**First Steps in Coding**

Problems for in-class and homework exercises for the course ["Programming Basics" @ SoftUni](https://softuni.org/).

Test your solutions in the **judge system** **at the following link:**

<https://judge.softuni.org/Contests/Compete/Index/3488>

## USD to GBP

Write a function convertor(dollars) for **converting US dollars** (USD) **to British pounds** (GBP). Use a fixed exchange rate between the dollar and the pound: **1 USD** = 0.81545 **GBP**.

### Sample Input and Output

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |  | **Input** | **Output** |
| convertor(22) | 17.9399 | convertor(100) | 81.545 | convertor(12.5) | 10.193125 |

### Hints and Guidelines

1. Create the variable **usd**, which accepts a string as input from the console, and convert it to a numeric type.
2. Calculate the conversion of US dollars to British pounds.
3. Print the output on the console.

Картина, която съдържа текст

Описанието е генерирано автоматично

## Radians to Degrees

Write a function radiansToDegrees(radians) that reads an **angle in** [**radians**](https://bg.wikipedia.org/wiki/%D0%A0%D0%B0%D0%B4%D0%B8%D0%B0%D0%BD) (a floating-point number) and converts it to [**degrees**](https://bg.wikipedia.org/wiki/%D0%93%D1%80%D0%B0%D0%B4%D1%83%D1%81_(%D1%8A%D0%B3%D1%8A%D0%BB)).

Use the formula: **degree = radian \* 180 / π**. The number **π** in JavaScript programs is available through **Math**.PI.

### Sample Input and Output

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |
| radiansToDegrees(3.1416) | 180.0004209182994 | radiansToDegrees (6.2832) | 360.0008418365988 |

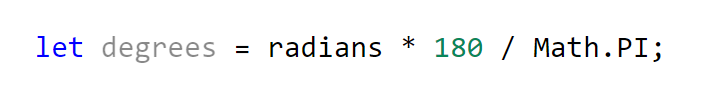
### Hints and Guidelines

1. Accept the input data (**the radians**):

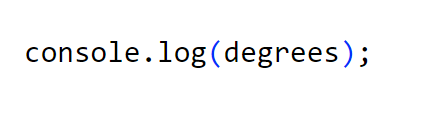
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1. Create a **new variable** in which you will convert from radians to degrees, knowing the **calculation formula**:



1. Print the resulting **degrees**:



## Deposit Calculator

Write a function depositCalculator(depositedAmount, term, rate) that calculates what **amount** you will receive at the end of the **deposit period** at a certain interest rate. Use the following formula:

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

### Input Data

The function receives **3 arguments**:

1. **Deposited amount – a floating-point 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 – a floating-point number in the range [0.00 …100.00]**

### Output Data

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

### Sample Input and Output

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

## Vacation Books List

There are a certain number of books on John's list of required literature for the summer vacation. Because John prefers to play with friends outside, your task is to help him calculate how many hours a day he has to spend reading the necessary literature.

### Input Data

Write a function calculate(currentPages, pagesPerHour, days) which **3 arguments**:

1. **Number of pages** in the current book - **an integer in the range [1…1000]**
2. **Pages** he reads in 1 hour **– an integer in the range [1…1000]**
3. **The number of days** for which he must read the book – **an integer in the range [1…1000]**

### Output Data

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

### Sample Input and Output

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| calculate(**212, 20, 2**) | 5.3 | Total time to read the book: **212** pages / **20** pages per hour = **10.6** hours in total.  Required hours per day: **10.6** hours / **2** days = 5.3 hours per day. |
| **Input** | **Output** | **Comments** |
| calculate(**432, 15, 4**) | 7.2 | Total time to read the book: **432** pages / **15** pages per hour = **28.8** hours in total.  Required hours per day: **28.8** hours / **4** days = 7.2 hours per day. |

# Sample Exam Problems

## Supplies for School

The school year has already started and the head of 10th grade - Annie has to buy a certain number of **packets of pens, packets of markers,** and a **board cleaner**. She is a regular customer of a bookstore, so there is a **discount** for her, which is **a percentage of the total amount**. **Write a** function calculate(penPackets, markerPackets, boardCleanerLiters, discountPercentage) **that calculates how much money Annie will have to raise to pay the bill, keeping in mind the following price list**:

* **Packets of pens - 5.80 USD.**
* **Packets of markers - 7.20 USD.**
* **Board cleaner - 1.20 USD (per liter).**

### Input Data

The function receives **4 arguments**:

