Statistics

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Loading libraries

```
library(tidyverse)
```

```
## -- Attaching packages -------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.5      v purrr   0.3.4
## v tibble  3.1.6      v dplyr   1.0.7
## v tidyr   1.1.4      v stringr 1.4.1
## v readr   2.1.1      v forcats 0.5.1
```

```
## Warning: package 'stringr' was built under R version 4.1.3
```

```
## -- Conflicts ----------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```
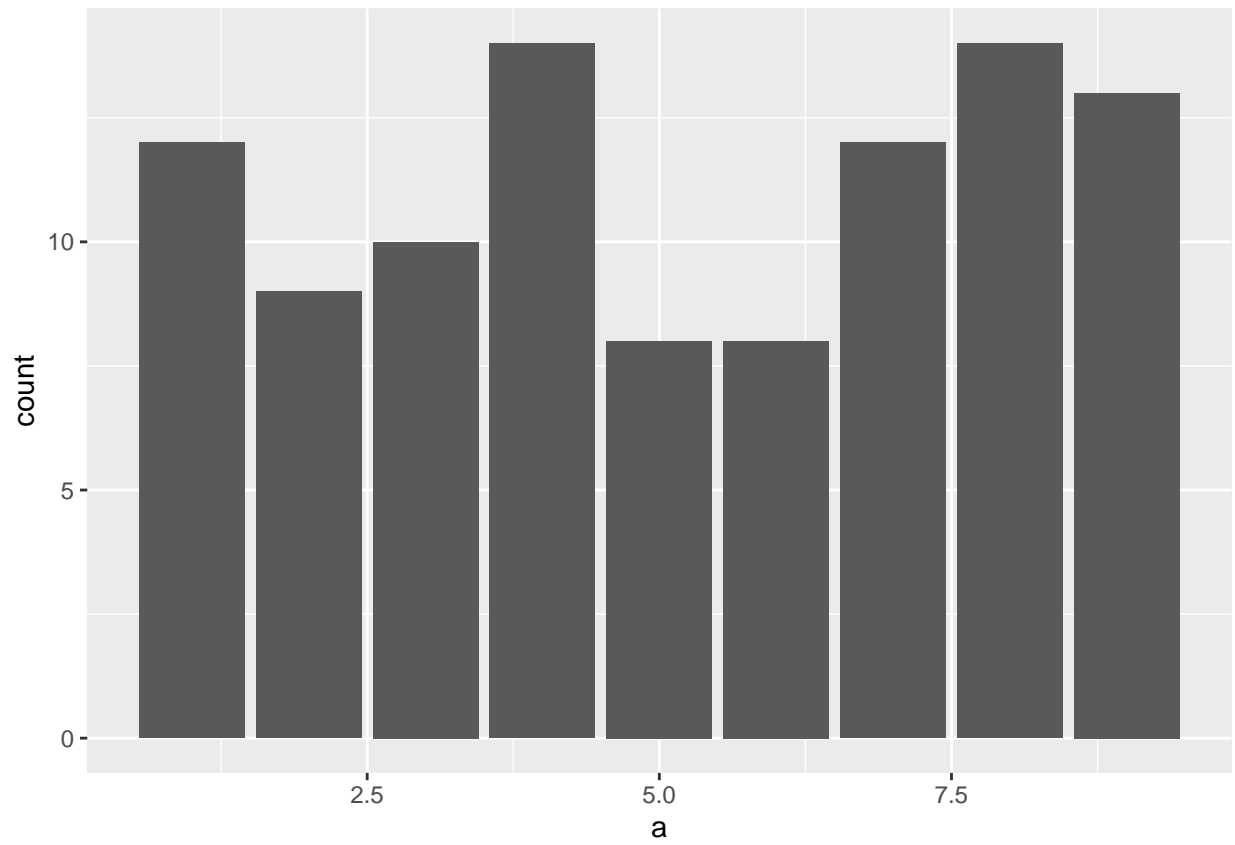
if we replicate 7 experiments with 9 different possible values to get in each experiment, with a probability of 0.20 that event "9" happens, our histogram graph will have a bell shape

