]])
  In [45]:
   In [46]:
             arr
            array([[[56, 78, 89],
  Out[46]:
                     [34, 98, 67],
                     [23, 34, 54]]])
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```

```
Out[47]: array([[113, 210, 210]])
  In [49]: # zeros & ones
         np.zeros(100)
         Out[49]:
               In [50]: np.ones(12)
         Out[50]:
  In [51]: | #arange
         np.arange(7)
         array([0, 1, 2, 3, 4, 5, 6])
  Out[51]:
  In [53]:
         np.arange(6,89,2)
         array([ 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38,
  Out[53]:
               40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72,
               74, 76, 78, 80, 82, 84, 86, 88])
  In [55]:
         np.empty(5)
         array([6.23042070e-307, 4.67296746e-307, 1.69121096e-306, 1.78020169e-306,
  Out[55]:
               2.05837056e-312])
  In [56]:
         np.empty((6,8))
         array([[8.22799121e-312, 8.22821172e-312, 8.22780685e-312,
  Out[56]:
                8.22784737e-312, 8.22779499e-312, 8.22784737e-312,
                8.22784737e-312, 8.22779499e-312],
               [8.22784737e-312, 8.22784737e-312, 8.22779499e-312,
                8.22784737e-312, 8.22784737e-312, 8.22779499e-312,
                8.22784737e-312, 8.22784737e-312],
               [8.22782115e-312, 8.22779533e-312, 8.22779533e-312,
                8.22832122e-312, 8.22832123e-312, 8.22779495e-312,
                8.22780685e-312, 8.22779495e-312],
               [8.22832123e-312, 8.22784737e-312, 8.22780644e-312,
                8.22784737e-312, 8.22832123e-312, 8.22777715e-312,
                8.22780685e-312, 8.22784737e-312],
               [8.22784737e-312, 8.22832123e-312, 8.22779496e-312,
                8.22780685e-312, 8.22779496e-312, 8.22779496e-312,
                8.22782115e-312, 8.22779495e-312],
               [8.22779533e-312, 8.22779533e-312, 8.22832123e-312,
                8.22832123e-312, 8.22784737e-312, 8.22780644e-312,
                8.22784737e-312, 8.22832123e-312]])
  In [64]:
         np.linspace(6,9,2)
         array([6., 9.])
  Out[64]:
  In [78]: x = [23, 45, 78, 90]
         y = [56, 78, 45, 23]
         <del>7 = [67 78 23</del>,45]
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```

common elements 23
common elements 45
common elements 78

In [ ]: