Factorials

The numbers you get from multiplying consecutive whole numbers are called factorials.

The symbol "!" after the number shows that it is a factorial number.

For example:

2! = 2 x 1 = 2	3! = 3 x 2 x 1 = 6	4! = 4 x 3 x 2 x 1 = 24

1. Work out these factorials:

   a. 5! b. 6! c. 10!

2. You can easily work out 9! if you already know 10!
   How can you do this?

3. 8! = 40 320
   Without a calculator, work out 7!

4. a. Can you see a pattern in these factorial equations?

   3! ÷ 1! = 6 4! ÷ 2! = 12 5! ÷ 3! = 20

   b. What do you expect 6! ÷ 4! to be? Check your prediction.

   c. What do you expect 10! ÷ 8! to be? Check your prediction.

5. Factorials are very useful when you are working out problems involving combinations.
   For example:

   In how many different orders can a group of people stand in a bus queue?

   a. i. Try with two people. ii. Try with three people. iii. Try with four people.

   b. What have the answers got in common?

   c. In how many different orders can 10 people stand in a bus queue?