9: Committee Chaos

Level: Easy
Time limit: 1 second

The new candidate for vice-chair of **via** has had it with all those committees. They've decided to merge pairs of committees, forming a new set of committees that now contain as many members as the sum of the amounts of members of both initial committees (lucky for them, none of the members of each pair overlap, and there was initially an even number of committees). The new candidate for secretary found out about this too late, and now your help is needed to document this administrative puzzle.

What we know (your puzzle input) is the number of members in each new committee. For each of these committees, we need to figure out how many members could have made up both of their original ones. Unfortunately not all combinations of number pairs are possible, since before the merge, each committee had a prime number of members. Please tell the kandidate-secretary how many possible pairs of numbers satisfy these properties, and then name each pair, in non-decreasing order.

Input

The first line has the number of merged committees you need to analyse n $(1 \leq n \leq 100)$. For each of these cases, there follows a line with the number of members of a merged committee m $(4 \leq m \leq 32.000)$.

Output

For each case, first print a line describing how many pairs p of numbers could satisfy the above description. Then, print p lines, each with two prime numbers that add up to the new committee's number of members, where the first number should never be greater than the second number, so there are no duplicate pairs. The first numbers on each line should be in non-descending order. Between cases print an empty line.

Sample input 1

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2
26
4
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Sample output 1

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26 can be made with 3 pair(s) of primes:
3+23
7+19
13+13

4 can be made with 1 pair(s) of primes:
2+2
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