Independent/dependent events

6 questions | 9 marks

Equivalent correct methods earn the corresponding marks.

1. A bag has four red and two blue balls. One blue is kept out. What remains? [1 mark]

Remove one from the blue count.

Answer: Four red and one blue.

2. A bag has four red and two blue balls. A drawn ball is replaced and the bag is mixed. What are the contents before the next draw? [1 mark]

Replacement restores the original collection.

Answer: Four red and two blue.

3. Are two random colour draws without replacement from a mixed-colour bag generally independent or dependent? [1 mark]

The first draw changes the collection for the next.

Answer: Dependent.

4. A fair coin has shown heads three times. Must the next toss be tails? Explain. [2 marks]

The next ordinary toss remains independent; tails is not owed.

Answer: No.

5. One red ball is removed from a bag with three red and two blue balls. Which colour is now more likely? [2 marks]

Two red and two blue remain.

Answer: Neither; they are equally likely.

6. Explain why mixing matters after returning a counter to a bag. [2 marks]

Restoring counts alone does not make a deliberately selected draw fair.

Answer: Mixing supports a random draw instead of deliberately choosing a known counter.