

Frequentist Concepts

Keith Allison

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Q1: Binomial Probability 1

```
dbinom(3, size = 4 ,prob = 0.75)
```

```
## [1] 0.421875
```

Q2: Binomial Probability 2

```
pbinom(3, size = 4 ,prob = 0.75)
```

```
## [1] 0.6835937
```

Q3: Binomial Probability 3

```
1- pbinom(3, size = 5 ,prob = 0.75)
```

```
## [1] 0.6328125
```

Q4: Normal Probability 1

```
pnorm(1.2, mean = 2, sd = 2)
```

```
## [1] 0.3445783
```

Q5: Normal Probability 2

```
1 - pnorm(1.2, mean = 2, sd = 2)
```

```
## [1] 0.6554217
```

Q6: Normal Probability 3

```
pnorm(3.2, mean = 2, sd = 2) - pnorm(1.2, mean = 2, sd = 2)
```

```
## [1] 0.3811686
```

Q7: Central Limit Theorem 1

The histogram approaches an approximation of the given beta distribution.

Q8: Central Limit Theorem 2

The histogram looks like the given beta distribution, but less skewed and much more like a normal distribution.

Q9: Central Limit Theorem 3

The histogram approaches a normal distribution as I hit the button.

Q10: Central Limit Theorem 3

When the sample size goes from 1 to 2, the sample size doubles. Since the mean is taken of the samples and follows the central limit theorem, the histogram is normalized instead of being purely a collection of samples from the beta distribution.

Q11: Central Limit Theorem 3

The two main factors that determine the width of the sampling distribution of the mean are the standard deviation of the population and the standard error of the sample.

Q12: Library of Babel 1

```
25*25*25
```

```
## [1] 15625
```

There are 15625 possible 3-character words

Q13: Library of Babel 2

```
410*40*81 - 410*40*80
```

```
## [1] 16400
```

$B * 25^{16400}$