Problem of the Week
Problem C
Press On

On a game show, contestants are selected to participate in a game in an attempt to win a fabulous prize. One particular game is called "Press On". The game involves a large number pad and the first ten digits of the 12-digit serial number of an 85 inch television. The first ten digits of the serial number are displayed at the top of the number pad. Contestants must guess the last two digits of the serial number.

The contestant is provided with the following information about the serial number:

- No two adjacent digits in the serial number are the same.

- On the keypad, each digit in serial number somehow touches the next digit in the serial number. For example, the digit 1 on the keypad touches digits 2, 4 and 5. The digit 5 on the keypad touches every digit but 0.

- The final three digits in the serial number form a three-digit number that is not divisible by 2, 3 or 5.

When the contestant is ready, they would press their two numbers on the number pad followed by the # key. If the contestant is correct, they would win the television. If they are incorrect, they leave the show with nothing. The contestant has only one chance to select the final two digits of the winning serial number.

If the contestant uses the given information correctly, how possible 2-digit choices are there for ending the serial number?

159 080 741 4 __ __		
1	2	3
4	5	6
7	8	9
*	0	#

It may be helpful to note that a number is divisible by 3 exactly when the sum of its digits is divisible by 3.

STRAND   DATA MANAGEMENT AND PROBABILITY