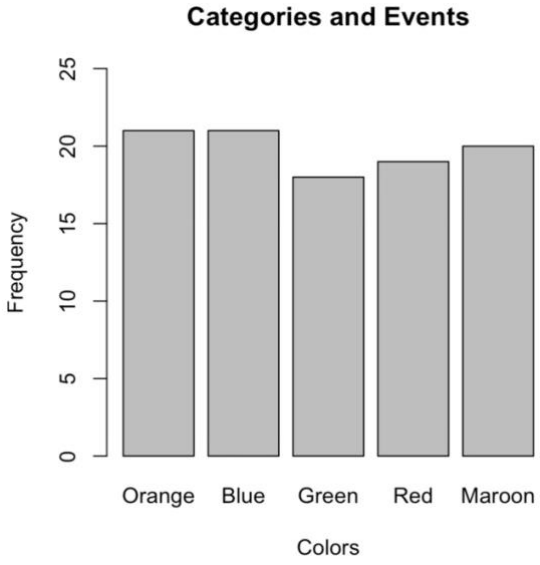
Sharon Chen
Advanced Psychological Statistics
Professor Hilford
15 March 2022

# Data Assignment 3

## QUESTION 1

(1) Mode will be the most appropriate measure of central tendency since this question is dealing with categories. The mode would be orange and blue.

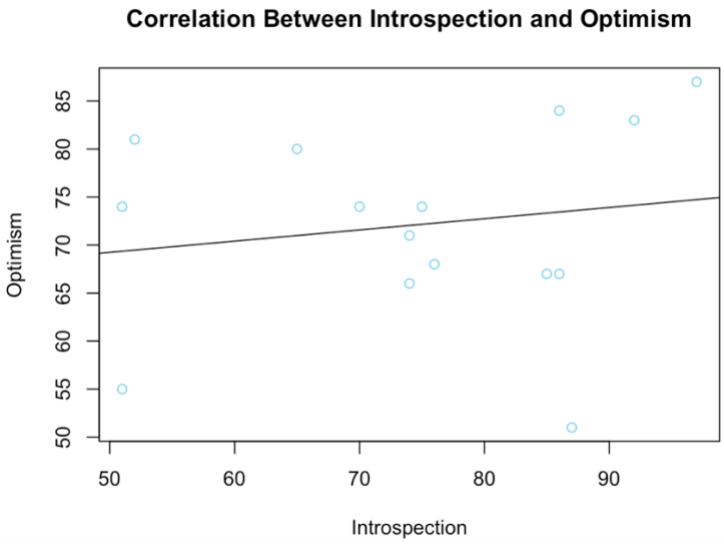
(2)




## QUESTION 2

(1) r = 0.1683006

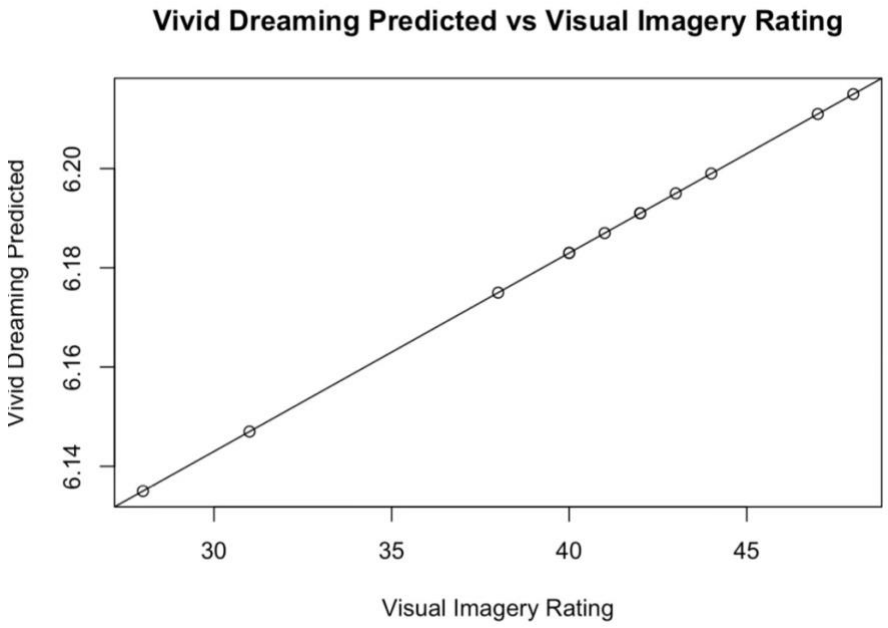
(2)



