3619 - Sum of Different Primes

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A positive integer may be expressed as a sum of different prime numbers (primes), in one way or another. Given two positive integers n and k, you should count the number of ways to express n as a sum of k different primes. Here, two ways are considered to be the same if they sum up the same set of the primes. For example, 8 can be expressed as 3 + 5 and 5 + 3 but they are not distinguished.

When n and k are 24 and 3 respectively, the answer is two because there are two sets {2, 3, 19} and {2, 5, 17} whose sums are equal to 24. There are no other sets of three primes that sum up to 24. For n = 24 and k = 2, the answer is three, because there are three sets {5, 19}, {7, 17} and {11, 13}. For n = 2 and k = 1, the answer is one, because there is only one set {2} whose sum is 2. For n = 1 and k = 1, the answer is zero. As 1 is not a prime, you shouldn't count {1}. For n = 4 and k = 2, the answer is zero, because there are no sets of two different primes whose sums are 4.

Your job is to write a program that reports the number of such ways for the given n and k.

Input

The input is a sequence of datasets followed by a line containing two zeros separated by a space. A dataset is a line containing two positive integers n and k separated by a space. You may assume that $n \leq 1120$ and $k \leq 14$.

Output

The output should be composed of lines, each corresponding to an input dataset. An output line should contain one non-negative integer indicating the number of ways for n and k specified in the corresponding dataset. You may assume that it is less than 2^{31}.

Sample Input

```
24 3
24 2
2 1
1 1
4 2
18 3
17 1
17 3
17 4
100 5
1000 10
1120 14
0 0
```

Sample Output

```
2
3
1
0
0
```

```
2
1
0
1
55
200102899
2079324314
```

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