

RWorksheet_Redosendo#3a

#1. There is a built-in vector LETTERS contains the uppercase letters of the alphabet and letters which
#Based on the above vector LETTERS:

LETTERS

```
## [1] "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K" "L" "M" "N" "O" "P" "Q" "R" "S"  
## [20] "T" "U" "V" "W" "X" "Y" "Z"
```

```
## [1] "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K" "L" "M" "N" "O" "P" "Q" "R" "S"  
## [20] "T" "U" "V" "W" "X" "Y" "Z"
```

letters

```
## [1] "a" "b" "c" "d" "e" "f" "g" "h" "i" "j" "k" "l" "m" "n" "o" "p" "q" "r" "s"  
## [20] "t" "u" "v" "w" "x" "y" "z"
```

```
## [1] "a" "b" "c" "d" "e" "f" "g" "h" "i" "j" "k" "l" "m" "n" "o" "p" "q" "r" "s"  
## [20] "t" "u" "v" "w" "x" "y" "z"
```

#a. You need to produce a vector that contains the first 11 letters.

```
first11<- LETTERS[1:11]  
first11
```

```
## [1] "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K"
```

Output: "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K"

#b. Produce a vector that contains the odd numbered letters.

```
odd_letters <- LETTERS[seq(1, 26, 2)]  
odd_letters
```

```
## [1] "A" "C" "E" "G" "I" "K" "M" "O" "Q" "S" "U" "W" "Y"
```

Output: "A" "C" "E" "G" "I" "K" "M" "O" "Q" "S" "U" "W" "Y"

#c. Produce a vector that contains the vowels

```
vowels <- LETTERS[c(1,5,9,15,21)]  
vowels
```

```
## [1] "A" "E" "I" "O" "U"
```

Output: "A" "E" "I" "O" "U"

#d. Produce a vector that contains the last 5 lowercase letters.

```
last5 <- letters[22:26]  
last5
```

```
## [1] "v" "w" "x" "y" "z"
```

```
# Output: "v" "w" "x" "y" "z"
```

#e. Produce a vector that contains letters between 15 to 24 letters in lowercase.

```
between_letters <- letters[15:24]  
between_letters
```

```
## [1] "o" "p" "q" "r" "s" "t" "u" "v" "w" "x"
```

```
# Output: "o" "p" "q" "r" "s" "t" "u" "v" "w" "x"
```

#2. Create a vector(not a dataframe) with the average temperatures in April for Tugue-garao City, Manila.

#a. What is the R code and its result for creating a character vector for the city/town of Tuguegarao City?

```
city <- c("Tugue-garao City","Manila","Iloilo City","Tacloban","Samal Island","Davao City")  
city
```

```
## [1] "Tugue-garao City" "Manila"           "Iloilo City"       "Tacloban"
```

```
## [5] "Samal Island"      "Davao City"
```

#b. The average temperatures in Celcius are 42, 39, 34, 34, 30, and 27 degrees. Name the object as temp.

```
temp <- c(42, 39, 34, 34, 30, 27)  
temp
```

```
## [1] 42 39 34 34 30 27
```

```
# Output: 42 39 34 34 30 27
```

#c. Create a dataframe to combine the city and the temp by using 'data.frame()'. What the R code and its

```
city_temp <- data.frame(city, temp)  
city_temp
```

```
##           city temp  
## 1 Tugue-garao City 42  
## 2           Manila 39  
## 3       Iloilo City 34  
## 4           Tacloban 34  
## 5       Samal Island 30  
## 6           Davao City 27
```

#d. Associate the dataframe you have created in 2.(c) by naming the columns using the names() function.

```
names(city_temp) <- c("City", "Temperature")  
city_temp
```

```
##           City Temperature  
## 1 Tugue-garao City        42  
## 2           Manila        39  
## 3       Iloilo City        34  
## 4           Tacloban        34  
## 5       Samal Island        30  
## 6           Davao City        27
```

