

Counting Puzzles

Practice — ANSWER KEY

Orders and handshakes.

Think: Every handshake is counted twice if you count per person — so divide by 2.

1. Answers with the thinking.

1) In how many different orders can you arrange 3 different stickers in a strip? **6**

$$\hookrightarrow 3 \times 2 \times 1$$

3) A party menu has 4 starters, 2 mains, and 2 desserts. How many different three-course meals are possible? **16**

$$\hookrightarrow 4 \times 2 \times 2$$

5) In how many different orders can you arrange 3 different flags on a pole? **6**

$$\hookrightarrow 3 \times 2 \times 1$$

7) In how many different orders can you arrange 3 different toys on a shelf? **6**

$$\hookrightarrow 3 \times 2 \times 1$$

9) 5 friends each shake hands with every other one exactly once. How many handshakes happen? **10**

$$\hookrightarrow 5 \times 4 \div 2$$

2) In how many different orders can you arrange 3 different photos in a row? **6**

$$\hookrightarrow 3 \times 2 \times 1$$

4) A menu has 5 starters, 5 mains, and 3 desserts. How many different three-course meals are possible? **75**

$$\hookrightarrow 5 \times 5 \times 3$$

6) A school-lunch menu has 3 starters, 2 mains, and 4 desserts. How many different three-course meals are possible? **24**

$$\hookrightarrow 3 \times 2 \times 4$$

8) A shop sells 3 kinds of shirts and 3 kinds of pairs of pants. How many one-of-each combinations are there? **9**

$$\hookrightarrow 3 \times 3$$

10) 5 cousins each shake hands with every other one exactly once. How many handshakes happen? **10**

$$\hookrightarrow 5 \times 4 \div 2$$