



# BAR CODE TRICK TASK SHEET

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.



**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.

1 <sup>st</sup>	3 <sup>rd</sup>	5 <sup>th</sup>	7 <sup>th</sup>	9 <sup>th</sup>	11 <sup>th</sup>	SUM A

2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>	8 <sup>th</sup>	10 <sup>th</sup>	12 <sup>th</sup>	SUM B

**Step 2:** Find the value of  $\text{SUM A} + 3 \times \text{SUM B}$

**SUM A + 3 × SUM B =**

**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.

**Check digit =**



Find the check digits for the bar codes below. You may wish to use spare paper to write down your working out.



**Extension**

In the two examples below, the check digit has been given but a different digit has been missed out. Can you work out how to find the missing digit?

