

4.5 Combinations

Thursday, April 04, 2013
9:58 AM

Permutation: an arrangement of objects where order matters

$${}_n P_r = \frac{n!}{(n-r)!}$$

ex group of 10 people and you are selecting a president and treasurer. \rightarrow order matters

$${}_{10} P_2 = \frac{10!}{(10-2)!} = \frac{10!}{8!} = 10 \cdot 9 = 90$$

Combination: an arrangement of objects where order does not matter.

$${}_n C_r = \binom{n}{r} = \frac{n!}{r!(n-r)!}$$

ex group of 10, choose 2 for a doughnut committee. \rightarrow order does not matter

$${}_{10} C_2 = \binom{10}{2} = \frac{10!}{2!(10-2)!}$$

$$= \frac{10!}{2! \cdot 8!} = \frac{10 \cdot 9 \cdot \cancel{8!}}{2! \cdot \cancel{8!}} = 45$$

In the small group that you are creating,
does the order matter?

Practice pg 272 # 1-4