

Tutorial 1

You may use repl.it (Node.JS template), visual studio code or simply your browser to work on your exercises. Place completed answers into a word document and submit.

Additional Reading/References

- [JavaScript Reference](#)
- [Math.floor](#)
- [.toFixed](#)

Exercise 1: Understanding Variables & Data Types

Create variables of different types and print their values and types using typeof

Eg. Assign the value **53** to a variable named p (`let p = 53`)

Exercise 2: More Variables

Define 4 variables:

- A variable, named age, with an integer value of 25.
- A variable, named gst, with a float value of 0.09.
- A boolean variable, named isRaining, with the value of False.
- A string, named username, with the value of "Samantha Brown".

Base code

```
//Add your code above
console.log(age);
console.log(gst);
console.log(isRaining);
console.log(username);
```

Exercise 3: Basic Arithmetic Operations

Perform basic arithmetic operations and print the results. (+,-,*,/)

Exercise 4: Simple Calculation

Objective: Write a program that takes two numbers as input and performs addition, subtraction, multiplication, and division on them.

Instructions:

- Declare two variables to store the numbers (e.g., num1 and num2).
- Perform each arithmetic operation using these variables.
- Print the result of each operation to the console.

Exercise 5: Donuts

A donut costs \$1.50. Mary bought 20 donuts. How much is the total?

Solve this problem by first assigning the relevant values to these three variables;

- cost
- numberOfDonuts
- total

Write an arithmetic expression and assign the result to the total variable

Display the total variable using the JavaScript's console.log function

Exercise 6: Taxes

The corporate tax of a certain country is 2.9%. Donald earns \$450,000 this year. How much tax is she required to pay?

Solve this problem with the by assigning the relevant values or expressions to those three variables;

- taxRate
- income
- totalPayment

Display totalPayment with console.log

Exercise 7: Area of a Rectangle

Objective: Calculate the area of a rectangle given its length and width.

Instructions:

- Declare two variables for length (length) and width (width) of the rectangle.
- Calculate the area using the formula
- $\text{area} = \text{length} \times \text{width}$
- Print the area to the console.

Exercise 8: Muffins

A muffin from the bakery cost d dollars and c cents respectively._._

Suppose Mary bought n muffins.

Assign the variable total the amount (in dollars) Mary must pay.

Use the variables d, c, n and total to solve the problem.

Assign your own values to the variables c, d and n.

Exercise 9: Working with Prompts

Write two prompts to ask a user for two numbers. (Hint: you need one variable for each number)

Calculate the product of those two numbers and console.log out the product

Important

- Do not use any unnecessary console.log except for those requested in the question

Example of using the prompt function

```
firstNumber = prompt("")
```

Test Cases

```
> 2
```

```
> 5
```

```
10
```

```
//if you are using node.js include the following line
```

```
//const prompt = require('prompt-sync')();
```

Exercise 10: How old are you

Write a program that,

- asks the user for his birth year (e.g. 1982, 1999 etc).
- asks the user for the current year.

Using these two numbers,

- Calculate the user's age
- Print out his age.

Test Case

```
> 1995
```

```
> 2020
```

```
25
```

Exercise 11: Area of Circle

Write a program to which will allow the user to input a floating point number. Assign that number to a variable named radius.

Calculate the area using the given radius and console.log the answer. Round up to two decimal point using the toFixed function:

```
let x = 3.1417;
```

```
console.log(x.toFixed(2)) // => "3.14"
```

Note:

Assume pi to be 3.14

Exercise 12: Average 4

Write a program where the users can enter four numbers.

Calculate and display the average of these four numbers. (do not use functions)

Test Cases

```
> 4
> 2
> 5
> 17
7
```

Exercise 13: Number Swap (Trick Question)

Objective: Swap the values of two variables using a temporary variable.

(Advanced) Swap the values of two variables without using a temporary variable.

Instructions:

- Declare two number variables (a and b) and assign them different values.
- Swap their values using arithmetic operations.
- Print the new values of a and b.

Exercise 14: Celsius to Fahrenheit Converter

Objective: Convert a temperature from Celsius to Fahrenheit.

Instructions:

- Declare a variable for the temperature in Celsius (celsius).
- Convert it to Fahrenheit using the formula
- $\text{Fahrenheit} = (\text{Celsius} \times 9/5) + 32$.
- Print the temperature in Fahrenheit to the console.

