

Conditional Probability

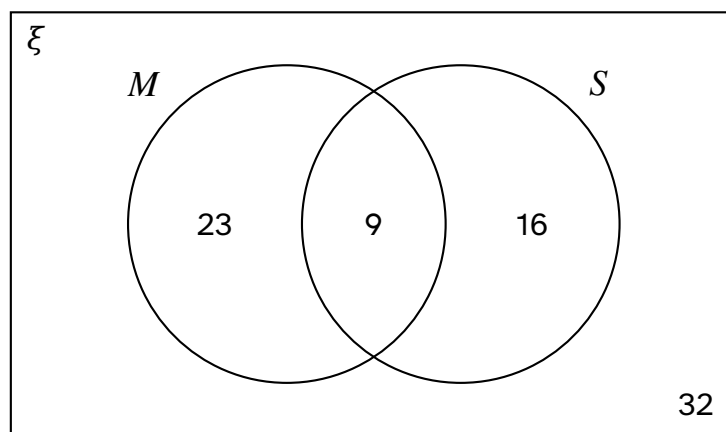
For Pearson Edexcel GCSE Mathematics (1MA1) • Higher tier

Name _____

Total marks: **29**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

- 1** 80 students were asked if they play a musical instrument (M) or sing in a choir (S). The Venn diagram shows the results.



- (a) One of the students is chosen at random.
Write down the probability that this student does not play an instrument and does not sing in a choir.

.....
(1)

- (b) One of the students who sing in a choir is chosen at random.
Work out the probability that this student also plays an instrument.

.....
(2)

(Total for Question 1 is 3 marks)

- 2** There are 12 sweets in a bag: 5 are toffees and 7 are mints.
Ali takes a sweet at random and eats it. He then takes another sweet at random and eats it.
Work out the probability that he eats at least one toffee.

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(3)

(Total for Question 2 is 3 marks)

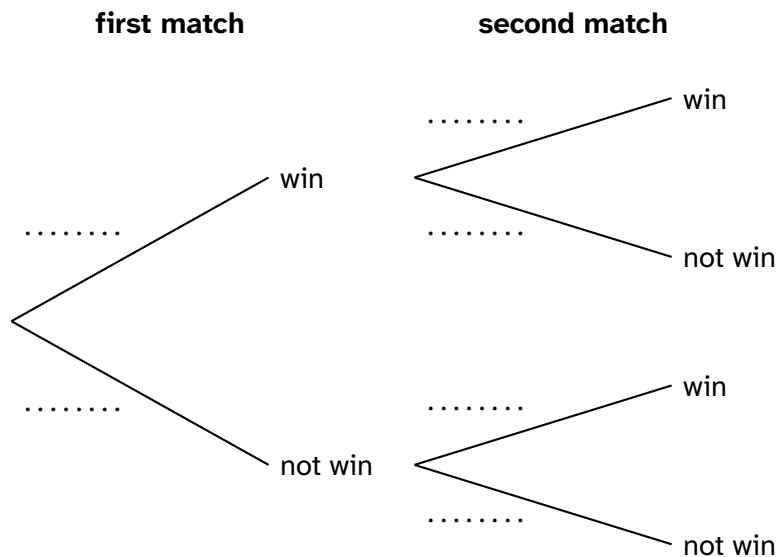
- (a) Complete the probability tree diagram.



- (3)

- 4 Ruby plays two matches of table tennis against Alex.
 The probability that Ruby wins the first match is 0.55
 If Ruby wins the first match, the probability that she does not win the second is 0.3
 If Ruby does not win the first match, the probability that she wins the second is 0.4

(a) Complete the probability tree diagram for this information.



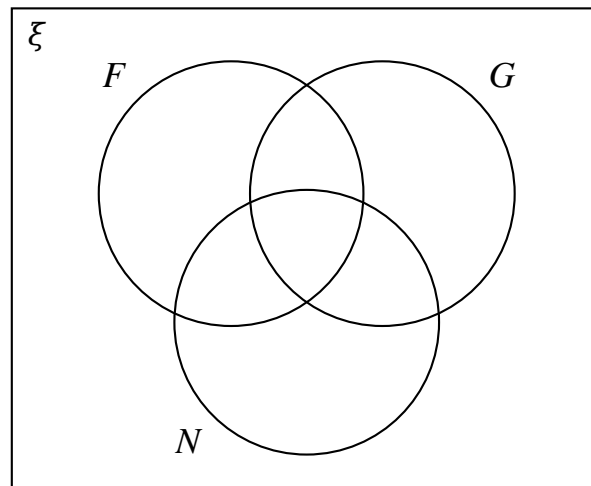
(2)

- (b) Ruby won exactly one of the two matches.
 Work out the probability that it was the first match that she won.
 You must show your working.

.....
 (3)

(Total for Question 4 is 5 marks)

- 5** There are 120 students in a year group.
 Some belong to the football club (F), the gym club (G) or the netball club (N).
 6 students belong to all three clubs.
 10 students belong to the football club and the gym club but not the netball club.
 13 students belong to the gym club and the netball club.
 45 students belong to the football club.
 41 students belong to the gym club.
 37 students belong to the netball club.
 30 students do not belong to any of these clubs.
- (a) Complete the Venn diagram for this information.



(4)

- (b) A student who belongs to exactly two of the clubs is chosen at random.
 Find the probability that one of these clubs is the gym.

.....
 (2)

(Total for Question 5 is 6 marks)

- 6** There are 14 marbles in a jar.
 r of the marbles are red and the rest are blue.
 Bella takes at random two marbles from the jar without replacement.
 The probability that Bella takes two marbles of the same colour is $\frac{46}{91}$

(a) Show that $r^2 - 14r + 45 = 0$

(4)

- (b) There are more red marbles than blue marbles in the jar.
 Work out the probability that the first marble Bella takes is blue and the second marble is red.

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 (3)

(Total for Question 6 is 7 marks)