

Numeracy for Combinatorics

Evaluate the following without using a calculator:

1. $1!$

2. $2!$

3. $3!$

4. $4!$

5. $5!$

6. $6!$

7. ${}_5P_3$

8. ${}_{10}P_3$

9. ${}_{100}P_2$

10. $\frac{10!}{8!2!}$

11. $\frac{10!}{5!5!}$

12. $\frac{20!}{18!2!}$

13. Which is bigger, $10!$ or 10^{10} ?

14. Simplify the fraction $\frac{2^7}{8!}$

Use a calculator to evaluate:

15. $11!$

16. ${}_{30}P_{10}$

Permutations with Identical Objects

To list permutations is to list distinct arrangements of objects.

List all the distinct arrangements of the following three words:

ON

T H E
T
H
H
E
E

L E A F
L
L
L
L
L
E
E
E
E
E
E
E
A
A
A
A
A
A
A
F
F
F
F
F
F

Now list all the distinct arrangements of the following two words:

P O P	P O O P