* **Number of pen packets - an integer in the range [0...100]**
* **Number of marker packets - an integer in the range [0...100]**
* **Liters of board cleaner - an integer in the range [0…50]**
* **Discount percentage- an integer in the range [0...100]**

### Output Data

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

### Sample Input and Output

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| calculate(**2** **, 3, 4, 25**) | 28.5 | **Price of the pen packets** => **2** \* **5.80** = 11.60 USD.  **Price of the marker packets** => **3** \* **7.20** = 21.60 USD.  **Price of the board cleaner** => **4** \* **1.20** = 4.80 USD.  **Price for all materials** => 11.60 + 21.60 + 4.80 = **38.00 USD.**  **25% = 0.25**  **Price with discount** = **38.00** – (**38.00** \* **0.25**) = 28.50 USD. |
| **Input** | **Output** | **Comments** |
| calculate(**4, 2, 5, 13**) | 37.932 | **Price of the pen packets** => **4** \* **5.80** = 23.20 USD.  **Price of the marker packets** => **2** \* **7.20** = 14.40 USD.  **Price of the board cleaner** => **5** \* **1.20** = 6.00 USD.  **Price for all materials** => 23.20 + 14.40 + 6.00 = **43.60** USD**.**  **13% = 0.13**  **Price with discount** = **43.60** – (**43.60** \* **0.13**) = 37.932 USD. |

## Repainting

Robert wants to repaint the living room and has hired craftsmen for this purpose. Write a function calculate(nylon, paint, thinner) that **calculates the cost of repairs**, given the following **prices**:

* **Protective nylon - 1.50 USD per square meter**
* **Paint - 14.50 USD per liter**
* **Paint thinner - 5.00 USD per liter**

Just in case, to **the necessary materials**, Robert wants to **add** another **10%** of the amount of **paint** and **2** **square meters of nylon**, and of course **0.40 USD for bags**. The amount **paid to the craftsmen** for **1 hour** of work is equal to **30%** of the sum of **all costs for materials**.

### Input Data

The function receives **4 arguments**:

1. **Required amount of nylon (in square meters)** – **an integer in the range [1... 100]**
2. **Required amount of paint (in liters) - an integer in the range [1…100]**
3. **Quantity of paint thinner (in liters) - an integer in the range [1…30]**
4. **The hours** for which the craftsmen will finish the work - **an integer in the range [1…9]**

### Output Data

Print **one line** on the console:

* "{the sum of all costs}"

### Sample Input and Output

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| calcualte(**10, 11, 4, 8**) | 727.09 | Amount for nylon: (**10** + **2**) \* **1.50** = 18 USD.  Amount for paint: (**11** + **10%**) \* **14.50** = 175.45 USD.  Amount for paint thinner: **4** \* **5.00** = 20.00 USD.  Amount for bags: **0.40 USD.**  Total amount for materials: 18 + 175.45 + 20.00 + **0.40** = 213.85 USD.  Amount for craftsmen: (213.85 \* 30%) \* **8** = 513.24 USD.  Total: 213.85 + 513.24 = 727.09 USD. |
| **Input** | **Output** | **Comments** |
| calculate**(5, 10, 10, 1**) | 286.52 | Amount for nylon: (**5** + **2**) \* **1.50** = 10.50 USD.  Amount for paint: (**10** + **10%**) \* **14.50** = 159.50 USD.  Amount for paint thinner: **10** \* **5.00** = 50.00 USD.  Amount for bags: **0.40 USD.**  Total amount for materials: 10.50 + 159.50 + 50.00 + **0.40** = 220.40 USD.  Amount for craftsmen: (220.40 \* 30%) \* **1** = 66.12 USD.  Total: 220.40 + 66.12 = 286.52 USD. |

## Food Delivery

A restaurant opens its doors and offers several menus at preferential prices:

* **Chicken menu – 10.35 USD.**
* **Fish menu – 12.40 USD.**
* **Vegetarian menu – 8.15 USD**.

**Write a** function calculate(chicken, fish, vegetarian) **that calculates how much it will cost a group of people to order takeaway food.**

The group will also order a dessert, whose cost is equal to 20% of the total bill (excluding delivery).

The cost of delivery is **2.50** USD and is charged at the end.

