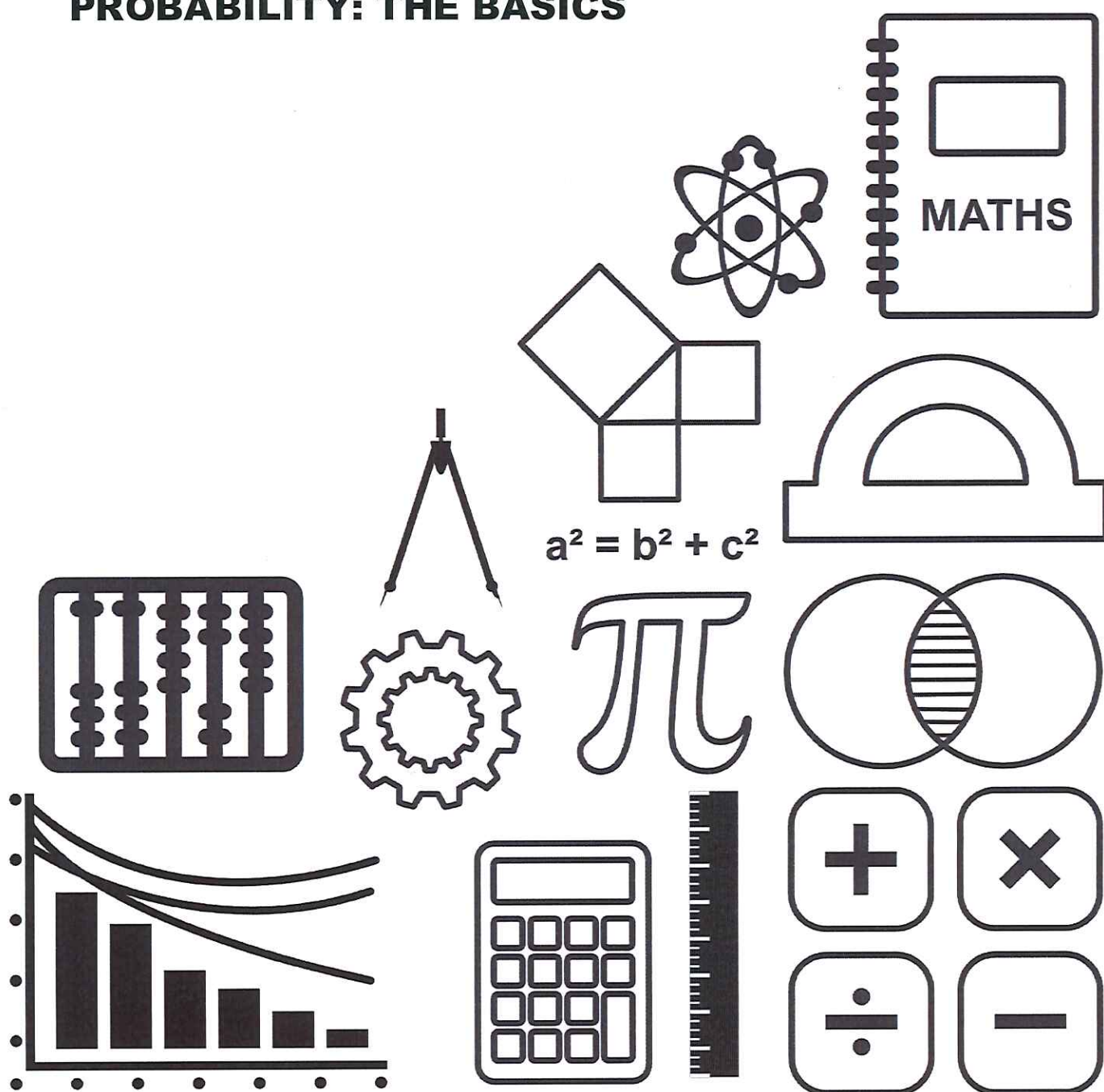
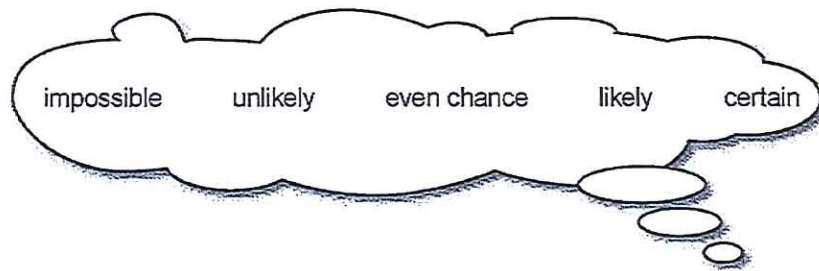


GCSE TOPIC BOOKLET PROBABILITY: THE BASICS



1.

