



- 1 A fair six-sided dice is rolled once.

Write down the probability that the dice lands on a number less than 3.

(1 mark)

The numbers less than 3 are 1 and 2, so there are 2 successful outcomes out of 6 equally likely outcomes

$$P(\text{less than 3}) = \frac{2}{6} = \frac{1}{3}$$

$$\frac{1}{3}$$

- 2 Choose the best word from **impossible**, **unlikely**, **evens**, **likely**, **certain** for each event.

- A fair coin lands on heads.
- It will be daytime somewhere in the world at some point tomorrow.
- An ordinary dice lands on 7.

(3 marks)

a)

Heads and tails equally likely

evens

b)

Sure to happen: certain

c)

Dice only has 1 to 6: impossible

a) evens b) certain c) impossible

3 On a probability scale from 0 to 1, write down the number where each event belongs.

- a. An impossible event
- b. An event with an even chance
- c. A certain event

(3 marks)

a)

Impossible = 0

b)

Even chance = $\frac{1}{2}$

c)

Certain = 1

a) 0 b) $\frac{1}{2}$ c) 1

4 Here is a probability scale, labelled from 0 to 1.

- a. Mark with a cross the probability that a fair coin lands on tails.
- b. Mark with a cross the probability that an ordinary fair dice lands on the number 8.



(2 marks)

A fair coin lands on tails with probability $\frac{1}{2}$, so the cross goes exactly halfway between 0 and 1

An ordinary dice only shows 1 to 6, so landing on 8 is impossible and the cross goes at 0

5 A bag contains 9 blue counters and 1 red counter. Zainab takes one counter without looking.

Is she likely or unlikely to take a red counter? Give a reason for your answer.

(2 marks)

1 red out of 10 counters

Very few red counters

Unlikely, only 1 of the 10 counters is red

- 6 The probability that it rains on a school trip is 0.3.

Work out the probability that it does not rain.

(1 mark)

Probabilities add up to 1

$$1 - 0.3 = 0.7$$

$$\boxed{0.7}$$

- 7 A fair six-sided dice is rolled once. Write down the probability that it lands on

- a. the number 5
- b. the number 7
- c. a number less than 7

(3 marks)

a)

1 five out of 6 numbers

$$P(5) = \frac{1}{6}$$

b)

No 7 on a dice: impossible

$$P(7) = 0$$

c)

All 6 numbers are less than 7

$$P(\text{less than } 7) = 1$$

$$\boxed{a) \frac{1}{6} \quad b) 0 \quad c) 1}$$

- 8 A spinner has three colours. The probability of red is $\frac{1}{4}$ and the probability of blue is $\frac{1}{2}$.

Work out the probability that the spinner lands on red or blue.

(2 marks)

Add the probabilities

$$\frac{1}{4} + \frac{1}{2}$$

$$\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$$

$$\boxed{\frac{3}{4}}$$

9

A bag contains only red, blue and green counters. The probability of taking a red counter is 0.2 and the probability of taking a blue counter is 0.5.

- Work out the probability of taking a green counter.
- There are 40 counters in the bag. How many are blue?

(4 marks)

a)

$$0.2 + 0.5 = 0.7$$

$$1 - 0.7 = 0.3$$

b)

$$0.5 = \text{half}$$

$$40 \div 2 = 20$$

a) 0.3 b) 20

10

A fair eight-sided spinner has sections numbered 1 to 8.

The spinner is spun once.

- Write down the word that best describes the probability that the spinner lands on 9.
- Find the probability that the spinner lands on a multiple of 3.

(2 marks)

The spinner only shows 1 to 8, so landing on 9 cannot happen: it is impossible

The multiples of 3 from 1 to 8 are 3 and 6, so $P(\text{multiple of 3}) =$

$$\frac{2}{8} = \frac{1}{4}$$