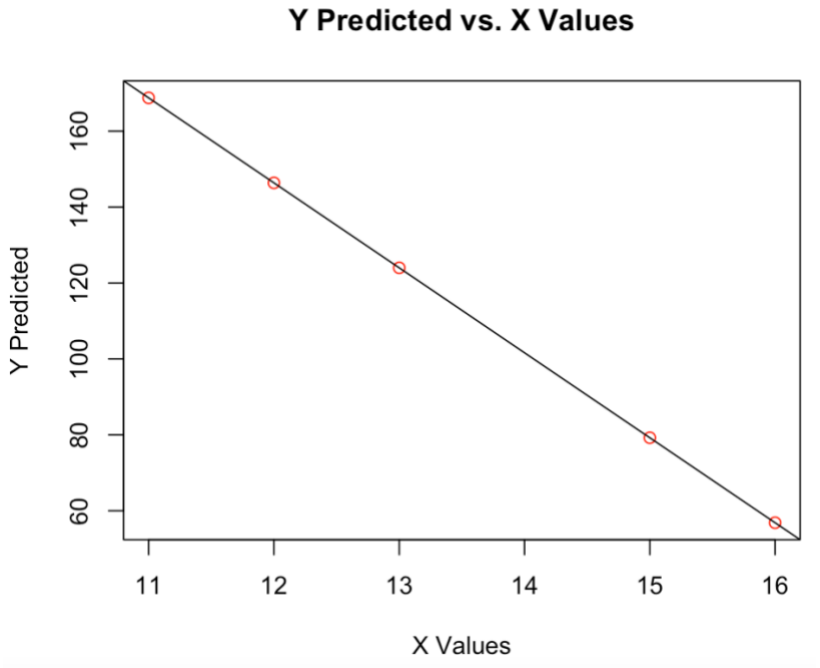

(3) Intercept = 63.3968
Slope = 0.1169

(4) The slope is positive so as x increase, y will increase as well. As introspection increases by 1, optimism increases by 0.1169.
(5) The predicted value of "optimism" will be 72.1643 if "introspection" has a value of 75.

