

Conditional Probability

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **27**

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

- 1** The table shows how 100 students travel to school.

	Walk	Bus	Car	Total
Girls	18	22	10	50
Boys	25	15	10	50

A student is chosen at random.

- (a) Given that the student is a girl, work out the probability that she walks to school.
[1 mark]

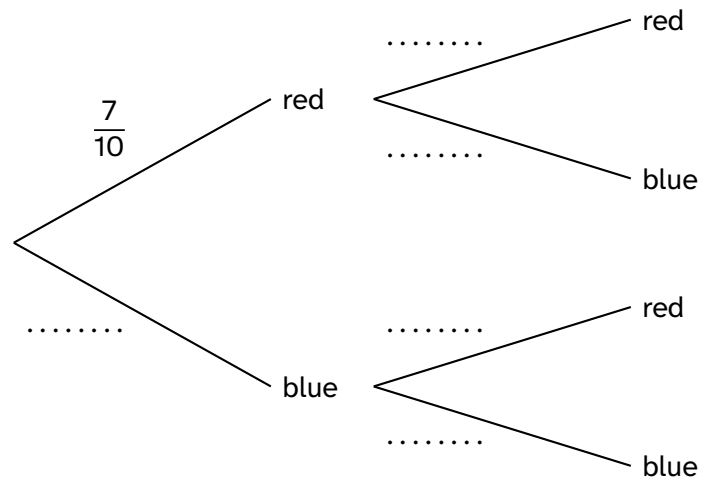
Answer _____

- (b) Given that the student travels by car, work out the probability that the student is a boy.
[1 mark]

Answer _____

- 2** A bag contains 7 red and 3 blue counters.
Two counters are taken at random without replacement.

(a) Complete the tree diagram.



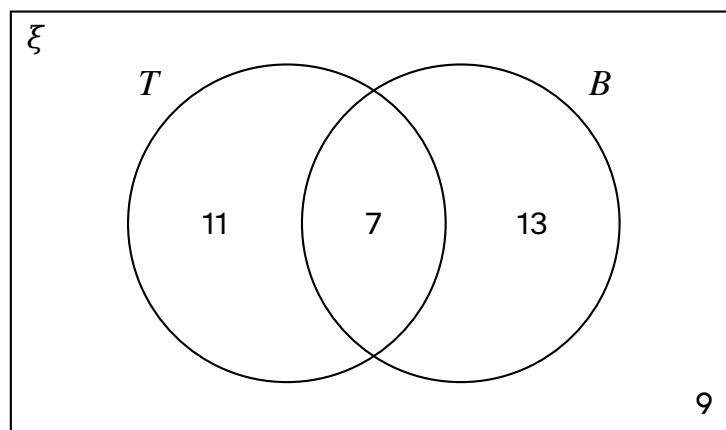
[2 marks]

- (b) Work out the probability that both counters are the same colour.

[3 marks]

Answer _____

- 3 The Venn diagram shows information about the 40 members of a sports club.
 T = members who play tennis B = members who play badminton



- (a) A member who plays badminton is chosen at random.
Work out the probability that this member also plays tennis.

[1 mark]

Answer _____

- (b) A member who plays exactly **one** of the two sports is chosen at random.
Work out the probability that this member plays tennis.

[1 mark]

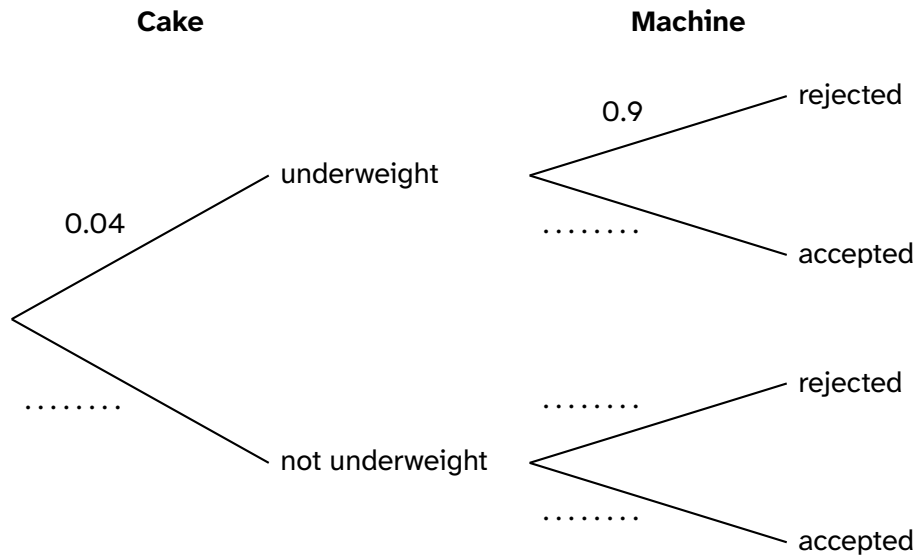
Answer _____

- (c) Sam says,
 "The probability that a badminton player also plays tennis is the same as the probability that a tennis player also plays badminton."
Is Sam correct?
You must show your working.

[2 marks]

- 4** At a bakery, 4% of the cakes made are underweight.
 A machine checks every cake.
 If a cake is underweight, the probability that the machine rejects it is 0.9
 If a cake is not underweight, the probability that the machine rejects it is 0.05

(a) Complete the tree diagram.



[2 marks]

- (b) A cake is chosen at random.
 Work out the probability that the machine rejects it.

[3 marks]

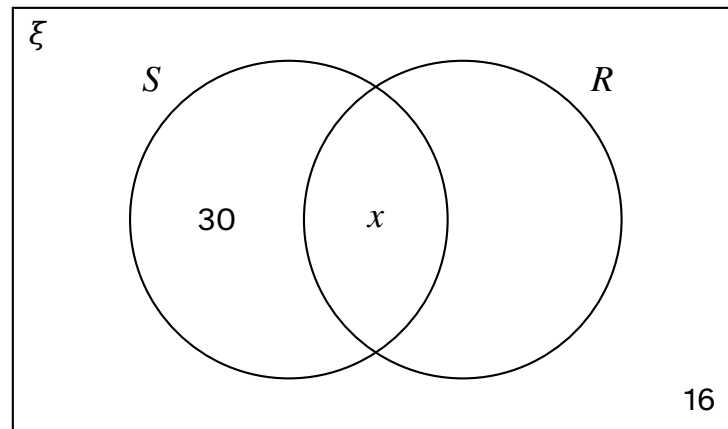
Answer _____

- 5 The Venn diagram shows information about the 90 members of a gym.

ξ = 90 members

S = members who swim

R = members who run



A member who swims is chosen at random.

The probability that this member also runs is $\frac{1}{4}$

A member who runs is chosen at random.

Work out the probability that this member also swims.

[4 marks]

Answer _____

- 6** A choir has 12 singers.
 n of the singers are sopranos.
There are fewer sopranos than other singers.
Two of the singers are chosen at random to sing a duet.
The probability that exactly one of the two singers is a soprano is $\frac{16}{33}$

Work out the value of n .
You must show your working.

[4 marks]

$n =$ _____

- 7** A tin contains 12 biscuits.
5 are chocolate, 4 are plain and 3 are ginger.
Dev takes two biscuits at random from the tin without replacement.

Given that the two biscuits are the same type, work out the probability that they are both chocolate.

[3 marks]

Answer _____