
Euler Answers Documentation

Release present

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Answers for [Project Euler](#) .

Contents:

1.1 Multiples of 3 and 5

Problem 1:

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.

1.2 Even Fibonacci numbers

Problem 2:

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.

1.3 Largest prime factor

Problem 3:

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

What is the largest prime factor of the number 600851475143 ?

1.4 Largest palindrome product

Problem 4:

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.

1.5 Smallest multiple

Problem 5:

2520 is the smallest number that can be divided by each of the numbers from 1 to 10 without any remainder. What is the smallest positive number that is evenly divisible by all of the numbers from 1 to 20?

1.6 Sum square difference

Problem 6:

The sum of the squares of the first ten natural numbers is,
 $1^2 + 2^2 + \dots + 10^2 = 385$
The square of the sum of the first ten natural numbers is,
 $(1 + 2 + \dots + 10)^2 = 55^2 = 3025$
Hence the difference between the sum of the squares of the first ten natural numbers and the square of the sum is $3025 - 385 = 2640$.
Find the difference between the sum of the squares of the first one hundred natural numbers and the square of the sum.

1.7 10001st prime

Problem 7:

By listing the first six prime numbers: 2, 3, 5, 7, 11, and 13, we can see that the 6th prime is 13. What is the 10 001st prime number?