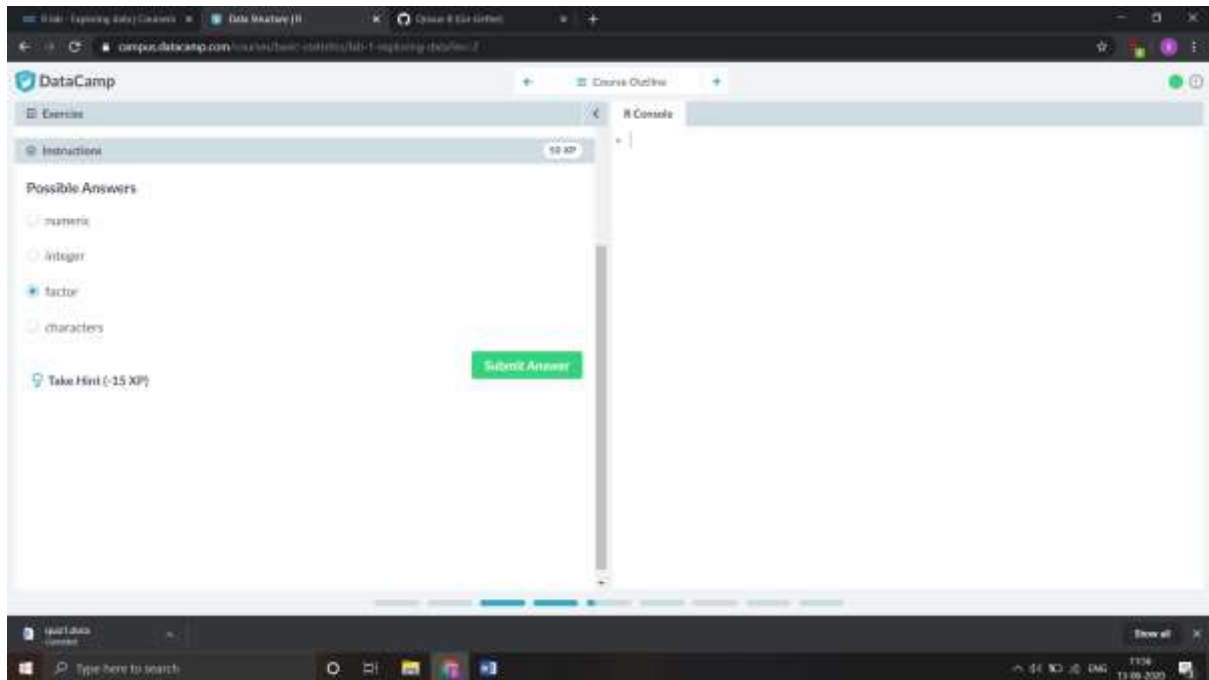


#Use the dim() function on mtcars

```
dim(mtcars)
```



Look at the levels of the variable am

```
levels(mtcars$am)
```

#Assign the value of mtcars to the new variable mtcars2

```
mtcars2 <- mtcars
```

```
mtcars2
```

#Assign the label "high" to mpgcategory where mpg is greater than or equal to 20

```
mtcars2$mpgcategory[mtcars2$mpg >= 20] <- "high"
```

#Assign the label "low" to mpgcategory where mpg is less than 20

```
mtcars2$mpgcategory[mtcars2$mpg < 20] <- "low"
```

#Assign mpgcategory as factor to mpgfactor

```
mtcars2$mpgfactor <- as.factor(mtcars2$mpgcategory)
```

#How many of the cars have a manual transmission?

```
table(mtcars$am)
```

```
mtcars
```

```
13
```

