

# A Famous Grid

Mr. B has recently discovered the grid named "spiral grid". Construct the grid like the following figure. (The grid is actually infinite. The figure is only a small part of it.)

100	99	98	97	96	95	94	93	92	91
65	64	63	62	61	60	59	58	57	90
66	37	36	35	34	33	32	31	56	89
67	38	17	16	15	14	13	30	55	88
68	39	18	5	4	3	12	29	54	87
69	40	19	6	1	2	11	28	53	86
70	41	20	7	8	9	10	27	52	85
71	42	21	22	23	24	25	26	51	84
72	43	44	45	46	47	48	49	50	83
73	74	75	76	77	78	79	80	81	82

Considering traveling around it, you are free to any cell containing a composite number or 1, but traveling to any cell containing a prime number is disallowed. You can travel up, down, left or right, but not diagonally. Write a program to find the length of the shortest path between pairs of nonprime numbers, or report it's impossible.

			97						
				61		59			
	37						31		89
67		17				13			
			5		3		29		
		19			2	11		53	
	41		7						
71				23					
	43				47				83
73						79			

## Input

Each test case is described by a line of input containing two nonprime integer  $1 \leq x, y \leq 10,000$ .

## Output

For each test case display its case number followed by the length of the shortest path or **impossible** in one line.

## Example

### Input:

1 4  
9 32  
10 12

### Output:

Case 1: 1  
Case 2: 7  
Case 3: impossible