

RWorksheet3a in R

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###1. VECTORS

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"
```

#a.

```
LET1 <- c(LETTERS[1:11])  
LET1
```

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

#b.

```
LET2 <- c(LETTERS[seq(1, 26, 2)])  
LET2
```

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

#c.

```
vowels <- LETTERS[LETTERS %in% c("A", "E", "I", "O", "U")]  
vowels
```

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

#d.

```
let1 <- c(letters[22:26])  
let1
```

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

#e.

```
let2 <- c(letters[16:23])  
let2
```

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

###2. VECTORS

```

#a.
city <- c("Tuguegarao City", "Manila", "Iloilo City", "Tacloban", "Samal Island", "Davao City")

#b.
temp <- c(42, 39, 34, 34, 30, 27)

#c.
table1 <- data.frame (
  city,
  temp
)
table1

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

#d.
table2 <- data.frame (
  City = city,
  Temperature = temp
)
table2

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

#e
str(table2)

## 'data.frame':   6 obs. of  2 variables:
## $ City      : chr  "Tuguegarao City" "Manila" "Iloilo City" "Tacloban" ...
## $ Temperature: num  42 39 34 34 30 27

#f.
table2[3:4, ]

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

```

```

#g.
highest_temp <- table2[1, 1]
highest_temp

## [1] "Tuguegarao City"

lowest_temp <- table2[6, 2]
lowest_temp

## [1] 27

####1. MATRIX (EXAMPLE)

#row = 2
matrix(c(5,6,7,4,3,2,1,2,3,7,8,9), nrow = 2)

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

#row = 3 and column = 2
matrix(data = c(3,4,5,6,7,8),nrow=3,ncol=2)

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

#creating a diagonal matrix where x value will always be 1
diag(1, nrow=6, ncol=5)

##      [,1] [,2] [,3] [,4] [,5]
## [1,]     1     0     0     0     0
## [2,]     0     1     0     0     0
## [3,]     0     0     1     0     0
## [4,]     0     0     0     1     0
## [5,]     0     0     0     0     1
## [6,]     0     0     0     0     0

diag(6)

##      [,1] [,2] [,3] [,4] [,5] [,6]
## [1,]     1     0     0     0     0     0
## [2,]     0     1     0     0     0     0
## [3,]     0     0     1     0     0     0
## [4,]     0     0     0     1     0     0
## [5,]     0     0     0     0     1     0
## [6,]     0     0     0     0     0     1

####2. MATRIX

```

```

#a.
matrix_data <- matrix(c(1:8,11:14),3,4)
matrix_data

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

#b.
product_matrix <- matrix_data * 2
product_matrix

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

#c.
matrix_data[2, ]

## [1] 2 5 8 13

#d.
matrix_data[1:2, 3:4]

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

#e.
matrix_data[3, 2:3]

## [1] 6 11

#f.
matrix_data[,4]

## [1] 12 13 14

#g.
rownames(matrix_data) <- c("isa", "dalawa", "tatlo")
colnames(matrix_data) <- c("uno", "dos", "tres", "quattro")
matrix_data

##      uno dos tres quattro
## isa     1   4    7    12
## dalawa  2   5    8    13
## tatlo  3   6   11    14

```

```

#h.
dim(matrix_data) <- c(6,2)
matrix_data

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

###1. ARRAYS (EXAMPLE)

#1.
#creates a two-dimensional array containing numbers from 1 to 24 that have 3 rows and
array_dta <- array(c(1:24), c(3,4,2))
array_dta

## , , 1
##
##      [,1] [,2] [,3] [,4]
## [1,]    1    4    7   10
## [2,]    2    5    8   11
## [3,]    3    6    9   12
##
## , , 2
##
##      [,1] [,2] [,3] [,4]
## [1,]   13   16   19   22
## [2,]   14   17   20   23
## [3,]   15   18   21   24

#row, column, dimension
dim(array_dta)

## [1] 3 4 2

#checking for the number of elements
length(array_dta)

## [1] 24

vectorA <- c(1:24)
vectorA

## [1]  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

```

```
#2.  
#creating an array  
an_Array <- array(vectorA, dim = c(3,4,2))  
an_Array
```

```
## , , 1  
##  
## [,1] [,2] [,3] [,4]  
## [1,] 1 4 7 10  
## [2,] 2 5 8 11  
## [3,] 3 6 9 12  
##  
## , , 2  
##  
## [,1] [,2] [,3] [,4]  
## [1,] 13 16 19 22  
## [2,] 14 17 20 23  
## [3,] 15 18 21 24
```

##2. ARRAYS

```
array_data <- array(c(1:3, 6:9, 0, 3:5, 1))  
  
#a.  
array_a <- array(array_data, dim = c(2, 4, 3))  
array_a
```

```
## , , 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
```

```
#b.  
str(array_a)
```

```
## num [1:2, 1:4, 1:3] 1 2 3 6 7 8 9 0 3 4 ...
```

```
#c.
dimnames(array_a)[[3]] <- c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensional Array")

rownames(array_a) <- letters[1:2]
colnames(array_a) <- LETTERS[1:4]
array_a

## , , 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
```