- (a) From the list below, choose **one** expression to describe the probability of each of the events happening.



- (i) Obtaining an 8 on a fair dice numbered 1 to 6.

impossible

[1]

- (ii) There will be a sunny day in Swansea in July.

likely

[1]

- (iii) A person chosen at random from the audience at a concert has their birthday on the 10th April.

unlikely

[1]

- (b) The 26 letters of the English alphabet are put into a box. One is picked out at random. What is the probability that it is the letter F?

$\frac{1}{26}$

[1]

- (c) For lunch, Sam either has a cooked meal or has sandwiches. The probability that Sam has a cooked meal for lunch is $\frac{11}{17}$. What is the probability that he has sandwiches for lunch?

$\frac{6}{17}$

[1]

2.

(a)



Jac had 14 T-shirts in his cupboard.

10 of them were white and the rest were blue.

One morning, Jac chose a T-shirt at random from his cupboard.

Circle the best expression from those given below to describe the chance that Jac chose a blue T-shirt. [1]

impossible

unlikely

an even chance

likely

certain

(b)



Jalal had 16 pairs of socks in a drawer.

One day, he chose a pair at random from the drawer.

There is an even chance that he chose a black pair.

How many pairs of black socks were there in the drawer? [1]

8 pairs

(c) (i) Fiona had a bag of 25 counters.

In the bag, there were 10 red counters, 6 yellow counters and the rest were green.

Fiona chose a counter at random from her bag.

What is the probability that she chose a green counter? [2]

$\frac{9}{25}$

(ii) Hari had a different bag of counters.

There were 36 counters in his bag. Hari chose a counter at random from his bag.

The probability that Hari chose a yellow counter is $\frac{5}{9}$.

How many yellow counters were in Hari's bag? [2]

$\frac{5}{9}$ of 36

$$\frac{1}{9} \text{ of } 36 = 4$$

$$\frac{5}{9} \text{ of } 36 = 4 \times 5 = 20$$

3.

A spinner has three colours: red, yellow and green.

The probability that the spinner lands on yellow is equal to the probability of landing on green.

Complete the table below.

[2]

Colour	Red	Yellow	Green
Probability	0.4	0.3	0.3

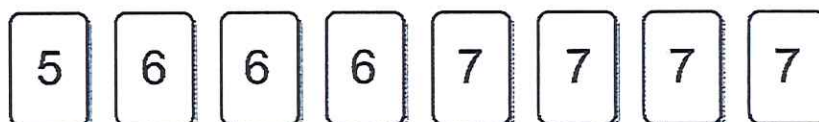
$$1 - 0.4 = 0.6$$

$$0.6 \div 0.2 = 0.3$$

4.

A box contains the following 8 cards.

They are identical except for the numbers written on them.



One card is chosen at random from the box.

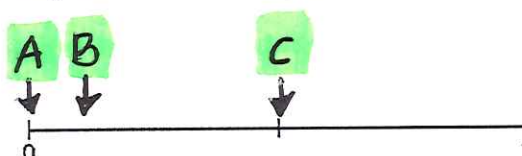
On the probability scale shown below, mark the points A, B and C where:

A is the probability that the chosen card has the number 3 on it.

B is the probability that the chosen card has the number 5 on it.

C is the probability that the chosen card has a number less than 7 on it.

[3]

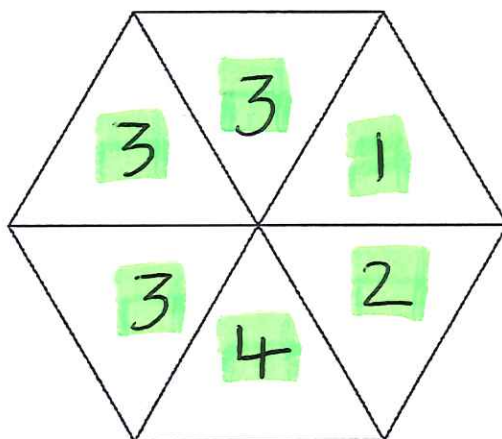


5.

