Probability – 2021/20 GCSE Mathematics Foundation

1. Nov/2021/Paper_J560/01/No.13

A biased five-sided spinner is numbered 1, 2, 3, 4 and 5.

The table shows the probability of the spinner landing on 1, 2 and 4.

Number	1	2	3	4	5
Probability	0.10	0.10		0.20	

The spinner is four times more likely to land on 5 than on 3.

Complete the table. **[4]**

2. Nov/2021/Paper_J560/01/No.18

Li throws two fair four-sided dice, each numbered 1, 2, 3 and 4.
Li multiplies together the two numbers that the dice land on to produce a score.

Find the probability that Li's score is a prime number.

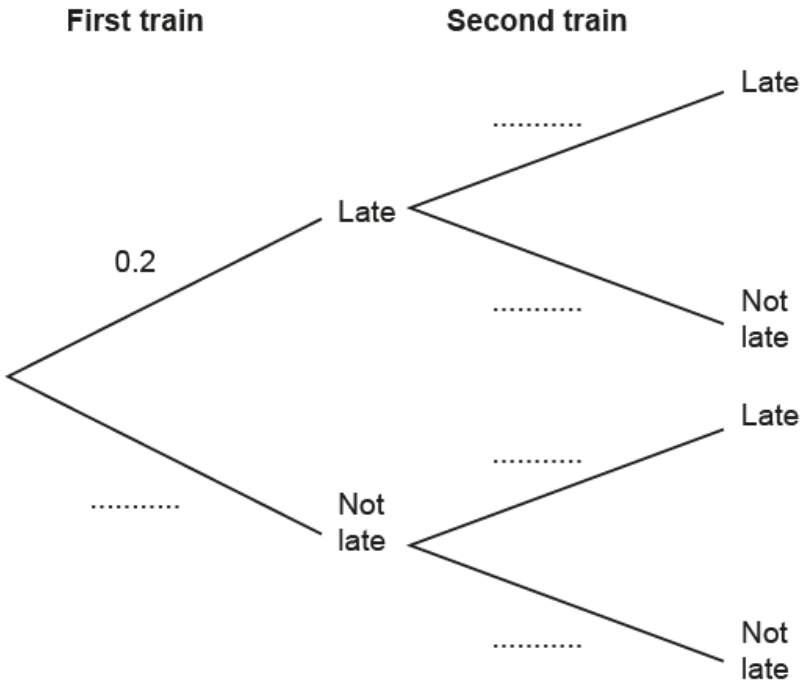
..... **[4]**

3. Nov/2021/Paper_J560/01/No.20

(a) Over a long period of time, it is found that the probability of a train from Bewford to London being late is 0.2.

(i) One morning there are two trains from Bewford to London.

Use the information to complete the tree diagram.



[2]

(ii) Work out the probability that both trains are **not late**.

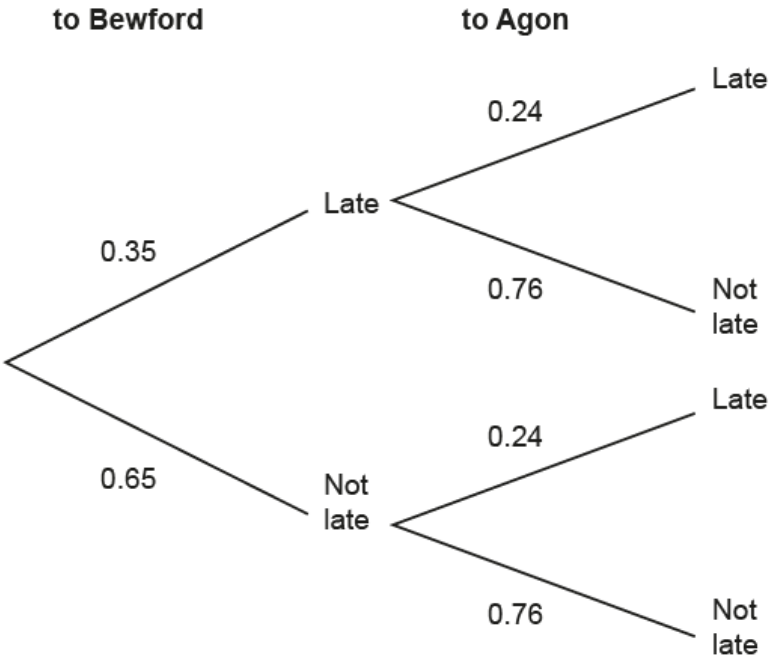
(a)(ii) ..... **[2]**

(iii) Give a reason why the probabilities used in the tree diagram for the second train may **not** be reliable.

.....

..... **[1]**

(b) Morgan takes a train from London to Bewford and then another train to Agon.
The tree diagram shows the probabilities of Morgan's trains being late or not late.



Morgan will **not catch** the train to Agon if the train to Bewford is late and the train to Agon is not late.

Work out the probability that Morgan will **catch** the train to Agon.

(b) ..... **[3]**

4. Nov/2021/Paper_J560/02/No.11

Ali (A), Blake (B), Rowan (R) and Sam (S) are in a relay team.
Sam always runs fourth in the team.
The order for the other three is chosen at random.

