

# Python Exercise Bonus

## Question 1: Multiples of 3 and 5

If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23.

Find the sum of all the multiples of 3 or 5 below 1000.

It's from [Euler Project](#)

## Question 2: Even Fibonacci numbers

### Even Fibonacci numbers

Each new term in the Fibonacci sequence is generated by adding the previous two terms. By starting with 1 and 2, the first 10 terms will be:

1, 2, 3, 5, 8, 13, 21, 34, 55, 89, ...

By considering the terms in the Fibonacci sequence whose values do not exceed four million, find the sum of the even-valued terms.

## Question 3: Largest prime factor

### Largest prime factor

The prime factors of 13195 are 5, 7, 13 and 29.

What is the largest prime factor of the number 600851475143 ?

## Question 4: Largest palidrome product

### Largest palindrome product

A palindromic number reads the same both ways. The largest palindrome made from the product of two 2-digit numbers is

$$9009 = 91 * 99$$

.

Find the largest palindrome made from the product of two 3-digit numbers.

## Question 5: Custom functions

Write a function that calculates the *median absolute deviation* (*MAD*) of a numeric vector. The median absolute deviation is a robust alternative to standard deviation as a measure of dispersion. It is defined for a vector  $X$  as:

$$MAD = median(|X_i - median(X)|)$$