

# The Product Rule for Counting *ramp up*

ANSWERS

|                                                                                                                                               |                                                                                                                                                                     |                                                                                                                                                             |                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>a</b> Pick one item from a list of 3 or a list of 5. How many choices are there?<br><br><div>8</div> <div>one list or the other: add</div> | <b>b</b> How many four digit codes use the digits 0 to 9, with repeats?<br><br><div>10 000</div> <div>a code can start with 0</div>                                 | <b>c</b> How many three digit numbers have only odd digits?<br><br><div>125</div> <div>a restriction on every digit</div>                                   | <b>d</b> How many three digit numbers are multiples of 5?<br><br><div>180</div> <div>two choices for the last digit</div>                    |
| <b>e</b> How many three digit numbers are greater than 600?<br><br><div>399</div> <div>greater than, not equal to</div>                       | <b>f</b> How many arrangements of A, B, C, D, E start with A?<br><br><div>24</div> <div>one place fixed</div>                                                       | <b>g</b> How many arrangements of A, B, C, D, E start and end with a vowel?<br><br><div>12</div> <div>both ends fixed</div>                                 | <b>h</b> How many even five digit numbers use each of 1, 2, 3, 4, 5 once?<br><br><div>48</div> <div>an arrangement with a condition</div>    |
| <b>i</b> How many odd two digit numbers have two different digits?<br><br><div>40</div> <div>a condition and no repeats</div>                 | <b>j</b> With no letter used twice, $n$ letters make 60 three letter codes. Find $n$ .<br><br><div><math>n = 5</math></div> <div>working back with no repeats</div> | <b>k</b> How many groups of 3 can you choose from A, B, C, D, E?<br><br><div>10</div> <div>choosing three: divide by <math>3 \times 2 \times 1</math></div> | <b>l</b> How many odd three digit numbers have three different digits?<br><br><div>320</div> <div>last digit first, then the zero rule</div> |

The Maths Habit

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