

**Problem 1: Round Minion**

Stuart is a minion who always thinks that “Why our shapes have to be a round shape?” He is an anatomist and he wants to answer his own question. He discovers that, the ratio between his waistline and the width of his body can be calculated as the number with 50 decimal points which is

3.14159265358979323846264338327950288419716939937510.

But Stuart doesn't quite sure that the number which his calculation can be used. So, he grabs five of his friends and starts to measure the waistline and the width of the body. By this following:

Name	Waistline	Width of body
Bob	22	7
Kevin	33.3	10.6
Dave	35.5	11.3
Phil	52.163	16.604
Jerry	10.3993	3.3102
Tim	24.5850922	7.8256779

Stuart wants to find the difference of the first  $K$ -decimal points of the ratio between waistline and the width of the body for each minion by using Hamming Distance.

For example,  $K = 6$

Bob	has the ratio of 3.142857
Kevin	has the ratio of 3.141509
Dave	has the ratio of 3.141592
Phil	has the ratio of 3.141592
Jerry	has the ratio of 3.141592
Tim	has the ratio of 3.141592

From the above ratios, Stuart can find the difference between each ratio of his friend and his ratio by using Hamming distance (or the digit's differ) as follows:

Bob	has 4 different digits
Kevin	has 2 different digits
Dave	has to 0 different digits
Phil	has to 0 different digits

Jerry has to 0 different digits

Tim has to 0 different digits

#### EXPLANATION:

Bob's ratio	3.	1	4	2	8	5	7
Stuart's calculation	3.	1	4	1	5	9	2
	O	O	O	X	X	X	X

O means the digits are matched and X means mismatched. From the explanation, Bob's ratio has 4 digits different from Stuart's calculation. The other differences can be calculated as the same way.

#### INPUT

The first line of input contains M the number of cases (which is not more than 50) and then M lines follow. Each subsequent line consists of cases with the integer k each on a separate line. K is between 1 and 50, inclusively.

#### OUTPUT

The output should be in form of:

Case #1

The Hamming distances for case #1

Case #2

The Hamming distances for case #2

...

Case #M

The Hamming distances for case #M

#### SAMPLE

Input

2

6

9

Output

Case #1

4 2 0 0 0

Case #2

7 4 3 3 0