

# Worksheet#3a\_Tupaz

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```
1#vectors
```

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

```
#1.a
```

```
first_11_letters <- head(LETTERS, 11)
first_11_letters
```

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

```
#1.b
```

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

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

```
#1.c
```

```
vowels <- LETTERS[LETTERS %in% c("A", "E", "I", "O", "U")]
vowels
```

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

```
#1.d
```

```
last_5_letters <- tail(letters, 5)
last_5_letters
```

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

```
#1.e
```

```
letters_15_24 <- letters[15:24]
letters_15_24
```

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

```
2#vectors
```

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

```
#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
```

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

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

```
#2.c
```

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

```
##           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(df) <- c("City", "Temperature")
df
```

```
##           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(df)
```

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

```
#2.f
```

```
df[3:4, ]
```

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

```
#2.g
```

```
max_temp_city <- df[which.max(df$Temperature), "City"]
min_temp_city <- df[which.min(df$Temperature), "City"]
```

```
print(paste("City with highest temperature:", max_temp_city))
```

```
## [1] "City with highest temperature: Tuguegarao City"
```

```
print(paste("City with lowest temperature:", min_temp_city))
```

```
## [1] "City with lowest temperature: Davao City"
```

```
2#matrices
```

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

```
#2.a
```

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

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

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

*#2.b*

```
m_times_two <- m * 2
m_times_two
```

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

*#2.c*

```
m[2, ]
```

```
## [1]  2  5  8 13
```

*#2.d*

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

```
##      [,1] [,2]
## [1,]    7   12
## [2,]    8   13
```

*#2.e*

```
m[3, 2:3]
```

```
## [1]  6 11
```

*#2.f*

```
m[, 4]
```

```
## [1] 12 13 14
```

*#2.g*

```
rownames(m) <- c("isa", "dalawa", "tatlo")
colnames(m) <- c("uno", "dos", "tres", "quatro")
m
```

```
##      uno dos tres quatro
## isa      1  4   7   12
## dalawa   2  5   8   13
## tatlo    3  6  11   14
```

*#2.h*

```
m_reshaped <- m
dim(m_reshaped) <- c(6, 2)
m_reshaped
```

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

*3#array*

```
## [1] 3
```

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

```
## , , 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
```

```
#3.b
length(dim(array_data))
```

```
## [1] 3
```

```
#3.c
dimnames(array_data) <- list(c("a", "b"), c("A", "B", "C", "D"), c("1st", "2nd", "3rd"))
array_data
```

```
## , , 1st
##
##   A B C D
## a 1 3 7 9
## b 2 6 8 0
##
## , , 2nd
##
##   A B C D
## a 3 5 1 3
## b 4 1 2 6
##
## , , 3rd
##
##   A B C D
## a 7 9 3 5
## b 8 0 4 1
```