```
a <- replicate(10^3, rbinom(7, 9, 0.20))
ggplot() + geom_bar(aes(a))
```
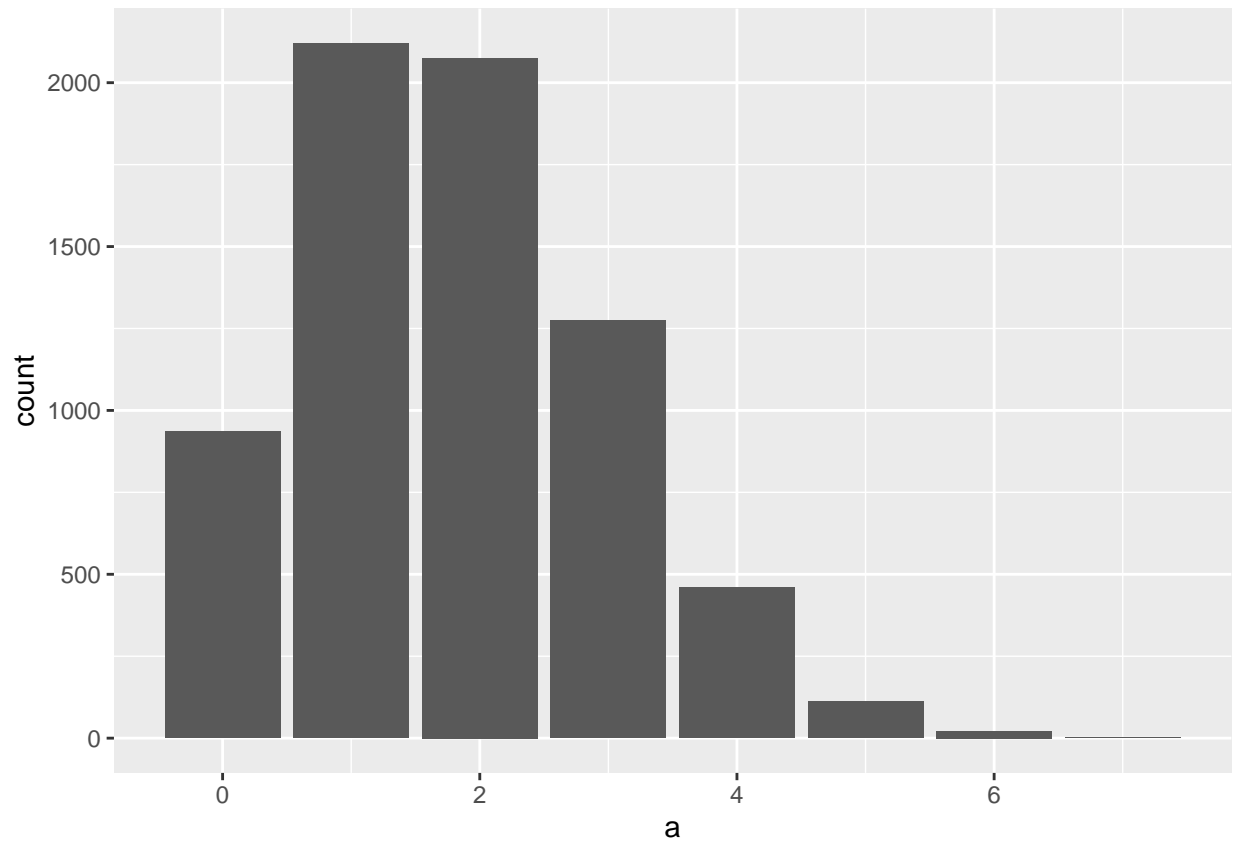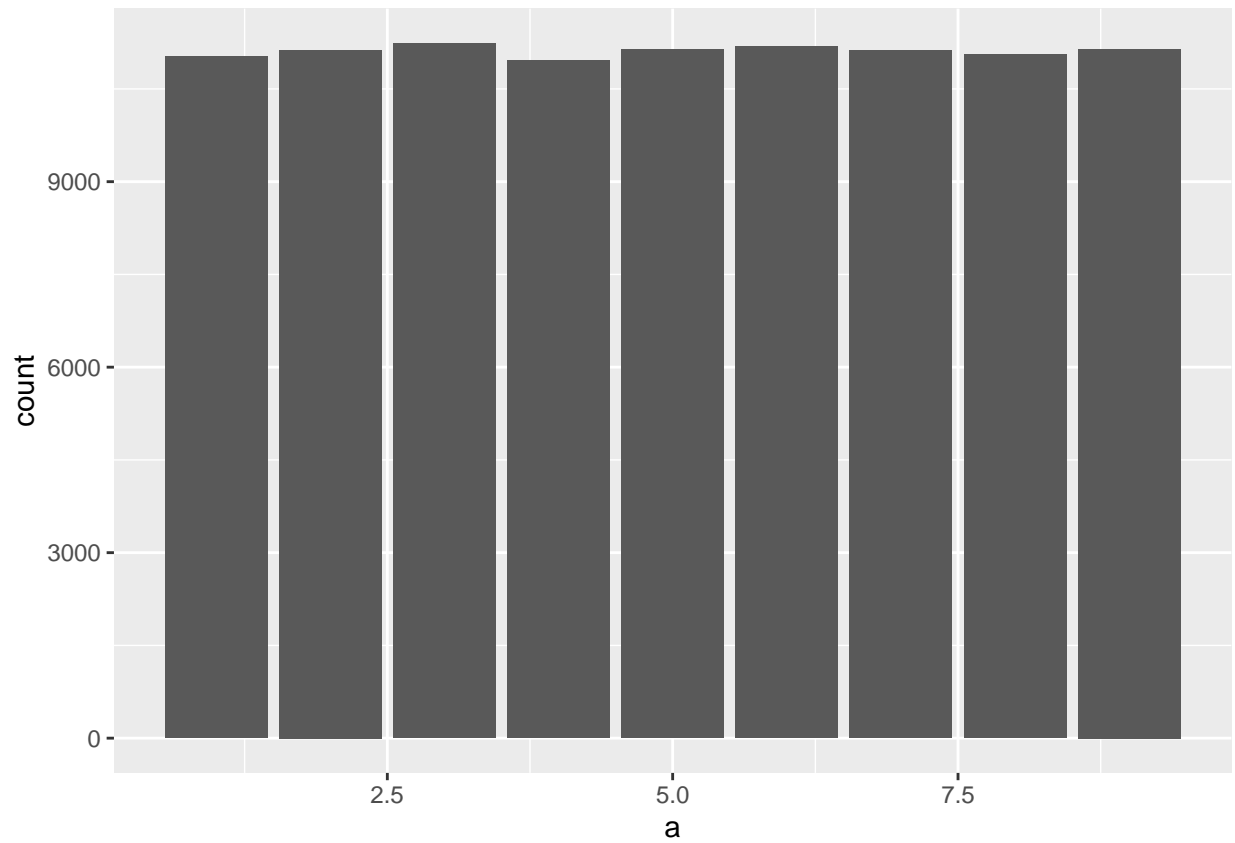
the closer our sample is from our population, the closer to a uniform distribution we'll be

```
a <- replicate(10^2, (sample(9, 1)))
ggplot() + geom_bar(aes(a))
```

```r
a <- replicate(10^5, (sample(9, 1)))
ggplot() + geom_bar(aes(a))
```

```
sum(a==8)/length(a)
```

```
## [1] 0.11053
```

```
table(a)
```

```
## a
##     1     2     3     4     5     6     7     8     9
## 11019 11131 11237 10961 11138 11190 11124 11053 11147
```