

Exercise1_P30–31

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2018/6/19

R Markdown

```
library(downloader) url <-  
“https://raw.githubusercontent.com/genomicsclass/dagdata/master/inst/extdata/femaleControlsPopulation.csv”  
(https://raw.githubusercontent.com/genomicsclass/dagdata/master/inst/extdata/femaleControlsPopulation.csv)”  
filename <- basename(url) download(url, destfile=filename) x <- unlist(read.csv(filename))
```

1.

```
mean(x)  
[1] 23.89338
```

Answer: 23.89338

2.

```
set.seed(1); sample1 <- sample(x,5)  
diff1 <- abs(mean(sample1) - mean(x))  
diff1  
[1] 0.2706222
```

Answer: 0.2706222

3.

```
set.seed(5); sample5 <- sample(x,5)  
diff5 <- abs(mean(sample5) - mean(x))  
diff5  
[1] 1.433378
```

Answer: 1.433378

4.

Answer: C

5.

```
n <- 1000
dif <- vector("numeric", n)
set.seed(1); for (i in 1:n) {
  sample <- sample(x, 5)
  mean <- mean(sample)
  dif[i] <- abs(mean - mean(x))
}
100*mean(dif >= 1)
[1] 49.8
```

Answer: 49.8 %

6.

```
n <- 10000
dif <- vector("numeric", n)
set.seed(1); for (i in 1:n) {
  sample <- sample(x, 5)
  mean <- mean(sample)
  dif[i] <- abs(mean - mean(x))
}
100*mean(dif >= 1)
[1] 49.76
```

Answer: 49.76

7.

```
n <- 1000
dif <- vector("numeric", n)
set.seed(1); for(i in 1:n) {
+ sample <- sample(x, 50)
+ mean <- mean(sample)
+ dif[i] <- abs(mean - mean(x))
+ }
100*mean(dif >= 1)
[1] 1.9
```

8.

```
n <- 10000
dif5 <- vector("numeric", n)
set.seed(1); for(i in 1:n) {
+ sample5 <- sample(x, 5)
+ mean5 <- mean(sample5)
+ dif5[i] <- mean5 - mean(x)
+ }
dif50 <- vector("numeric", n)
set.seed(1); for(i in 1:n) {
+ sample50 <- sample(x, 50)
+ mean50 <- mean(sample50)
+ dif50[i] <- mean50 - mean(x)
+ }
library(rafalib)
mypar(2,1)
hist(dif5)
hist(dif50)
```

Answer: B

9.

```
mean50 <- vector("numeric", n)
set.seed(1); for(i in 1:n) {
+ sample50 <- sample(x, 50)
+ mean50[i] <- mean(sample50)
+ }
100*(mean(25 >= mean50) - mean(23 > mean50))
[1] 97.6
```

Answer: 97.6 %

10.

```
pnorm(25, mean=23.9, sd=0.43) - pnorm(23, mean=23.9, sd=0.43)
[1] 0.9765648
```

Answer: 97.7 %