**QUESTION 3**



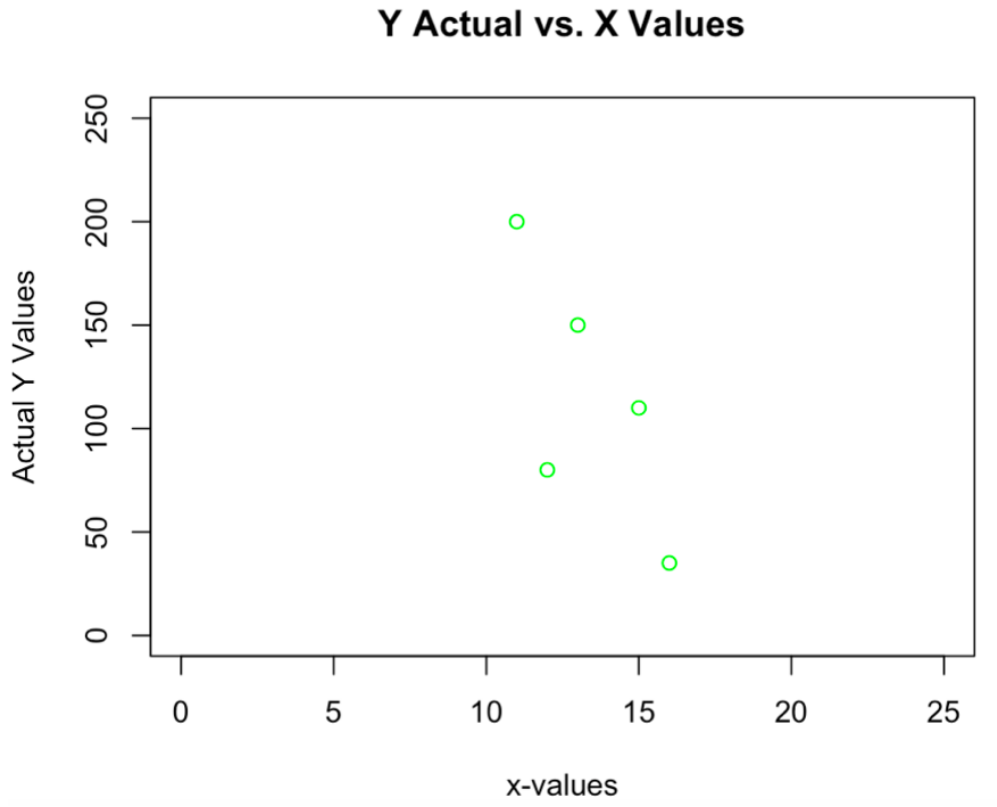

**QUESTION 4**



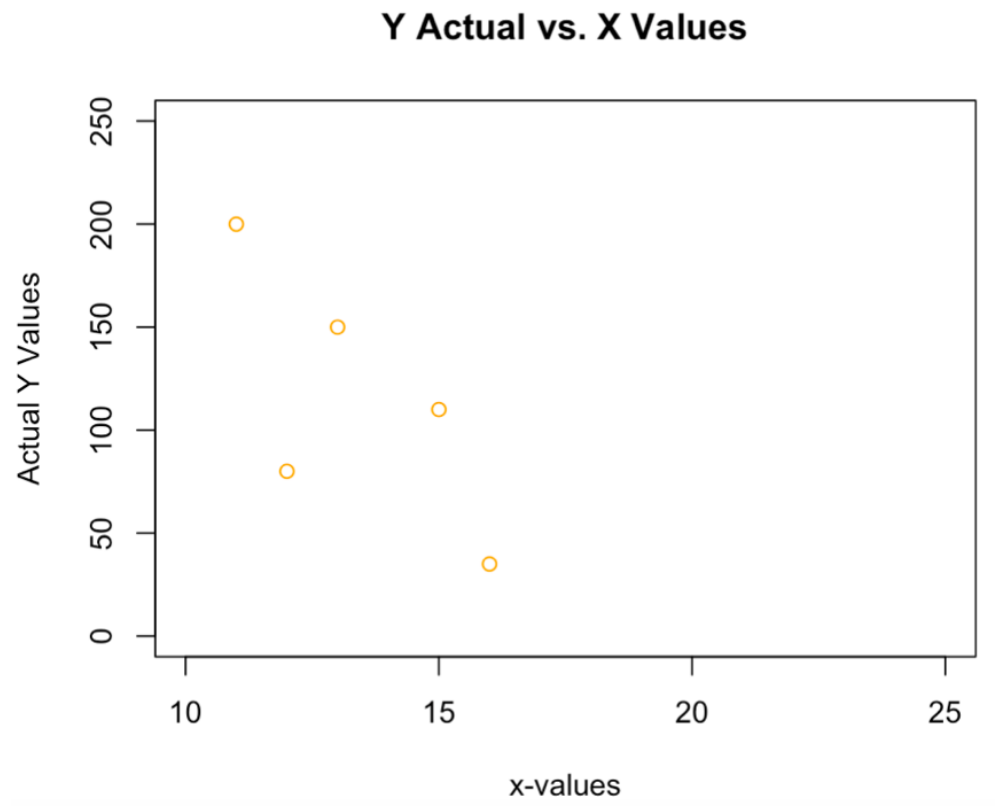

