Flutter Foundation - Exercises

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# First Program

Write a program that prints "Hello, world!".

1. Between the opening and closing shape brackets of the "Main" method, type the print command.
2. In the brackets of the command, in quotation marks write – ‘Hello, world!’
3. Start the program with "Ctr + F5"

# Variable Assignment and Data Types

1. Declare a variable age of type int and assign it a value of 25.
2. Declare a variable height of type double and assign it a value of 5.9.
3. Declare a variable isStudent of type bool and assign it a value of true.
4. Declare a variable name of type String and assign it your name as a value.
5. Print all the variables on a single line using a single print statement.

# Weather Forecast

Write a program that has variables city (text) and degrees (integer) and displays the following message on the console: "**Today in {city} it is {degrees} degrees.**". Now make it with 4 cities and degrees.

# Simple Arithmetic Operations

1. Declare two variables num1 and num2 of type int.
2. Assign the values 10 and 20 to num1 and num2 respectively.
3. Perform and print the following operations:
   * Addition (num1 + num2)
   * Subtraction (num1 - num2)
   * Multiplication (num1 \* num2)
   * Division (num1 / num2)
4. Make sure to print the results of each operation on a new line.

| Output |
| --- |
| 30 |
| -10 |
| 200 |
| 0.5 |

# Kilometers to Miles

Write a program that reads kilometers (real number) from the console and converts them to miles. Print the result on the console. 1 kilometer is equal to 0.621371192 miles.

Examples:

| Input | Output |
| --- | --- |
| *10* | 6.21371192 |
| *23* | 14.291537416 |
| *115* | 71.45768708 |

# String Manipulation

1. Declare two variables firstName and lastName of type String.
2. Assign your first name and last name to these variables.
3. Concatenate both strings and print the result as your full name.
4. Print the length of your full name

| Output |
| --- |
| John Doe |

# Calculate

Write a program that reads two integers "numOne" and "numTwo". Following the described sequence, find and print:

* Sum of numbers
* Difference Between Numbers
* Multiplication
* Moderately arrhythmic

| Input | Output |
| --- | --- |
| *25*  *5* | The sum is: 30  The difference is: 20  The product is: 125  The average is: 15.000000 |
| *7*  *2* | The sum is: 9  The difference is: 5  The product is: 14  The average is: 4.500000 |
| *26158*  *19* | The sum is: 26177  The difference is: 26139  The product is: 497002  The average is: 13088.500000 |
| *3*  *46* | The sum is: 49  The difference is: 43  The product is: 138  The sum is: 24 |

# Time

Write a program that reads minutes (integer) and converts them into hours and minutes. Print the result in HR:MM format.

| Input | Output |
| --- | --- |
| *60* | 01:00 |
| *90* | 01:30 |
| *325* | 05:25 |

# Speed

Write a program that calculates the speed in meters per second and displays the result on the console.

The input data are integers as follows:

* Distance in meters
* Hours
* Minutes
* Seconds

Use the formula V **= S/**T where V - speed, S - distance, T - time

| INPUT | OUTPUT |
| --- | --- |
| *100*  *1*  *20*  *20* | 0.020747 |
| *2500*  *5*  *56*  *23* | 0.116915 |
| *600*  *7*  *35*  *55* | 0.021934 |

# Painting

For the painting of 3 rooms they spent **n**  kg of paint (equally for each room). To get the desired color, they mixed yellow, red and white paint. The yellow paint was 4 times more than the red and 2 times less than the white. How many kilograms of each color did they spend on painting a room?

* + - 1. N = 150
      2. N = 120
      3. N = 630

The output must be rounded to **the fourth** decimal point.

| INPUT | OUTPUT |
| --- | --- |
| *150* | Red: 11.5385  Yellow: 46.1538  White: 92.3077 |
| *120* | Red: 9.2308  Yellow: 36.9231  White: 73.8462 |
| *630* | Red: 48.4615  Yellow: 193.8462  White: 387.6923 |

# Office

For the furnishing of the office purchased 3 cabinets. One cabinet cost **$n**, the second was 20% cheaper than the first, and the third cost 15% more than the other two combined.

