Probability – 2021 IGCSE 0580

1. Nov/2021/Paper_11/No.17

The table shows the relative frequency of the games won by a football team.

Result of game	won	lost	drawn
Relative frequency	0.1		

The number of games lost is twice the number of games drawn.

Complete the table.

[3]

2. Nov/2021/Paper_12/No.24

Yasmin has 4 white flowers, 3 red flowers and x yellow flowers.
She picks a flower at random.

The probability that it is white is $\frac{1}{5}$.

Find the probability that it is yellow.

..... [4]

3. Nov/2021/Paper_13/No.5

Cheng spins a fair 6-sided spinner numbered 1 to 6.

On the probability scale, draw an arrow (↓) to show the probability that the spinner lands on 4.

[1]

4. Nov/2021/Paper_13/No.9

The probability that it rains tomorrow is 0.47 .

Find the probability that it does not rain tomorrow.

..... [1]

5. Nov/2021/Paper_21/No.5

The table shows the relative frequency of the games won by a football team.

Result of game	won	lost	drawn
Relative frequency	0.1		

The number of games lost is twice the number of games drawn.

Complete the table.

[3]

6. Nov/2021/Paper_22/No.7

Katy has 5 white flowers, x red flowers and $(2x+1)$ yellow flowers.
She picks a flower at random.

The probability that it is white is $\frac{1}{12}$.

Find the probability that it is yellow.

..... [4]

7. Nov/2021/Paper_22/No.16

Sachin picks a number at random from the first three multiples of 3.
He then picks a number at random from the first three prime numbers.
He adds the two numbers to find a score.

(a) Complete the table.

		Multiples of 3		
		3		9
Prime numbers	2	5		11
	3	6		

[2]

(b) Given that the score is even, find the probability that one of the numbers he picks is 9.

..... [2]

8. Nov/2021/Paper_31/No.3

360 people go on a school trip to one of four places.
Some of the information is shown in the table.

	Adventure park	Botanic gardens	Wildlife centre	Red castle	Total
Boys	65	12		36	
Girls		9	62		163
Staff	15	3			37
Total	144	24	121	71	360

(a) Complete the table. [3]

(b) Find the probability that

(i) a girl, picked at random, visits the Wildlife centre,

..... [1]

(ii) a person, picked at random from those visiting the Botanic gardens, is a girl,

..... [1]

(iii) a person, picked at random, visits the Adventure park or the Botanic gardens.

..... [1]

(c) The people who visit the Adventure park travel by coach.
Each coach has 52 seats for passengers.

Complete this statement.

The least number of coaches needed for the trip to the Adventure park is ..... and there will be a total of ..... empty seats.

[2]

(d) The school hires one coach from each of two different companies for the trip to Red castle.

A coach from Fast Track coaches costs \$600 plus \$0.72 per kilometre travelled.
The total cost, in dollars, for travelling x kilometres is $600 + 0.72x$.

(i) A coach from Rapid coaches costs \$550 plus \$1.12 per kilometre travelled.

Write an expression for the total cost, in dollars, for travelling x kilometres.

..... [1]

(ii) Both companies charge the same amount for the trip.

Write down an equation and solve it to find the distance travelled.

..... km [3]

(e) The length, l km, of the journey to the Wildlife centre is 53 km, correct to the nearest kilometre.

Complete this statement about the value of l.

..... $\leqslant l <$ ..... [2]

(f) Samira takes \$31.50 to spend in the Botanic gardens.

(i) She spends $\frac{2}{7}$ of this money on food.

Work out how much Samira spends on food.

\$ ..... [1]

(ii) At the end of the visit to the Botanic gardens, Samira has \$4.50 left.

What fraction of her money does Samira spend?
Give your answer in its simplest form.

..... [2]

9. Nov/2021/Paper_43/No.10

(a) Sarah spins a fair four-sided spinner numbered 0, 1, 1 and 3.

(i) What number is the spinner most likely to land on?

..... [1]

(ii) Sarah spins the spinner twice.

Find the probability that it lands on the number 1 both times.

..... [2]

(iii) Sarah spins the spinner until it lands on the number 3.

The probability that this happens on the nth spin is $\frac{729}{16384}$.

Find the value of n.

$n =$ ..... [2]

(b) Scott takes an examination.
The examination is in two parts, a theory test and a practical test.
Both parts must be passed to pass the examination.

The probability that Scott passes the theory test is 0.9 .
The probability that Scott passes the practical test is 0.8 .

Find the probability that

(i) Scott passes the examination,

..... [2]

(ii) Scott passes the theory test or the practical test but not both.

..... [3]

10. March/2021/Paper_42/No.4

(a) A shop gives each of 1000 people a voucher.
28 people use their voucher.
The shop now gives each of 16 500 people a voucher.

Calculate how many of these 16 500 people are expected to use their voucher.

..... [1]

(b) In a class activity, all the 15 students wear hats.
7 students wear red hats, 6 students wear green hats and 2 students wear white hats.

(i) One of these students is picked at random.

Find the probability that this student wears a red hat.

..... [1]

(ii) Two of the 15 students are picked at random.

Show that the probability that these two students wear hats of the same colour is $\frac{37}{105}$.

[3]

(iii) Three of the 15 students are picked at random.

Find the probability that at least two of these three students wear red hats.

..... [4]

11. June/2021/Paper_11/No.7

The probability that a train is late is 0.15 .

Write down the probability that the train is not late.

..... [1]

12. June/2021/Paper_12/No.10

The probability that Jane wins a game is $\frac{7}{10}$.

