Simulating Many Coin Flips

In [1]:
```
import numpy as np
```

In [2]:
```
# number of heads from 10 fair coin flips
np.random.binomial(10, 0.5)
```

Out[2]:
```
4
```

In [3]:
```
# results from 20 tests with 10 coin flips
np.random.binomial(10, 0.5, 20)
```

Out[3]:
```
array([4, 7, 3, 6, 4, 3, 5, 5, 2, 5, 4, 5, 3, 4, 6, 6, 6, 4, 7, 6])
```

In [4]:
```
# mean number of heads from the 20 tests
np.random.binomial(10, 0.5, 20).mean()
```

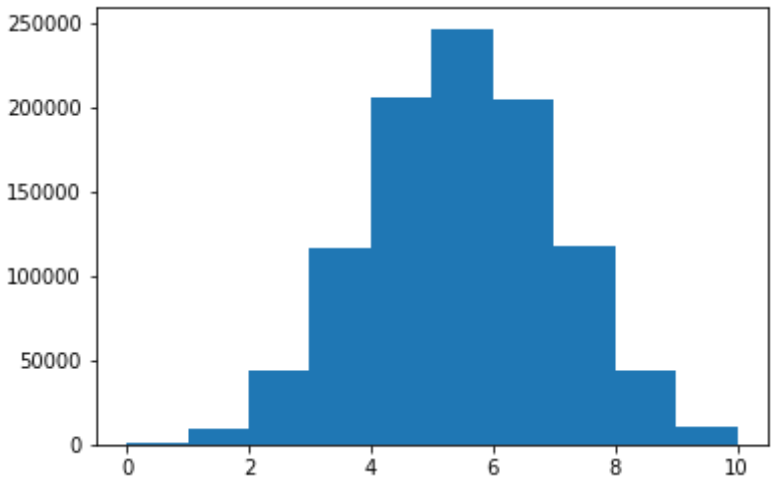
Out[4]:
```
5.1500000000000004
```

In [5]:
```
# reflects the fairness of the coin more closely as # tests increases
np.random.binomial(10, 0.5, 1000000).mean()
```

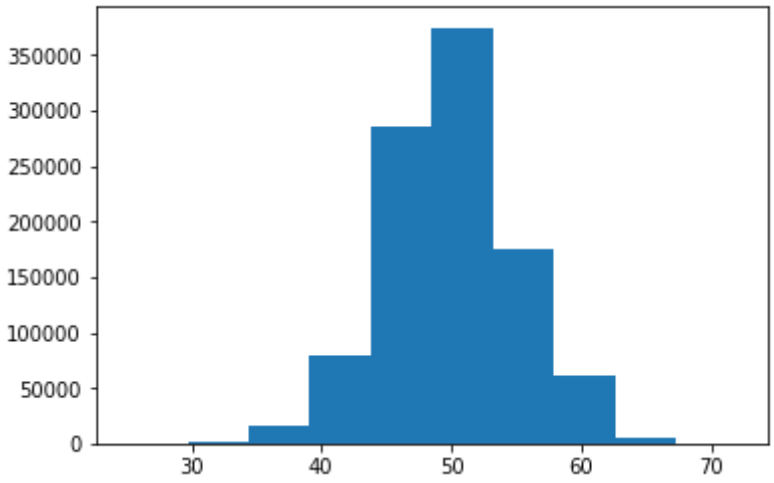
Out[5]:
```
4.9987719999999998
```

In [6]:
```
import matplotlib.pyplot as plt
% matplotlib inline
```

In [7]:
```
plt.hist(np.random.binomial(10, 0.5, 1000000));
```



In [8]:
```
# gets more narrow as number of flips increase per test
plt.hist(np.random.binomial(100, 0.5, 1000000));
```



In [ ]:
```

```