STAT 343 Examples, Unit 1 Day 1

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Loading packages from the command line

I loaded `fastR2` using `library()`; `require()` also works.

```
library(fastR2)
require(MASS)
```

Some commands do not work—or, at least, do not work as you saw in class—unless you have the `mosaic` package loaded. These include `rflip()`, `resample()` and `do()`. The video I ask you to watch uses mosaic commands like `tally()` and `gf_bar()`.

Simulating taking a true/false quiz by guessing

My first go today

```
rflip(12)    # H, or heads, represent correct answers
```

```
Flipping 12 coins [ Prob(Heads) = 0.5 ] ...

T T T H H T H H T T H H

Number of Heads: 6 [Proportion Heads: 0.5]
```

```
manyRuns <- do(50000) * rflip(12)
names(manyRuns)   # displays names of columns in manyRuns
```

```
[1] "n"     "heads" "tails" "prop"
```

```
nrow(manyRuns)
```

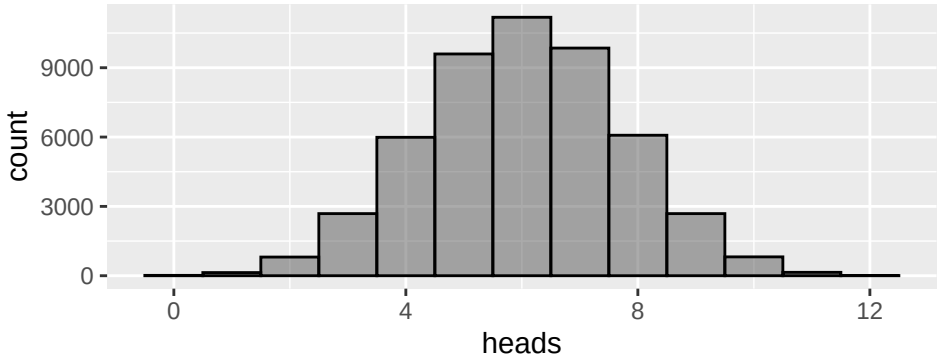
```
[1] 50000
```

```
head(manyRuns)
```

```
  n heads tails      prop
1 12     7     5 0.5833333
2 12     6     6 0.5000000
3 12     3     9 0.2500000
4 12     7     5 0.5833333
5 12     5     7 0.4166667
6 12     5     7 0.4166667
```

An histogram displaying the distribution of heads is obtained via the command

```
gf_histogram(~heads, data=manyRuns, bins=13, color="black")
```



To obtain an approximate probability of earning at least 3 correct I used the `filter` command:

```
nrow( filter(manyRuns, heads >= 3) ) / nrow(manyRuns)
```

```
[1] 0.98082
```

My second go

```
bag = c(0,1)
resample(bag, size=12)    # 1s represent correct answers
```

```
 [1] 0 1 1 0 1 0 1 1 0 1 1 1
```

```
manyRuns2 <- do(100000) * sum( resample(bag, size=12) )
head(manyRuns2)
```

```
  sum
1   6
2   5
3   6
4   6
5   6
6   5
```

It is a new simulation (different from the first go above), but the resulting probability of "3 or more correct" is nearly the same.

```
nrow( filter(manyRuns2, sum >= 3) ) / nrow(manyRuns2)
```

```
[1] 0.98079
```