# Exercise: Data Types

Tasks for exercising from the free course ["C - Essentials" @ SoftUni](https://softuni.bg/trainings/2940/c-essentials-march-2020).

Test your solutions in the **judge system** here: <https://judge.softuni.bg/Contests/Practice/Index/2254#0>

## Square Area

Read single integer (square side) from the console and print the area of the square.

### Example:

|  |  |
| --- | --- |
| **Input** | **Output** |
| 5 | 25 |

## 2. Inches to Centimeters

Read real number inches and convert it to centimeters. Simply multiply the input with **2.54** (1 inch = 2.54 centimeters).

### Example:

|  |  |
| --- | --- |
| **Input** | **Output** |
| 5 | 12.70 |

## 3. Circle Area and Perimeter

The input here is the radius of a circle calculate the Area and the Perimeter print the result formatted to the second decimal digit.

### Example:

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3 | 28.27  18.85 |
| 4.5 | 63.62  28.27 |

## 4. Pet Shop

You have to buy dog's food for the local zoo. But you buy food for you own dog too. The price for the zoo is **2.50lv**. and for your dogs you pay **4lv.**

**Input**

Read **2 lines**:

1. **Zoo dogs count – integer [0… 100]**
2. **Your dogs count - integer [0… 100]**

**Output**

Print:

**"{total\_cost} lv."**

The result should be formatted to the second digit after the decimal point.

**Example**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |
| 5  4 | 28.50 lv. | 13  9 | 68.50 lv. |

## 5. Yard Greening

Develop a program that calculates the price and discount given by yard greening organization. The price per square meter is **7.61lv.** There is discount equal to **18% from the total price**.

**Input**

Single line:

1. **Square meters – real number [0.00… 10000.00]**

**Output**

Print two lines:

* **"The final price is: {final\_cost} lv."**
* **"The discount is: {discount} lv."**

Both values formatted to two digits after the decimal point.

**Example**

|  |  |
| --- | --- |
| **Input** | **Output** |
| 540 | The final price is: 3369.71 lv.  The discount is: 739.69 lv. |
| **Input** | **Output** |
| 135 | The final price is: 842.43 lv.  The discount is: 184.92 lv. |

## 6. Greetings by Name

Write a simple program that greets you by name. You have read the string from the console.

The output is simple: **"Hello, {name}"**

## 7. Projects Creation

Calculate the working hours of an architect required to finish the projects of few buildings. Single building project takes about **3 hours**.

**Input**

Two lines:

1. **The Architect name - string**
2. **Buildings count - integer [0… 100]**

**Output**

Print:

* **"The architect {architect\_name} will need {hours\_needed} hours to complete {projects\_count} project/s."**

**Examples**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |
| George  4 | The architect George will need 12 hours to complete 4 project/s. | Sanya  9 | The architect Sanya will need 27 hours to complete 9 project/s. |

# Example of Examination Problem

## 8. \* Fish Tank

You have to buy fish tank. **We read from the input the three dimensions: length height and length in centimeters.**

Your task is to calculate the volume of water needed to fill in the fish tank, knowing that the objects inside (sand, pump, filters, etc.) cause water displacement.

Take in mind that / 1l=1dm3/.

**Calculate the volume of later to fill the tank.**

### Input

Console input in **four lines**:

1. **Length in сm – integer [10 … 500]**
2. **Width in cm – integer [10 … 300]**
3. **Height in cm – integer [10… 200]**
4. **Percent**  **– real number [0.000 … 100.000]**

### Output

Single number:

* **Liters of water to fill the tank**, **formatted to the third digit after the decimal dot**.

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Hints** |
| 85  75  47  17 | 248.689 | Calculate the volume:  **volume** = 85\*75\*47=**299625** сm3  **liters needed:** 299625 \* 0.001=**299.625**l.  **percent:** 17\*0.01=**0.17**  **finally liters that the tank can hold:** 299.625\*(1-0.17) = **248.68875 liters** |
| **Input** | **Output** |  |
| 105  77  89  18.5 | 586.445 |  |

## 9. \* Charity Campaign

The local bakery started a charity campaign. **First we get the dates of the campaign, after that the count of the cookies included. After that on new line we get the number of the cakes, waffles and pancakes, prepared by a single worker for a day.** Each product costs as follows:

* **Cake - 45 lv.**
* **Waffles - 5.80 lv.**
* **Pancakes – 3.20 lv.**

**1/8 of the sum collected is removed as cost for the production process. Write a program that calculates the amount saved at the end of the campaign.**

### Input

Comes from the console on five lines:

**1. Campaign days – integer [0 … 365]**

1. **Workers count – integer [0 … 1000]**
2. **Cakes count – integer [0… 2000]**
3. **Waffles count – integer [0 … 2000]**
4. **Pancakes count – integer [0 … 2000]**

### Output

Print single number:

* **Amount collected after the end of the campaign, formatted to the second digit after the decimal point**.

### Examples:

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Hints** |
| 20  8  14  30  16 | 119728.00 | Calculate the profit made by each worker:  **Cakes**: 14 \* 45 = **630 lv**.;  **Waffles**: 30 \* 5.80 = **174 lv.**;  **Pancakes:** 16 \* 3.20 = **51.20 lv.**  **Total amount per day:** (630 + 174 + 51.20) \* 8 = **6841.60 lv.**  **Amount earned for the whole campaign:** 6841.60 \* 20 = **136832lv.**  **Amount without paying the cost:** 136832 - 1/8 от 136832 = **119728 lv** |
| **Input** | **Output** |  |
| 131  5  9  33  46 | 426175.75 |  |