Week 1 Quiz

15/20 points earned (75%)

You haven't passed yet. You need at least 80% to pass.
Review the material and try again! You have 3 attempts every 8 hours.

Review Related Lesson

1 / 1 points

1.
The R language is a dialect of which of the following programming languages?

- Scheme
- S

Correct
R is a dialect of the S language which was developed at Bell Labs.

- Lisp
- Fortran

0 / 1 points

2.
The definition of free software consists of four freedoms (freedoms 0 through 3). Which of the following is NOT one of the freedoms that are part of the definition? Select all that apply.

- [x] The freedom to prevent users from using the software for undesirable purposes.

This should be selected

- [x] The freedom to sell the software for any price.

This should be selected

☐ The freedom to restrict access to the source code for the software.

Correct
This is not part of the free software definition. Freedoms 1 and 3 require access to the source code.

☐ The freedom to redistribute copies so you can help your neighbor.

Un-selected is correct

☐ The freedom to study how the program works, and adapt it to your needs.

Un-selected is correct

☐ The freedom to run the program, for any purpose.

Un-selected is correct

☐ The freedom to improve the program, and release your improvements to the public, so that the whole community benefits.

Un-selected is correct

✖ 0 / 1 points

3.
In R the following are all atomic data types EXCEPT: (Select all that apply)

☐ array

This should be selected

☐ list

This should be selected

☐ character

Un-selected is correct

- [x] numeric

Un-selected is correct

- [x] logical

Un-selected is correct

- [x] integer

Un-selected is correct

- [ ] table

This should be selected

- [x] data frame

Correct
'data frame' is not an atomic data type in R.

- [x] complex

Un-selected is correct

- [ ] matrix

This should be selected

✔ 1 / 1 points

4.
If I execute the expression x <- 4 in R, what is the class of the object `x' as determined by the `class()' function?

- ○ integer
- ○ vector

- [x] numeric

Correct

- [ ] list
- [ ] complex
- [ ] matrix
- [ ] real

✗ 0 / 1 points

5.
What is the class of the object defined by the expression x <- c(4, "a", TRUE)?

- [ ] logical
- [ ] mixed
- [ ] integer
- [x] numeric

This should not be selected
The character class is the "lowest common denominator" here and so all elements will be coerced into that class.

- [ ] character

✓ 1 / 1 points

6.
If I have two vectors x <- c(1,3, 5) and y <- c(3, 2, 10), what is produced by the expression cbind(x, y)?

- [ ] a vector of length 2
- [ ] a 2 by 2 matrix
- [x] a matrix with 2 columns and 3 rows

Correct

The 'cbind' function treats vectors as if they were columns of a matrix. It then takes those vectors and binds them together column-wise to create a matrix.

- ○ a 3 by 3 matrix
- ○ a 2 by 3 matrix
- ○ a vector of length 3

✔ 1 / 1 points

7.
A key property of vectors in R is that

- ○ a vector cannot have have attributes like dimensions
- ○ the length of a vector must be less than 32,768
- ◉ elements of a vector all must be of the same class

Correct

- ○ elements of a vector can only be character or numeric
- ○ elements of a vector can be of different classes

✖ 0 / 1 points

8.
Suppose I have a list defined as x <- list(2, "a", "b", TRUE). What does x[[1]] give me? Select all that apply.

- ☐ a list containing the number 2.

Un-selected is correct

- ☐ a character vector containing the element "2".

Un-selected is correct

- ☐ a numeric vector containing the element 2.

This should be selected

- [x] a list containing the letter "a".

Un-selected is correct

- [x] a numeric vector of length 1.

Correct

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1 / 1 points

9.
Suppose I have a vector x <- 1:4 and a vector y <- 2. What is produced by the expression x + y?

- [ ] an integer vector with elements 3, 2, 3, 6.
- [x] a numeric vector with elements 3, 4, 5, 6.

Correct

- [ ] a numeric vector with elements 1, 2, 3, 6.
- [ ] a numeric vector with elements 3, 2, 3, 4.
- [ ] an integer vector with elements 3, 2, 3, 4.
- [ ] a numeric vector with elements 3, 2, 3, 6.

