Worked answers | Probability

Factorials and simple arrangements

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Evaluate $4!$. [2 marks]

$4 \times 3 \times 2 \times 1 = 24$.

Answer: 24.

2. Evaluate $\frac{7!}{5!}$. [2 marks]

Cancel $5!$, leaving 7×6.

Answer: 42.

3. Six different students line up. How many orders? [2 marks]

$6! = 720$.

Answer: 720.

4. From 6 students choose a captain and deputy. How many choices? [2 marks]

$6 \times 5 = 30$; roles are different.

Answer: 30.

5. How many unordered two-person groups can be chosen from 6 students? [3 marks]

Ordered pairs:$6 \times 5 = 30$.

Divide by 2 because each group appears twice.

Answer: 15.

6. List the distinct arrangements of AAB and explain why there are not 6. [3 marks]

Swapping identical A letters does not create a different result.

Answer: AAB, ABA, BAA:3 arrangements.