

Assignment 20 Solutions

1.Create a function that takes a list of strings and integers, and filters out the list so that it returns a list of integers only.

Examples:

`filter_list([1, 2, 3, "a", "b", 4]) → [1, 2, 3, 4]`

`filter_list(["A", 0, "Edabit", 1729, "Python", "1729"]) → [0, 1729]`

`filter_list(["Nothing", "here"]) → []`

```
In [1]: def filter_list(in_list):
        out_list = []
        for ele in in_list:
            if type(ele) == int:
                out_list.append(ele)
        print(f'Output → {out_list}')

filter_list([1, 2, 3, "a", "b", 4])
filter_list(["A", 0, "Edabit", 1729, "Python", "1729"])
filter_list(["Nothing", "here"])
```

Output → [1, 2, 3, 4]

Output → [0, 1729]

Output → []

2.Given a list of numbers, create a function which returns the list but with each element's index in the list added to itself. This means you add 0 to the number at index 0, add 1 to the number at index 1, etc...

Examples:

`add_indexes([0, 0, 0, 0, 0]) → [0, 1, 2, 3, 4]`

`add_indexes([1, 2, 3, 4, 5]) → [1, 3, 5, 7, 9]`

`add_indexes([5, 4, 3, 2, 1]) → [5, 5, 5, 5, 5]`

```
In [2]: def add_indexes(in_list):
        out_list = []
        for ele in range(len(in_list)):
            out_list.append(ele+in_list[ele])
        print(f'{in_list} → {out_list}')

add_indexes([0, 0, 0, 0, 0])
add_indexes([1, 2, 3, 4, 5])
add_indexes([5, 4, 3, 2, 1])
```

[0, 0, 0, 0, 0] → [0, 1, 2, 3, 4]

[1, 2, 3, 4, 5] → [1, 3, 5, 7, 9]

[5, 4, 3, 2, 1] → [5, 5, 5, 5, 5]

3.Create a function that takes the height and radius of a cone as arguments and returns the volume of the cone rounded to the nearest hundredth. See the resources tab for the formula.

Examples:

cone_volume(3, 2) → 12.57
 cone_volume(15, 6) → 565.49
 cone_volume(18, 0) → 0

```
In [3]: import math

def cone_volume(height, radius):
    output = ((math.pi)*pow(radius,2))*(height/3)
    print(f'Output → {output:.2f}')

cone_volume(3,2)
cone_volume(15,6)
cone_volume(18,0)
```

Output → 12.57
 Output → 565.49
 Output → 0.00

4.This Triangular Number Sequence is generated from a pattern of dots that form a triangle.

The first 5 numbers of the sequence, or dots, are: 1, 3, 6, 10, 15

This means that the first triangle has just one dot, the second one has three dots, the third one has 6 dots and so on. Write a function that gives the number of dots with its corresponding triangle number of the sequence.

Examples:

triangle(1) → 1
 triangle(6) → 21
 triangle(215) → 23220

```
In [4]: def triangle(in_num):
    print(f'Output → {int((in_num)*((in_num+1)/2))}')

triangle(1)
triangle(6)
triangle(215)
```

Output → 1
 Output → 21
 Output → 23220

5.Create a function that takes a list of numbers between 1 and 10 (excluding one number) and returns the missing number.

Examples:

`missing_num([1, 2, 3, 4, 6, 7, 8, 9, 10]) → 5`

`missing_num([7, 2, 3, 6, 5, 9, 1, 4, 8]) → 10`

```
In [5]: def missing_num(in_list):  
        for i in range(1,11):  
            if i not in in_list:  
                print(f'{in_list} → {i}')  
  
        missing_num([1, 2, 3, 4, 6, 7, 8, 9, 10])  
        missing_num([7, 2, 3, 6, 5, 9, 1, 4, 8])  
        missing_num([10, 5, 1, 2, 4, 6, 8, 3, 9])
```

`[1, 2, 3, 4, 6, 7, 8, 9, 10] → 5`

`[7, 2, 3, 6, 5, 9, 1, 4, 8] → 10`

`[10, 5, 1, 2, 4, 6, 8, 3, 9] → 7`