RWorksheet_Nava#3a

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USING VECTORS

```
LETTERS <- c ("A", "B", "C", "D" ,"E" ,"F", "G", "H", "I", "J", "K", "L", "M", "N", "O", "P", "Q", "R",

letters <- c ("a", "b", "c", "d", "e", "f", "g", "h", "i", "j", "k", "l", "m", "n", "o", "p", "q", "r",
```

1.

a.

```
first_eleven <- head(LETTERS, 11)
first_eleven
```

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

b.

```
odd_numberedL <- LETTERS[seq(1,26, by=2)]
odd_numberedL
```

```
##  [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.

```
lowercase <- tail(letters, 5)
lowercase
```

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

e.

```
lcase_1524 <- letters[15:24]
lcase_1524
```

```
##  [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"
```

b.

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

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

c.

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

```
##              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.

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

```
##              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(city_temp)
```

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

f.

```
city_temp[3:4,]
```

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

g.

```
highesttempcity <- city_temp[which.max(city_temp$Temperature), ]
highesttempcity
```

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

```
lowesttempcity <- city_temp[which.min(city_temp$Temperature), ]
lowesttempcity
```

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

MATRICES 2. a

```
matrix_1 <- matrix(c(1:8, 11:14), nrow = 3, ncol = 4, byrow = TRUE)
matrix_1
```

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

b.

```
matrix_2 <- matrix_1 * 2
matrix_2
```

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

c.

```
matrix_1[2, ]
```

```
## [1] 5 6 7 8
```

d.

```
matrix_1[1:2, 3:4]
```

```
##      [,1] [,2]
## [1,]    3    4
## [2,]    7    8
```

e.

```
matrix_1[3, 2:3]
```

```
## [1] 12 13
```

f.

```
matrix_1[, 4]
```

```
## [1]  4  8 14
```

g.

```
# Name rows and columns
rownames(matrix_2) <- c("isa", "dalawa", "tatlo")
colnames(matrix_2) <- c("uno", "dos", "tres", "quatro")
matrix_2
```

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

h.

```
dim(matrix_1) <- c(6, 2)
matrix_1
```

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

ARRAYS 3. a.

```
values <- rep(c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1), times = 2)
array <- array(values, dim = c(2, 4, 3))
array
```

```
## , , 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.

```
dim(array)
```

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

c.

```
dimnames(array) <- list(
c("a", "b"),
c("A", "B", "C", "D"),
c("1st-Dimensional Array", "2nd-Dimensional Array", "3rd-Dimensional Array")
)
array
```

```
## , , 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
```