Unlocking the Secret of Product Codes!

Shock and amaze a friend or parent by using a little computer science to guess the last number in a product code!

What you will need:

- A partner (friend, parent, grandparent) to shock or amaze
- Something to write with (pencil, pen, crayon)
- Something to write on (paper)
- A household item with a 13 digit product code on it. We recommend a book with a 13-digit ISBN number on it.

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Follow these steps:

1. Ask your partner to find an item that has a 13 digit product code on it, such as a can or box from the kitchen. Make sure to tell them not to show you the product code.

2. Ask your partner to count all the numbers under the barcode to make sure there are 13. Every number counts, including numbers on the far left and far right.

3. Ask your partner to read off the numbers under the barcode, starting at the left but leaving off the last number. As they read off the numbers, write them down on your paper on alternating lines, stacking two numbers on top of each other.

Example: 978012345678 would look like this:

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9 8 1 3 5 7
7 0 2 4 6 8
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Once you have written down all 12 numbers, add across the two rows. (In our example: 9+8+1+3+5+7=33; 7+0+2+4+6+8=27)

5. Multiply the total from the **bottom** row by 3. (Ex: 3 x 27=81)

6. Add the product from Step 6 to the total of the **top** row from Step 5. (Ex: 81+33=114)

7. Round the total from Step 7 to the nearest number ending in a 0. What single number did you add to get there? (example: 114+6=120). That number is the secret number! In our example, the secret number is 6.

Try it again with a different product code!