Worked answers | Probability

Systematic counting and the multiplication principle

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. There are 4 shirts and 3 trousers. How many outfits choosing one of each? [2 marks]

$4 \times 3 = 12$.

Answer: 12.

2. A four-digit PIN allows 0-9 in each position and permits repeats. How many PINs? [2 marks]

$10^4 = 10,000$; a PIN may begin with zero.

Answer: 10,000.

3. How many three-letter codes use different letters from A,B,C,D,E? [2 marks]

$5 \times 4 \times 3 = 60$.

Answer: 60.

4. Five runners fill first and second place with no ties. How many ordered results? [2 marks]

5 choices for first and 4 for second.

Answer: 20.

5. How many two-digit numbers use distinct digits from 0,2,4,6? [3 marks]

3 choices for the tens digit, then 3 remaining choices.

Answer: 9.

6. A student says 3 mains and 2 drinks make 5 lunches. Explain and correct. [3 marks]

Every main combines with each drink.

Multiply 3×2 rather than adding separate categories.

Answer: There are 6 lunches.