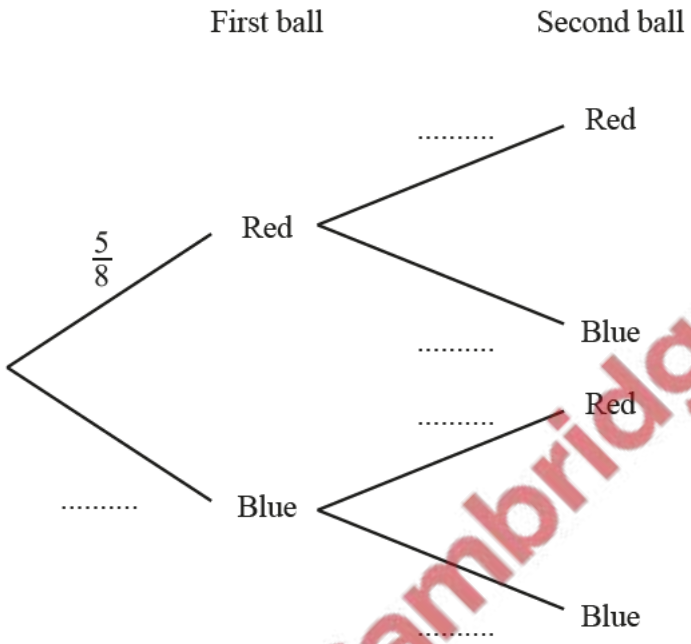
Find the probability that Jane does not win the game.

..... [1]

13. June/2021/Paper_12/No.19

A bag contains 5 red balls and 3 blue balls.
Sophie takes a ball at random, notes its colour and then puts it back in the bag.
She does this a second time.

(a) Complete the tree diagram.



[2]

(b) Work out the probability that both of the balls she takes are blue.

..... [2]

14. June/2021/Paper_13/No.12

Francesca spins a four-sided spinner numbered 1, 2, 3 and 4.
The table shows some of the probabilities of landing on each number.

Number	1	2	3	4
Probability	0.18	0.21	0.37	

Complete the table.

[2]

15. June/2021/Paper_21/No.2

The probability that a train is late is 0.15 .

Write down the probability that the train is not late.

..... [1]

16. June/2021/Paper_21/No.17

A bag contains 3 blue buttons, 8 white buttons and 5 red buttons.
Two buttons are picked at random from the bag, without replacement.

Work out the probability that the two buttons are either both red or both white.

..... [3]

17. June/2021/Paper_22/No.1

The probability that Jane wins a game is $\frac{7}{10}$.

(a) Find the probability that Jane does not win the game.

..... [1]

(b) Jane plays this game 50 times.

Find the number of times she is expected to win the game.

..... [1]

18. June/2021/Paper_23/No.26

Malik goes to a shop every day to buy bread.

On any day, the probability that Malik goes to the shop in the morning is 0.7 .

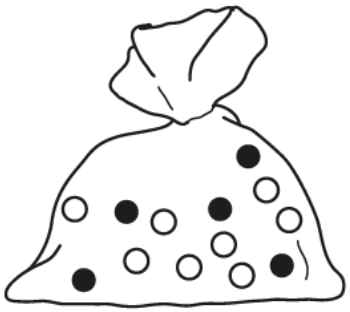
If he goes in the morning, the probability that there is bread for Malik to buy is 0.95 .
If he goes later, the probability that there is bread for Malik to buy is 0.6 .

Calculate the probability that, on any day, there is bread for Malik to buy.

..... [3]

(b)

Bag *A*



Bag *B*

Bag *A* contains 2 black marbles and 3 white marbles.
Bag *B* contains 5 black marbles and 8 white marbles.

(i) Write down the probability that a marble picked at random from bag *A* is black.

..... [1]

(ii) Toby says,

'You are more likely to pick a black marble at random from bag *B* than from bag *A* because bag *B* has more black marbles.'

Is Toby correct?
Give a reason for your answer.

..... because ..... [2]

(iii) Toby adds some marbles to bag *B*.
The probability of picking a black marble at random from either bag is now the same.

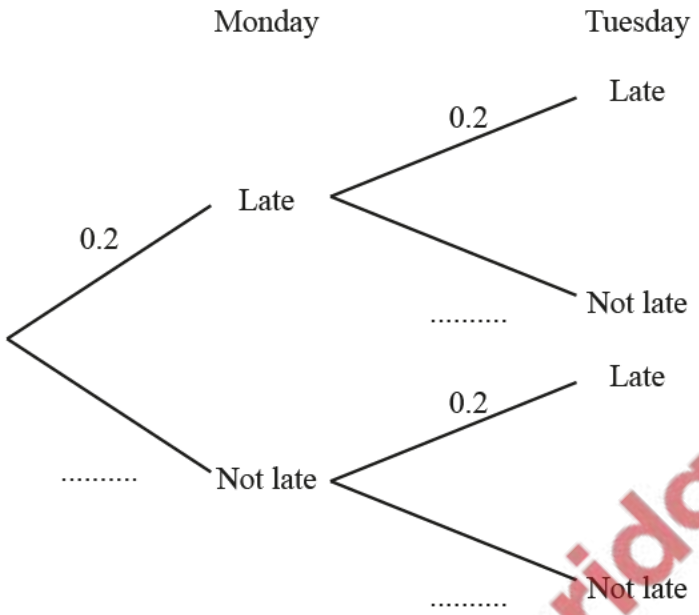
Work out the smallest number of black marbles and white marbles he adds to bag *B*.

Black .....

White ..... [2]

20. June/2021/Paper_33/No.8b

(b) On Monday and Tuesday, the probability that a train is late is 0.2 .



(i) Complete the tree diagram. [1]

(ii) Use the tree diagram to find the probability that a train is

(a) late on both days,

..... [2]

(b) not late on Monday and late on Tuesday.

..... [2]