

# RWorksheet\_Suero#4a

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```
#1
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",
shoeSize <-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,
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,
household_data <- data.frame(
  ShoeSize = shoeSize,
  Height = height,
  Gender = gender
)
household_data
```

##	ShoeSize	Height	Gender
## 1	6.5	66.0	F
## 2	9.0	68.0	F
## 3	8.5	64.5	F
## 4	8.5	65.0	F
## 5	10.5	70.0	M
## 6	7.0	64.0	F
## 7	9.5	70.0	F
## 8	9.0	71.0	F
## 9	13.0	72.0	M
## 10	7.5	64.0	F
## 11	10.5	74.5	M
## 12	8.5	67.0	F
## 13	12.0	71.0	M
## 14	10.5	71.0	M
## 15	13.0	77.0	M
## 16	11.5	72.0	M
## 17	8.5	59.0	F
## 18	5.0	62.0	F
## 19	10.0	72.0	M
## 20	6.5	66.0	F
## 21	7.5	64.0	F
## 22	8.5	67.0	M
## 23	10.5	73.0	M
## 24	8.5	69.0	F
## 25	10.5	72.0	M
## 26	11.0	70.0	M

```
## 27      9.0   69.0      M
## 28     13.0   70.0      M
```

*#1a.*

*# The data shows a coloumn for shoe size,a coloumn for height and a coloumn for gender  
# With the corresponding values for each value. The data set has 28 data points with 3 Coloumns*

*# -----*

*#1b.*

```
males <- household_data[household_data$Gender == "M",]
males
```

```
##      ShoeSize Height Gender
## 5         10.5   70.0      M
## 9         13.0   72.0      M
## 11        10.5   74.5      M
## 13        12.0   71.0      M
## 14        10.5   71.0      M
## 15        13.0   77.0      M
## 16        11.5   72.0      M
## 19        10.0   72.0      M
## 22         8.5   67.0      M
## 23        10.5   73.0      M
## 25        10.5   72.0      M
## 26        11.0   70.0      M
## 27         9.0   69.0      M
## 28        13.0   70.0      M
```

```
females <- household_data[household_data$Gender == "F",]
females
```

```
##      ShoeSize Height Gender
## 1         6.5   66.0      F
## 2         9.0   68.0      F
## 3         8.5   64.5      F
## 4         8.5   65.0      F
## 6         7.0   64.0      F
## 7         9.5   70.0      F
## 8         9.0   71.0      F
## 10        7.5   64.0      F
## 12        8.5   67.0      F
## 17        8.5   59.0      F
## 18         5.0   62.0      F
## 20        6.5   66.0      F
## 21        7.5   64.0      F
## 24        8.5   69.0      F
```

*# -----*

*#1c.*

```
meanOfShoeSize <- mean(household_data$ShoeSize)
meanOfShoeSize
```

```
## [1] 9.410714
```

```
meanOfHeight <- mean(household_data$Height)
meanOfHeight
```

```
## [1] 68.57143
```

*#1d. The relationship between the two factors lies in their direct proportionality, where a smaller height corresponds to a smaller number of months.*

```
# -----
```

*#2*

```
months_vector <- c("March", "April", "January", "November", "January",
                  "September", "October", "September", "November", "August",
                  "January", "November", "November", "February", "May", "August",
                  "July", "December", "August", "August", "September", "November", "February",
                  "April")
factor_months_vector <- factor(months_vector)
factor_months_vector
```

```
## [1] March      April      January   November  January   September October
## [8] September November  August    January   November  November  February
## [15] May        August    July      December  August    August    September
## [22] November  February  April
## 11 Levels: April August December February January July March May ... September
```

```
# -----
```

*#3*

```
summary(months_vector)
```

```
##      Length      Class      Mode
##         24 character character
```

```
summary(factor_months_vector)
```

```
##      April      August  December  February  January      July      March      May
##         2         4         1         2         3         1         1         1
## November  October  September
##         5         1         3
```

*#The summary for "months\_vector" provides information about the dataset's size, data type, and its most frequent values.*

*#Conversely, in the summary of "factor\_months\_vector," you can see how often each month appears.*

*#These summaries serve different purposes, offering insights into dataset characteristics and the distribution of values.*