What percentage of cars have 3 or 5 gears?

```
table(mtcars$gear)
```

62.5

#Assign the frequency of the mtcars variable "am" to a variable called "height"

```
height <- table(mtcars$am)
```

height

#Create a barplot of "height"

```
barplot(height)
```

vector of bar heights

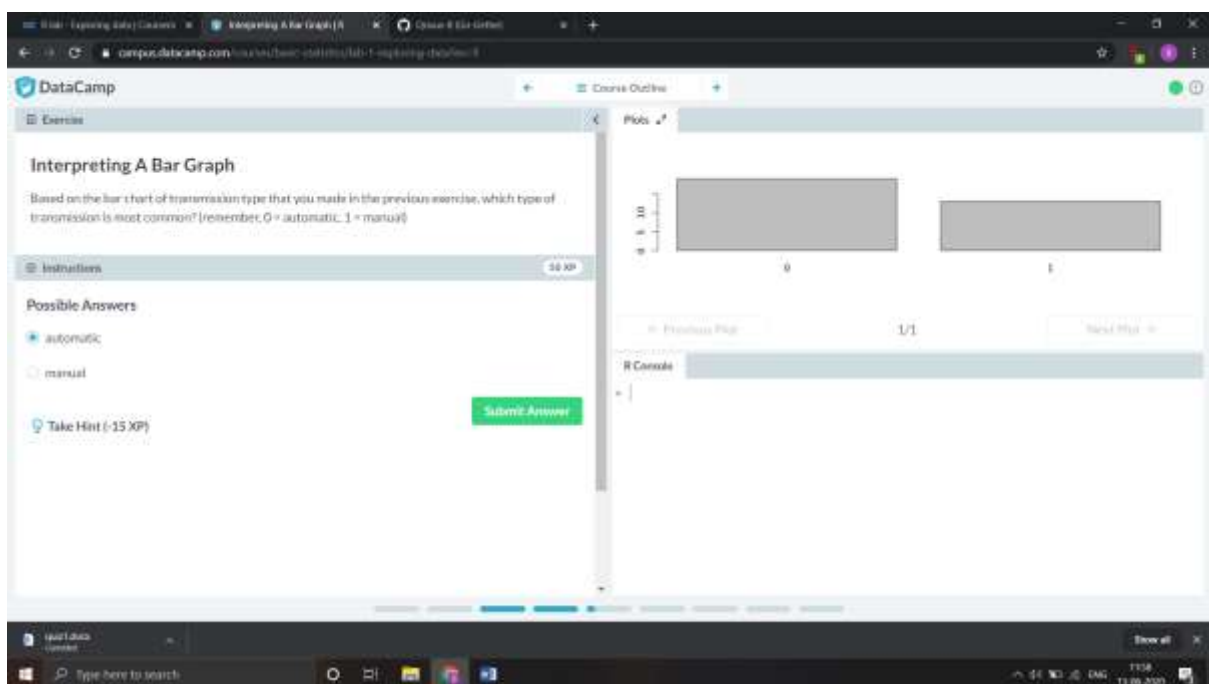
```
height <- table(mtcars$am)
```

Make a vector of the names of the bars called "barnames"

```
barnames <- c("automatic", "manual")
```

Label the y axis "number of cars" and label the bars using barnames

```
barplot(height,ylab="number of cars", names.arg=barnames)
```



Make a histogram of the carb variable from the mtcars data set. Set the title to "Carburetors"

```
hist(mtcars$carb, main="Carburetors")
```

arguments to change the y-axis scale to 0 - 20, label the x-axis and colour the bars red

```
hist(mtcars$carb, main = "Carburetors", ylim=c(0,20), col="red", xlab="Number of Carburetors")
```

Bar Graph vs. Histogram

Why did we make a bar graph of transmission (`mtcars$am`), but a histogram of carburetors (`mtcars$carb`)?

Instructions 50 XP

Possible Answers

- ☐ Because transmission is continuous, and carb is categorical
- ☒ Because transmission is categorical, and carb is continuous

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Distributions

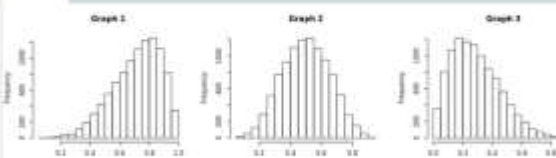
Take a look at the distributions in these histograms. Which of the following is correct?

