



S20-10min Mutually Exclusive Events: 10-minute Pack

EDEXCEL 1ST0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** A fair six-sided dice is rolled once. State whether the events 'rolling a 2' and 'rolling a 5' are mutually exclusive.

(Total for Question 1 is 1 mark)

- 2** A fair spinner has sections numbered 1 to 6. Write down whether the events 'landing on an odd number' and 'landing on an even number' are mutually exclusive.

(Total for Question 2 is 1 mark)

- 3** State the mathematical term for two or more events that, between them, cover every possible outcome.

(Total for Question 3 is 1 mark)

- 4** A box contains coloured pens. The probability that a pen taken at random from the box is each colour is shown in the table.

Colour	Black	Blue	Red	Green
Probability	0.4	0.3	0.2	0.1

- (a) Explain why taking a black pen and taking a blue pen are mutually exclusive events. (1)
- (b) Work out the probability that the pen taken is black or blue. (2)

(Total for Question 4 is 3 marks)

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- 5** The probability that it rains in a particular town tomorrow is 0.65.

- (a) Work out the probability that it does not rain in the town tomorrow. (2)
- (b) State the term used to describe two events, such as 'it rains' and 'it does not rain', that between them cover every possible outcome. (1)

(Total for Question 5 is 3 marks)

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- 6** A bag has red, blue and green counters only. $P(\text{red}) = 0.4$, $P(\text{blue}) = 0.25$ and $P(\text{green}) = 0.35$. Explain how you know that these three colours are all of the colours in the bag.

(Total for Question 6 is 2 marks)

Mark scheme · S20-10min Mutually Exclusive Events: 10-minute Pack

Question 1

- **B1** mutually exclusive - a single roll cannot be both 2 and 5, oe
- **Answer: Mutually exclusive**

Question 2

- **B1** mutually exclusive cao
- **Answer: Mutually exclusive**

Question 3

- **B1** exhaustive cao
- **Answer: Exhaustive**

Question 4

- (a) **B1** a single pen cannot be both black and blue, so the two events cannot happen at the same time (oe)
- (a) **Answer: A pen cannot be both black and blue at the same time, so the events cannot both happen.**
- (b) **M1** $0.4 + 0.3$, oe
- (b) **A1** 0.7 cao
- (b) **Answer: 0.7**

Question 5

- (a) **M1** $1 - 0.65$, oe
- (a) **A1** 0.35 cao
- (a) **Answer: 0.35**
- (b) **B1** exhaustive (events) cao
- (b) **Answer: Exhaustive**

Question 6

- **M1** $0.4 + 0.25 + 0.35 (= 1)$, oe
- **A1** since the probabilities sum to 1, these outcomes are exhaustive, so no other colour is possible, oe
- **Answer: $0.4+0.25+0.35 = 1$, so red, blue and green must be the only possible colours (they are exhaustive).**