Replacement and dependence

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. A bag has 4 green and 3 yellow. After drawing a green without replacement, find the next green chance. [2 marks]

3 green remain out of 6.

Answer: 1/2.

2. A bag has 4 green and 3 yellow counters. Two counters are drawn at random with replacement. Find P(two green). [2 marks]

(4/7)^2=16/49.

Answer: 16/49.

3. A bag has 4 green and 3 yellow counters. Two counters are drawn at random without replacement. Find P(two yellow). [2 marks]

(3/7)(2/6)=1/7.

Answer: 1/7.

4. P(A)=0.3, P(B)=0.6 and P(A and B)=0.18. Test independence. [2 marks]

0.3×0.6=0.18.

Answer: Independent.

5. P(A)=0.5, P(B)=0.4 and P(A and B)=0.3. Find P(A|B) and test independence. [3 marks]

0.3/0.4=0.75.

0.75 differs from P(A)=0.5.

Answer: 3/4; dependent.

6. Two fair coin tosses are independent. Does a first head make a second tail “due”? Explain. [3 marks]

The second toss remains equally likely to be H or T.

Previous outcomes do not rebalance the next independent trial.

Answer: No.