

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

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

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

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

5) A school-lunch menu has 3 starters, 3 mains, and 4 desserts. How many different three-course meals are possible? **36**

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

7) A shop sells 3 kinds of ice-cream flavors and 7 kinds of toppings. How many one-of-each combinations are there? **21**

$$\hookrightarrow 3 \times 7$$

9) 6 teammates each shake hands with every other one exactly once. How many handshakes happen? **15**

$$\hookrightarrow 6 \times 5 \div 2$$

2) A shop sells 7 kinds of covers and 5 kinds of stickers. How many one-of-each combinations are there? **35**

$$\hookrightarrow 7 \times 5$$

4) A school-lunch menu has 3 starters, 4 mains, and 3 desserts. How many different three-course meals are possible? **36**

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

6) 4 teammates each shake hands with every other one exactly once. How many handshakes happen? **6**

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

8) A menu has 5 starters, 4 mains, and 3 desserts. How many different three-course meals are possible? **60**

$$\hookrightarrow 5 \times 4 \times 3$$

10) 6 robots each shake hands with every other one exactly once. How many handshakes happen? **15**

$$\hookrightarrow 6 \times 5 \div 2$$