Finding All the Possibilities

Amazing Fact

When you shuffle a pack of cards, you are very likely to be making history and shuffling them that way for the first time. This is because there are 80,658,175,170,943,878,571,660, 636,856,403,766,975,289,505,440,883,277,824,000,000,000,000 different combinations for the cards to be ordered.

Challenge

Solve the maths puzzles below by finding all the different possibilities.

Remember to:

- have a system for finding the possibilities;
- record all the possibilities in an organised way;
- track what has already been included;
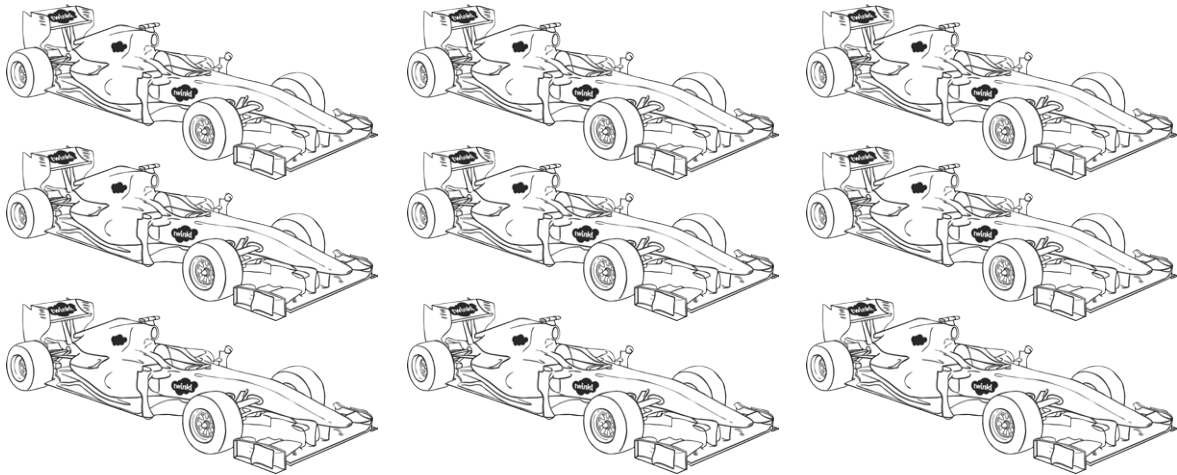- have a method for checking duplicate possibilities.

Tidy-Up Time!

Sanjit was playing with 9 toy racing cars.
When it was time to tidy up, he put the toy cars into 3 boxes.
The teacher said that there has to be at least one car in each box.

What were all the different ways in which Sanjit could have tidied the 9 toy cars away?

You could also try to find out:

- what factorial means;
- how this number compares to the number of atoms in the universe;
- how many different ways there are to order ten cards;
- which has more possibilities – shuffling a deck of cards or playing a game of chess.

Finding All the Possibilities

Box 1	Box 2	Box 3
Box 1	**Box 2**	**Box 3**

Finding All the Possibilities **Answers**

Box 1	Box 2	Box 3
1	1	7
1	2	6
1	3	5
1	4	4
1	5	3
1	6	2
1	7	1
2	1	6
2	2	5
2	3	4
2	4	3
2	5	2
2	6	1
3	1	5
3	2	4
3	3	3
3	4	2
3	5	1
4	1	4
4	2	3
4	3	2
4	4	1
5	1	3
5	2	2
5	3	1
6	1	2
6	2	1
7	1	1