Each of the numbers 1, 2, 3 and 4 must occur at least once on the spinner below. Write one of the numbers 1, 2, 3 or 4 in each of the six sections of the spinner so that on each spin

- (i) the probability of getting a 1 is equal to the probability of getting a 2,
- (ii) the probability of getting a 3 is greater than the probability of getting a 1,
- (iii) the probability of getting a 4 is less than the probability of getting a 3.

[4]



6.

- (a) Huw has 19 coins in his pocket.
13 of these coins are 10p coins and the rest are 5p coins.
Huw chooses one coin at random from his pocket.

Circle the best expression from those given below to describe the chance that Huw chooses a 5p coin. [1]

impossible

unlikely

an even chance

likely

certain

- (b) Catrin has 10 pieces of fruit in her bag.
She has 4 oranges and 6 apples.

Catrin chooses one piece of fruit at random from her bag.

Circle the best expression from those given below to describe the chance that Catrin chooses a banana from her bag. [1]

impossible

unlikely

an even chance

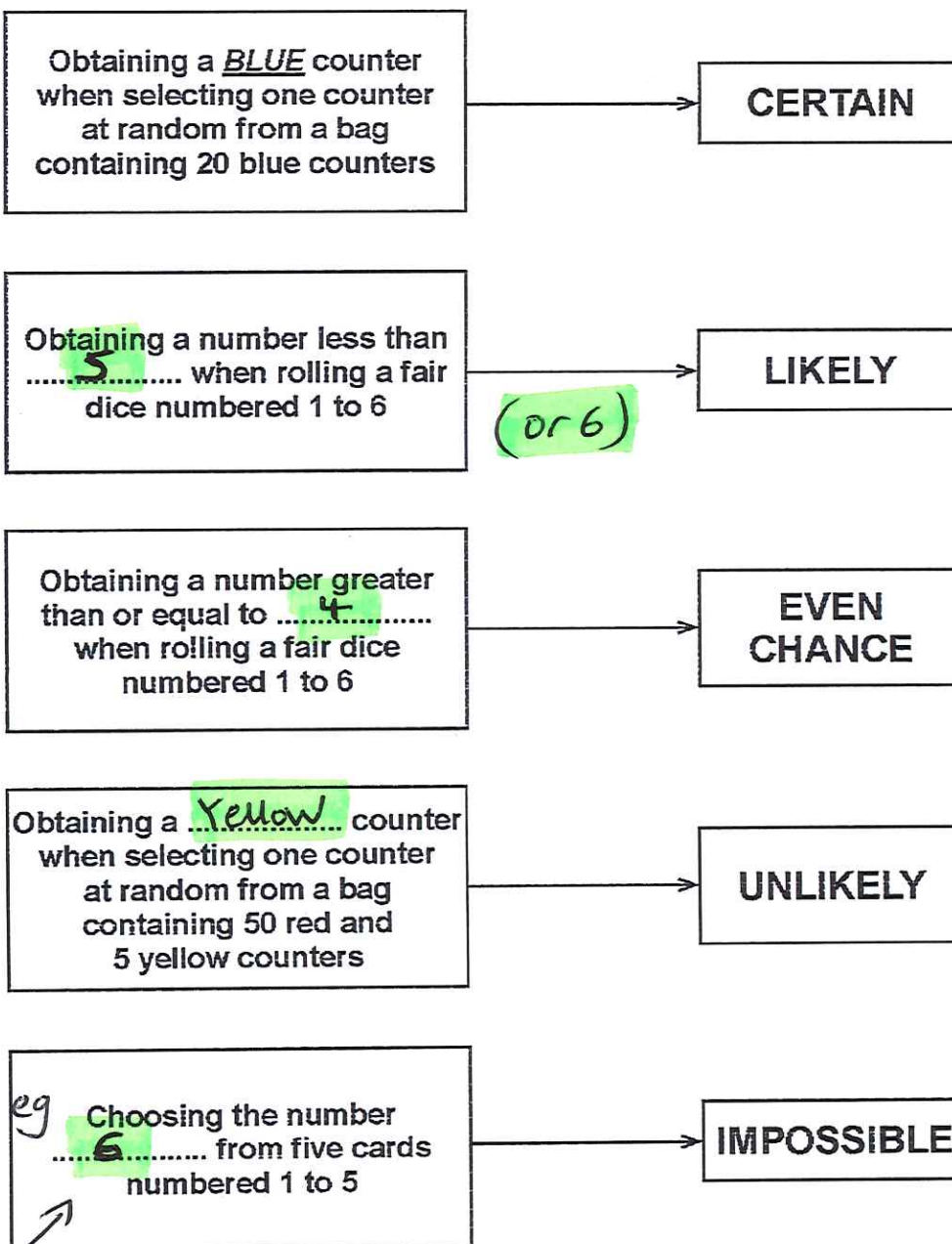
likely

certain

7.

- (a) Fill in the blanks to match each event to its chance of happening.
The first one is done for you.

[4]



any number that isn't 1, 2, 3, 4, 5

- (b) There are 50 members in a tennis club.
Some of these members have visited the Wimbledon Championship and some have not.
This information is displayed in the following table.

	Male	Female	Total
Visited Wimbledon Championship	24	5	29
Have not visited Wimbledon Championship	6	15	21
Total	30	20	50

What is the probability that a member chosen at random

- (i) is male?

$$\frac{30}{50} \quad \left(\frac{3}{5}\right) \quad [1]$$

- (ii) has visited the Wimbledon Championship?

$$\frac{29}{50} \quad [1]$$

- (iii) is a female who has not visited the Wimbledon Championship?

$$\frac{15}{50} \quad \left(\frac{3}{10}\right) \quad [1]$$

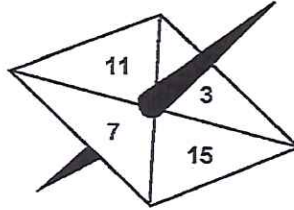
8.

