

Class Computations

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```
library(ggplot2)
```

1 What's the expected value of a binomial distribution where 25 coins are flipped, each having 30% chance of heads?

```
mean(rbinom(10000, 25, 0.3))
```

7.4631

2 Simulate 100,000 flips of a coin with a 40%/20% chance of heads

```
A <- rbinom(100000, 1, .4)
```

```
B <- rbinom(100000, 1, .2)
```

```
mean(A & B)
```

0.08124

2.1 $P(A|B) = P(A) + P(B) - P(A \cap B)$

```
mean(A) + mean(B) - mean(A & B)
```

3 Simulating from the binomial and the normal

```
binom_sample <- data.frame(value = rbinom(100000, 1000, .2))
```

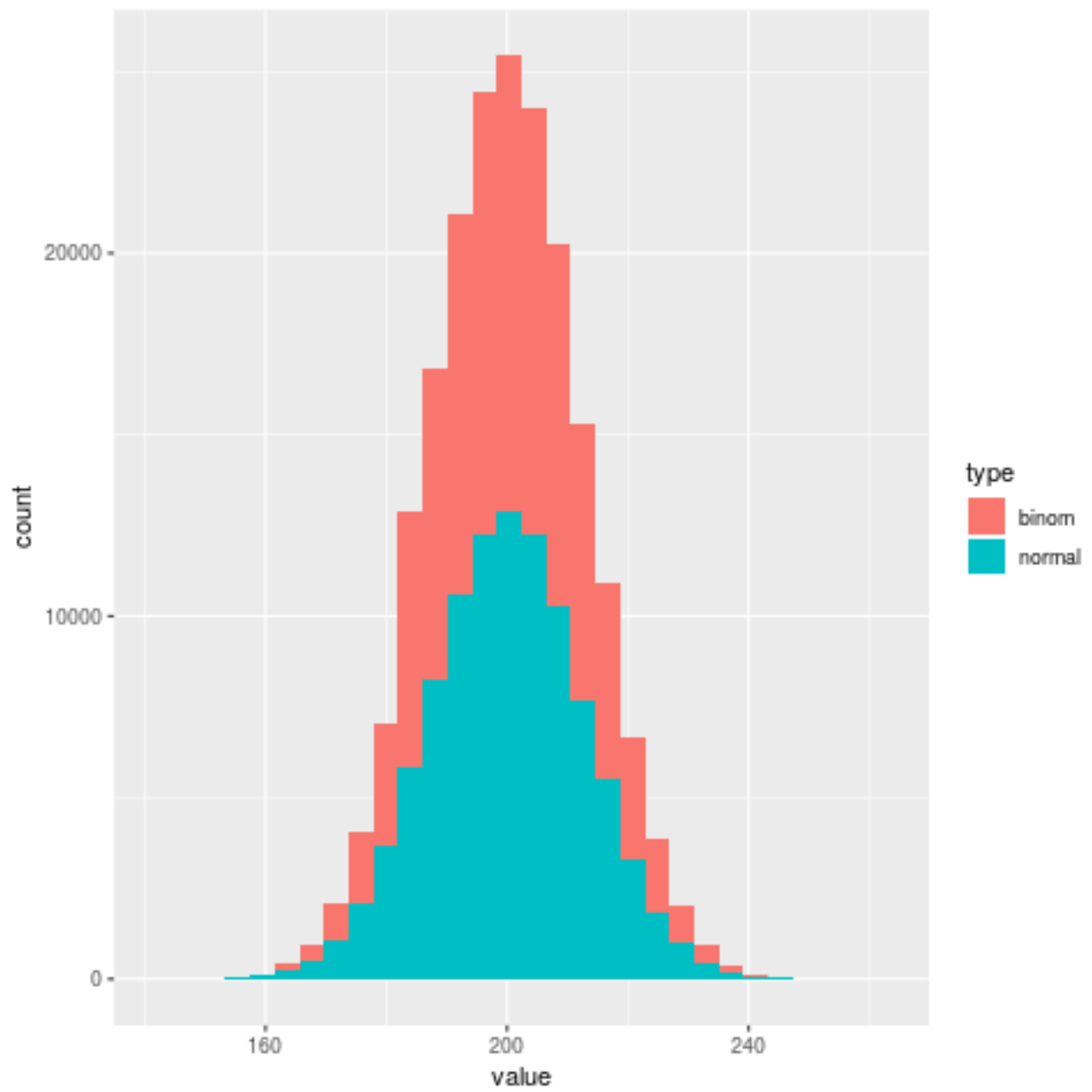
```
normal_sample <- data.frame(value = rnorm(100000, 200, sqrt(160)))
```

```
binom_sample$type = "binom"
```

```
normal_sample$type = "normal"
```

```
joint <- rbind(binom_sample, normal_sample)
```

```
ggplot(joint, aes(value, fill = type)) + geom_histogram()
```



x = 2