# Lab: Key Concepts

Submit your solutions here: <https://judge.softuni.org/Contests/4626/Key-Concepts-Lab>

## Convertor: USD to EUR

Write a program to convert from USD to EUR:

* Read a **floating-point** number: **the dollars to be converted**
* Convert **dollars to euro** (use fixed rate of dollars to euro: **0.88**)
* Print the **converted value in euro formatted to the 2nd digit**

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| 17 | 14.96 |
| 87.2 | 76.74 |

## Four Operations

Write a program that:

* Read **two floating-point numbers**: **first number** and **second number**
* Performs **4 arithmetic operations** on the given 2 numbers, in the following order:
  + Addition (**+**)
  + Subtraction (**-**)
  + Multiplication (**\***)
  + Division (**/**)
* Print the **results, all formatted to the 2nd digit**, in the following format:
  + **"{first number} + {second number} = {addition result}"**
  + **"{first number} - {second number} = {subtraction result}"**
  + **"{first number} \* {second number} = {multiplication result}"**
  + **"{first number} / {second number} = {division result}"**

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| 5  10 | 5.00 + 10.00 = 15.00  5.00 - 10.00 = -5.00  5.00 \* 10.00 = 50.00  5.00 / 10.00 = 0.50 |
| 15  2.2 | 15.00 + 2.20 = 17.20  15.00 - 2.20 = 12.80  15.00 \* 2.20 = 33.00  15.00 / 2.20 = 6.82 |

## Market

Write a program that:

* You have a farmer sells **tomatoes** and **cucumbers** at the market
* Read **four floating-point numbers:**
  + First represents **tomato price**
  + Second represents **tomato quantity**
  + Third represents **cucumber price**
  + Forth represents **cucumber quantity**
* Calculate the total cost of the production by given **quantities** and **prices**
* Print the **total cost, formatted to the 2nd digit**

### Example

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comment** |
| 42.50  3.30  60.80  1.80 | 249.69 | Tomatoes: 42.50 \* 3.30 = 140.25  Cucumbers: 60.80 \* 1.80 = 109.44  Total cost: 140.25 + 109.44 = 249.69 |

## Tiles

Write a program that:

* You have a **rectangular bathroom** of size **W** x **H**
* We want to cover it with **tiles** of size **Wt** x **Ht**
* Read **four floating-point numbers:**
  + First represents **bathroom width (W)**
  + Second represents **bathroom height (H)**
  + Third represents **tile width (Wt)**
  + Forth represents **tile height (Ht)**
* Calculate **how many tiles** will be needed **(add 10% surplus)**
* Print the **count of the needed tiles, rounded to the nearest integer**

### Example

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comment** |
| 3.3  2.2  0.25  0.75 | 43 | Bathroom area = 3.3 \* 2.2 = 7.26  Add surplus = 7.26 + 10% = 7.986  Tile area = 0.25 \* 0.75 = 0.1875  Tiles needed = 7.986 / 0.1875 = 42.592 ~ 43 |

## Deposit Calculator

Write a program that calculates how **much you** will receive at the end of **the deposit period** at a certain **interest rate**. Use the following formula:

**amount = deposited amount + term of deposit \* (deposited amount \* annual interest rate) / 12**

### Input

From the console read **3 lines**:

1. **Deposited amount – real number in the range [100.00 ... 10000.00]**
2. **Term of the deposit (in months) – an integer in the range [1... 12]**
3. **Annual interest rate – real number in the range [0.00 ... 100.00]**

### Output

Print the amount on the console at the end of the term.

### Example

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comment** |
| **200**  **3**  **5.7** | 202.85 | 1. We calculate the accumulated interest: **200** \* 0.057 (**5.7**%) = **11.40** BGN.  2. We calculate the interest for 1 month: **11.40** BGN / **12** months = **0.95** BGN.  3. The total amount is:  **200 BGN +** 3 **\*** 0.95 **BGN = 202.85 BGN** |
| **2350**  6  **7** | 2432.25 | 1. We calculate the accumulated interest: **2350** \* 0.07 (**7**%) = **164.50** BGN.  2. We calculate the interest for 1 month: **164.50** BGN / **12** months = **13.7083...** Lv.  3. The total amount is: **2350** BGN + **6** \* **13.7083...** = 202.85 BGN |

## Mandatory Literature

For the summer holidays, there are a certain number of books on Joro's list of mandatory literature. Since Joro prefers to play with friends outside, your task is to help him calculate how many **hours a day** he should devote to reading the necessary literature.

### Input

Read **3 lines** from the console:

1. **Number of pages** in the current book **– an integer in the range [1... 1000].**
2. **Pages** that he reads **in 1 hour** **– an integer in the range [1... 1000].**
3. **The number of days** he needs to finish the book – **an integer in the range [1... 1000].**

**Hint:** For the operands of integer types, the result of the **/** operator is of an integer type and equals the quotient of the two operands rounded towards zero***.***

### Output

Print on the console the **number of hours** that Joro has to spend reading each day.

### Example

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| **212**  **20**  **2** | 5 | Total reading time of the book: **212** pages / **20** pages per hour = **10** hours total  Required hours per day: 10 **hours /** 2 **days = 5 hours per day** |
| **432**  **15**  **4** | 7 | Total reading time of the book: **432** pages / **15** pages per hour = **28** hours total  Required hours per day: 28 **hours /** 4 **days = 7 hours per day** |

## Supplies for School

The school year has already started and the 10B grade manager - Annie has to buy a certain number of **packets of pens**, **packets with markers,** as well as **board cleaner.** She is a regular client of a bookstore, so there is **a discount** for her, which represents **some discount percentage of the total amount**.  **Write a program that calculates how much money Annie will need to collect to pay the bill, keeping in mind the following price list:**

* **Package of pens - 5.80 lv.**
* **Package of markers - 7.20 lv.**
* **Board cleaner - 1.20 BGN (per liter)**

### Input

From the console read **4 numbers**:

* **Number of packages of pens** - **integer in the range [0...100].**
* **Number of packets of markers** - **integer in the range [0...100].**
* **Liters of board cleaner** - **an integer in the range [0... 50].**
* **Discount percentage** - **integer in the range [0...100].**

### Output

Print on the console **how much money will Annie need** to pay the bill.

### Example

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| **2**  **3**  **4**  **25** | 28.5 | **Price of packages of pens** => **2** \* **5.80** = 11.60 BGN  **Price of marker packages** => **3** \* 7.20 **= 21.60 BGN**  **Price of the board cleaner** => 4 **\*** 1.20 **= 4.80 BGN**  **Price for all materials** => 11.60 + 21.60 + 4.80 = **38.00 BGN**  **Calculating the discount 25% = 0.25**  **Price after discount** = 38.00 – (**38.00** \* **0.25**) = 28.50 BGN |
| **4**  **2**  **5**  **13** | 37.932 | **Price of packages of pens** => **4** \* **5.80** = 23.20 BGN  **Price of marker packages =**> **2** \* **7.20** = 14.40 BGN  **Price of the board cleaner** => **5** \* **1.20** = 6.00 BGN  **Price for all materials =**> 23.20 + 14.40 + 6.00 = 43.60 **BGN**  **Calculating the discount 13% = 0.13**  **Price after discount** = 43.60 – (**43.60** \* **0.13**) = 37.932 BGN |