

## 80. Systematic Listing Strategies

### Practice Questions

1. List all two-digit numbers where both digits are even.
2. How many ways can you arrange the letters in the word DOG?
3. List all odd numbers that can be made using 3, 5, and 7 (each used once).
4. A coin is flipped twice. List all possible outcomes.
5. A bag contains red, blue, and green marbles. How many different ways can you pick two marbles?
6. How many different ways can you order A, B, and C in a line?
7. How many three-digit numbers can be made using 1, 2, and 3 (each used once)?
8. A restaurant offers 3 starters and 4 main courses. How many different meal combinations are there?
9. How many different sums can be made using two dice (with numbers 1-6)?
10. List all possible ways to arrange four different books on a shelf.

### Scenario Questions

1. A school committee is selecting two students from a group of 5. List all possible selections.
2. A café offers 3 coffee types and 2 cake options. List all possible menu choices.
3. A lock has 3 dials with numbers 1-3. How many possible codes exist?
4. A football team can choose 3 goalkeepers and 2 defenders. List all possible line-ups.
5. A cinema sells small, medium, and large drinks in 5 flavours. How many combinations are there?
6. A racing game lets players choose from 4 cars and 3 tracks. List all race combinations.
7. A student chooses 2 subjects from Maths, English, Science, and History. List all options.
8. A restaurant serves 5 pizzas and 4 drinks. How many meal combos exist?
9. A game lets players pick 3 weapons and 2 shields. List all possible selections.
10. A theme park has 3 rollercoasters and 2 water rides. How many different ride choices are there?

## 80. Systematic Listing Strategies

### Practice Questions

1. 20, 22, 24, 26, 28, 40, 42, 44, 46, 48, 60, 62, 64, 66, 68, 80, 82, 84, 86, 88
2. 6 ways (DOG, DGO, ODG, OGD, GDO, GOD)
3. 357, 375, 537, 573, 735, 753
4. HH, HT, TH, TT
5. 6 ways (Red-Blue, Red-Green, Blue-Red, Blue-Green, Green-Red, Green-Blue)
6. 6 ways (ABC, ACB, BAC, BCA, CAB, CBA)
7. 6 numbers (123, 132, 213, 231, 312, 321)
8. 12 combinations
9. 11 sums (2 to 12)
10. 24 arrangements

### Scenario Questions

1. 10 selections (AB, AC, AD, AE, BC, BD, BE, CD, CE, DE)
2. 6 choices (Coffee A-Cake 1, Coffee A-Cake 2, Coffee B-Cake 1, Coffee B-Cake 2, Coffee C-Cake 1, Coffee C-Cake 2)
3. 27 codes
4. 6 line-ups (Goalkeeper 1-Defender 1, Goalkeeper 1-Defender 2, Goalkeeper 2-Defender 1, Goalkeeper 2-Defender 2, Goalkeeper 3-Defender 1, Goalkeeper 3-Defender 2)
5. 15 combinations
6. 12 combinations
7. 6 options (Maths-English, Maths-Science, Maths-History, English-Science, English-History, Science-History)
8. 20 combos
9. 12 selections
10. 6 choices