



Probability Linear or Circular Permutation - Scenario to Factorial

1

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

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

| | | | |
|---|----------------|---|------|
| A | $7!$ | B | $6!$ |
| C | $\frac{6!}{2}$ | D | $5!$ |
| | | | |

2

5 ornaments are hung at equally spaced positions around a circular wreath. How many distinct arrangements are possible if rotations of the wreath count as the same?

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

| | | | |
|---|------|---|------|
| A | $6!$ | B | $4!$ |
| C | $3!$ | D | $5!$ |
| | | | |

3

A class of 7 students line up in a single row for a class photo. How many different left-to-right line-ups are possible?

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

| | | | |
|---|------|---|------|
| A | $5!$ | B | $7!$ |
| C | $6!$ | D | $8!$ |
| | | | |

4

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?

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

| | | | |
|---|----------------|---|------|
| A | $6!$ | B | $5!$ |
| C | $\frac{6!}{2}$ | D | $4!$ |
| | | | |

5

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?

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

| | | | |
|---|------|---|----------------|
| A | $4!$ | B | $3!$ |
| C | $5!$ | D | $\frac{4!}{2}$ |
| | | | |

6

Ranked prizes (1st, 2nd, 3rd, and so on) are awarded to 5 contestants in a competition, one prize each. How many ways can the prizes be awarded?

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

| | | | |
|---|----------------|---|------|
| A | $\frac{5!}{2}$ | B | $5!$ |
| C | $4!$ | D | $6!$ |
| | | | |

7

4 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?

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

| | | | |
|---|----------------|---|------|
| A | $3!$ | B | $5!$ |
| C | $\frac{4!}{2}$ | D | $2!$ |
| | | | |

8

Ranked prizes (1st, 2nd, 3rd, and so on) are awarded to 6 contestants in a competition, one prize each. How many ways can the prizes be awarded?

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

| | | | |
|---|----------------|---|------|
| A | $4!$ | B | $5!$ |
| C | $\frac{6!}{2}$ | D | $6!$ |
| | | | |