Python Exercise: Introduction to NumPy and Pandas

Import

```
import numpy as np
import pandas as pd
```

Part 1

Task 1: Creating the array

```
array1 = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15]
```

Make the array into numpy array

```
array1 = np.array(array1)
```

Task 2: Reshapnig the array

```
array2 = np.reshape(array1, (3, 5))

print(array2)
```

```
[[ 1  2  3  4  5]
 [ 6  7  8  9 10]
 [11 12 13 14 15]]
```

Task 3: Create a new array

```
array3 = array2 + 2
print(array3)
```

```
[[ 3  4  5  6  7]
 [ 8  9 10 11 12]
 [13 14 15 16 17]]
```

Task 4: Extract the second row

```
ndRow = array2[1]
print(ndRow)
```

```
[ 6  7  8  9 10]
```

Task 5: Multiply each element

```
array4 = array2 * 3
```

Task 6: Calculate the mean and sum

```
print(np.mean(array4))
```

```
24.0
```

```
print(np.sum(array4))
```

```
360
```

Part 2

Task 7: Creating DataFrames

```
data = {
    'Name': ['Tom', 'Jane', 'Steve'],
    'Age': [28, 34, 29],
    'Salary': [50000, 60000, 55000]
}

df = pd.DataFrame(data)
df
```

```
    Name  Age  Salary
0    Tom   28   50000
1   Jane   34   60000
2  Steve   29   55000
```

Task 8: Accessing DataFrame Columns

```
df['Name']
```

```
0      Tom
1     Jane
2    Steve
Name: Name, dtype: object
```

Task 9: Adding a New Column

```
df['Bonus'] = df['Salary'] * 0.12
df['Bonus']
```

```
0    6000.0
1    7200.0
2    6600.0
Name: Bonus, dtype: float64
```

Task 10: Basic DataFrame Statistics

```
print(df['Salary'].mean())
```

```
55000.0
```

```
df
```

```
    Name  Age  Salary   Bonus
0    Tom   28   50000  6000.0
1   Jane   34   60000  7200.0
2  Steve   29   55000  6600.0
```