Probability (Combined Events)

Grade 4 topic · Foundation and Higher · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Foundation students: aim for Questions 1–15 (46 marks) and have a go at the rest. Higher students: complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 69 marks.

Warm-up

1 The probability that it rains on Saturday is 1/3. What is the probability that it does not rain? **[1 mark]**

Answer _____

2 A fair coin is flipped twice. What is the probability of two heads? **[2 marks]**

Answer _____

3 A bag has 3 red, 4 blue and 5 green counters. What is the probability of picking a counter that is not green? **[2 marks]**

Answer _____

4 A fair dice is rolled. What is the probability of a prime number? **[2 marks]**

Answer _____

5 P(A) = 1/2. A and B are mutually exclusive and P(B) = 1/10. Work out P(A or B). **[2 marks]**

Answer _____

Core

6 The probability that Ali is late is 3/5 and the probability that Ben is late is 3/4. The events are independent. Work out the probability both are late. **[3 marks]**

Answer _____

7 A fair dice is rolled 150 times. How many sixes would you expect? **[2 marks]**

Answer _____

8 A spinner lands on red with probability 1/3. It is spun twice. Work out the probability it lands on red both times. **[3 marks]**

Answer _____

9 The probability of passing a test is 1/5. 150 people take the test. How many are expected to pass? **[3 marks]**

Answer _____

10 Two fair dice are rolled. What is the probability that the total is 9? **[3 marks]**

Answer _____

Stretch

11 A and B are independent. P(A) = 1/3 and P(B) = 1/2. Work out P(A and B), and P(A or B). **[5 marks]**

Answer _____

12 The probability that a bus is on time is 1/2. Work out the probability that it is late on both of two days. **[4 marks]**

Answer _____

13 Two dice are rolled. Work out the probability that at least one shows a six. **[5 marks]**

Answer _____

14 The probability of snow on any day is 1/3. Work out the probability of no snow on 3 days in a row. **[5 marks]**

Answer _____

15 A card is chosen from a pack of 52. Work out the probability it is a heart or a king. **[4 marks]**

Answer _____

Challenge

16 A fair coin is flipped 3 times. Work out the probability of exactly two heads. **[5 marks]**

Answer _____

17 A bag has 4 red and 6 blue counters. Two are taken without replacement. Work out the probability they are the same colour. **[5 marks]**

Answer _____

18 The probability of a faulty item is 0.02. In a batch of 500 items, how many faulty items are expected? **[3 marks]**

Answer _____

19 Events A and B are independent with P(A) = 1/2. P(A and B) = 1/10. Find P(B). **[5 marks]**

Answer _____

20 Two dice are rolled. The scores are added. Find the probability that the total is a prime number. **[5 marks]**

Answer _____