# Appendix

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```
library(ggplot2)
library(dplyr)
library(mosaic)
library(Lock5Data)
```

1)

```
ME <- qt(.95, 40-1) * (1.3 / sqrt(40))
c(11.2-ME, 11.2+ME)
```

```
## [1] 10.85368 11.54632
```

2)

```
ME <- qt(.975, 100-1) * (1.1 / sqrt(100))
c(1.1-ME, 1.1+ME)
```

```
## [1] 0.8817361 1.3182639
```

3)

```
(qnorm(.995) * (4/1)) ^ 2
```

```
## [1] 106.1583
```

4)

```
# Bootstrap method
data("FloridaLakes", package = "Lock5Data")
BootDist <- mosaic::do(1000) *
  mosaic::resample(FloridaLakes) %>%
  summarise(Bootxbar=mean(AvgMercury))
quantile(BootDist$Bootxbar, probs=c(0.025, 0.975))
```

```
##      2.5%     97.5%
## 0.4486604 0.6152877
```

```
# Asymptotic method
mercury <- FloridaLakes$AvgMercury
ME <- qt(.975,length(mercury)-1) * (sd(mercury) / sqrt(length(mercury)))
c(mean(mercury)-ME, mean(mercury)+ME)
```

```
## [1] 0.4331688 0.6211709
```

5)

```
# Bootstrap method
data("Cereal", package = "Lock5Data")
BootDist <- mosaic::do(1000) *
  mosaic::resample(Cereal) %>%
  summarise(Bootxbar=mean(Sugars))
quantile(BootDist$Bootxbar, probs=c(0.05, 0.95))
```

```
##        5%       95%
##  8.819833 11.992667
```

```
# Asymptotic method
sugar <- Cereal$Sugars
ME <- qt(.95,length(sugar)-1) * (sd(sugar) / sqrt(length(sugar)))
c(mean(sugar)-ME, mean(sugar)+ME)
```

```
## [1]  8.765973 12.074027
```