


Factorial Notation

Notation:



For example, suppose you had three letters, A, B and C, and wanted to arrange them in a line to form a 'word', e.g. ACB or BAC.

- There are 3 choices for the first letter.
- There are then 2 choices left for the second letter.
- There is then only 1 choice left for the last letter.

There are therefore $3 \times 2 \times 1 = 3! = 6$ possible combinations.

Your calculator can calculate a factorial using the $x!$ button.



For example, if you are a football team captain and need to choose 4 people from amongst 10 in your class, there are $\binom{10}{4} = \frac{10!}{4!6!} = 210$ possible selections.

(Note: the $\binom{10}{4}$ notation is preferable to $10C4$)

Use the nCr button on your calculator (your calculator input should display “10C4”)

Examples:

Calculate the value of the following. You may use the factorial button, but not the nCr button.

a) $5!$

b) $\binom{5}{3}$

c) $0!$

d) $\binom{20}{1}$

e) $\binom{20}{0}$

f) $\binom{20}{2}$

g) $\binom{20}{2}$

g) $\binom{20}{18}$