#e. Print the structure by using str() function. Describe the output.

```
str(city_temp)
```

```
## 'data.frame':   6 obs. of  2 variables:
```

```
## $ City      : chr  "Tugue-garao City" "Manila" "Iloilo City" "Tacloban" ...
## $ Temperature: num  42 39 34 34 30 27
```

```
# Output: data.frame': 6 obs. of 2 variables:
# $ city: chr  "Tugue-garao City" "Manila" "Iloilo City" "Tacloban" ...
# $ temp: num  42 39 34 34 30 27
```

```
#f. From the answer in d, what is the content of row 3 and row 4 What is its R code and its output?
city_temp[3:4, ]
```

```
##           City Temperature
## 3 Iloilo City           34
## 4   Tacloban           34
```

```
#g. From the answer in d, display the city with highest temperature and the city with the lowest temperature
city_temp[which.max(city_temp$Temperature), ]
```

```
##           City Temperature
## 1 Tugue-garao City       42
city_temp[which.min(city_temp$Temperature), ]
```

```
##           City Temperature
## 6 Davao City            27
```

```
#3. Using Matrices
```

```
#2. Create a matrix of one to eight and eleven to fourteen with four columns and three rows.
```

```
#a. What will be the R code for the #2 question and its result?
```

```
m <- matrix(c(1:8, 11:14), ncol=4, nrow=3)
m
```

```
##      [,1] [,2] [,3] [,4]
## [1,]   1   4   7  12
## [2,]   2   5   8  13
## [3,]   3   6  11  14
```

```
# Output: 3x4 matrix
```

```
#b. Multiply the matrix by two. What is its R code and its result?
```

```
m2 <- m * 2
m2
```

```
##      [,1] [,2] [,3] [,4]
## [1,]   2   8  14  24
## [2,]   4  10  16  26
## [3,]   6  12  22  28
```

```
# Output:      [,1] [,2] [,3] [,4]
#      [1,]   2   8  14  24
#      [2,]   4  10  16  26
#      [3,]   6  12  22  28
```

```
#c. What is the content of row 2? What is its R code?
```

```
m[2, ]
```

```
## [1]  2  5  8 13
```

#d. What will be the R code if you want to display the column 3 and column 4 in row 1 and row 2? What is its output?

```
m[1:2, 3:4]

##      [,1] [,2]
## [1,]    7   12
## [2,]    8   13
```

#Outputs:

```
#      [,1] [,2]
#[1,]    7   12
#[2,]    8   13
```

#e. What is the R code if you want to display only the columns in 2 and 3, row 3? What is its output?

```
m[3, 2:3]
```

```
## [1]  6 11
#Output: 6 11
```

#f. What is the R code if you want to display only the columns 4? What is its output?

```
m[,4]
```

```
## [1] 12 13 14
#Output: 12 13 14
```

#g. Name the rows as isa, dalawa, tatlo and columns as uno, dos, tres, quatro for the matrix that was created.

```
rownames(m2) <- c("isa", "dalawa", "tatlo")
colnames(m2) <- c("uno", "dos", "tres", "quatro")
m2
```

```
##      uno dos tres quatro
## isa      2  8  14     24
## dalawa   4 10  16     26
## tatlo    6 12  22     28
```

#Output: uno dos tres quatro

```
#isa      2  8  14     24
#dalawa   4 10  16     26
#tatlo    6 12  22     28
```

#h. From the original matrix you have created in a, reshape the matrix by assigning a new dimension with 6 rows and 2 columns.

```
dim(m) <- c(6,2)
m
```

```
##      [,1] [,2]
## [1,]    1    7
## [2,]    2    8
## [3,]    3   11
## [4,]    4   12
## [5,]    5   13
## [6,]    6   14
```

#4. Using Arrays

#An array contains 1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1

```
#a. Create an array for the above numeric values. Each values will be repeated twice What will be the R
nums <- c(1,2,3,6,7,8,9,0,3,4,5,1)
array1 <- array(rep(nums, 2), dim = c(2,4,3))
array1
```

```
## , , 1
##
##      [,1] [,2] [,3] [,4]
## [1,]    1    3    7    9
## [2,]    2    6    8    0
##
## , , 2
##
##      [,1] [,2] [,3] [,4]
## [1,]    3    5    1    3
## [2,]    4    1    2    6
##
## , , 3
##
##      [,1] [,2] [,3] [,4]
## [1,]    7    9    3    5
## [2,]    8    0    4    1
```

```
#Output:      [,1] [,2] [,3] [,4]
#      [1,]    7    9    3    5
#      [2,]    8    0    4    1
```

```
#b. How many dimensions do your array have?
dim(array1)
```

```
## [1] 2 4 3
```

```
#Output: 2 4 3
```

```
#c. Name the rows as lowercase letters and columns as uppercase letters starting from the A. The array
rownames(array1) <- c("a", "b")
colnames(array1) <- c("A", "B", "C", "D")
dimnames(array1) <- list(c("a", "b"),
                        c("A", "B", "C", "D"),
                        c("1st-Dimensional Array",
                          "2nd-Dimensional Array",
                          "3rd-Dimensional Array"))
array1
```

```
## , , 1st-Dimensional Array
##
##   A B C D
## a 1 3 7 9
## b 2 6 8 0
##
## , , 2nd-Dimensional Array
##
##   A B C D
## a 3 5 1 3
## b 4 1 2 6
```

```
##  
## , , 3rd-Dimensional Array  
##  
##   A B C D  
## a 7 9 3 5  
## b 8 0 4 1
```

#Output:

, , 1st-Dimensional Array

```
   #A B C D  
#a 1 3 7 9  
#b 2 6 8 0
```

#, , 2nd-Dimensional Array

```
   #A B C D  
#a 3 5 1 3  
#b 4 1 2 6
```

#, , 3rd-Dimensional Array

```
   #A B C D  
#a 7 9 3 5  
#b 8 0 4 1
```