

# worksheet\_#3a

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```
#1. using vectors
```

```
#LETTERS
```

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

```
upper_case <- c(LETTERS)
```

```
c(upper_case[1:11])
```

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

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

```
odd_uppercase <- LETTERS[(1:26 %% 2 == 1)]
```

```
odd_uppercase
```

```
## [1] "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"
```

```
#letters
```

```
#Based on the above vector letters:
```

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

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

```
last_five
```

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

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

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

```
lower_case
```

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

```
#2. Create a vector with the average temperatures in April for Tuguegarao City, Manila, Iloilo City, Tacloban, Samal Island, Davao City
```

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

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

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

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

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

```
temperature
```

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

```
#c. Associate the temperature temp with the city by using names() function. What is the R code and its
names(temperature) <- city
temperature
```

```
## Tuguegarao City      Manila      Iloilo City      Tacloban      Samal Island
##           42           39           34           34           30
##      Davao City
##           27
```

```
#e. From the answer in d, what is the content of index 5 and index 6? What is its R code?
index5_index6 <- temperature[5:6]
index5_index6
```

```
## Samal Island      Davao City
##           30           27
```

```
#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?
num2 <- matrix(c(1:8,11:14),nrow = 3,ncol = 4)
num2
```

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

```
#b Multiply the matrix by two. What is its R code and its result?
multiplied_by2 <- num2 * 2
multiplied_by2
```

```
##      [,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?
row2 <- multiplied_by2 [2,]
row2
```

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

```
#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 i
display1 <- multiplied_by2[1:2,3:4]
display1
```

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

```
#e. What is the R code is you want to display only the columns in 2 and 3, row 3? What is its output?
display2 <- multiplied_by2[2:3,2]
display2
```

```
## [1] 10 12
```

```
#f. What is the R code is you want to display only the columns 4? What is its output?
display_col4 <- multiplied_by2[,4]
display_col4
```

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

```
#g. Name the rows as isa, dalawa, tatlo and columns as uno, dos, tres, quatro for the matrix that was created  
dimnames(multiplied_by2) <- list(c("isa","dalawa","tatlo"),c("uno","dos","tres","quatro"))  
multiplied_by2
```

```
##      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(num2) <- c(6,2)  
num2
```

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

```
dim(num2)
```

```
## [1] 6 2
```

```
num2
```

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

```
#Using Arrays
```

```
#3. 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 object type?  
elements1 <- array(c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1))  
elements1
```

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

```
elements2 <- rep(elements1, 2)  
elements2
```

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

```
dim(elements2) <- c(2, 4, 3)  
elements2
```

```
## , , 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. How many dimensions do your array have?*

```
dim(elements2)
```

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

*#Answer is 3 dimensions.*

*#c. Name the rows as lowercase letters and columns as uppercase letters starting from the A. The array is 2-dimensional. Name the dimensions as 1st-Dimensional Array and 2nd-Dimensional Array.*

```
dimnames(elements2) <- list(c("a","b"),c("A","B","C","D"),c("1st-Dimensional Array", "2nd-Dimensional Array"))
elements2
```

```
## , , 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
```