INTRODUCTION TO PROBABILITY

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

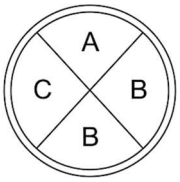
1) It will rain chocolate tomorrow. Impossible
2) A fair coin is flipped. It lands on heads. Even chance
3) You buy one lottery ticket. Millions of tickets are sold. Unlikely
4) The sun will rise tomorrow. Certain
5) A bag contains 10 red counters and 1 blue counter. You pick one counter at random and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

Task 2

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

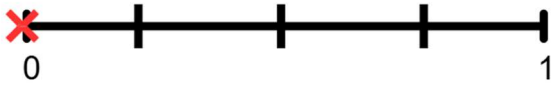
$\frac{1}{4}$

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



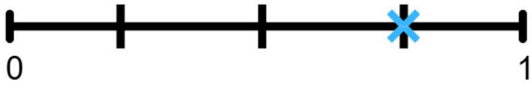
$\frac{3}{4}$

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



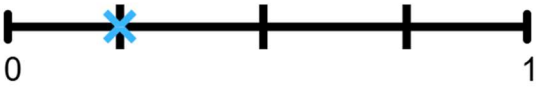
9) A fair coin is tossed. Mark the probability scale with a cross (x) to show the probability it lands on tails.

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



0.75

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

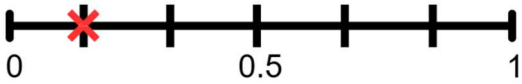


0.25

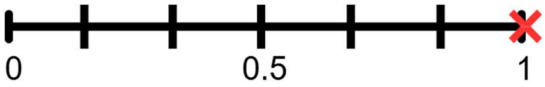
12) A fair 6-sided spinner is spun. What is the probability of landing on a prime number?

$\frac{3}{6} = \frac{1}{2}$

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:

a. An even number $\frac{4}{9}$

b. An odd number $\frac{5}{9}$

c. A square number $\frac{3}{9} = \frac{1}{3}$

d. An integer 1

16) A fair 6-sided dice is rolled. What is the probability that it lands on an even number?

$$\frac{3}{6} = \frac{1}{2}$$

17) A bag contains 5 red counters, 3 blue counters and 2 green counters. A counter is taken at random from the bag.

a. Work out the probability the counter is green. $\frac{2}{10} = \frac{1}{5}$

b. Work out the probability the counter is not blue. $\frac{7}{10}$

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. $\frac{6}{25}$

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	0.3

Probabilities in a sample space add to 1

20) A fair dice is rolled. Work out the probability that the result is greater than 4. $\frac{2}{6} = \frac{1}{3}$

21) A day of the week is chosen at random. What is the probability it falls on a weekend? $\frac{2}{7}$

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. $\frac{3}{8}$

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. $\frac{6}{12} = \frac{1}{2}$

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

$$1 - 0.56 = 0.44$$

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. $\frac{4}{20} = \frac{1}{5}$

26) The probability that it rains tomorrow is 45%. Work out the probability it does not rain tomorrow. 55%

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? $\frac{2}{7}$

28) Rachel buys 1 raffle ticket. A total of 300 raffle tickets are sold.

a. Work out the probability that Rachel's ticket wins. $\frac{1}{300}$

b. What could Rachel do to increase her chances of winning?

Buy more tickets

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.

$$P(green) = 1 - \frac{2}{5} - \frac{1}{3} = \frac{4}{15}$$

$$60 \times \frac{4}{15} = 16 \text{ green counters}$$

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.

Roll	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

$$\frac{5}{36}$$