Topic test | Probability

Probability - Practice test 1

Name: _____ Date: _____

16 questions | 40 marks | 60 minutes

Compound outcomes, counting and conditional probability.

A scientific calculator may be used.

1. List all complete outcomes for two fair coin tosses. [2 marks]

2. Two fair coins are tossed. Find $P(\text{exactly one tail})$. [2 marks]

3. A fair die is rolled. Find $P(\text{even or greater than } 4)$. [2 marks]

4. Two fair dice are rolled. Find $P(\text{sum } 8)$. [3 marks]

5. Choose one of 4 meals,3 drinks and 2 desserts. How many meal combinations? [2 marks]

6. How many three-letter codes use distinct letters from A,B,C,D,E? [2 marks]

7. Evaluate $\frac{5!}{3!}$. [2 marks]

8. Six students are available for captain and deputy. How many ordered assignments? [2 marks]

9. Use the supplied travel table. [4 marks]

Invented survey of 60 students; every student is in exactly one travel category.

Travel	Girl	Boy	Total
Cycle	12	8	20
Walk	18	22	40
Total	30	30	60

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

(b) Find $P(\text{girl and cycle})$. [2 marks]

10. From the travel table, find $P(\text{walk} \mid \text{girl})$. [2 marks]

Invented survey of 60 students; every student is in exactly one travel category.

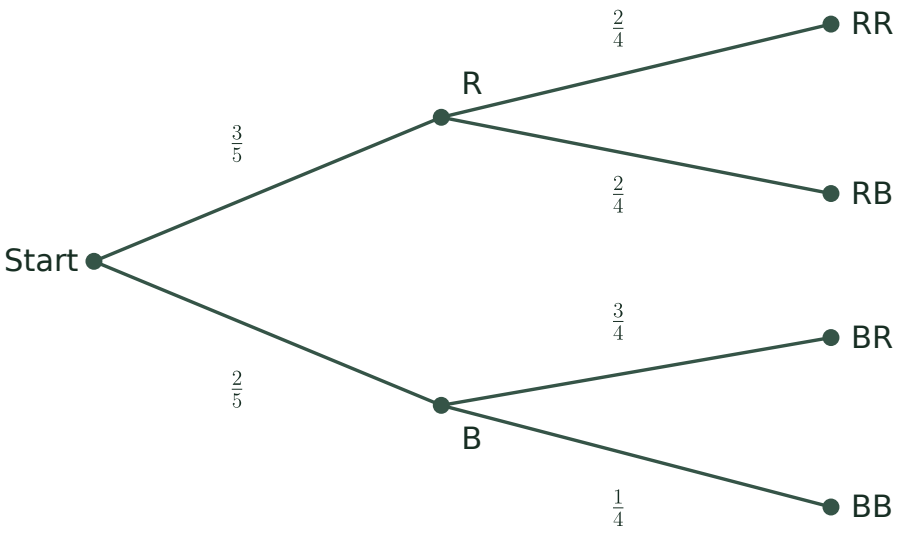
Travel	Girl	Boy	Total
Cycle	12	8	20
Walk	18	22	40
Total	30	30	60

11. From the travel table, find $P(\text{girl} \mid \text{walk})$. [2 marks]

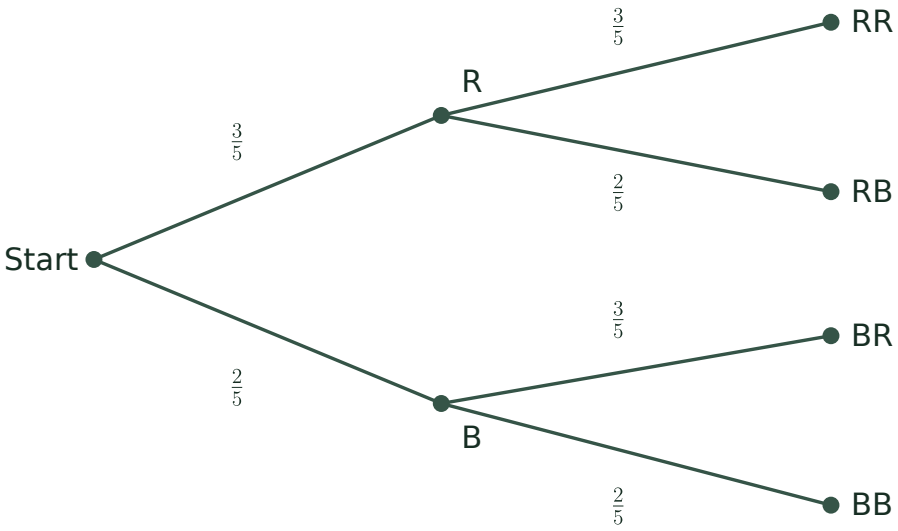
Invented survey of 60 students; every student is in exactly one travel category.

Travel	Girl	Boy	Total
Cycle	12	8	20
Walk	18	22	40
Total	30	30	60

12. A bag has 3 red and 2 blue counters. Two are drawn without replacement. Find $P(\text{two red})$. [2 marks]



13. A bag contains 3 red and 2 blue counters. Draw twice at random with replacement. Find $P(\text{exactly one red})$. [3 marks]



14. $P(A) = 0.4$, $P(B) = 0.6$ and $P(A \cap B) = 0.2$. Are A and B independent? Justify. [3 marks]

15. A simulation of a theoretical 0.6 success probability gives 284 successes in 500 trials. [4 marks]

(a) Estimate the success probability. [2 marks]

(b) Does the difference from 0.6 prove the simulation rule is wrong? [2 marks]

16. In the club table, find $P(\text{music or drama})$, showing how overlap is handled. [3 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