

# Assignments

October 5, 2024

## 0.1 Assignments for Probability 2

### 0.1.1 A 1

A fair coin is flipped 10 times. What is the probability of getting exactly 6 heads?

```
[1]: # Write your solution code here
# You can use scipy.stats.binom to create binomial distribution objects
# For example:
# from scipy.stats import binom
# binom.pmf(k, n, p)
from scipy.stats import binom

n = 10
k = 6
p = 0.5

probability = binom.pmf(k, n, p)
print(f"The probability of getting exactly 6 heads is: {probability}")
```

The probability of getting exactly 6 heads is: 0.20507812499999999

### 0.1.2 A 2

Assume that 45% of the population has brown eyes. If 12 people are randomly selected, what is the probability that exactly 5 of them have brown eyes?

```
[3]: # Write your solution code here
# You can use scipy.stats.binom to create binomial distribution objects
# For example:
# from scipy.stats import binom
# binom.pmf(k, n, p)
from scipy.stats import binom

n = 12
k = 5
p = 0.45

probability = binom.pmf(k, n, p)
```

```
print(f"The probability that exactly 5 out of 12 people have brown eyes is:␣  
↪{probability}")
```

The probability that exactly 5 out of 12 people have brown eyes is:  
0.2224982384326581

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