

GCSE Maths Probability (Higher): check-up and exam-style questions: answers

GCSE Maths - Probability - Higher - Test yourself

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch23-probability/higher/check-up-and-exam-style-questions/

Exercise 23Z Check-up (non-calculator) Non-calculator

- 1 A bag contains 5 red, 3 blue and 2 green counters. One counter is picked at random. Find the probability that it is blue.

Answer: $\frac{3}{10}$

- 2 The probability that a bus is late is 0.35. Work out the probability that the bus is not late.

Answer: 0.65

- 3 A spinner can land on red, blue or green. $P(\text{red}) = \frac{1}{2}$ and $P(\text{blue}) = \frac{1}{6}$. Work out $P(\text{green})$.

Answer: $\frac{1}{3}$

- 4 A drawing pin is dropped 50 times and lands point up 18 times. Write down the relative frequency of point up as a fraction in its simplest form.

Answer: $\frac{9}{25}$

- 5 The probability that a spinner lands on red is $\frac{1}{5}$. The spinner is spun 150 times. How many times would you expect it to land on red?

Answer: 30

- 6 Two fair coins are tossed. Find the probability that both land on heads.

Answer: $\frac{1}{4}$

- 7 Two fair dice are rolled and their scores are added. Find the probability that the total is 9.

Answer: $\frac{1}{9}$

- 8 A bag has 3 red and 2 blue counters. Two counters are taken at random without replacement. Find the probability that both are red.

Answer: $\frac{3}{10}$

- 9 The table shows how 40 students voted for a school trip. A girl is chosen at random. Find the probability that she voted for the zoo.

	Zoo	Museum	Total
Boys	14	6	20

Girls	9	11	20
Total	23	17	40

Answer: $\frac{9}{20}$

- 10** A bag has x red counters and 4 blue counters. $P(\text{red}) = \frac{2}{3}$. Find the value of x .

Answer: 8

Exercise 23X Exam-style questions Non-calculator

- 1** A bag contains 4 red counters, 5 blue counters and 1 green counter. One counter is picked at random. Find the probability that the counter is... [3 marks]

- (a) green

Answer: $\frac{1}{10}$

- (b) not blue

Answer: $\frac{1}{2}$

- (c) red or green

Answer: $\frac{1}{2}$

- 2** The table shows the probability that a biased spinner lands on each colour. [4 marks]

Colour	Red	Blue	Green	Yellow
Probability	0.3	0.25	0.35	?

- (a) Work out the probability that it lands on yellow.

Answer: 0.1

- (b) The spinner is spun 200 times. How many times would you expect it to land on blue?

Answer: 50

- 3** Priya rolled a die 60 times. The results are in the table. [3 marks]

Score	1	2	3	4	5	6
Frequency	8	12	9	11	10	10

- (a) Work out the relative frequency of a 6.

Answer: $\frac{1}{6}$

- (b) Priya says the die is biased. Is she right? Give a reason.

Answer: No evidence

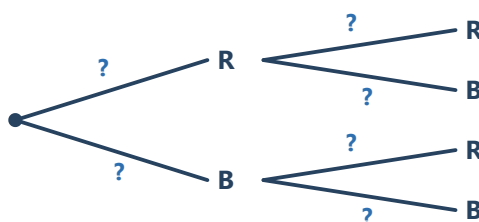
- 4 Two fair dice are rolled and the scores are multiplied. Find the probability that the product is 12. [3 marks]

Answer: $\frac{1}{9}$

- 5 A fair coin is tossed and a fair spinner with the numbers 1, 2, 3, 4, 5 is spun. Find the probability of heads and an even number. [2 marks]

Answer: $\frac{1}{5}$

- 6 A bag has 3 red counters and 2 blue counters. A counter is picked at random, replaced, and a second counter is picked. [4 marks]



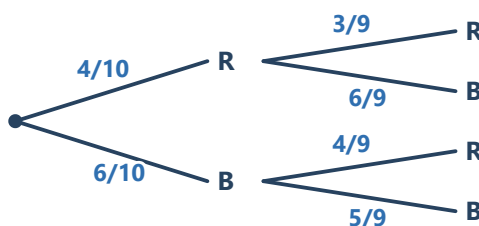
- (a) Complete the tree diagram.

Answer: First stage $\frac{3}{5}$ red, $\frac{2}{5}$ blue; second stage $\frac{3}{5}$ red, $\frac{2}{5}$ blue after each

- (b) Find the probability that the two counters are the same colour.

Answer: $\frac{13}{25}$

- 7 A bag has 4 red and 6 blue counters. Two counters are taken at random without replacement. Find the probability that the counters are different colours. [4 marks]



Answer: $\frac{8}{15}$

- 8 40 students were asked if they play chess (A) and draughts (B). 22 play chess, 18 play draughts and 7 play both. [4 marks]

- (a) Draw a Venn diagram.

Answer: A only 15, both 7, B only 11, neither 7

- (b) A student is chosen at random. Find the probability that the student plays neither game.

Answer: $\frac{7}{40}$

- 9 70 members of a club were asked if they prefer swimming or running. Some of the results are shown. [4 marks]

	Swimming	Running	Total
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Men	20	?	35
Women	?	25	?
Total	30	?	70

- (a) Complete the two-way table.

Answer: Men running 15; women swimming 10; women total 35; running total 40

- (b) A member is chosen at random. Find the probability that it is a woman who prefers swimming.

Answer: $\frac{1}{7}$

- 10 120 people were asked about their diet. $\frac{2}{3}$ of them are adults. $\frac{1}{4}$ of the adults and $\frac{1}{2}$ of the children are vegetarian. Complete a frequency tree and find how many of the 120 people are vegetarian. [4 marks]

Answer: 40

- 11 The probability that a train is late is 0.1 on any day, independently. Find the probability that it is late on at least one of 3 days. Give your answer as a decimal. [3 marks]

Answer: 0.271

- 12 Sam says: "When I toss two coins there are three outcomes, so the probability of getting two heads is $\frac{1}{3}$." Explain what is wrong with Sam's statement. [2 marks]

Answer: The three outcomes are not equally likely; $P = \frac{1}{4}$

- 13 A game costs £2 to play. The probability of winning is $\frac{1}{8}$ and the prize is £12. 400 people play. Work out the expected profit. [4 marks]

Answer: £200

- 14 A bag has 6 red and 4 blue counters. Two counters are taken at random without replacement. Given that the second counter is blue, find the probability that the first counter was red. [4 marks]

Answer: $\frac{2}{3}$

- 15 A bag has 4 red counters and x blue counters. Two counters are taken at random without replacement. The probability that both are red is $\frac{2}{15}$. Show that $x^2 + 7x - 78 = 0$ and hence find x . [5 marks]

Answer: $x = 6$

- 16 $P(A) = 0.5$ and $P(B) = 0.4$ and $P(A \text{ and } B) = 0.2$. [5 marks]

- (a) Work out $P(A \text{ or } B)$.

Answer: 0.7

- (b) Work out the probability that neither A nor B happens.

Answer: 0.3

- (c) Are A and B independent? Give a reason.

Answer: Yes

