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Worked with Sarah Guitart

```{r}

require(palmerpenguins)

rm(list = ls())

sse\_mean = function(x)

{

get\_sd =

function(x){

return(sd(x, na.rm = TRUE))

}

get\_sample\_size =

function(x){

sample\_size = sum(table(x))

return(sample\_size)

}

sse = get\_sd(x) / sqrt(get\_sample\_size(x))

return(sse)

}

sse\_mean(penguins$body\_mass\_g)

sse\_mean(mtcars$mpg)

dev.off()

```

two\_group\_resample\_diff = function(x, n\_1, n\_2){

dat\_1 = sample(na.omit(x), n\_1, replace = TRUE)

dat\_2 = sample(na.omit(x), n\_2, replace = TRUE)

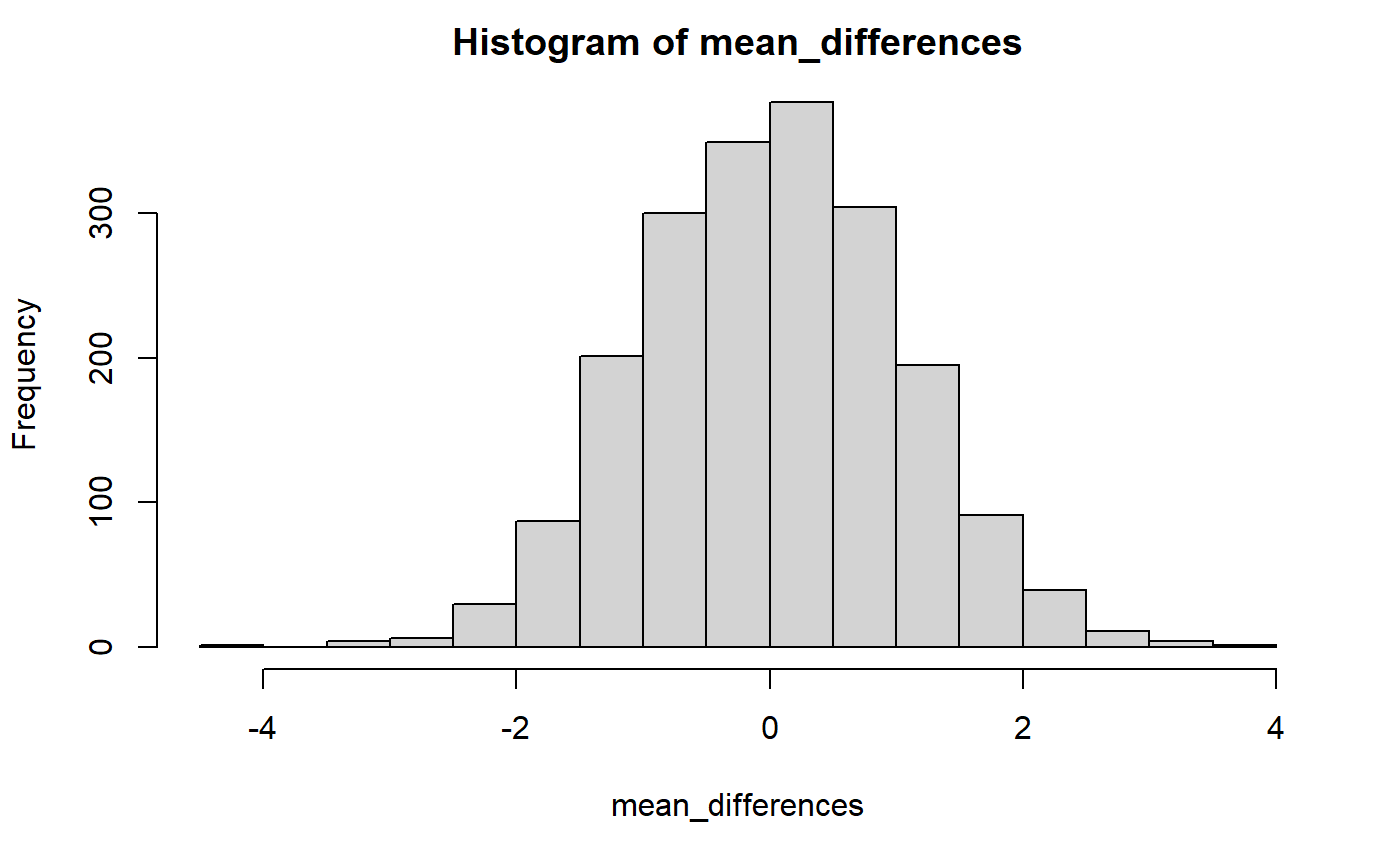
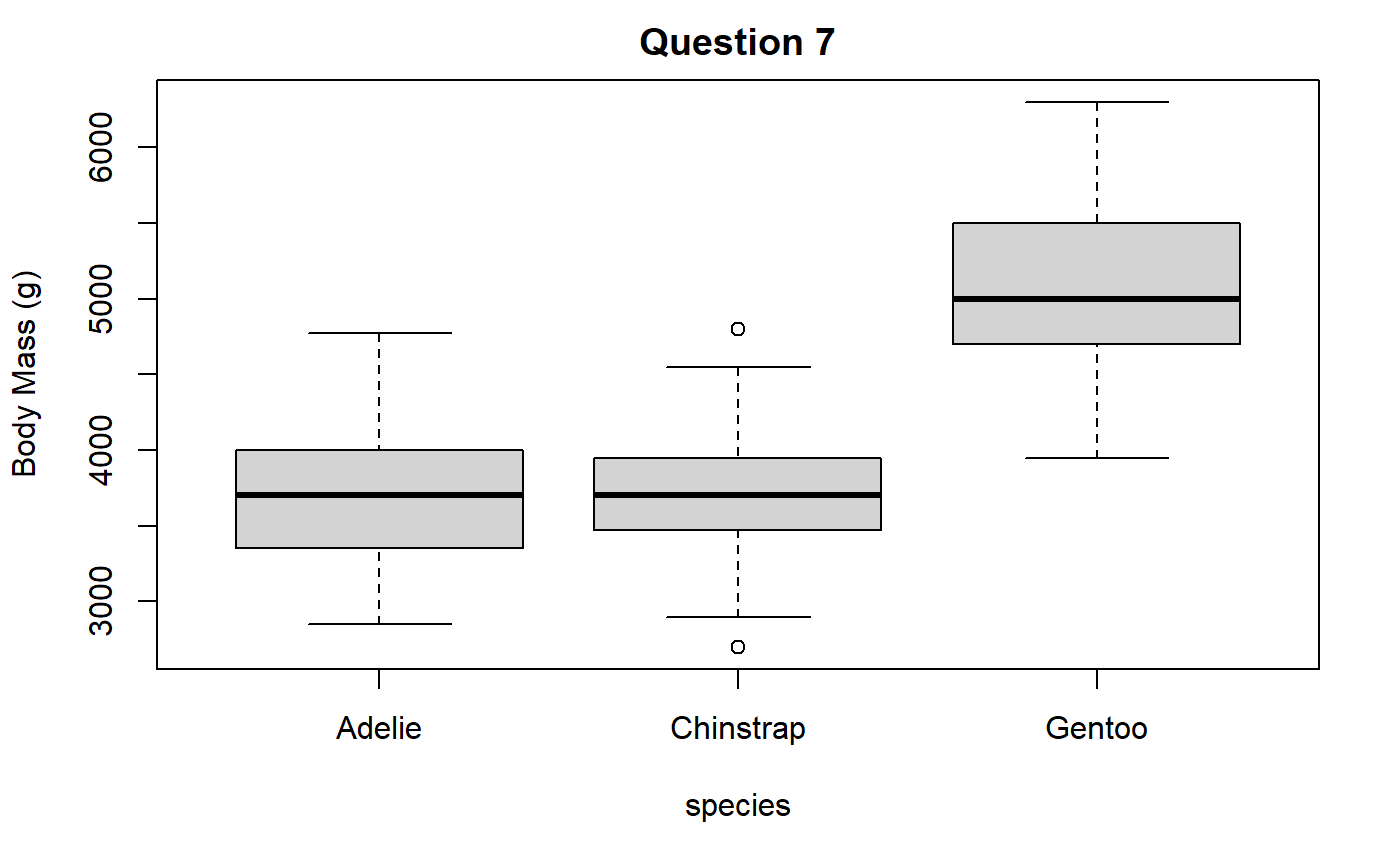
difference\_in\_means = mean(dat\_1, na.rm = TRUE) - mean(dat\_2, na.rm = TRUE)

return(difference\_in\_means)

}

set.seed(54321)

two\_group\_resample\_diff(dat\_pen$flipper\_length\_mm, 68, 152)

1. Monte Carlo because we are testing the null hypothesis.
2. 
3. None had a magnitude greater than 5.8.  
   sum(abs(mean\_differences) > diff\_observed)
4. You would need to run over 10 million simulations until you would expect to see a value equal to or greater than 5.8mm.
5. 
6. The mean for Adelie penguins is 3700.662g and the mean for Gentoo is 5076.016g.  
   The difference in means is 1375.354.
7. p-value = 2.2e-16. This p-value means that the chances of observing these results as pure chance and not an interaction between the predictor and outcome variables. A larger p-value means it is more likely there is no interaction and it was pure chance the results are how they appear. A smaller p-value means it is unlikely that this is random chance and that there is a relationship or interaction between the variables observed.
8. There are zero differences in mean greater than diff\_crit.
9. 