



Name: _____ Date: _____ Score: _____ / 53

- 1 A bistro menu has 5 starters, 8 main courses and 4 desserts.
Callum chooses one starter, one main course and one dessert.
Work out the number of different three-course meals Callum can choose. (2 marks)

Answer _____

- 2 A bag contains 4 green counters, 7 yellow counters and 9 white counters.
A counter is taken from the bag at random.
Find the probability that the counter is **not** green. (2 marks)

Answer _____

- 3 A spinner can land on red, blue or green only.
 $P(\text{red}) = 0.3$ and $P(\text{blue}) = 0.25$.
a. Work out the probability that the spinner lands on red or blue.
b. Work out the probability that the spinner lands on green. (3 marks)

Answer _____

- 4 Two fair spinners are each numbered 1, 2, 3 and 4.

Both spinners are spun and the two scores are added together.

+	1	2	3	4
1	2	3		
2	3			
3			6	
4				

- Complete the sample space diagram.
- Work out the probability that the total is 5
- Work out the probability that the total is greater than 6

(4 marks)

Answer _____

- 5 Twelve cards are numbered 1 to 12. One card is taken at random.

Event A: the number is even.

Event B: the number is a multiple of 5

Event C: the number is an odd prime number.

- Write down two of the events that are mutually exclusive. Give a reason for your answer.
- Work out the probability that the number is even or an odd prime number.
- Leah says, " $P(A \text{ or } B) = P(A) + P(B)$ ". Explain why Leah is wrong.

(4 marks)

Answer _____

- 6 A four-sided spinner can land on 1, 2, 3 or 4.

The table shows some of the probabilities.

Number	1	2	3	4
Probability	0.2	0.35	0.15	

- a. Work out the probability that the spinner lands on 4.
- b. The spinner is spun 200 times. Work out an estimate for the number of times it lands on 4.

(4 marks)

Answer _____

- 7 Zainab and Theo play a game with two fair six-sided dice.

They roll both dice and multiply the two scores.

Zainab wins if the answer is even.

Theo wins if the answer is odd.

- a. Show that the game is not fair.
- b. They play the game 60 times. Work out the number of games Theo should expect to win.
- c. Theo actually wins 18 of the 60 games. Kemi says, "The dice must be biased." Is Kemi right? Give a reason for your answer.

(4 marks)

Answer _____

8

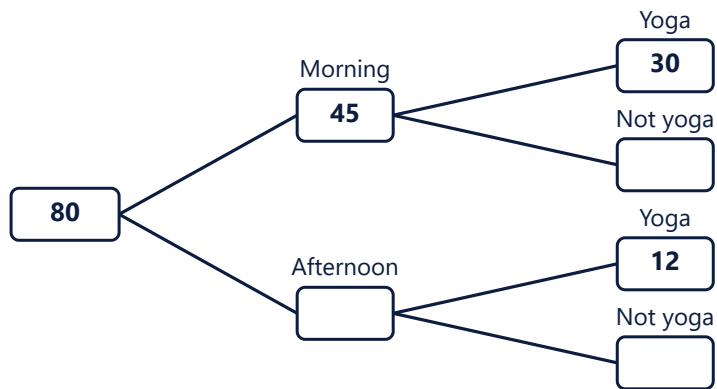
80 adults went to a gym on Saturday.

45 of the adults went to a morning class. The rest went to an afternoon class.

Of the adults at the morning class, 30 did yoga.

Of the adults at the afternoon class, 12 did yoga.

- Complete the frequency tree.
- One of the 80 adults is chosen at random. Find the probability that this adult went to the morning class and did yoga.



(4 marks)

Answer _____

9

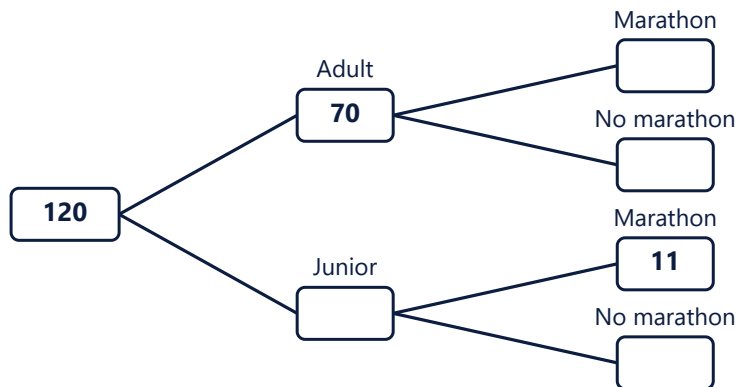
A running club has 120 members. Each member is an adult or a junior.

70 of the members are adults. The rest are juniors.

$\frac{2}{5}$ of the adults ran a marathon last year.

11 of the juniors ran a marathon last year.

- Work out the number of juniors in the club.
- Work out the number of adults who ran a marathon last year.
- One of the members who ran a marathon last year is chosen at random. Work out the probability that this member is a junior.