slope = -22.38
intercept= 414.94

(1) y-values = 35; 80; 110.0015; 150; 200

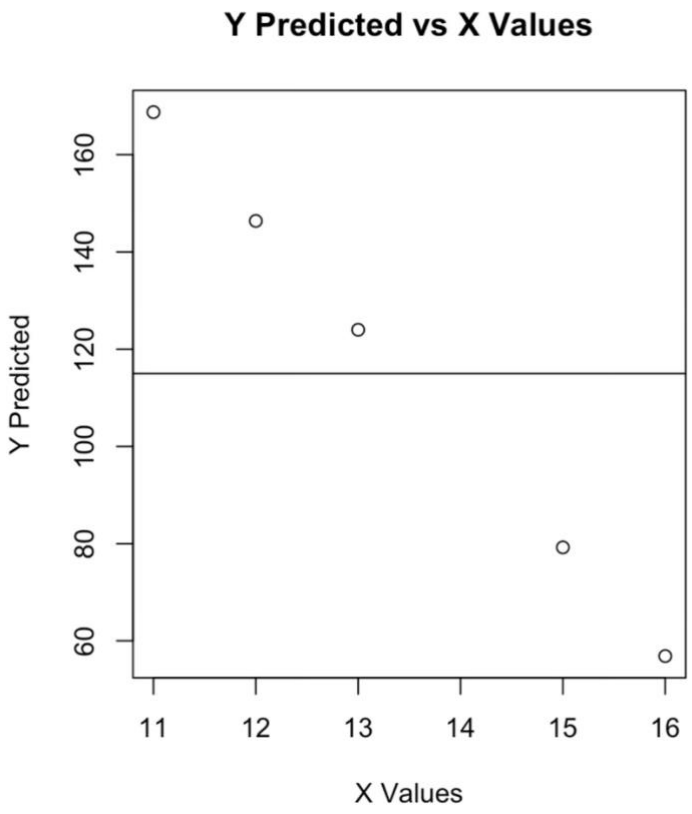
(2)




(3) .

