Comments, Variables, Console

Solve the following exercises and upload your solutions to Moodle until the specified due date. Make sure to use the *exact filenames* that are specified for each individual exercise. Unless explicitly stated otherwise, you can assume correct user input and correct arguments.

Exercise 1 – Submission: `ex1.py` 15 Points

Create four variable of data types `int` (integer), `float` (floating point), `bool` (boolean) and `str` (string). You can choose arbitrary variable names and values. Print the variables (to the console).

Example output:

```
12
1.5
True
hello
```

Exercise 2 – Submission: `ex2.py` 15 Points

You are given the following two variables:

```
x = 104
y = 10.5391
```

Create formatted strings and print them, so that they look like:

```
"␣␣104"
"␣␣␣10.54"
```

i.e., `x` must have a minimum width of 5, and `y` must have exactly two (rounded) digits for its decimal part and also a width of 5 for its integer part.

Exercise 3 – Submission: `ex3.py` 20 Points

Read two numbers from the console and convert them to integers (you can assume correct user input). Afterwards, perform the following calculations and print the results:

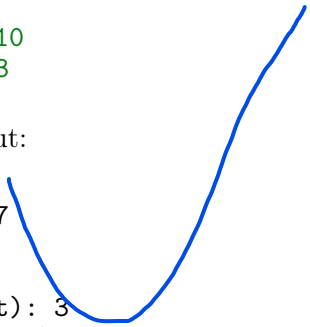
- The sum of the two numbers
- The result of the first number minus the second number, i.e., the difference
- The product of the two numbers
- The first number to the power of the second number
- The result of an integer division when dividing the first number by the second number
- The result of a regular division when dividing the first number by the second number
- The remainder of an integer division (modulo) when dividing the first number by the second number

Example input:

```
1st number: 10
2nd number: 3
```

Example output:

```
Sum: 13
Difference: 7
Product: 30
Power: 1000
Quotient (int): 3
Quotient (float): 3.3333333333333335
Remainder: 1
```



Exercise 4 – Submission: `ex4.py` 20 Points

Write a program that computes the following three metrics of a tetrahedron based on its edge length a that is read from the console (float; you can assume correct user input):

- The surface: $a^2 \cdot \sqrt{3}$
- The volume: $\frac{a^3}{12} \cdot \sqrt{2}$
- The height: $\frac{a}{3} \cdot \sqrt{6}$

Afterwards, print the results rounded to 4 decimal places.

Example input:

```
Edge length: 5
```

Example output:

```
Surface: 43.3013
Volume: 14.7314
Height: 4.0825
```

Hints:

- You can compute the square root by calculating some value to the power of $\frac{1}{2}$.

Exercise 5 – Submission: `ex5.py` 30 Points

Powerlifting is a strength sport where competitors must perform three weight lifts: squat, bench press and deadlift. Write a program where competitors can enter 1) the width/character count of the produced output table (int; you can assume correct user input) and 2) their achieved lifts in kilograms (float; you can assume correct user input). The total should then be calculated (sum of all three lifts), and afterwards, the following output should be printed:

Example input:

```
Enter width: 30
Enter squat: 345
Enter bench press: 267.5
Enter deadlift: 410
```

Example output:

```
##############################
# Powerlifting 2022W         #
##############################
Maximum Squat:         345.0kg
Maximum Bench Press:   267.5kg
Maximum Deadlift:      410.0kg
------------------------------
Total:                1022.5kg
```

The float values are right-aligned and have 1 decimal place.