

```
#1 a. a. You need to produce a vector that contains the first 11 letters. LETTERS[1:11]
#Output "A" "B" "C" "D" "E" "F" "G" "H" "I" "J" "K" # b. Produce a vector that contains the odd
numbered letters. LETTERS[x=seq(1,26,by=2)]
#Output "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
#Output "A" "E" "I" "O" "U" # d. Produce a vector that contains the last 5 lowercase letters. last_five
<-letters[c(22:26)] last_five
#Output "v" "w" "x" "y" "z" # e. Produce a vector that contains letters between 15 to 24 letters in lowercase.
between_letters <-letters[c(15:24)] between_letters
```

Output "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
#Output "Tuguegarao City" "Manila" "Iloilo City" "Tacloban" "Samal Island" "Davao City"
#2 b.
temp <-c(42, 39, 34, 34, 30, 27) temp
#2 c. city_temp <- data.frame(city, temp) city_temp
#Output city temp #1 Tuguegarao City 42 #2 Manila 39 #3 Iloilo City 34 #4 Tacloban 34 #5 Samal Island
30 #6 Davao City 27
#2 d. names(city_temp) <- c("City","Temperature") city_temp
#Output City Temperature #1 Tuguegarao City 42 #2 Manila 39 #3 Iloilo City 34 #4 Tacloban 34 #5
Samal Island 30 #6 Davao City 27
#2 e.
str(city_temp)
```

the structure of the city_temp object is shows when you code it

the contents of the data frame shows in the console

the summary of the data frame is displayed

2 f.

```
twoRows <- city_temp[3:4,] twoRows
```

Output City Temperature

```
#3 Iloilo City 34 #4 Tacloban 34
#2 g. high<- city_temp[which.max(city_temp$Temperature),] high
```

```

low <- city_temp[which.min(city_temp$Temperature),] low
#Output City Temperature # 1 Tuguegarao City 42 #low <- city_temp[which.min(city_temp$Temperature),]
#low # City Temperature # 6 Davao City 27

#MATRIX

#2 a. matrix <-matrix(c(1:8,11:14),nrow = 3, ncol = 4) matrix
#Output # [,1] [,2] [,3] [,4] #[,1] 1 4 7 12 #[,2] 2 5 8 13 #[,3] 3 6 11 14

#2 b. multiply_matrix <-matrix*2 multiply_matrix #Output # [,1] [,2] [,3] [,4] #[,1] 2 8 14 24 #[,2] 4 10 16
26 #[,3] 6 12 22 28 #2 c.

rowtwooo <- multiply_matrix[2,] rowtwooo
#Output 8 20 32 52 #2 d. twocols_and_rows <- multiply_matrix[c(1,2),c(3,4)] twocols_and_rows
#Output [,1] [,2] #[,1] 28 48 #[,2] 32 52 #2 e.

twocols_onerow <- multiply_matrix[3,c(2,3)] twocols_onerow #Output 12 22

#2 f. four_col <- multiply_matrix[,4] four_col #Output 24 26 28 #2 g. dimnames( multiply_matrix) <-
list(c("isa", "dalawa", "tatlo"), c("uno", "dos", "tres", "cuatro")) multiply_matrix
#Output uno dos tres cuatro #isa 2 8 14 24 #dalawa 4 10 16 26 #tatlo 6 12 22 28

#2 h.

matrix dim(matrix) <- c(6,2) matrix
#Output [,1] [,2] #[,1] 1 7 #[,2] 2 8 #[,3] 3 11 #[,4] 4 12 #[,5] 5 13 #[,6] 6 14

#3 a. vValues <- c(1, 2, 3, 6, 7, 8, 9, 0, 3, 4, 5, 1) rep_values <- rep(vValues, each = 2)
array <- array(rep_values, dim = c(2,4,3)) array
#Output , , 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. # My array has 3 dimensions

#3 c.

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

array

#Output , , 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

```