Exercise 15: Basic Decision Making

Use if-else statements to classify a number as positive, negative, or zero.

Exercise 16: The Modulus Operator

Objective: Use the modulus operator to determine if a number is even or odd.

Instructions:

- Declare a variable for the number (num).
- Use the modulus operator (%) to find the remainder when num is divided by 2.

- Based on the remainder, print whether num is even or odd.

Exercise 17: Grading System

Classify a student's grade based on their score.

Instructions:

- Declare a variable for the score (score).
- Use if-else statements to classify the score into grades (A, B, C, D, F) and print the grade.
- Use a switch statement to do the same.

A: 90-100

B: 80-89

C: 70-79

D: 60-69

F: <60

Exercise 18: A test of Truths

SHOULD WE GO DOWN TO THE BEACH TODAY?

John, Eve and Adam are thinking about going down to the beach..

They will only go to the beach if the following conditions are met:

The weather is sunny or the weather is cloudy

Eve must be going

It is not a Tuesday

Eve's friend Janice is not going

Replace the **?????** with your own condition

```
let isSunny = false;
```

```
let isCloudy = true;
```

```
let isEveGoing = true;
```

```
let isTuesday = false;
```

```
let isJaniceGoing = false;
```

```
if ( ??? ) {
  console.log("Going to the beach!");
} else {
  console.log("Not going to the beach!");
}
```

Exercise 19: Test of Operators

- Jo and a friend invented a simple game where the player with the highest value of his height (in cm) plus five times his age wins.
- Create variables for the heights and ages of two friends and assign them some values
- Calculate their scores

- Decide who wins and print the winner to the console. Include the score in the string that you output to the console. Don't forget that there can be a draw (both players with the same score).
- If it is a draw it should print "It's a draw"

CHALLENGE: Add a third player and now decide who wins.

- Hint: You will need the && operator to take the decision.

Exercise 20: PSI

Write a program that asks the user to enter the PSI level (**a floating-point number**).

Challenge: Check whether it is a valid number and only allow valid float inputs.

If it is equal or above 100, print "**Unhealthy**"

If it is above 50 but below 100, print "**Moderate**"

Otherwise, if the PSI is less than 50, print "**Healthy**"

Note:

- The message in the input function should be "PSI: "

Example Input

PSI: 120

Correct Output

Unhealthy

Exercise 21: Muffins 2

A muffin costs X dollars and Y cents. The user wants to buy Z muffins.

Write a program that asks the user to enter the value for these three variables:

- X
- Y
- Z

For example: if X=1 and Y=90, then this means the muffin each cost \$1.90

If X=3 and Y=0 then this means each muffin costs \$3.00.

For the case if each muffin costs \$1.90 (which means X is 1, and Y is 90), if we buy 6, then the total cost will be \$11.40. It means it will cost 11 dollars and 40 cents.

If we buy 10 muffins, then the output will be 19 dollars and 0 cents.

Calculate how much it will cost to buy Z muffins. Display the total in dollars and cents.

Consider implementing proper user validations.

Test Cases

> 1

> 90

> 6

Total cost of 6 muffins is \$11 and 40cents (\$11.40)

> 1

```
> 90
> 10
19.00
Total cost of 10 muffins is $19 and 0cents ($19.00)
```

Exercise 22: About Ifs

Update the conditions in each of if statement so that they will be true.

Note:

- Only change the sections with ???.

Hint:

- It will be one of the following symbols: +, -, /, *, !, >, <, <=, >=, ==, != or a string

You may fork this sample: <https://replit.com/@immalcolm/tut1-ex22-sample>

```
let x = 3;
let y = 8;
let firstName = "Charlie";
let raining = false;
let snowing = false;
let windy = true;
```

```
if (x + y ??? 10) {
  console.log("Good!");
}
```

```
if (??? - ??? < 0) {
  console.log("Good!");
}
```

```
if (???? >= 11) {
  console.log("Good!");
}
```

```
if (y - x ??? 5) {
  console.log("Good!");
}
```

```
if (x != ???) {
  console.log("Good!");
}
```

```
if (raining == ???) {
  console.log("Good!");
}
```

```
if (??? != ???) {  
    console.log("Good!");  
}  
  
if (firstName ??? ???) {  
    console.log("Good!");  
}
```

Correct Output

Good!
Good!
Good!
Good!
Good!
Good!
Good!
Good!