```
# -----
```

*#4*

```
factorData <- c("East", "West", "North")
factor_frequency <- c(1,4,3)

newOrderdata <- factor(factorData, levels = c("East", "West", "North"))

print(newOrderdata)
```

```
## [1] East West North
## Levels: East West North
```

```

# -----

# 5

imported_table <- read.table(file = "/cloud/project/RWorksheet_Suero#4/import_march.csv", header = TRUE,
imported_table

##    X Students Strategy.1 Strategy.2 Strategy.3
## 1 1      Male          8          10          8
## 2 2      <NA>          4           8           6
## 3 3      <NA>          0           6           4
## 4 4    Female         14           4          15
## 5 5      <NA>         10           2          12
## 6 6      <NA>          6           0           9

#-----

# 6

random_num <- readline(prompt = "Enter number from 1 to 50: ")

## Enter number from 1 to 50:
#randomNum <- as.numeric(randomNum)

paste("The number you have chosen is", random_num)

## [1] "The number you have chosen is "

if (random_num > 50) {
  paste("The number selected is beyond the range of 1 to 50")
} else if (random_num == 20) {
  paste("TRUE")
} else {
  paste(random_num)
}

## [1] ""

# -----

#7

minimum_Bills <- function(price) {

  minBills <- price %/% 50
  paste("The minimum no. of bills:", minBills)
}

minimum_Bills(100)

## [1] "The minimum no. of bills: 2"

# -----

#8
# 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

grade$Average <- (grade$Grade1 + grade$Grade2 + grade$Grade3 + grade$Grade4) / 4

highScores <- grade[grade$Average > 90,]
highScores

## [1] Name      Grade1  Grade2  Grade3  Grade4  Average
## <0 rows> (or 0-length row.names)

if (nrow(highScores) > 0) {
  paste(highScores$Name, "'s average grade this semester is", highScores$Average)
} else {
  paste("No students have an average math score over 90.")
}

## [1] "No students have an average math score over 90."

# 8.c

first_Test <- sum(grade$Grade1) / nrow(grade)
first_Test

## [1] 80

second_Test <- sum(grade$Grade2) / nrow(grade)
second_Test

## [1] 67.5

third_Test <- sum(grade$Grade3) / nrow(grade)
third_Test

## [1] 88.75

fourth_Test <- sum(grade$Grade4) / nrow(grade)
fourth_Test

## [1] 91.25

if (first_Test < 80) {
  paste("The 1st test was difficult.")
}

```

```

} else if(second_Test < 80) {
  paste("The 2nd test was difficult.")
} else if(third_Test < 80) {
  paste("The 3rd test was difficult.")
} else if(fourth_Test < 80) {
  paste("The 4th test was difficult.")
} else {
  paste("No test had an average score less than 80.")
}

```

```
## [1] "The 2nd test was difficult."
```

```

# 8.d
# Annie scores in the semester
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[1,4] > grade[1,5]) {
  annieHighest <- grade[1,4]
} else {
  annieHighest <- grade[1,5]
}

# Thea scores in the semester
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[2,4] > grade[2,5]) {
  theaHighest <- grade[2,4]
} else {
  theaHighest <- grade[2,5]
}

# Steve scores in the semester
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[3,4] > grade[3,5]) {
  steveHighest <- grade[3,4]
} else {
  steveHighest <- grade[3,5]
}

# Hanna scores in the semester
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[4,3]
} else if (grade[4,4] > grade[4,5] && grade[4,4] > 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

##      Name Grade1 Grade2 Grade3 Grade4 Average HighestGrades
## 1 Annie      85      65      85      100  83.75          100
## 4 Hanna      95      75     100      90  90.00          100

if (nrow(above90) > 0) {
  paste(above90$Name, "'s highest grade this semester is", above90$HighestGrade)
} else {
  paste("No students have an average math score over 90.")
}

## [1] "Annie 's highest grade this semester is 100"
## [2] "Hanna 's highest grade this semester is 100"

```