FOUNDATION & HIGHER

SAME AT BOTH TIERS

Name ..... Class .....

P8: Combined events

Independent and dependent combined events; tree diagrams

20 marks · 25 minutes · Non-calculator

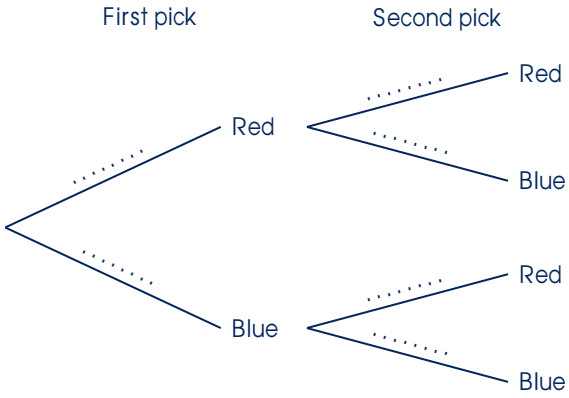
1) A and B are independent. $P(A) = 0.3$ and $P(B) = 0.6$. Find $P(A \text{ and } B)$.

.....

[Question 1: 1 marks]

2) A bag holds 3 red and 2 blue balls. A ball is taken at random and put back. Then a second ball is taken.

(a) Write the probabilities on the tree diagram.



(2)

(b) Find the probability that both balls are red.

.....

(2)

(c) Find the probability of one red and one blue ball.

.....

(2)

[Question 2: 6 marks]

3) A bag holds 4 red and 3 green sweets. Two sweets are taken at random without replacement.

(a) Find the probability that both are green.

.....

(2)

(b) Find the probability that both are the same colour.

.....

(2)

[Question 3: 4 marks]

---

4) The probability of rain on any day is 0.4, independently of other days. Find the probability that it does not rain on Monday or Tuesday.

.....

[Question 4: 2 marks]

---

5) A fair coin is flipped and a fair dice is rolled. Find the probability of a tail and a 6.

.....

[Question 5: 1 marks]

---

6) What must be true about two events to find the probability of both by multiplying their probabilities?

.....

[Question 6: 1 marks]

---

7) The probability that Jo passes her theory test is 0.7. The probability that she passes her practical test is 0.6. The tests are independent. Find the probability that she passes at least one test.

.....

[Question 7: 2 marks]

8) Three fair coins are flipped. Find the probability of three heads.

.....

[Question 8: 1 marks]

9) A box has 10 bulbs and 2 of them are faulty. Two bulbs are taken at random without replacement. Find the probability that both are faulty.

.....

[Question 9: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	0.18	B1.
2	(a) $\frac{3}{5}$, $\frac{2}{5}$ on every pair (b) $\frac{9}{25}$ (c) $\frac{12}{25}$	(a) B2 (B1 for first branches). (b) $\frac{3}{5} \times \frac{3}{5}$ (M1); A1. (c) $2 \times \frac{3}{5} \times \frac{2}{5}$ (M1); A1.
3	(a) $\frac{1}{7}$ (b) $\frac{3}{7}$	(a) $\frac{3}{7} \times \frac{2}{6}$ (M1); A1. (b) $\frac{12}{42} + \frac{6}{42}$ (M1); A1.
4	0.36	0.6×0.6 (M1); A1.
5	$\frac{1}{12}$	B1.
6	They are independent	B1.
7	0.88	$1 - 0.3 \times 0.4$ (M1); A1.
8	$\frac{1}{8}$	B1.
9	$\frac{1}{45}$	$\frac{2}{10} \times \frac{1}{9}$ (M1); A1.