Guide to:
Systematic listing

maths Links

Explanation:

To list all possible outcomes without missing or repeating any, use a **systematic order**: fix the first item and work through every partner in order, then move to the second item and repeat. Use clear single-letter abbreviations to save time.

You can check how many combinations there should be in total by multiplying the number of choices in each group (e.g. 2 starters × 3 mains = 6 combinations). Read carefully whether items can be repeated or if order matters.

Example 1: A café offers 2 starters: **Soup (S)** or **Melon (M)**, and 3 mains: **Chicken (C)**, **Fish (F)**, or **Pasta (P)**. List all possible 2-course meals.

Solution:

Fix the starter first, then pair with each main:

- **With Soup (S): SC, SF, SP**
- **With Melon (M): MC, MF, MP**

Check: 2 × 3 = **6 combinations in total**.

Example 2: Write down all possible 3-digit numbers that can be made using each of the digits **2, 5, and 8** once.

Solution:

Fix the hundreds digit in ascending order:

- Starting with **2**: **258, 285**
- Starting with **5**: **528, 582**
- Starting with **8**: **825, 852** (Total = 6 numbers)

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