Outcomes and sample spaces

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. List the sample space for one ordinary six-sided die roll. [2 marks]

One face number is recorded.

Include each of the six face numbers once.

Answer: $\{1, 2, 3, 4, 5, 6\}$.

2. One card is selected from cards labelled M, A, T, H and S. List the sample space. [2 marks]

The recorded outcome is the selected letter.

All five distinct letters belong in the list.

Answer: $\{M, A, T, H, S\}$.

3. For a die roll, list the outcomes in the event “prime number”. [2 marks]

Prime numbers have exactly two positive factors.

The primes among 1 to 6 are 2, 3 and 5; 1 is not prime.

Answer: $\{2, 3, 5\}$.

4. For a die roll, list the outcomes “less than 4”. [2 marks]

Check each possible face against the condition.

4 is not less than 4.

Answer: $\{1, 2, 3\}$.

5. Is “roll an 8” impossible, possible or certain on an ordinary die? Explain. [2 marks]

8 is not in the sample space 1 to 6.

No allowed outcome meets the condition.

Answer: Impossible.

6. A die is rolled. Is the event “less than 7” certain? Explain. [2 marks]

All six results 1, 2, 3, 4, 5 and 6 are less than 7.

The event includes every possible result.

Answer: Yes.