

Name: _____

Date: _____

Count the orders. Each place has one fewer choice than the last.

- ① 7 runners finish a race with no ties. In how many different orders can they finish?

$$7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5040$$

- ② 3 songs are on a playlist. In how many different orders can they play?

- ③ 7 books go on a shelf. In how many different orders can they stand?

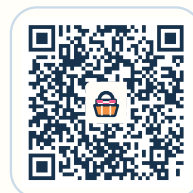
- ④ 4 songs are on a playlist. In how many different orders can they play?

- ⑤ 6 books go on a shelf. In how many different orders can they stand?

- ⑥ 4 runners finish a race with no ties. In how many different orders can they finish?

- ⑦ 5 friends line up for a photo. In how many different orders can they stand?

- ⑧ 3 runners finish a race with no ties. In how many different orders can they finish?



Permutations and combinations · Arranging everything — Answer key



1. 7 runners finish a race with no ties. In how many different orders can they finish? $\rightarrow 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5040$

2. 3 songs are on a playlist. In how many different orders can they play? $\rightarrow 3 \times 2 \times 1 = 6$

3. 7 books go on a shelf. In how many different orders can they stand? $\rightarrow 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5040$

4. 4 songs are on a playlist. In how many different orders can they play? $\rightarrow 4 \times 3 \times 2 \times 1 = 24$

5. 6 books go on a shelf. In how many different orders can they stand? $\rightarrow 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$

6. 4 runners finish a race with no ties. In how many different orders can they finish? $\rightarrow 4 \times 3 \times 2 \times 1 = 24$

7. 5 friends line up for a photo. In how many different orders can they stand? $\rightarrow 5 \times 4 \times 3 \times 2 \times 1 = 120$

8. 3 runners finish a race with no ties. In how many different orders can they finish? $\rightarrow 3 \times 2 \times 1 = 6$