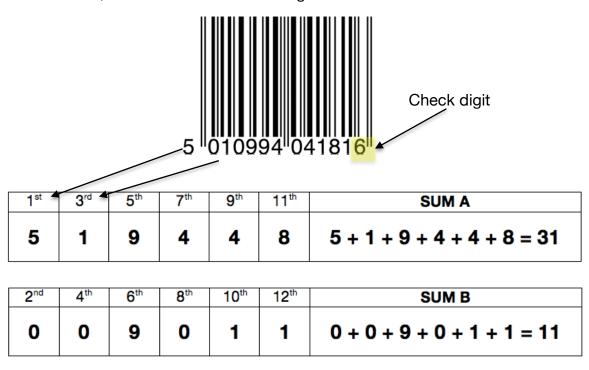# BAR CODE TRICK EXAMPLE

Bar codes have a pattern in their digits to help detect errors: the sum of the odd positions plus three times the even positions is always a multiple of ten. This means a magic trick can be done where we 'predict' the check digit (the final digit) of a bar code, by calculating it using the method outlined below.

Example

Step 1: Split the first 12 digits into the tables below based on their position in the bar code, then find the sum of the digits in each table.

Check digit

5 010994 041816

1st	3rd	5th	7th	9th	11th	SUM A
5	1	9	4	4	8	$5 + 1 + 9 + 4 + 4 + 8 = 31$

2nd	4th	6th	8th	10th	12th	SUM B
0	0	9	0	1	1	$0 + 0 + 9 + 0 + 1 + 1 = 11$

Step 2: Find the value of SUM A + 3 × SUM B

Example
SUM A + 3 × SUM B = 31 + 3 × 11 = 64

Step 3: The check digit is whatever you need to add on to your answer in step 2, to make the next multiple of 10.

Example
The next multiple of 10 above 64 is 70, and **70 – 64 = 6**. The check digit is **6**.