



# STUDENT REPORT

## DETAILS

Name

MANASA K

Roll Number

3BR23EC090

## EXPERIMENT

Title

SUM OF NUMBERS AT PRIME FACTORS

Description

Prime factors of a positive integer are the prime numbers that divide that integer exactly.

Given an array arr of n integers and a positive integer num.

Let's suppose prime factorization of num is:  $p^a \times q^b \times r^c \times \dots \times z^f$ , where p,q,r...z are prime numbers.

Sum of numbers in array arr at indices of prime factors of number num is:  $a \times arr[p] + b \times arr[q] + c \times arr[r] + \dots + f \times arr[z]$ .

You are given an array arr of size n and a positive integer num. You are required to calculate the sum of numbers in arr as mentioned above, and print the same.

Note:

- If arr is empty, print -1.
- If prime factor of num not found as indices, print 0.

Input Format:

The input consists of three lines:

- The first line contains an integer, i.e. n.
- The second line contains an array arr of length of n.
- The third line contains an integer num

The input will be read from the STDIN by the candidates.

Output Format:

Print the sum that was mentioned in the problem statement.

Example:

Input:

6  
  
11 21 32 45 1 23  
  
6

Output:

77

Explanation:

$6=2^1 \times 3^1$

$sum=1*arr[2]+1*arr[3]=1*32+1*45=77$

Source Code:

```
def prime_factors(n):
    i=2
    factors={}
    while i*i <= n:
        while(n%i) == 0:
            if i in factors:
                factors[i] += 1
            else:
                factors[i]=1
            n//=i
        i+=1
    if n>1:
        factors[n]=1
    return factors

def calculate_sum(arr,num):
    if not arr:
        return -1

    factors=prime_factors(num)
    total_sum=0
    found_valid_index=False

    for prime,exponent in factors.items():
        index=prime-1
        if 0 <= index < len(arr):
            total_sum+=exponent*arr[index]
            found_valid_index=True

    return total_sum if found_valid_index else 0

arr=[]
num=()
result=calculate_sum(arr,num)
print(result)
```

RESULT

1 / 5 Test Cases Passed | 20 %