JRA Tutors
Private tuition and small online Study Pods

Probability Equation Questions

Grade 8/9 topic · Higher tier · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Questions 1–15 (71 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: 99 marks.

Warm-up

1 A bag has x red counters and 3 blue counters. The probability of taking a red counter is 4/7. Work out x. **[6 marks]**

Answer _____

2 A bag has x red counters and 6 blue counters. The probability of taking a red counter is 4/7. Work out x. **[4 marks]**

Answer _____

3 A bag has x red counters and 6 blue counters. The probability of taking a red counter is 5/11. Work out x. **[4 marks]**

Answer _____

4 A bag has x red counters and 6 blue counters. The probability of taking a red counter is 2/5. Work out x. **[4 marks]**

Answer _____

5 A bag has x red counters and 3 blue counters. The probability of taking a red counter is 3/4. Work out x. **[6 marks]**

Answer _____

Core

6 A bag has 4 red counters and x blue counters. P(blue) = 5/9. Work out x. **[4 marks]**

Answer _____

7 A bag has 8 red counters and x blue counters. P(blue) = 3/11. Work out x. **[4 marks]**

Answer _____

8 A bag has 6 red counters and x blue counters. P(blue) = 1/3. Work out x. **[4 marks]**

Answer _____

9 A bag has 8 red counters and x blue counters. P(blue) = 3/11. Work out x. **[4 marks]**

Answer _____

10 A bag has 5 red counters and x blue counters. P(blue) = 1/2. Work out x. **[4 marks]**

Answer _____

Stretch

11 A bag has x red counters and 4 blue counters. Two counters are taken without replacement. The probability both are red is 1/7. Show that $6x^2 - 14x - 12 = 0$. **[5 marks]**

Answer _____

12 A bag has x red counters and 3 blue counters. Two counters are taken without replacement. P(both red) = 1/5. Find x. **[6 marks]**

Answer _____

13 A bag has x red counters and 6 blue counters. Two counters are taken without replacement. The probability both are red is 12/35. Show that $23x^2 - 167x - 360 = 0$. **[5 marks]**

Answer _____

14 A bag has x red counters and 5 blue counters. Two counters are taken without replacement. P(both red) = 36/91. Find x. **[6 marks]**

Answer _____

15 A bag has x red counters and 4 blue counters. Two counters are taken without replacement. The probability both are red is 3/14. Show that $11x^2 - 35x - 36 = 0$. **[5 marks]**

Answer _____

Challenge

16 A bag has 8 red and 5 blue counters. Two are taken with replacement. P(both red) = 64/169. Show how this is calculated and find P(both blue). **[5 marks]**

Answer _____

17 A bag has x red counters and 5 blue counters. Two counters are taken with replacement. P(both red) = 4/9. Find x. **[6 marks]**

Answer _____

18 A bag has x red counters and 3 blue. Two are taken without replacement. P(both blue) = 1/15. Find x. **[6 marks]**

Answer _____

19 There are x counters in a bag and 4 of them are red. Two are taken without replacement. P(both red) = 2/15. Find x. **[6 marks]**

Answer _____

20 The probability that a biased coin lands heads is p. Two flips: P(two heads) = 0.16. Find p, and the probability of exactly one head. **[5 marks]**

Answer _____