



Probability and Statistics - Permutation or Combination Concepts - Intro

1 Is this situation a permutation or a combination?

From 3 runners, the finishing positions of the top 2 are recorded. How many finishing orders are possible?

A

Combination

B

Permutation

2 Does the order of selection matter?

A 4-digit PIN with no repeated digits is created from 5 available digits. How many PINs are possible?

A

Order matters

B

Order does not matter

3 Select the correct permutation or combination notation.

In a race with 4 runners, distinct medals are awarded to the top 3 finishers. How many ways can the medals be awarded?

A

$${}_3C_4$$

B

$${}_4P_3$$

C

$${}_4C_3$$

D

$${}_3P_4$$

4 Is this situation a permutation or a combination?
 ${}_5\text{C}_3$

$${}_5C_3$$

A

Combination

B

Permutation

5 Does the order of selection matter?
 ${}_6\text{C}_2$

$${}_6C_2$$

A

Order does not matter

B

Order matters

6 Select the situation that matches this notation.
 ${}_5\text{C}_4$

$${}_5C_4$$

A From 5 exam questions, 4 are selected to answer. How many selections are possible?

B From 5 speakers, 4 are scheduled into the first, second, and later presentation slots. How many schedules are possible?

7 Is this situation a permutation or a combination?

Order matters

A

Permutation

B

Combination

8 Does the order of selection matter?

Combination

A

Order matters

B

Order does not matter



Probability and Statistics - Permutation or Combination Concepts - Intro

9 Select the correct formula.

From a roster of 5 players, a group of 3 starting players is chosen. How many groups are possible?

A ${}_nC_r = \frac{r!(n-r)!}{n!}$

B ${}_nC_r = \frac{n!}{r! + (n-r)!}$

C ${}_nC_r = \frac{n!}{(n-r)!}$

D ${}_nC_r = \frac{n!}{r!(n-r)!}$

10 Select the correct formula.

$${}_4\text{C}_2$$

$${}_4\text{C}_2$$

A ${}_nC_r = \frac{n!}{r!(n+r)!}$

B ${}_nC_r = \frac{r!(n-r)!}{n!}$

C ${}_nC_r = \frac{n!}{r!}$

D ${}_nC_r = \frac{n!}{r!(n-r)!}$

11 Select the correct formula.

Order does not matter

A ${}_nC_r = \frac{n!}{r!(n-r)!}$

B ${}_nC_r = \frac{n!}{r!(n+r)!}$

C ${}_nC_r = \frac{n!}{(n-r)!}$

D ${}_nC_r = \frac{n!}{r!}$

12 Select the correct formula.

Combination

A ${}_nC_r = \frac{n!}{r!(n+r)!}$

B ${}_nC_r = \frac{n!}{r!}$

C ${}_nC_r = \frac{n!}{(n-r)!}$

D ${}_nC_r = \frac{n!}{r!(n-r)!}$

13 Select the correct permutation or combination notation.

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

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

A ${}_2\text{P}_5$

B ${}_2\text{C}_3$

C ${}_2\text{P}_2$

D ${}_5\text{C}_2$

14 Would this formula solve for a permutation or a combination?

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

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

A Combination

B Permutation

15 Would this formula solve for a situation where order matters?

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

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

A Order does not matter

B Order matters

16 Select the situation that matches this formula.

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

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

A From 4 members, 3 delegates are selected to attend a conference. How many selections are possible?

B From 4 different books, 3 are arranged in a row on a shelf. How many arrangements are possible?



Probability and Statistics - Permutation or Combination Concepts - Intro

17 Select the correct factorial formula.

In a race with 5 runners, distinct medals are awarded to the top 2 finishers. How many ways can the medals be awarded?

A $\frac{2!}{3!}$

B $3!$

C $\frac{5!}{3!}$

D $\frac{5!}{2! \cdot 3!}$

18 Select the correct number of ways.

From 4 paintings, 2 are hung in a row along a gallery wall. How many arrangements are possible?

A 16

B 6

C 20

D 12

19 Would this calculation solve for a permutation or a combination?

$$\frac{3!}{2! \cdot 1!}$$

A Permutation

B Combination

20 Would this calculation solve for a situation where order matters?

$$\frac{3!}{2! \cdot 1!}$$

A Order matters

B Order does not matter

21 Is this scenario counted with a linear or a circular permutation?

5 campers stand evenly spaced in a circle around a campfire. How many distinct arrangements are possible if arrangements that are rotations of each other count as the same?

A Linear permutation

B Circular permutation

22 Does this scenario have circular symmetry, or is it linear?

A class of 6 students line up in a single row for a class photo. How many different left-to-right line-ups are possible?

A Linear

B Circular symmetry

23 Which formula counts the number of arrangements for this kind of symmetry?

Circular symmetry

A $(n - 2)!$

B $(n - 1)!$

C $\frac{(n - 1)!}{2}$

D $n!$

24 Which formula counts the number of arrangements for this type of permutation?

Linear permutation

A $n!$

B $(n - 2)!$

C $(n + 1)!$

D $(n - 1)!$



Probability and Statistics - Permutation or Combination Concepts - Intro

25 Which formula counts the number of arrangements in this scenario?

Ranked prizes (1st, 2nd, 3rd, and so on) are awarded to 4 contestants in a competition, one prize each. How many ways can the prizes be awarded?

A

$$n!$$

B

$$(n - 2)!$$

26 Which factorial expression counts the number of arrangements in this scenario?

6 friends ride in the identical cars of a Ferris wheel arranged in a circle. How many distinct arrangements are possible if rotations of the wheel count as the same?

A

$$7!$$

B

$$6!$$

C

$$4!$$

D

$$5!$$

27 How many distinct arrangements are possible in this scenario?

4 runners are each assigned to a different numbered lane in a sprint race. How many ways can the lanes be filled?

A

$$120$$

B

$$6$$

C

$$24$$

D

$$2$$

28 Would this calculation count a linear or a circular permutation of 4 items?
 $3!$

$$3!$$

A

Circular permutation

B

Linear permutation

29 Would this calculation count an arrangement of 7 items with circular symmetry, or a linear one?
 $7!$

$$7!$$

A

Linear

B

Circular symmetry