

rworksheets_4a

2023-10-26

1

```
shoe_Size <- c(6.5, 9.0, 8.5, 8.5, 10.5, 7.0, 9.5, 9.0, 13.0, 7.5, 10.5, 8.5, 12.0, 10.5, 13.0, 11.5,
8.5,5.0,10.0,6.5,7.5,8.5,10.5,8.5,10.5,11.0,9.0,13.0)
height <- c(66.0, 68.0, 64.5, 65.0, 70.0,64.0,70.0,71.0,72.0,64.0,74.5,67.0,71.0,71.0,77.0,72.0,59.0,62.0,72.0,66.0,64.0,67.0,73.0,69.0,
gender <- c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F", "M", "F", "M", "M", "M", "M", "F", "F",
"M", "F", "F", "M", "M", "F", "M", "M", "M", "M")
df <- data.frame( ShoeSize = shoe_Size, Height = height, Gender = gender )
df
```

1.a

1.b

```
males <- df[dfGender == "M",]females <- df[dfGender == "F",] males females
```

1.c

```
meanOfShoeSize <- mean(dfShoeSize)meanOfHeight <- mean(dfHeight) meanOfHeight meanOfShoeSize
```

1.d

The relationship between the two variables is that shoe size and height are positively correlated. In other words, if a person has a smaller height, they are likely to have a smaller shoe size.

#—————

2

```
monthsVector <- c("March","April","January","November","January","September","October","September","November","Aug
monthsVector factormonthsVector <- factor(monthsVector) factormonthsVector
```

—————

3

```
summary(monthsVector) summary(factormonthsVector)
```

4

```
factorData <- c("East", "West", "North") factorFrequency <- c(1,4,3)
neworderData <- factor(factorData,levels = c("East","West","North"))
neworderData
```

5

```
imported_table <- read.table(file = "/cloud/project/import_march.csv" , header = TRUE, sep = ",")
imported_table
```

6

```
randomNum <- readline(prompt = "Enter number from 1 to 50:")
#error cannot knit if there is as.numeric #randomNum <- as.numeric(randomNum)
paste("The number you have chosen is", randomNum)
if (randomNum > 50) { paste("The number selected is beyond the range of 1 to 50") } else if (randomNum
== 20) { paste("TRUE") } else { paste(randomNum) }
```

7

```
minimumBills <- function(price) {
min_bills <- price %/% 50 paste("The minimum no. of bills:", min_bills) }
minimumBills(900)
```

8.a

```
names <- c("Annie", "Thea", "Steve", "Hanna") grade1 <- c(85,65,75,95) grade2 <- c(65,75,55,75) grade3 <-
c(85,90,80,100) grade4 <- c(100,90,85,90)
grade <- data.frame( Name = names, Grade1 = grade1, Grade2 = grade2, Grade3 = grade3, Grade4 =
grade4 )
```

8.b

```
gradeAverage <- -(gradeGrade1 + gradeGrade2 + gradeGrade3 + grade$Grade4) / 4
highScorers <- grade[grade$Average > 90,] highScorers
```

```
if (nrow(highScorers) > 0) { paste(highScorersName, "saveragegradethissemesteris", highScorersAverage)
} else { paste("No students have an average math score over 90.") }
```

8.c

```
firstTest <- sum(grade$Grade1) / nrow(grade) firstTest
secondTest <- sum(grade$Grade2) / nrow(grade) secondTest
thirdTest <- sum(grade$Grade3) / nrow(grade) thirdTest
fourthTest <- sum(grade$Grade4) / nrow(grade) fourthTest

if (firstTest < 80) { paste("The 1st test was difficult.") } else if(secondTest < 80) { paste("The 2nd test
was difficult.") } else if(thirdTest < 80) { paste("The 3rd test was difficult.") } else if(fourthTest < 80) {
paste("The 4th test was difficult.") } else { paste("No test had an average score less than 80.") }
```

8.d

Annie scores

```
if (grade[1,2] > grade[1,3] && grade[1,2] > grade[1,4] && grade[1,2] > grade[1,5]) { annieHighest <- grade[1,2]
} else if (grade[1,3] > grade[1,4] && grade[1,3] > grade[1,5]) { annieHighest <- grade[1,3] } else if (grade[1,4]
> grade[1,5] && grade[1,2] > grade[1,5]) { annieHighest <- grade[1,4] } else { annieHighest <- grade[1,5] }
```

Thea scores

```
if (grade[2,2] > grade[2,3] && grade[2,2] > grade[2,4] && grade[2,2] > grade[2,5]) { theaHighest <- grade[2,2]
} else if (grade[2,3] > grade[2,4] && grade[2,3] > grade[2,5]) { theaHighest <- grade[2,3] } else if (grade[2,4]
> grade[2,5] && grade[2,2] > grade[2,5]) { theaHighest <- grade[2,4] } else { theaHighest <- grade[2,5] } #
Steve scores if (grade[3,2] > grade[3,3] && grade[3,2] > grade[3,4] && grade[3,2] > grade[3,5]) { steveHighest
<- grade[3,2] } else if (grade[3,3] > grade[3,4] && grade[3,3] > grade[3,5]) { steveHighest <- grade[3,3] } else
if (grade[3,4] > grade[3,5] && grade[3,2] > grade[3,5]) { steveHighest <- grade[3,4] } else { steveHighest <-
grade[3,5] }
```

Hanna scores

```
if (grade[4,2] > grade[4,3] && grade[4,2] > grade[4,4] && grade[4,2] > grade[4,5]) { hannaHighest <- grade[4,2]
} else if (grade[4,3] > grade[4,4] && grade[4,3] > grade[4,5]) { hannaHighest <- grade[2,3] } else if (grade[4,4]
> grade[4,5] && grade[4,2] > grade[4,5]) { hannaHighest <- grade[4,4] } else { hannaHighest <- grade[4,5] }

grade$HighestGrades <- c(annieHighest, theaHighest, steveHighest, hannaHighest)

above90 <- grade[grade$HighestGrades > 90,] above90

if (nrow(above90) > 0) { paste(above90Name, "shighestgradethissemesteris", above90HighestGrade) } else
{ paste("No students have an average math score over 90.") }
```