Conditional Probability

Grade 7 topic · Higher tier · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Questions 1–15 (52 marks) build up to the harder Grade 8–9 style questions at the end; aim to 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: 77 marks.

Warm-up

1 One student is chosen at random. Given that the student is a girl, work out the probability that she likes the subject. **[3 marks]**

	Likes	Dislikes	Total
Boys	14	19	33
Girls	5	8	13
Total	19	27	46

Answer _____

2 Given that the student likes the subject, work out the probability that they are a boy. **[3 marks]**

	Likes	Dislikes	Total
Boys	10	18	28
Girls	11	11	22
Total	21	29	50

Answer _____

3 Work out P(likes | boy). **[3 marks]**

	Likes	Dislikes	Total
Boys	16	9	25
Girls	15	9	24
Total	31	18	49

Answer _____

4 Given that the student dislikes the subject, find the probability they are a girl. **[3 marks]**

	Likes	Dislikes	Total
Boys	5	8	13
Girls	18	15	33
Total	23	23	46

Answer _____

5 Work out P(boy | dislikes). **[3 marks]**

	Likes	Dislikes	Total
Boys	19	20	39
Girls	10	6	16
Total	29	26	55

Answer _____

Core

6 A bag has 5 red and 5 blue counters. Two are taken without replacement. Work out the probability that the second is red, given that the first is red. **[3 marks]**

Answer _____

7 A bag has 5 red and 5 blue counters. Two are taken without replacement. Work out P(both red). **[4 marks]**

Answer _____

8 A bag has 2 red and 6 blue counters. Two are taken without replacement. Work out P(second is blue | first is red). **[3 marks]**

Answer _____

9 A bag has 5 red and 5 blue counters. Two are taken without replacement. **[4 marks]**
Work out P(different colours).

Answer _____

10 A bag has 3 red and 5 blue counters. Two are taken without replacement. **[4 marks]**
Work out P(first is blue and second is red).

Answer _____

Stretch

11 A bag has 6 red and 4 blue counters. Two are taken without replacement. **[5 marks]**
Given that the second is red, work out the probability that the first was red.

Answer _____

12 A bag has 2 red and 6 blue counters. Two are taken without replacement. Work out P(second is red). **[5 marks]**

Answer _____

13 Events A and B: P(A) = 0.4, P(B) = 0.5, P(A and B) = 0.2. Work out P(A | B). **[3 marks]**

Answer _____

14 P(A) = 0.6, P(B | A) = 0.5. Work out P(A and B). **[3 marks]**

Answer _____

15 P(A and B) = 0.12 and P(A) = 0.4. Work out P(B | A). **[3 marks]**

Answer _____

Challenge

16 P(A) = 0.3, P(B) = 0.5 and P(A | B) = 0.3. Are A and B independent? Explain. **[4 marks]**

Answer _____

17 A test for a disease is positive for 90% of people with the disease and 5% of people without it. 2% of the population have the disease. Work out the probability a random person tests positive. **[5 marks]**

Answer _____

18 Using the test above, given that a person tests positive, work out the probability they have the disease (to 2 d.p.). **[6 marks]**

Answer _____

19 A bag has 2 red and 6 blue counters. Three are taken without replacement. Work out P(all three red). **[5 marks]**

Answer _____

20 P(A) = 0.5, P(B) = 0.4 and P(A or B) = 0.7. Work out P(A | B). **[5 marks]**

Answer _____