

# SIOB 296 Introduction to Programming with R

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## Homework

Answer all questions in a script (.R) file. Use comments (# or #').

1. Compute the following values:

27 times 38 minus 17 (= 1009)

natural logarithm of (56 divided by 4) (= 2.6390573)

square root of (4 times 13) (= 7.2111026)

2. Create the following vector and assign it to `q2`.

```
[1] 4 5 6 7 3 5 6 7 8 1
```

3. Create the following vector and assign it to `q3`.

```
[1] 0 10 15 20 25 30 35 40 45 50 4 6 5 4 3 1 10
```

4. Multiply every element in `q2` by 5 and assign it to `q4`.

```
[1] 20 25 30 35 15 25 30 35 40 5
```

5. Remove the second and ninth element from `q4`.

```
[1] 20 30 35 15 25 30 35 5
```

6. What are the fifth, first, and eighth elements of the new `q4` vector in #5?

```
[1] 25 20 5
```

7. What is the sum of all elements in `q4` that are greater than 18?

The values:

```
[1] 20 30 35 25 30 35
```

Their sum:

```
[1] 175
```

8. Create this vector and assign it to `q8`:

```
[1] 32 25 66 32 25 66 32 25 66 32 25 66
```

9. Create this vector and assign it to `q9`:

```
[1] 32 32 25 25 66 66 32 32 25 25
```

10. Execute the script “temperature.r”. Create a single named vector with the number of values of temperature are in the vector `temp` and what is their mean and standard deviation.

n	mean	std.dev
77641.000000	14.576133	2.612531

11. Create a new named vector of state areas (called `areas`) using the values in the `state.name` vector to name the values in `state.area`.

Alabama	Alaska	Arizona	Arkansas	California
51609	589757	113909	53104	158693
Colorado	Connecticut	Delaware	Florida	Georgia
104247	5009	2057	58560	58876
Hawaii	Idaho	Illinois	Indiana	Iowa
6450	83557	56400	36291	56290
Kansas	Kentucky	Louisiana	Maine	Maryland
82264	40395	48523	33215	10577
Massachusetts	Michigan	Minnesota	Mississippi	Missouri
8257	58216	84068	47716	69686
Montana	Nebraska	Nevada	New Hampshire	New Jersey
147138	77227	110540	9304	7836
New Mexico	New York	North Carolina	North Dakota	Ohio
121666	49576	52586	70665	41222
Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina
69919	96981	45333	1214	31055
South Dakota	Tennessee	Texas	Utah	Vermont
77047	42244	267339	84916	9609
Virginia	Washington	West Virginia	Wisconsin	Wyoming
40815	68192	24181	56154	97914

12. Using the `areas` vector from #11, what is the total area of Washington, Oregon, and California?

[1] 323866

13. Using the `areas` vector from #11, how many Rhode Islands can fit into California?

[1] 130.7191

14. Using the `state.abb` and `state.name` vectors, what is the abbreviation of Iowa?

[1] "IA"

15. Using the `state.abb` and `state.area` vectors, what are the abbreviations of states with areas greater than the mean area of all states?

[1] "AK" "AZ" "CA" "CO" "ID" "KS" "MN" "MT" "NE" "NV" "NM" "OR" "SD" "TX"

[15] "UT" "WY"