Topic test | Probability

Probability - Practice test 2

Name: _____ Date: _____

16 questions | 45 marks | 60 minutes

Compare models, tables and dependent events.

A scientific calculator may be used.

1. A spinner has $P(A)=\frac{1}{2}$, $P(B)=\frac{1}{3}$ and $P(C)=\frac{1}{6}$. Find $P(\text{not } C)$. [2 marks]

2. A spinner has $P(A)=\frac{1}{2}$, $P(B)=\frac{1}{3}$ and $P(C)=\frac{1}{6}$. It is spun twice independently. Find $P(\text{the same letter twice})$. [3 marks]

3. A cafe offers 2 vegetarian mains and 3 other mains, each with 3 drinks. How many vegetarian-main-and-drink choices are there? [2 marks]

4. Using digits 1,2,3,4 once each, how many four-digit numbers are even? [3 marks]

5. How many distinct arrangements of AABC are there? Explain the overcount. [3 marks]

6. Seven students form an unordered pair. How many pairs? [3 marks]

7. A number is chosen uniformly from 1-10. Given that it is even, find the probability it is greater than 5. [2 marks]

8. Using the club table, find $P(\text{not music} \mid \text{drama})$. [2 marks]

Invented membership data for 60 students.

Music membership	Drama	Not drama	Total
Music	8	12	20
Not music	10	30	40
Total	18	42	60

9. A group has 30 girls and 20 boys. Nine girls and six boys wear glasses. [4 marks]

(a) Find $P(\text{girl} \mid \text{glasses})$. [2 marks]

(b) Are girl and glasses independent in this data? [2 marks]

10. A bag has 4 green and 3 yellow counters. Draw two without replacement. Find $P(\text{one of each colour})$. [3 marks]

11. A bag contains 4 green and 3 yellow counters. Draw twice at random without replacement. Find $P(\text{second green} \mid \text{first yellow})$. [2 marks]

12. $P(A) = 0.6$, $P(B) = 0.4$, $P(A \mid B) = 0.75$. [4 marks]

(a) Find $P(A \cap B)$. [2 marks]

(b) Find $P(A \cup B)$. [2 marks]

13. A tree has first-stage $P(A) = 0.7$ and $P(\text{not } A) = 0.3$. Given A, $P(B) = 0.2$; given not A, $P(B) = 0.6$. Find $P(B)$. [3 marks]

14. A simulation records 95 events in 400 trials. Estimate the probability. [2 marks]

15. A fair coin has landed head five times. Under the independent-toss model, find the next-tail probability and explain. [3 marks]

16. In an invented scanner trial,20 unreadable labels are flagged and 5 are not. Of 975 readable labels,80 are flagged. [4 marks]

(a) Find $P(\text{unreadable} \mid \text{flagged})$. [2 marks]

(b) Find $P(\text{flagged} \mid \text{unreadable})$. [2 marks]