Topic test | Probability

Probability - Practice test 2

Name: _____ Date: _____

16 questions | 39 marks | 55 minutes

A fresh mix of counting, complementary events, compound draws, tables and simulation design.

No calculator needed.

1. A fair die is rolled. Find $P(\text{not a } 4)$. [1 mark]

2. An equal three-section spinner is labelled R1, R2, B. It is spun twice independently. Find $P(\text{red both times})$. [2 marks]

3. A random code uses A, B or C followed by 1, 2, 3 or 4, with all 12 codes equally likely. Find $P(\text{letter C and digit greater than } 2)$. [2 marks]

4. Three fair independent coins are tossed. Find $P(\text{exactly two heads})$. [3 marks]

5. Two fair independent dice are rolled. Find $P(\text{an odd product})$. [2 marks]

6. Two fair independent dice are rolled. Find $P(\text{sum no greater than } 4)$. [3 marks]

7. A bag has 2 green and 3 yellow counters. Draw twice at random, replacing and mixing after the first draw. Find $P(\text{different colours})$. [3 marks]

8. A bag has 2 green and 3 yellow counters. Draw twice at random without replacement. Find $P(\text{two yellows})$. [2 marks]

9. Select two different cards at random in order from cards 1,2,3,4, with each remaining card equally likely at each draw. Find $P(\text{sum } 5)$. [3 marks]

10. One student is chosen at random from the 30 students in the supplied table. [3 marks]

Thirty students' weekly activities

Bike use / dog ownership	Keeps a dog	Does not keep a dog
Rides a bike	6	9
Does not ride a bike	10	5

(a) Find $P(\text{rides a bike or keeps a dog})$, including students who do both. [2 marks]

(b) Find $P(\text{neither rides a bike nor keeps a dog})$. [1 mark]

11. In a group of 25, 10 play chess, 11 play soccer and 4 play both. One student is chosen at random. Find $P(\text{exactly one of these activities})$. [2 marks]

12. The same event occurs 30 times in 100 trials and 42 times in another 200 trials. Find the combined relative frequency. [3 marks]

13. Describe a fair die simulation using equally likely random digits 0-9. [3 marks]

14. A without-replacement simulation selects two independent colours using fixed first-draw probabilities. Explain the problem. [2 marks]

15. A coin gives 10 heads in 20 tosses. Does this prove the coin fair? Explain. [2 marks]

16. Two fair independent dice are rolled. Find $P(\text{at least one } 6)$. [3 marks]