### Input Data

The function receives **3 arguments**:

* **Number of chicken menus – an integer in the range [0 … 99]**
* **Number of fish menus – an integer in the range [0 … 99]**
* **Number of vegetarian menus – an integer in the range [0 … 99]**

### Output Data

Print **one line** on the console:

* "{price of the order}

### Sample Input and Output

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| calculate(**2, 4, 3**) | 116.2 | **Price for the chicken menus: 2 pieces \* 10.35 = 20.70**  **Price for fish menus: 4 pieces \* 12.40 = 49.60**  **Price for vegetarian menus: 3 pieces \* 8.15 = 24.45**  **Total price of the menus: 20.70 + 49.60 + 24.45 = 94.75**  **Dessert price: 20% от 94.75 = 18.95**  **Delivery price: 2.50 (conditional)**  **Total order price: 94.75 + 18.95 + 2.50 = 116.20** |
| **Input** | **Output** | **Comments** |
| calculate(**9, 2, 6**) | 202.72 | **Price for the chicken menus: 9 pieces \* 10.35 = 93.15**  **Price for fish menus: 2 pieces \* 12.40 = 24.80**  **Price for vegetarian menus: 6 pieces \* 8.15 = 48.90**  **Total price of the menus: 93.15 + 24.80 + 48.90 = 166.85**  **Dessert price: 20% от 166.85 = 33.37**  **Delivery price: 2.50 (conditional)**  **Total order price: 166.85 + 33.37 + 2.50 = 202.72** |

## Basketball Equipment

Jessie decides she wants to play basketball, but she needs equipment to practice. **Write a** function calculate(annualFee) **that calculates what costs Jessie will have if she starts practicing, knowing how much the basketball practice fee is for one year. Equipment needed:**

* Basketball sneakers - their price is 40% less than the fee for one year
* Basketball suit - the price is 20% cheaper than the sneakers
* Basketball - its price is 1/4 the price of a basketball team
* Basketball accessories – their price is 1/5 of the price of the basketball

### Input Data

The functionreceives **1 argument**:

* **Annual basketball practice fee - an integer in the range [0… 9999]**

### Output Data

Print on the console **what costs Jessie will have if she starts playing basketball**.

### Sample Input and Output

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| calculate(**365)** | 811.76 | **Price for practice per year: 365**  **Price for basketball sneakers: 365 – 40% = 219**  **Price for basketball suit: 219 – 20% = 175.20**  **Price for basketball: 1 / 4 от 175.20 = 43.80**  **Price for basketball accessories: 1 / 5 от 43.80 = 8.76**  **Total price for the equipment: 365 + 219 + 175.20 + 43.80 + 8.76 = 811.76** |
| **Input** | **Output** | **Comments** |
| calculate(**550**) | 1223.2 | **Price for practice per year: 550**  **Price for basketball sneakers: 550 – 40% = 330**  **Price for basketball suit: 330 – 20% = 264**  **Price for basketball: 1 / 4 от 264 = 66**  **Price for basketball accessories: 1 / 5 от 66 = 13.20**  **Total price for the equipment: 550 + 330 + 264 + 66 + 13.20= 1223.2** |

## Fish Tank

For his birthday, Leonardo received an aquarium in the shape of a parallelepiped. **At first, we read from the console on separate lines its dimensions - length, width, and height in centimeters.** We have to calculate how many liters of water the aquarium will hold, knowing that a certain percentage of its capacity is taken up by sand, plants, a heater, and a pump.

One liter of water equals one cubic decimeter / 1l=1dm3/.

**Write a** function calculate(length, width, height, percentage) **that calculates the liters of water needed to fill the aquarium.**

### Input Data

The function receives **4 arguments**:

1. **Length in cm – an integer in the range [10 … 500]**
2. **Width in cm – an integer in the range [10 … 300]**
3. **Height in cm – an integer in the range [10… 200]**
4. **Percentage**  **– a floating-point in the range [0.000 … 100.000]**

### Output Data

Print **one number** on the console:

* **the liters of water the aquarium will collect**.

### Sample Input and Output

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| calcuate(**85, 75, 47, 17**) | 248.68875 | Volume of the aquarium: **85** \* **75** \* **47** = **299625** cm3  Volume in liters: **299625** \* 0.001 or **299625** / 1000 => **299.625** liters  Occupied space: **17%** = **0.17**  Liters needed: **299.625** \* (1 - **0.17**) = 248.68875 liters |
| **Input** | **Output** | **Comments** |
| calculate(**105, 77, 89, 18.5**) | 586.445475 | Volume of the aquarium: **105** \* **77** \* **89** = **719565** cm3  Volume in liters: **719565** \* 0.001 or **719565** / 1000 => **719.565** liters  Occupied space: **18.5%** = **0.185**  Liters needed: **719.565** \* (1 - **0.185**) = 586.445475 liters |