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# Harvardx: PH125.1x - (1) Data Science: R Basics
# SECTION 4: PROGRAMMING BASICS
# ASSESSMENTS


# # # ASSESSMENT 4.0: PROGRAMMING BASICS

# # IFELSE

# Assign the state abbreviation when the state name is longer than 8
 characters
[redacted]


# # DEFINING FUNCTIONS

# Create function called `sum_n`
[redacted]
# Use the function to determine the sum of integers from 1 to 5000
[redacted]


# # LEXICAL SCOPE

# Run this code
[redacted]

# Print the value of x
[redacted]


# # FOR LOOPS
```

```
# Here is an example of a function that adds numbers from 1 to n
[redacted]

# Here is the sum of the first 100 numbers
[redacted]

# Write a function compute_s_n with argument n that for any given n
 computes the sum of 1 + 2^2 + ...+ n^2
[redacted]

# Report the value of the sum when n=10
[redacted]

# Define a function and store it in `compute_s_n`
[redacted]

# Create a vector for storing results
[redacted]

# write a for-loop to store the results in s_n
[redacted]


# # CHECKING MATH

# Define the function
[redacted]

# Define the vector of n
[redacted]

# Define the vector to store data
[redacted]
```

[redacted]

Create the plot
[redacted]

Check that s_n is identical to the formula given in the instructions.
[redacted]

SECTION 1 ASSESSMENT

Q1 Write an ifelse statement that returns 1 if the sex is Female and 2 if the sex is Male. What is the sum of the resulting vector?
[redacted]

Q2 Write an ifelse statement that takes the height column and returns the height if it is greater than 72 inches and returns 0 otherwise. What is the mean of the resulting vector?
[redacted]

Q3 Write a function inches_to_ft that takes a number of inches x and returns the number of feet. One foot equals 12 inches. What is inches_to_ft(144)?
[redacted]

How many individuals in the heights dataset have a height less than 5 feet?
[redacted])

Q4 Which of the following are TRUE?
[redacted]

Q5 Given an integer x, the factorial of x is called x! and is the product of all integers up to and including x. The factorial() function computes factorials in R. For example, factorial(4) returns 4! = 4 × 3 × 2 × 1 = 24. Complete the code above to generate a vector of length m where the first entry is 1!, the second entry is 2!, and so on up to m!.
[redacted]