Test - Probability: experiments, Venn and tree diagrams

Year: Year 11 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Spinner probabilities

A spinner has four colours. $P(\text{red}) = 0.4$, $P(\text{blue}) = 0.3$, and green and yellow are equally likely.

a. Work out $P(\text{green})$. (2 marks)
b. The spinner is spun 200 times. How many yellows are expected? (1 mark)
c. Work out $P(\text{not blue})$. (1 mark)

Question 2 (4 marks)

Question 2 – Venn diagram

40 people were asked if they own a bike (B) or a scooter (S). 18 own a bike, 15 own a scooter and 6 own both.

a. Complete a Venn diagram. (2 marks)
b. Find the probability that a person owns neither. (1 mark)
c. Find the probability that a person who owns a scooter also owns a bike. (1 mark)

Question 3 (4 marks)

Question 3 – Independent events

Sam is late for school with probability 0.2 on any day, independently.

a. Find the probability that he is late on both of two days. (1 mark)
b. Find the probability that he is late on exactly one of two days. (3 marks)

Question 4 (4 marks)

Question 4 – Without replacement

A bag contains 7 red and 3 white counters. Two counters are taken without replacement.

a. Find the probability that both are white. (2 marks)
b. Find the probability that at least one is red. (2 marks)

Question 5 (4 marks)

Question 5 – Problem: how many red counters?

A bag has 3 blue counters and x red counters. A counter is taken, replaced, and another is taken. The probability that both are blue is $\frac{9}{25}$.

a. Write an equation for x. (1 mark)
b. Solve it. (3 marks)