(a) Complete this table to show all the possible orders for the team.
The first row has been completed for you.
You may not need to use all the rows.

First	Second	Third	Fourth
A	B	R	S

[2]

(b) Find the probability that Ali will run first.

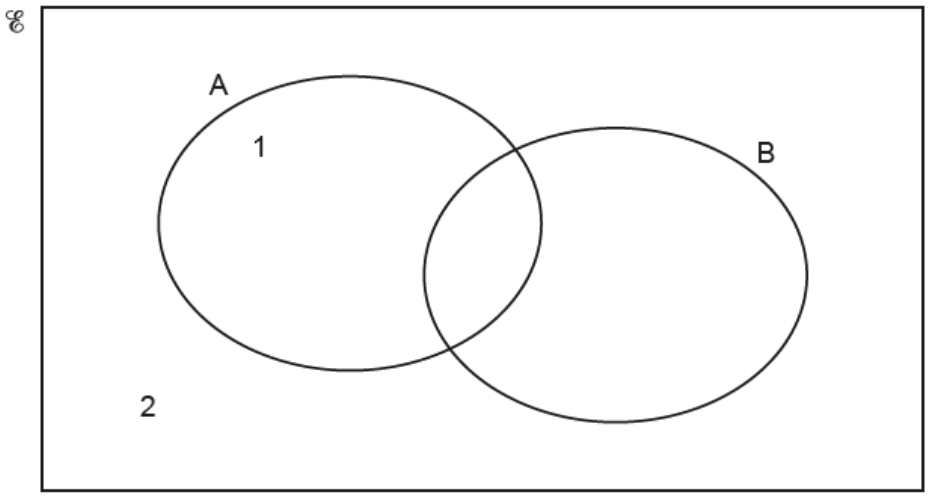
(b) ..... **[2]**

5. Nov/2021/Paper_J560/03/No.9

$\mathscr{E}$ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16}
Set A = {odd numbers}
Set B = {multiples of 5}

(a) The elements 1 and 2 have been entered on this Venn diagram.

Complete the Venn diagram to show **all** of the elements.



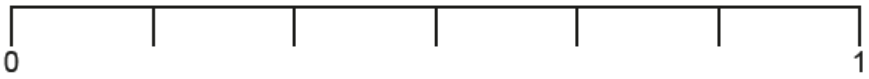
[3]

6. Nov/2020/Paper_J560/01/No.6

A bag contains 12 counters.
6 are red, 4 are blue and 2 are yellow.
A counter is taken from the bag at random.

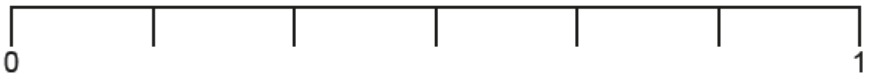
Mark with an arrow (↓) the probability the counter is

(a) red,



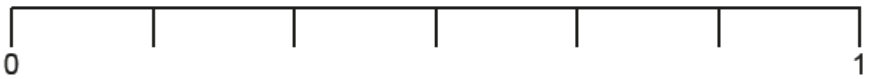
[1]

(b) yellow,



[1]

(c) green.



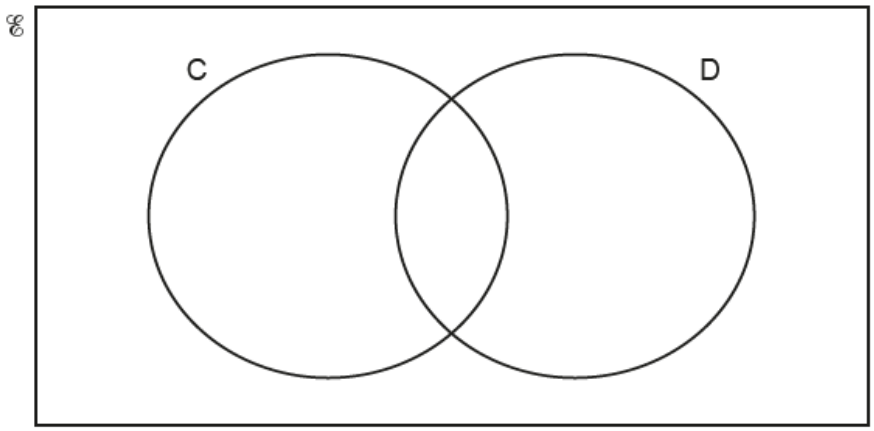
[1]

7. Nov/2020/Paper_J560/01/No.9

59 families are asked whether they have a cat (C) or a dog (D).

- 26 only have a cat.
- 14 only have a dog.
- 11 have both a cat and a dog.

(a) Show this information on the Venn diagram.



[1]

(b) **(i)** How many of the families do not have a cat or a dog?

(b)(i) ..... **[1]**

(ii) Write your answer in the correct place on the Venn diagram. **[1]**

(c) One of the families is chosen at random.

Write down the probability that they have a dog.

