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Eco 602
Frequentist Concepts
October 21, 2021
*worked solo

1.
```
> dbinom(3, 4, .75)
[1] 0.421875
```

2.
```
> pbinom(3, 4, .75)
[1] 0.6835937
```

3.
```
> 1 - (pbinom(3, 5, .75))
[1] 0.6328125
```

4.
```
> pnorm(1.2, 2, 2)
[1] 0.3445783
```

5.
```
> 1 - (pnorm(1.2, 2, 2))
[1] 0.6554217
```

6.
```
> (pnorm(3.2, 2, 2)) - (pnorm(1.2, 2, 2))
[1] 0.3811686
```

7. Overtime, as you sample more and more, the histogram begins to reflect the shape of the yellow probability mass function.
8. Again, as you take more samples, the histogram begins to resemble the shape of the theoretical distribution of the probability mass function in yellow, and the peak percentage in the first bin is slightly higher than before.
9. Again, as you take more samples, the histogram follows the shape of the theoretical distribution of the probability mass function in yellow, and the percentage in the first bin is much higher than before, closer to 100%.
10. There is such a drastic change when you begin to increase the sample size, because as the sample gets bigger, it begins to resemble the expected standard normal distribution. Doubling the sample size from 1 to 2 is a big step towards a bigger size.
11. The two main factors that affect the width of the sampling distribution are sample size and population standard deviation.
12. There are 25 x 25 x 25 = $25^3$ = 15625 possible combinations of 3 character words.
13. One additional position would mean 410*40*81 positions for characters = 1,328,400 positions in each book. With 25 characters, that's $25^{1,328,400}$.
    a. If B = $25^{1,312,000}$, then out new value divided by B = $25^{16,400}$, so the new value is equal to B * $25^{16,400}$.