Name: _____ Date: _____

Order matters here. Each place has one fewer choice than the last.

1. 8 runners race for 3 different medals. In how many ways can the medals be won?

   $8 \times 7 \times 6 = 336$

2. 9 runners race for 4 different medals. In how many ways can the medals be won?

   _____

3. 4 dogs compete for the top 2 places. In how many ways can those places be filled?

   _____

4. 9 students take the 4 seats in the front row, one to a seat. In how many ways can they sit?

   _____

5. A club of 5 students picks 2 officers, each with a different job. In how many ways can it do that?

   _____

6. 4 runners race for 3 different medals. In how many ways can the medals be won?

   _____

7. 10 students take the 4 seats in the front row, one to a seat. In how many ways can they sit?

   _____

8. 5 dogs compete for the top 2 places. In how many ways can those places be filled?

   _____

Permutations and combinations · Permutations — Answer key

1. 8 runners race for 3 different medals. In how many ways can the medals be won? → 8 × 7 × 6 = 336

2. 9 runners race for 4 different medals. In how many ways can the medals be won? → 9 × 8 × 7 × 6 = 3024

3. 4 dogs compete for the top 2 places. In how many ways can those places be filled? → 4 × 3 = 12

4. 9 students take the 4 seats in the front row, one to a seat. In how many ways can they sit? → 9 × 8 × 7 × 6 = 3024

5. A club of 5 students picks 2 officers, each with a different job. In how many ways can it do that? → 5 × 4 = 20

6. 4 runners race for 3 different medals. In how many ways can the medals be won? → 4 × 3 × 2 = 24

7. 10 students take the 4 seats in the front row, one to a seat. In how many ways can they sit? → 10 × 9 × 8 × 7 = 5040

8. 5 dogs compete for the top 2 places. In how many ways can those places be filled? → 5 × 4 = 20