Problem 1-Roman Roads

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Along a certain road in Rome, there are a number of watering holes for the horses. Some of the watering holes also sell feed, but not all of them do. A recent decree from Caligula is requiring every watering hole that does not sell feed to be within a certain specific distance from one that does along this road. If the existing feed stores do not cover all the watering holes along the road, then new feed stores must be established at other watering holes that do not as yet have them. Obviously, the peasants do not want to set up any more feed stores than they absolutely have to.

For example, if there are watering holes at mile markers 1, 2, 4, 7, 8, 10, and 13, and the watering holes at mile markers 4 and 10 already have feed stores, and Caligula has decreed a maximum distance of 2 miles between a watering hole and a feed store, then this will not cut it. For example, the watering hole at 1 is three miles from the nearest feed store (which is mile marker 4). The peasants could add feed stores to the watering holes at 2, 8, and 13, and that would satisfy Caligula. There might be another way to do it, but it can't be done with any fewer than 3 new feed stores.

Given the positions of the watering holes, the feed stores (which only exist at watering holes), and the maximum distance allowed between a watering hole and a feed store, you are to compute the minimum number of watering holes that need to add feed stores.

INPUT SPECIFICATION. Each input case consists of the following: The (positive) number of watering holes followed by ***<EOLN>***. The (positive) maximum distance between watering holes followed by ***<EOLN>***. The list of the positions of the watering holes, separated by a single space and followed by ***<EOLN>***. This list is guaranteed to be in ascending order. The number of existing feed stores followed by ***<EOLN>***. The list of the positions of the feed stores, separated by a single space and followed by ***<EOLN>***. This list is also guaranteed to be in ascending order. A zero followed by ***<EOLN>*** will follow the last case. All numbers are integers. There won't be any more than 200000 watering holes. All the integers will be normal 32-bit integers.

OUTPUT SPECIFICATION. The output cases should appear in the same order as their corresponding input cases. Each output case will consist of the line "Case *c*: *f* new feed stores will need to be added." where c is the case number and *f* the minimum number of new feed stores. Two ***<EOLN>***'s should follow each output case.

SAMPLE INPUT

```
7<EOLN>
2<EOLN>
1·2·4·7·8·10·13<EOLN>
2<EOLN>
4·10<EOLN>
5<EOLN>
1<EOLN>
1·10·100·1000·10000<EOLN>
1<EOLN>
1<EOLN>
0<EOLN>
<EOF>
```

SAMPLE OUTPUT

```
Case·1:·3·new·feed·store(s)·will·ne
ed·to·be·added.<EOLN>
<EOLN>
Case·2:·4·new·feed·store(s)·will·ne
ed·to·be·added.<EOLN>
<EOLN>
<EOF>
```