FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

P8: Combined events

Solve problems involving independent and dependent events

20 marks · 25 minutes · Non-calculator

1) A bag has 6 red and 4 blue balls. Two are taken without replacement. Find the probability that they are different colours.

.....

[Question 1: 3 marks]

2) The probability of rain on any day is 0.3, independently. Find the probability that it rains on exactly one of three days.

.....

[Question 2: 3 marks]

3) A bag has 5 red, 3 blue and 2 green balls. Two are taken without replacement. Find the probability that at least one is green.

.....

[Question 3: 3 marks]

4) $P(A) = 0.6$ and $P(B) = 0.5$, and A and B are independent. Find the probability that neither happens.

.....

[Question 4: 2 marks]

5) A bag has x red and 3 blue balls. Two are taken without replacement. The probability that both are red is $\frac{5}{14}$. Find x.

.....

[Question 5: 4 marks]

6) The probability of passing a driving test first time is 0.6. If failed, the probability of passing the second time is 0.7. Find the probability of passing within two attempts.

.....

[Question 6: 3 marks]

7) Three fair dice are rolled. Find the probability of at least one six.

.....

[Question 7: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	$\frac{8}{15}$	$\frac{6}{10} \times \frac{4}{9}$ (P1); $\times 2$ (P1); A1.
2	0.441	$0.3 \times 0.7 \times 0.7$ (P1); $\times 3$ (P1); A1.
3	$\frac{17}{45}$	$P(\text{no green}) = \frac{8}{10} \times \frac{7}{9}$ (P1, P1); A1.
4	0.2	0.4×0.5 (P1); A1.
5	5	$\frac{x(x-1)}{(x+3)(x+2)} = \frac{5}{14}$ (P1); $3x^2 - 13x - 10 = 0$ (P1, P1); $x = 5$ (A1).
6	0.88	$0.6 + 0.4 \times 0.7$ (P1, P1); A1.
7	$\frac{91}{216}$	$1 - \left(\frac{5}{6}\right)^3$ (P1); A1.