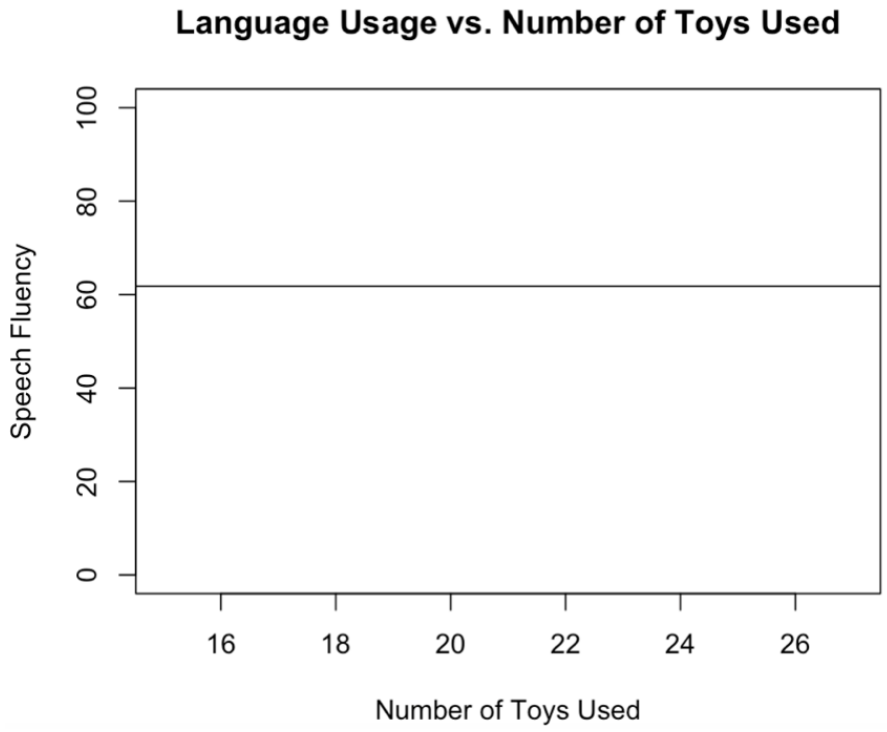


(4)

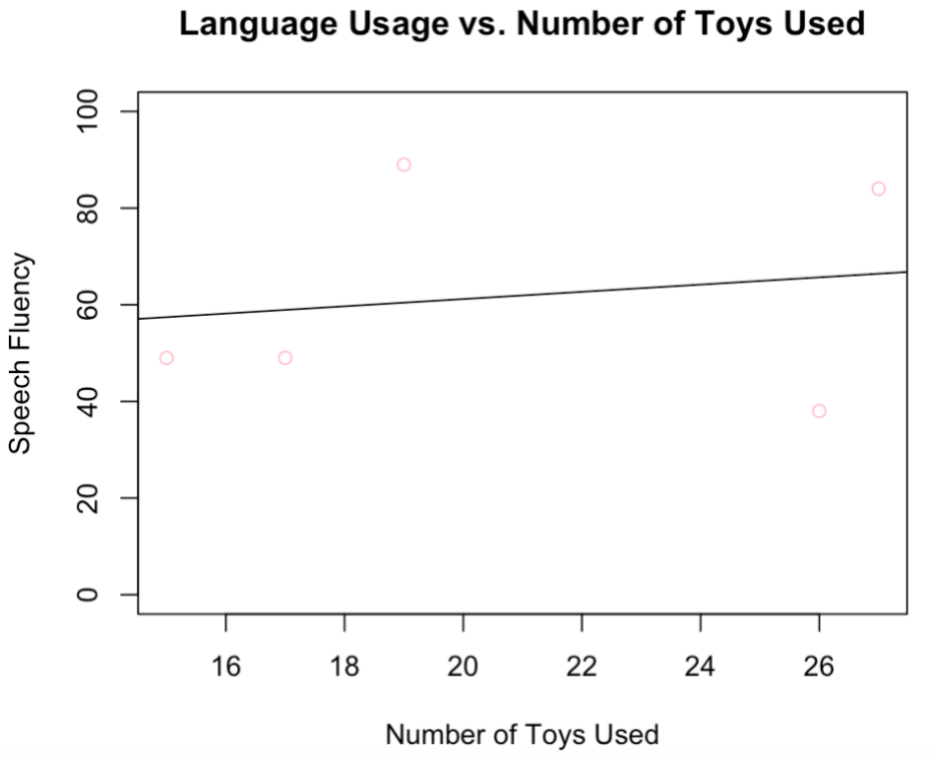



**QUESTION 5**

(1)



(2)




(3) abline(h=<value>) will form a horizontal line for prediction of the y-values.
(4) abline(v=<value>) will form a vertical line for prediction of the x-values.

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# Advance Psychological statistics Spring 2022
# Data Assignment 3
# Created by Sharon Chen, 03/14/2022

setwd("~/Desktop/soph. spring 2022/Advanced Psychological Statistics [001]/
Data assignments/data assignment 3")

#QUESTION 1
color_frequency<- c(21,21,18,19,20)
color_frequency_unique<- unique(color_frequency)
color_frequency_tabled<-
tabulate(match(color_frequency,color_frequency_unique))
color_frequency_unique(color_frequency_tabled==max(color_frequency_tabled))

barplot(color_frequency,
        main = "Categories and Events",
        xlab = "Colors",
        ylab = "Frequency",
        names.arg = "Orange                Blue                  Green
Red                Maroon")