Instructions 50 XP

Possible Answers

- ☐ Graph 1 is normally distributed, graph 2 is right skewed, graph 3 is left skewed.
- ☐ Graph 1 is right skewed, graph 2 is normally distributed, graph 3 left skewed.
- ☒ Graph 1 is left skewed, graph 2 is normally distributed, graph 3 is right skewed.

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```
# Calculate the mean miles per gallon
```

```
mean(mtcars$mpg)
```

```
# Calculate the median miles per gallon
```

```
median(mtcars$mpg)
```

```
# Produce a sorted frequency table of `carb` from `mtcars`
```

```
sort(table(mtcars$carb), decreasing = TRUE)
```

```
# Minimum value
```

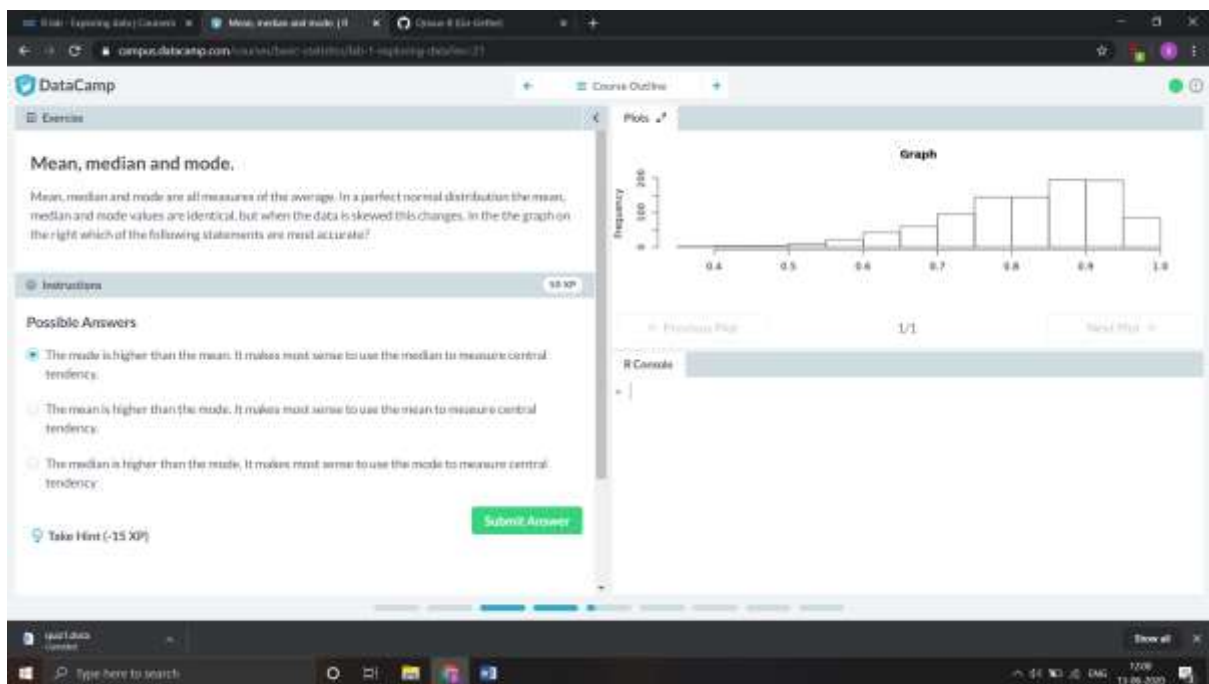
```
x <- min(mtcars$mpg)
```

```

x
# Maximum value
y <-max(mtcars$mpg)
y
# Calculate the range of mpg using x and y
range <- (y - x)
range
# What is the value of the second quartile?
17.7100
# What is the value of the first quartile?
16.8925
quantile(mtcars$qsec)
# Make a boxplot of qsec
boxplot(mtcars$qsec)
# Calculate the interquartile range of qsec
IQR(mtcars$qsec)
IQR(mtcars$qsec)
quantile(mtcars$qsec)
# What is the threshold value for an outlier below the first quartile?
lower_threshold <- (16.8925 - (1.5 * 2.0075))
lower_threshold
# What is the threshold value for an outlier above the third quartile?
higher_threshold <- (18.9000 + (1.5 * 2.0075))
higher_threshold
# Find the IQR of horsepower
IQR(mtcars$hp)
# Find the standard deviation of horsepower
sd(mtcars$hp)
# Find the IQR of miles per gallon
IQR(mtcars$mpg)
# Find the standard deviation of miles per gallon

