Q1

```
from numpy import random
import numpy as np


arr=random.randint(50,size=(4,2))
print(arr)
print("Array shape: ",arr.shape)
print("Dimensions: ",arr.ndim)
print("Size of each element  : ",arr.itemsize)
```

Output:

[[1 21]

 [36 35]

 [38 2]

 [2 43]]

Array shape: (4, 2)

Dimensions: 2

Size of each element : 4

Q2

```
import numpy as np
from numpy import random

n=int(input("Enter number of elements : "))
arr=random.randint(10,91,size=(n,))
print(arr)
```

Output:

Enter number of elements : 6

[65 66 30 19 71 10]

Q3

```
import numpy as np
from numpy import random

n=int(input("Enter number of elements : "))

arr=random.randint(1,50,size=n)
print(arr)
arr2=arr.reshape(4,3)
print(arr2)
```

Output:

Enter number of elements : 12

[8 42 17 32 15 20 34 14 25 34 11 15]

[[8 42 17]

[32 15 20]

[34 14 25]

[34 11 15]]

Q4

```
import numpy as np
from numpy import random

arr=np.eye(3)
print(arr)
```

Output:

[[1. 0. 0.]

[0. 1. 0.]

[0. 0. 1.]]

Q5

```
import numpy as np
from numpy import random

arr = random.randint(100,size=(3,3,3))

print(arr)
```

Output:

[[[96 5 21]

 [34 0 68]

 [2 51 72]]

[[9 49 55]

 [3 62 86]

 [32 42 32]]

[[62 0 95]

 [21 27 21]

 [81 70 46]]]

Q6

```
import numpy as np
from numpy import random

arr = random.randint(50,size=(10,10))
print(arr)
print('Maximum value is :',arr.max())
print('Minimum value is :',arr.min())
```

Output:

[[0 2 31 31 12 38 11 15 25 0]

 [13 14 46 22 13 36 14 19 18 2]

 [25 19 14 18 47 2 15 7 38 25]

 [2 17 17 17 6 42 5 21 9 35]

 [34 8 21 3 14 6 28 25 47 33]

 [20 26 2 40 11 44 46 12 17 1]

 [14 9 41 13 33 32 9 42 22 40]

 [46 3 9 43 16 29 41 46 39 27]

 [43 23 13 28 21 46 5 30 37 18]

 [0 38 6 37 32 27 5 4 33 16]]

Maximum value is : 47

Minimum value is : 0

Q7

```
import numpy as np
from numpy import random

arr1 = random.randint(50, size=(10))
arr2 = random.randint(70, size=(10))
print(arr1)
print(arr2)

print('The common element is:',np.intersect1d(arr1,arr2))
```

Output:

[23 30 43 40 41 18 2 36 39 4]

[60 58 34 11 32 25 13 35 47 66]

The common element is: []

[35 40 2 18 41 13 35 26 45 34]

[54 36 34 20 12 7 68 66 46 66]

The common element is: [34]

Q8

```
import numpy as np
from numpy import random

arr = random.randint(50,size=(4,4))
print('Array is: \n',arr)
print('reverse all rows: \n',arr[::-1])
print('reverse all columns: \n',arr[::,::-1])
print('reverse array: \n',arr[::-1,::-1])
print('swap two rows: ')
arr[[1,2],:] = arr[[2,1],:]
print(arr)
print('swap two columns: ')
arr[:,[1,2]] = arr[:,[2,1]]
print(arr)
```

Output:

Array is:

[[24 39 6 35]

[4 43 27 32]

[41 11 19 26]

[3 41 7 21]]

reverse all rows:

[[3 41 7 21]

[41 11 19 26]

[4 43 27 32]

[24 39 6 35]]

reverse all columns:

[[35 6 39 24]

[32 27 43 4]

[26 19 11 41]

[21 7 41 3]]

reverse array:

[[21 7 41 3]

[26 19 11 41]

[32 27 43 4]

[35 6 39 24]]

swap two rows:

[[24 39 6 35]

[41 11 19 26]

[4 43 27 32]

[3 41 7 21]]

swap two columns:

[[24 6 39 35]

[41 19 11 26]

[4 27 43 32]

[3 7 41 21]]

Q9

```
import numpy as np
from numpy import random

arr1 = random.randint(50,size=(3,3))
print('Original array  :\n',arr1)
n = random.randint(1,9,size=1)
print('Each elemenet of \n',arr1,'\n will be multiplied by : ',n)

print('Array after multiplication is:\n',arr1*n)
```

Output:

riginal array :

[[48 20 49]

[32 26 5]

[11 0 7]]

Each elemenet of

[[48 20 49]

[32 26 5]

[11 0 7]]

will be multiplied by : [5]

Array after multiplication is:

[[240 100 245]

[160 130 25]

[55 0 35]]

Q10

```
import numpy as np
from numpy import random

arr1 = random.randint(100, size=(3,3))
print('matrix A is:\n',arr1)
arr2 = random.randint(100,size=(3,3))
print('matrix B is:\n',arr2)
print('Addition of matrix A and B is:\n',arr1+arr2)
print('Subtraction of matrix A and B is:\n',arr1-arr2)
print('Multiplication of matrix A and B is:\n',arr1*arr2)
print('Transpose of matrix A is:\n',arr1.transpose())
print('Transpose of matrix B is:\n',arr2.transpose())
```

Output:

matrix A is:

[[61 63 90]

[29 26 14]

[75 92 32]]

matrix B is:

[[12 77 96]

[29 32 35]

[23 36 68]]

Addition of matrix A and B is:

[[73 140 186]

[58 58 49]

[98 128 100]]

Subtraction of matrix A and B is:

[[49 -14 -6]

[0 -6 -21]

[52 56 -36]]

Multiplication of matrix A and B is:

[[732 4851 8640]

[841 832 490]

[1725 3312 2176]]

Transpose of matrix A is:

[[61 29 75]

[63 26 92]

[90 14 32]]

Transpose of matrix B is:

[[12 29 23]

[77 32 36]

[96 35 68]]