Choose the best word from those given below to describe the chance of each of the following events occurring.

impossible unlikely even chance likely certain

- (a) You get an odd number when the following spinner is spun once.

[1]



certain

- (b) You win a raffle when 200 tickets are sold and you have bought one.

[1]

unlikely

- (c) You get an even number when a fair dice is rolled once.

[1]

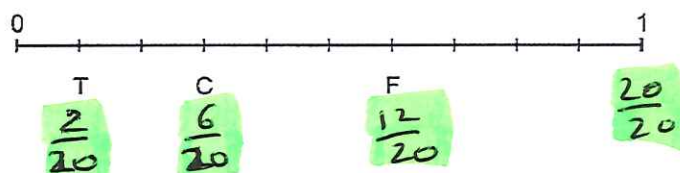
even chance

9.

There are 20 people in Omar's sports club.

Omar asked each person in the club to select their favourite sport from cricket (C), football (F) and tennis (T).

One person is chosen at random from the 20 people in the club. The probability that the chosen person selected cricket, football or tennis is shown on this probability scale:



Use the information given in the probability scale to fill in the spaces in the table below for the 20 people in Omar's sports club. [3]

Favourite sport	Number of people
cricket (C)	6
football (F)	12
tennis (T)	2

10.

Fracton School is organising a Summer Fayre. Carys is making a spinner for her stall. A sketch of her spinner is shown below.

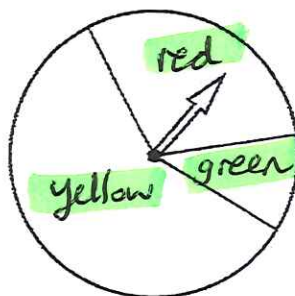


Diagram not drawn to scale

The spinner has three sectors, each to be painted a different colour: red, green or yellow. The sectors are **not** of equal size.

- The probability that the spinner lands on the green sector is $\frac{1}{10}$.
- The probability that the spinner lands on the yellow sector is twice the probability that the spinner lands on the red sector.

Calculate the angle that the yellow sector makes at the centre of the circle.

[4]

$$\text{yellow} + \text{red} = \frac{9}{10}$$

$$\text{yellow} = 2 \times \text{red}$$

$$\text{yellow} = \frac{6}{10} \quad \text{red} = \frac{3}{10}$$

$$\underline{\text{yellow angle}} = \frac{6}{10} \text{ of } 360$$

$$\frac{1}{10} \text{ of } 360 = 36 \quad \frac{6}{10} \text{ of } 360 = \frac{36 \times 6}{1} = 216^\circ$$

11.