From the console read the cost of the first cabinet – a real number.

The output must be rounded to the third decimal point.

| INPUT | OUTPUT |
| --- | --- |
| *380* | 1470.600 |
| *720.50* | 2788.335 |
| *455.30* | 1762.011 |

# Journey

A car started from the city of Sofia to the city of Berlin at a speed **of x** km / h, and 2 hours later another car went to the same destination at a speed y km / h. How many kilometers will be the distance between the two cars 3 hours after the departure of the second car?

| INPUT | OUTPUT |
| --- | --- |
| *81*  *120* | 45 |
| *100*  *90* | 230 |
| *75*  *90* | 105 |

# Body Mass Index (BMI)

Calculate the Body Mass Index (BMI) based on the given weight (in kilograms) and height (in meters).

Use the formula BMI= Weight / Height2.

| INPUT | OUTPUT |
| --- | --- |
| *70*  *1.73* | 23.38 |
| *60*  *1.75* | 19.59 |
| *85*  *1.80* | 26.23 |

# Water Consumption

Calculate the daily water consumption per person in a household. Given the total water consumption in liters for a week and the number of people in the household, find out the daily consumption per person.

Use the formula

Daily consumption per person = Total weekly consumption / 7 / Number of people

| INPUT | OUTPUT |
| --- | --- |
| *2450*  *7* | 50.00 |
| *3150*  10 | 45.00 |
| *980*  7 | 20.0 |

# Electricity Bill

Calculate the monthly electricity bill based on the number of units consumed and the rate per unit. Additionally, a fixed charge of $10 is added to the bill.

Use the formula

Total Bill = ( Units consumed × Rate per unit ) + 10

| INPUT | OUTPUT |
| --- | --- |
| *100*  *1.0* | 110.00 |
| *200*  *1.0* | 210.00 |
| *150*  *1.1* | 175 |

# Average Speed

Calculate the average speed of a vehicle that has traveled a certain distance D in kilometers over a given time T in hours.

Use the formula Average Speed = D / T.

On the first line, you receive the distance D in kilometers.

On the second line, you receive the time T in hours.

| INPUT | OUTPUT |
| --- | --- |
| *200*  *2* | 100.00 |
| *150*  3 | 50.00 |
| *300*  *5* | 60.00 |

# Fuel Efficiency

Calculate the fuel efficiency of a car given the total distance traveled D in kilometers and the total fuel consumed F in liters.

Use the formula: Fuel Efficiency = D / F

On the first line, you receive the distance D in kilometers.   
On the second line, you receive the fuel F in liters.

| INPUT | OUTPUT |
| --- | --- |
| *500*  *40* | 125 |
| *600*  40 | 150 |
| *750*  *40* | 18.75 |

# Circle Circumference

Calculate the circumference of a circle given its radius R.

Use the formula: Circumference = 2 \* pi \* R

On the first line, you receive the radius R.

| INPUT | OUTPUT |
| --- | --- |
| *5* | 31.42 |
| *7* | 43.98 |
| *10* | 62.83 |

# Functions with Return Values

1. Write a function addNumbers that takes two integers as parameters and returns their sum.
2. Call the function with two integer arguments (e.g., 5 and 7) and print the result.

# Functions with Parameters

1. Write a function greet that takes a String parameter name and prints a greeting like "Hello, name!".
2. Call the function with your name as an argument.

# Simple Calculator Using Functions

1. Write three functions:
   * add(a, b) that returns the sum of two numbers.
   * subtract(a, b) that returns the difference between two numbers.
   * multiply(a, b) that returns the product of two numbers.
2. Call these functions with appropriate arguments and print the results.

# Using String and Numeric Operations in Functions

1. Write a function calculateTotalCost that takes two parameters: itemPrice (type double) and quantity (type int).
2. In the function, calculate the total cost by multiplying itemPrice by quantity and print the result.
3. Call the function with sample values (e.g., itemPrice = 10.5 and quantity = 3).