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0 / 1 points

10.
Suppose I have a vector x <- c(17, 14, 4, 5, 13, 12, 10) and I want to set all elements of this vector that are greater than 10 to be equal to 4. What R code achieves this? Select all that apply.

- [x] x[x >= 11] <- 4

This should be selected

- [x] x[x == 4] > 10

Un-selected is correct

- [ ] x[x > 4] <- 10

Un-selected is correct

- [ ] x[x >= 10] <- 4

Un-selected is correct

- [ ] x[x > 10] <- 4

Correct
You can create a logical vector with the expression x > 10 and then use the [operator to subset the original vector x.

- [ ] x[x > 10] == 4

Un-selected is correct

- [ ] x[x < 10] <- 4

Un-selected is correct

- [ ] x[x == 10] <- 4

Un-selected is correct

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1 / 1 points

11.
Use the Week 1 Quiz Data Set to answer questions 11-20.

In the dataset provided for this Quiz, what are the column names of the dataset?

- ( ) 1, 2, 3, 4, 5, 6
- ( ) Ozone, Solar.R, Wind
- (•) Ozone, Solar.R, Wind, Temp, Month, Day

Correct
You can get the column names of a data frame with the `names()' function.

- Month, Day, Temp, Wind

1 / 1 points

12.
Extract the first 2 rows of the data frame and print them to the console. What does the output look like?

-
```
  1    Ozone Solar.R Wind Temp Month Day
2 1     41     190  7.4   67     5   1
3 2     36     118  8.0   72     5   2
```

Correct
You can extract the first two rows using the [operator and an integer sequence to index the rows.

-
```
  1    Ozone Solar.R Wind Temp Month Day
2 1      7      NA  6.9   74     5  11
3 2     35     274 10.3   82     7  17
```

-
```
  1    Ozone Solar.R Wind Temp Month Day
2 1      9      24 10.9   71     9  14
3 2     18     131  8.0   76     9  29
```

-
```
  1    Ozone Solar.R Wind Temp Month Day
2 1     18     224 13.8   67     9  17
3 2     NA     258  9.7   81     7  22
```

1 / 1 points

13.
How many observations (i.e. rows) are in this data frame?

- 160
- 45
- 129
- 153

Correct
You can use the `nrows()' function to compute the number of rows in a data frame.

1 / 1 points

14.
Extract the *last* 2 rows of the data frame and print them to the console. What does the output look like?

```
  1       Ozone Solar.R Wind Temp Month Day
  2   152    18     131  8.0   76     9  29
  3   153    20     223 11.5   68     9  30
```

Correct
The `tail()' function is an easy way to extract the last few elements of an R object.

```
  1       Ozone Solar.R Wind Temp Month Day
  2   152    31     244 10.9   78     8  19
  3   153    29     127  9.7   82     6   7
```

```
  1       Ozone Solar.R Wind Temp Month Day
  2   152    11      44  9.7   62     5  20
  3   153   108     223  8.0   85     7  25
```

```
  1       Ozone Solar.R Wind Temp Month Day
  2   152    34     307 12.0   66     5  17
  3   153    13      27 10.3   76     9  18
```

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1 / 1 points

15.
What is the value of Ozone in the 47th row?

- 63
- 34
- 18
- 21

Correct
The single bracket [operator can be used to extract individual rows of a data frame.

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1 / 1 points

16.
How many missing values are in the Ozone column of this data frame?

- 78
- 9

- 43
- 37

Correct
The `is.na' function can be used to test for missing values.

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1 / 1 points

17.
What is the mean of the Ozone column in this dataset? Exclude missing values (coded as NA) from this calculation.

- 42.1

Correct
The `mean' function can be used to calculate the mean.

- 31.5
- 53.2
- 18.0

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1 / 1 points

18.
Extract the subset of rows of the data frame where Ozone values are above 31 and Temp values are above 90. What is the mean of Solar.R in this subset?

- 212.8

Correct
You need to construct a logical vector in R to match the question's requirements. Then use that logical vector to subset the data frame.

- 185.9
- 205.0
- 334.0
