Worksheet1

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1.

a. How many data points? 34
b. Write the R code and its output.

```
  age <- c(34, 28, 22, 36, 27, 18, 52, 39, 42, 29,
35, 31, 27, 22, 37, 34, 19, 20, 57, 49, 50, 37, 46, 25, 17, 37, 42, 53, 41,
51, 35, 24, 33, 41
)
```

```
length(age)
```

```
## [1] 34
```

2. Find the reciprocal

```
rec <- 1 / age
```

```
library(MASS)
fractions(rec)
```

```
##  [1] 1/34 1/28 1/22 1/36 1/27 1/18 1/52 1/39 1/42 1/29 1/35 1/31 1/27 1/22 1/37
## [16] 1/34 1/19 1/20 1/57 1/49 1/50 1/37 1/46 1/25 1/17 1/37 1/42 1/53 1/41 1/51
## [31] 1/35 1/24 1/33 1/41
```

3. ASSIGN The vector repeats the output of the age but the 0 seperates the two age's outputs

```
new_age <- c(age, 0, age)
new_age
```

```
##  [1] 34 28 22 36 27 18 52 39 42 29 35 31 27 22 37 34 19 20 57 49 50 37 46 25 17
## [26] 37 42 53 41 51 35 24 33 41  0 34 28 22 36 27 18 52 39 42 29 35 31 27 22 37
## [51] 34 19 20 57 49 50 37 46 25 17 37 42 53 41 51 35 24 33 41
```

4. SORT

```
sort(age)
```

```
##  [1] 17 18 19 20 22 22 24 25 27 27 28 29 31 33 34 34 35 35 36 37 37 37 39 41 41
## [26] 42 42 46 49 50 51 52 53 57
```

5. MAX MIN

```
max(age)
```

```
## [1] 57
```

```
min(age)
```

```
## [1] 17
```

6. SET VECTOR B.Write the R code and its output.

```
vec <- c(2.4, 2.8, 2.1, 2.5, 2.4, 2.2, 2.5,
2.3, 2.5, 2.3, 2.4, 2.7)
```

a.How many data points? (12)

```
length(vec)
```

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

7.Generates a new vector for data where you double every value of the data. | What happen to the data? (it doubles the data inside the vec).

```
double <- vec * 2
double
```

```
##  [1] 4.8 5.6 4.2 5.0 4.8 4.4 5.0 4.6 5.0 4.6 4.8 5.4
```

8.Generate a sequence for the following scenario: 8.1 Integers from 1 to 100

```
hundred <- seq(1:100)
```

8.2 Numbers from 20 to 60

```
nums <- seq(20, 60)
```

8.3 Mean of numbers from 20 to 60

```
 mean(nums)
```

```
## [1] 40
```

8.4 Sum of numbers from 51 to 91

```
sum(51:91)
```

```
## [1] 2911
```

8.5

```
thousands <- seq(1:1000)
```

A.How many data points from 8.1 to 8.4? (143) B.Write the R code and its output from 8.1 to 8.4

```
length(hundred) + length(nums) + length(mean) + length(sum)
```

```
## [1] 143
```

C. For 8.5 find only maximum data points until 10.

```
max(thousands[thousands <- 10])
```

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

9.Print a vector with the integers between 1 and 100 that are not divisible by 3, 5 and 7 using filter option.

```
Filter(function(i) { all(i %% c(3,5,7) != 0) }, seq(100))
```

```
##  [1]  1  2  4  8 11 13 16 17 19 22 23 26 29 31 32 34 37 38 41 43 44 46 47 52 53
## [26] 58 59 61 62 64 67 68 71 73 74 76 79 82 83 86 88 89 92 94 97
```

10.Generate a sequence backwards of the integers from 1 to 100.

```
 ten <- seq(100,1)
ten
```

```
##   [1] 100  99  98  97  96  95  94  93  92  91  90  89  88  87  86  85  84  83
##  [19]  82  81  80  79  78  77  76  75  74  73  72  71  70  69  68  67  66  65
##  [37]  64  63  62  61  60  59  58  57  56  55  54  53  52  51  50  49  48  47
##  [55]  46  45  44  43  42  41  40  39  38  37  36  35  34  33  32  31  30  29
##  [73]  28  27  26  25  24  23  22  21  20  19  18  17  16  15  14  13  12  11
##  [91]  10   9   8   7   6   5   4   3   2   1
```

11. Find the sum of these multiples(143)

```
numbers <- 1:24
multiples <- numbers[numbers %% 3 == 0 | numbers %% 5 == 0]
print(multiples)
```

```
##  [1]  3  5  6  9 10 12 15 18 20 21 24
```

```
sum_multiples <- sum(multiples)
print(sum_multiples)
```

```
## [1] 143
```

A. How many data points from 10 to 11? (136) B.

```
length(ten) + length(numbers) + length(multiples) + length(sum_multiples)
```

```
## [1] 136
```

12. It shows an Error unexpected '}' so i use the # sign to make it a comment

```
#x <- {0 + x + 5 + }
```

13.Find x[2] and x[3]. Write the R code and its output.

```
score <- c(72, 86, 92, 63, 88, 89, 91, 92, 75,
75, 77.)
score[2]
```

```
## [1] 86
```

```
score[3]
```

```
## [1] 92
```

14.*Create a vector a = c(1,2,NA,4,NA,6,7)

```
 a = c(1,2,NA,4,NA,6,7)
```

A. Change the NA to 999 using the codes print(a,na.print="-999")

```
print(a,na.print="-999")
```

```
## [1]    1    2 -999    4 -999    6    7
```

B. The output is [1] 1 2 -999 4 - 999 6 7

15.Follow the codes below:

```
name = readline(prompt="Input your name: ")
```

```
## Input your name:
```

```
age = readline(prompt="Input your age: ")
```

```
## Input your age:
```

```r
print(paste("My name is",name, "and I am",age ,"years old."))
```

```
## [1] "My name is  and I am  years old."
```

```r
print(R.version.string)
```

```
## [1] "R version 4.4.1 (2024-06-14)"
```

What is the output of the above code? (The output of the code above is the name that you input and the age and print it.)