title: “RWorksheet_Obas#3a” output: pdf_document date: “2023-10-04” —

```
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
Firts_11_Letters <- LETTERS [1:11]
Firts_11_Letters
```

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

```
#1.b
OddNumLetters <- LETTERS[c(TRUE, FALSE)]
OddNumLetters
```

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

```
#1.c
Vowel_Letters <- LETTERS [c(1,5,9,15,21)]
Vowel_Letters
```

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

```
#1.d.
lowercase_5 <- letters [22:26]
lowercase_5
```

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

```
#1.e
lowercase15_24 <- letters [15:24]
lowercase15_24
```

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

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

```
## [1] "Tuguegarao City" "Manila"          "Iloilo City"     "Tacloban"
## [5] "Samal Island"    "Davao City"
```

```
#2.b
temperatures <- c(42, 39, 34, 34, 30, 27)
temperatures
```

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

```
#2.c
CityTemp  <- data.frame(city,temperatures)
CityTemp
```

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

```r
#2.d
names(CityTemp) <- c("City", "Temperature")
CityTemp
```

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

```r
#2.e
str(CityTemp)
```

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

```r
# showed the contents of the data frame
# showed the summary of the data frame

#2.f
Row3_4 <- CityTemp[3:4,]
Row3_4
```

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

```r
#2.g
highest <- CityTemp[which.max(CityTemp$Temperature),]
highest
```

```
##              City Temperature
## 1 Tuguegarao City          42
```

```r
lowest <- CityTemp[which.min(CityTemp$Temperature),]
lowest
```

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

```r
#USING MATRICES
#2.a

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

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

```r
#2.b

mulMatr <- matr * 2
mulMatr
```

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

```
#2.c

rowTwooo <- mulMatr[2,]
rowTwooo
```

```
## [1]  4 10 16 26
```

```
#2.d

twoColsAndRows <- mulMatr[c(1,2),c(3,4)]
twoColsAndRows
```

```
##      [,1] [,2]
## [1,]   14   24
## [2,]   16   26
```

```
#2.e

twoColsOneRow <- mulMatr[3,c(2,3)]
twoColsOneRow
```

```
## [1] 12 22
```

```
#2.f

fourCol <- mulMatr[,4]
fourCol
```

```
## [1] 24 26 28
```

```
#2.g
dimnames(mulMatr) <- list(c("isa", "dalawa", "tatlo"), c("uno", "dos", "tres", "quatro"))

mulMatr
```

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

```
#2.h

matr
```

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

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

```
##      [,1] [,2]
## [1,]    1    7
## [2,]    2    8
## [3,]    3   11
```

```
## [4,]    4   12
## [5,]    5   13
## [6,]    6   14
```

```
#ARRAYS

#3.a


values <- c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1)
rep_values <- rep(values, each = 2)

arr <- array(rep_values, dim = c(2,4,3))
arr
```

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

```
#3.b
# three dimensions

#3.c
dimnames(arr) <- list(
  letters[1:2], # row names
  LETTERS[1:4], # col names
  c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensional Array") # dim names
)

arr
```

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

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