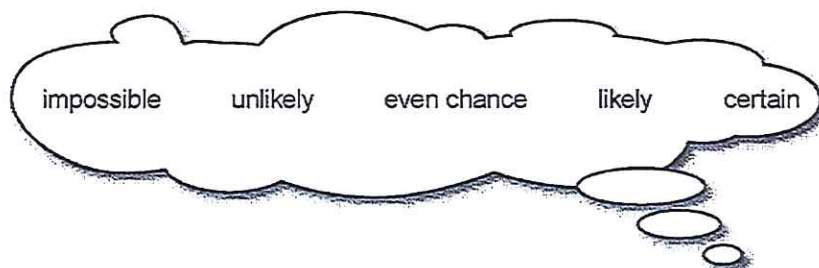
On the probability scale shown below, mark the points A, B, C and D where:

- A is the probability that when a fair dice is thrown an even number is obtained $= \frac{1}{2}$
 B is the probability that the day after Saturday will be Sunday $= 1$
 C is the probability that the next object you see flying in the sky will be a live pink elephant $= 0$
 D is the probability that a marble picked out of a bag containing 1 red, 1 blue, 1 green and 1 black marble will be blue. $= \frac{1}{4}$



12.

- (a) From the list below, choose **one** expression to describe the probability of each of the events happening.



- (i) Obtaining an 8 on a fair dice numbered 1 to 6.

impossible

[1]

- (ii) There will be a sunny day in Swansea in July.

likely

[1]

- (iii) A person chosen at random from the audience at a concert has their birthday on the 10th April.

unlikely

[1]

- (b) The 26 letters of the English alphabet are put into a box. One is picked out at random. What is the probability that it is the letter F?

$\frac{1}{26}$

[1]

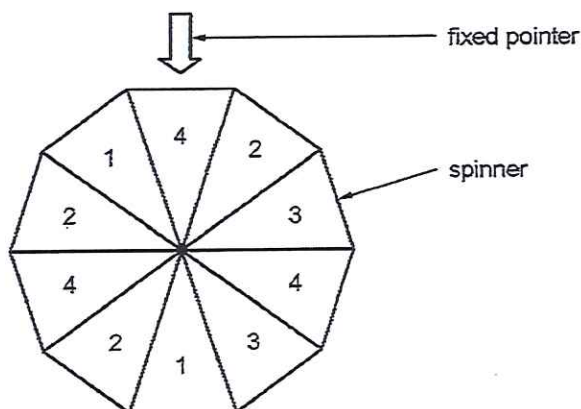
- (c) For lunch, Sam either has a cooked meal or has sandwiches. The probability that Sam has a cooked meal for lunch is $\frac{11}{17}$. What is the probability that he has sandwiches for lunch?

$\frac{6}{17}$

[1]

13.

- (a) A spinner has numbers on each of its equal sections, as shown in the diagram.

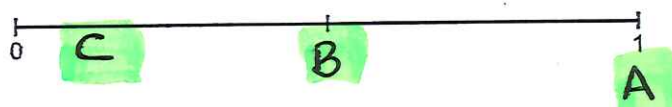


The spinner is spun and the number shown at the fixed pointer when it stops is the result.

On the probability scale shown below, mark the points A, B and C where:

- A is the probability that the result is less than 5,
 B is the probability that the result is more than 2,
 C is the probability that the result is a 3.

[3]



- (b) Choose the best expression from those given below to describe the chance that the number spun is not a 2. [1]

impossible

unlikely

even chance

likely

certain

14.

Sumston School has a total of 600 pupils.
 They each travel to school in only one of four ways: by bus, by car, cycle or walk.

On a given day, when all pupils attended school, the probability that a randomly chosen pupil travelled by bus was 0.6 and the probability that the pupil travelled by car was 0.1.

How many pupils cycled or walked to Sumston School on that day?

[4]

$$P(\text{bus or car}) = 0.7$$

$$\text{so, } P(\text{walked or cycled}) = 1 - 0.7 = 0.3$$

$$0.3 \times 600 = 3 \times 60 =$$

$$= 180 \text{ pupils}$$