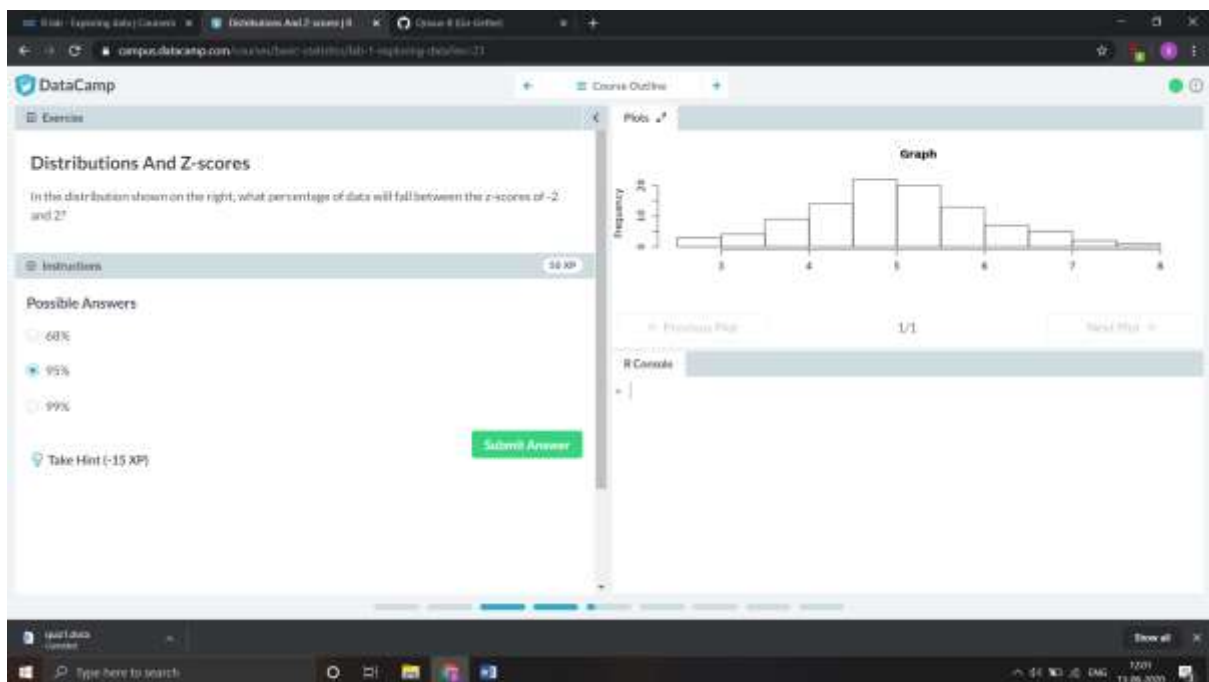
```

`sd(mtcars$mpg)`



`# Calculate the z-scores of mpg`

`(mtcars$mpg - mean(mtcars$mpg)) / sd(mtcars$mpg)`



The screenshot shows a web browser window displaying a DataCamp exercise titled "Z-score Outliers". The interface includes a sidebar with navigation links for "Exercises", "Instructions", and "Possible Answers". The main content area displays the question: "Outside of which boundaries might an observation be considered an outlier?". Below the question, there are three radio button options: "-2 and 2", "-2.5 and 2.5", and "-3 and 3". The third option, "-3 and 3", is selected. A green "Submit Answer" button is visible. At the bottom of the sidebar, there is a "Take Hint (-15 XP)" link. The browser's address bar shows the URL "campus.datacamp.com". The Windows taskbar is visible at the bottom of the screen.