(c) ..... **[2]**

8. Nov/2020/Paper_J560/02/No.13

A bag only contains red, blue, yellow and white counters.
A counter is taken at random from the bag.
The table shows the probability it is red and the probability it is blue.

Colour	red	blue	yellow	white
Probability	0.24	0.34		

There are twice as many yellow counters as white counters in the bag.

Complete the table. **[5]**

9. Nov/2020/Paper_J560/02/No.17

Dora has the following number cards.

She takes a card at random, replaces the card and then takes a second card.
She adds the numbers on the two cards she has taken and records the total.

(a) Complete the following table to show all of her possible totals.

Second card \ First card	2	2	3	5	6
2	4	4	5	7	8
2	4	4	5		8
3	5	5		8	9
5	7		8	10	11
6	8	8	9	11	12

[1]

(b) Find the probability that her total is

(i) an even number,

(b)(i) ..... **[2]**

(ii) a multiple of 3 or 4.

(ii) ..... **[2]**

10. Nov/2020/Paper_J560/02/No.22

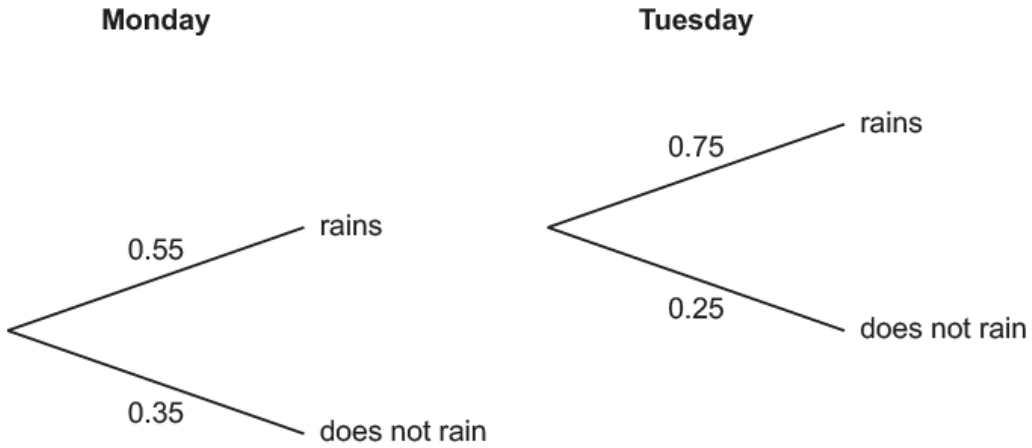
A weather forecast says

- the probability that it will rain on Monday is 0.55

and

- the probability that it will rain on Tuesday is 0.25.

Ella draws a tree diagram to show this information.



Write down three errors that Ella has made with her tree diagram.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

11. Nov/2020/Paper_J560/03/No.9

Mia has knitted 3 left-hand gloves: 1 blue, 1 green, and 1 red.
She has knitted 2 right-hand gloves: 1 green and 1 red.

She chooses a left-hand glove and a right-hand glove at random to make a pair of gloves.

Mia says

I have a probability of $\frac{2}{3}$ of choosing a pair of gloves of the same colour as there is a red pair and a green pair and there are three colours.

Is she correct?
Show how you decide.

Mia is ..... because .....

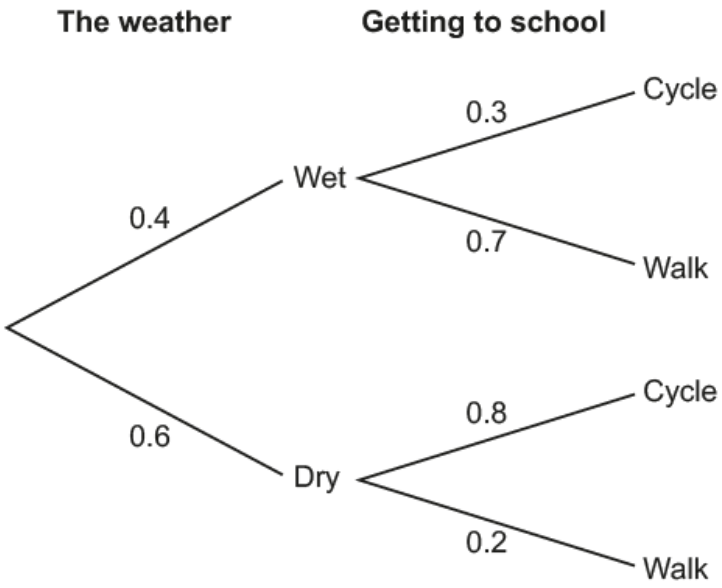
..... **[3]**

12. Nov/2020/Paper_J560/03/No.23

The probability that Adam cycles to school or walks to school depends on the weather.

- On any day, the probability that the weather is wet is 0.4.
- When the weather is wet the probability that he cycles to school is 0.3.
- When the weather is dry the probability that he cycles to school is 0.8.

The information is shown on this tree diagram.



Work out the probability that

(a) it is dry and Adam walks to school,

(a) ..... **[2]**

(b) Adam cycles to school.

(b) ..... **[3]**