#QUESTION 2
Participants<- c(1,2,3,4,5,6,7,8,9,10,11,12,13,14,15)
Introspection<- c(51,65,74,74,75,76,87,86,51,85,52,92,97,70,86)
Optimism<- c(55,80,71,66,74,68,51,67,74,67,81,83,87,74,84)
cor(Introspection,Optimism, method ="pearson")

plot(Introspection,Optimism,
     main = "Correlation Between Introspection and Optimism",
     xlab = "Introspection",
     ylab = "Optimism",
     col= "skyblue")
Linear_Model<- lm(Optimism~Introspection)
lm(Optimism~Introspection)
abline(Linear_Model)


#QUESTION 3
dream_intercept<- c(6.023)
dream_slope<- c(0.004)
visual_imagery_rating<- c(44,38,40,43,47,31,42,42,48,28,40,41)
yvalues<- dream_slope*visual_imagery_rating+dream_intercept

vivid_dreaming_predicted<-(0.004*visual_imagery_rating)+6.023
print(vivid_dreaming_predicted)
vivid_dreaming_predicted<-c(6.199, 6.175, 6.183, 6.195, 6.211, 6.147,
6.191, 6.191, 6.215, 6.135, 6.183, 6.187)

plot(vivid_dreaming_predicted,visual_imagery_rating,
     main = "Visual Dreaming Rating vs. Vivid Dreaming Predicted",
     ylab = "Vivid Dreaming Predicted",
     xlab = "Visual Imagery Rating")
vivid_visual_line<- lm(vivid_dreaming_predicted~visual_imagery_rating)
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```
abline(vivid_visual_line)


#QUESTION 4
x_value4<- c(16,12,15,13,11)
y_hat_value4<- c(56.86, 146.38, 79.2415, 124, 168.76)
plot(x_value4,y_hat_value4,
     ylab = "Y Predicted",
     xlab = "X Values",
     main = "Y Predicted vs. X Values",
     col= "red")
data.frame(x_value4,y_hat_value4)
fit<- lm(y_hat_value4~x_value4)
abline(fit)
print(fit)

residuals4<- c(-21.86, -66.38, 30.76, 26, 31.24)
y_values4<- y_hat_value4+residuals4
print(y_values4)
y_values4<- c(35.0000, 80.0000, 110.0015, 150.0000, 200.0000)

plot(x_value4,y_values4,
     col= "green",
     xlab = "x-values",
     ylab = "Actual Y Values",
     main = "Y Actual vs. X Values",
     xlim = c(0,25),
     ylim = c(0,250))

plot(x_value4,y_values4,
     col= "orange",
     xlab = "x-values",
     ylab = "Actual Y Values",
     main= "Y Actual vs. X Values",
     xlim = c(10,25),
     ylim = c(0,250))

y_values4.mean<- mean(y_values4)
print(y_values4.mean)
abline(h=y_values4.mean)


#QUESTION 5
Number_toys_used<- c(15,26,27,17,19)
Mean_speech_fluency<- c(61.8)
plot(Number_toys_used,NULL,
     xlim = range(Number_toys_used),
     ylim = c(0,100),
     xlab = "Number of Toys Used",
     ylab = "Speech Fluency",
     main = "Language Usage vs. Number of Toys Used")
abline(h=Mean_speech_fluency)

Number_toys_used<- c(15,26,27,17,19)
```

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Speech_fluency<- c(49,38,84,49,89)
plot(Number_toys_used,Speech_fluency,
     xlim = range(Number_toys_used),
     ylim = c(0,100),
     xlab = "Number of Toys Used",
     ylab = "Speech Fluency",
     main = "Language Usage vs. Number of Toys Used",
     col = "pink")
Used_toys_line<- lm(Speech_fluency~Number_toys_used)
abline(Used_toys_line)
```