Simulating Many Coin Flips

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

In [11]:
```
# number of heads from 10 fair coin flips
np.random.binomial(10, 0.5)
```

Out[11]:
```
5
```

In [12]:
```
# results from 20 tests with 10 coin flips
np.random.binomial(10, 0.5, 20)
```

Out[12]:
```
array([5, 3, 6, 5, 6, 5, 5, 6, 6, 1, 5, 5, 5, 3, 4, 8, 5, 4, 9, 5]
)
```

In [13]:
```
# mean number of heads from the 20 tests
np.random.binomial(10, 0.5, 20).mean()
```

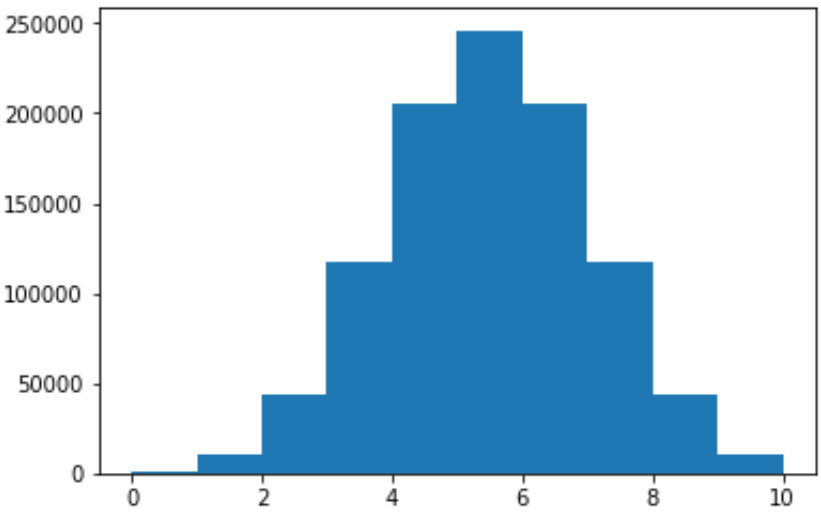
Out[13]:
```
4.8499999999999996
```

In [19]:
```
# reflects the fairness of the coin more closely as # tests increas
es
np.random.binomial(10, 0.5, 1000000).mean()
```

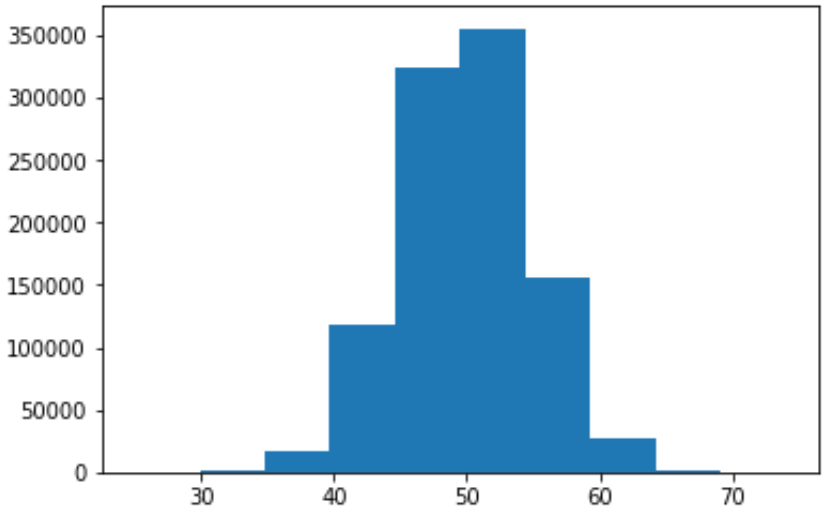
Out[19]:
```
5.0036009999999997
```

In [22]:
```
import matplotlib.pyplot as plt
% matplotlib inline
```

In [27]:
```
plt.hist(np.random.binomial(10, 0.5, 1000000));
```



In [29]:
```
# gets more narrow as number of flips increase per test
plt.hist(np.random.binomial(100, 0.5, 1000000));
```



In [ ]:
```
```