

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 matix 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", "quatro")
matrix_data
```

```
##      uno dos tres quatro
## 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
```