

INTRODUCTION TO PROBABILITY

Task 1 – Describe the following events using one of the words: *impossible, unlikely, even chance, likely, certain*.

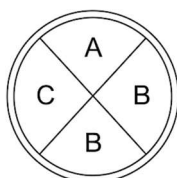
- 1) It will rain chocolate tomorrow.
- 2) A fair coin is flipped. It lands on heads.
- 3) You buy one lottery ticket. Millions of tickets are sold.
- 4) The sun will rise tomorrow.
- 5) A bag contains 10 red counters and 1 blue counter. You pick one counter at random and draw a red.

Task 2

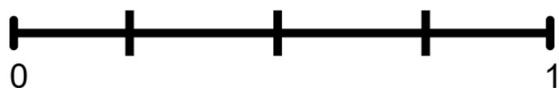
- 6) Alex spins a fair 4-sided spinner. What is the probability that the spinner lands on a 4?



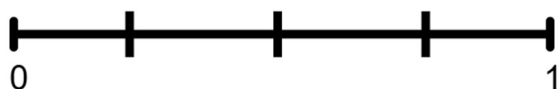
- 7) Jane spins a fair 4-sided spinner. What is the probability the spinner does not land on the letter A?



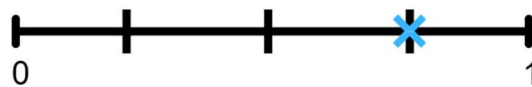
- 8) Mark the probability scale with a cross (x) to show an event that is impossible.



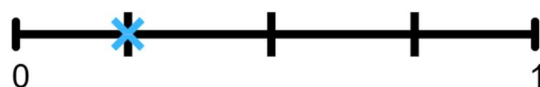
- 9) A fair coin is tossed. Mark the probability scale with a cross (x) to show the probability it lands on tails.



- 10) The probability that a bus arrives on time is marked on the probability scale below. Estimate the probability shown.



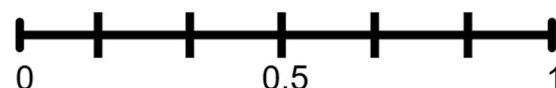
- 11) The probability that Jamie wins a board game is marked on the probability scale below. Estimate the probability shown.



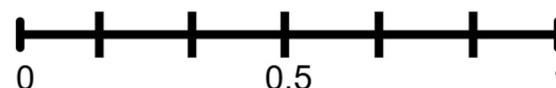
- 12) A fair 6-sided spinner is spun. What is the probability of landing on a prime number?



- 13) A fair dice is rolled. Mark the probability scale with a cross (x) to show the probability it lands on a 1.



- 14) A fair dice is rolled. Mark the probability scale with a cross (x) to show the probability it landed on an integer from 1 to 6 inclusive.



Task 3

- 15) A list of numbers is shown below.

1 2 3 4 5 6 7 8 9

A number is selected at random. Work out the probability the number is:

- An even number
 - An odd number
 - A square number
 - An integer
- 16) A fair 6-sided dice is rolled. What is the probability that it lands on an even number?
- 17) A bag contains 5 red counters, 3 blue counters and 2 green counters. A counter is taken at random from the bag.
- Work out the probability the counter is green.
 - Work out the probability the counter is not blue.
- 18) In a box there are 11 chocolates, 6 raisins and 8 hazelnuts. Sophia chooses one piece of food from the box at random. Write down the probability she chooses a raisin.
- 19) The table shows the probabilities of taking a white, blue or yellow counter. Complete the table to show the probability of taking a green counter.
- | Colour | White | Blue | Yellow | Green |
|-------------|-------|------|--------|-------|
| Probability | 0.4 | 0.2 | 0.1 | |
- 20) A fair dice is rolled. Work out the probability that the result is greater than 4.
- 21) A day of the week is chosen at random. What is the probability it falls on a weekend?
- 22) A bag contains 8 sweets: 3 strawberry, 2 orange and 3 lemon. One sweet is picked at random. Find the probability the sweet is strawberry.

- 23) A bag contains 12 counters: 4 red, 6 green, 2 yellow. One counter is chosen at random. Work out the probability the counter is not green.

- 24) The probability that Nicola wins a tennis match is 0.56. Work out the probability that Nicola loses the match.

- 25) A pack contains 20 cards numbered with integers from 1 to 20. A card is chosen at random. Work out the probability that the number is a multiple of 5.

- 26) The probability that it rains tomorrow is 45%. Work out the probability it does not rain tomorrow.

- 27) The probability that a team will win a match is $\frac{5}{7}$. What is the probability that the team will not win the match?

- 28) Rachel buys 1 raffle ticket. A total of 300 raffle tickets are sold.
- Work out the probability that Rachel's ticket wins.
 - What could Rachel do to increase her chances of winning?

Challenge

- 29) A bag contains red, blue and green counters. The probability of picking:
- A red counter is $\frac{2}{5}$
- A blue counter is $\frac{1}{3}$
- There are a total of 60 counters in the bag. Work out how many green counters are in the bag.
- 30) A fair 6-sided dice is rolled twice. The sum of the two rolls is added together. Work out the probability the sum of the two rolls is 8.