(5 marks)

Answer _____

10

The passcode for a tablet is a 4 digit number.

The first digit cannot be 0.

Digits may repeat.

- Work out the number of different passcodes that are possible.
- Ruby does not know the passcode. She types one 4 digit number at random, with a non-zero first digit. Write down the probability that Ruby types the correct passcode.

(3 marks)

Answer _____

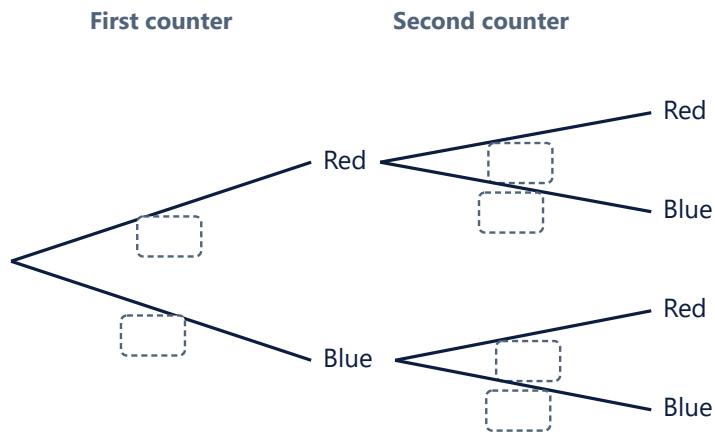
11

A bag contains 3 red counters and 7 blue counters.

Kira takes a counter at random, notes its colour and puts it back.

She then takes a second counter at random.

- Complete the probability tree diagram for the two picks.
- Work out the probability that both counters are blue.



(3 marks)

Answer _____

EXTENSION QUESTIONS

12

80 Year 9 pupils were asked if they play chess. The two-way table shows some of the results.

	Chess	No chess	Total
Boys	12		48
Girls		24	
Total			80

- Complete the two-way table.
- One of the girls is chosen at random. Work out the probability that she plays chess.
- Are the events "the pupil is a girl" and "the pupil plays chess" independent? You must show your working.

(5 marks)

Answer _____

13

There are 60 pupils in Year 9.

25 pupils play an instrument (I).

18 pupils sing in the choir (C).

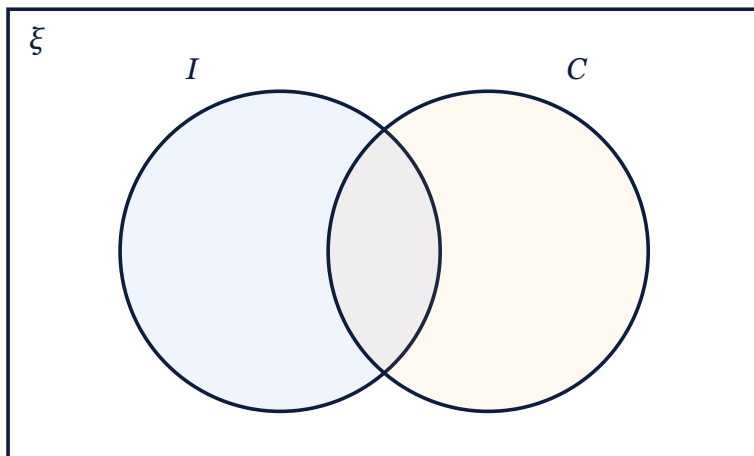
7 pupils play an instrument and sing in the choir.

a. Complete the Venn diagram.

b. One of the 60 pupils is chosen at random. Find $P(I \cap C')$.

c. Find $P(I')$.

d. A pupil who sings in the choir is chosen at random. Work out the probability that this pupil also plays an instrument.



(5 marks)

Answer

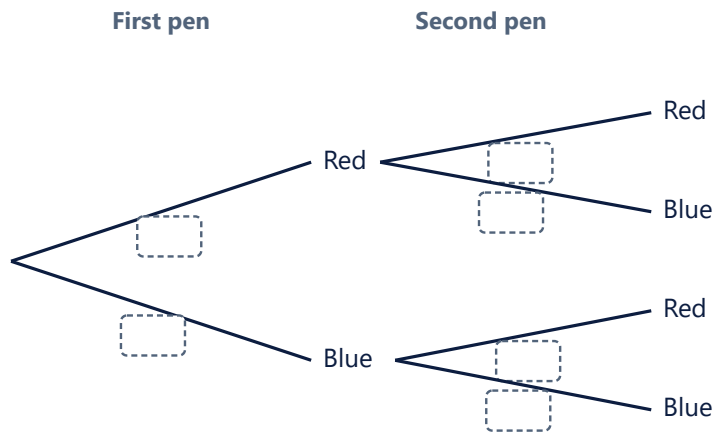
14

A box contains 5 red pens and 4 blue pens.

Milo takes a pen at random and does **not** replace it.

He then takes a second pen at random.

- Complete the probability tree diagram.
- Work out the probability that Milo takes at least one red pen.



(5 marks)

Answer

End of questions | Total 53 marks