

Venn Diagrams and Set Notation

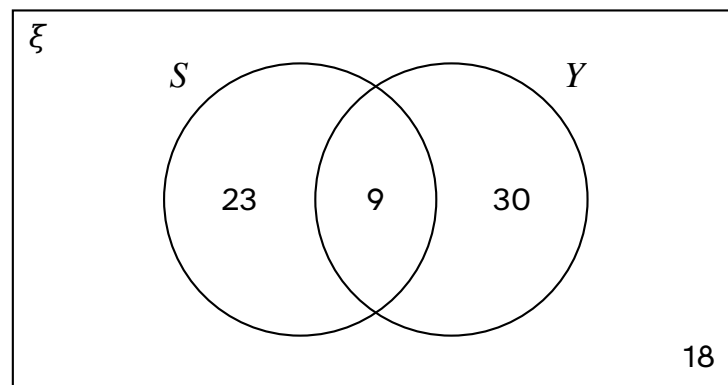
For AQA GCSE Mathematics (8300) • Foundation tier

Name _____

Total marks: **28**

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

- 1 The Venn diagram shows information about the 80 members of a gym.
 S = members who swim Y = members who do yoga



- (a) How many of the members do yoga?

[1 mark]

Answer _____

- (b) How many of the members do **exactly one** of the two activities?

[1 mark]

Answer _____

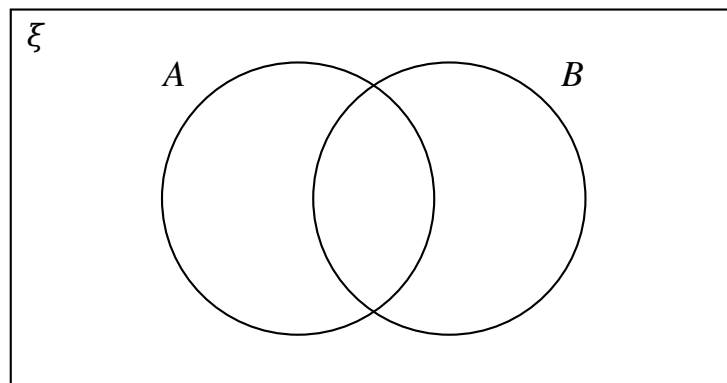
- (c) One of the members is chosen at random.
Write down the probability that the member does **not** swim.

[1 mark]

Answer _____

- 2** $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$
 $A = \text{factors of } 20$
 $B = \text{odd numbers}$

(a) Complete the Venn diagram.



[3 marks]

- (b) A number is chosen at random from ξ .
Write down the probability that the number is in $A \cap B$.

[1 mark]

Answer _____

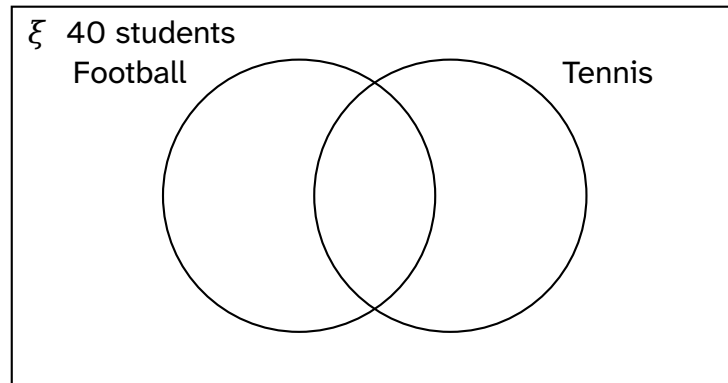
- (c) List the numbers in $A \cup B$.

[1 mark]

Answer _____

- 3** There are 40 students in a club.
25 of the students play football.
18 of the students play tennis.
7 of the students play both football and tennis.

(a) Complete the Venn diagram to show this information.



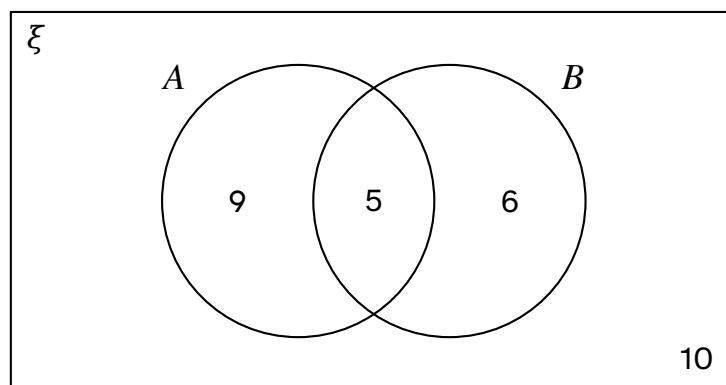
[3 marks]

- (b) One of the students is picked at random.
Work out the probability that the student plays exactly one of the sports.

[2 marks]

Answer _____

- 4 The Venn diagram shows the number of elements in each region.



- (a) How many elements are in $A \cup B$?

[1 mark]

Answer _____

- (b) A member of ξ is chosen at random.
Write down $P(B')$, the probability that it is **not** in B .

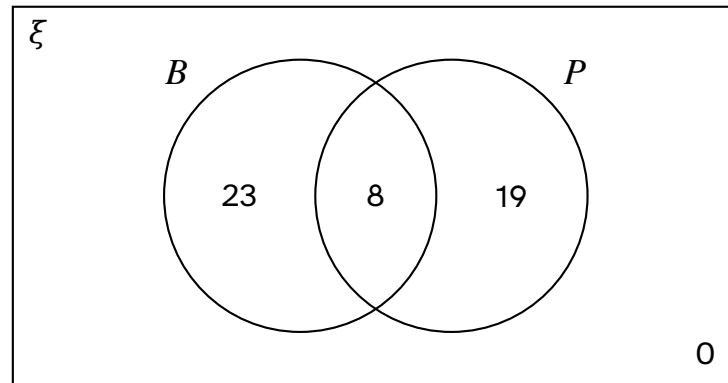
[1 mark]

Answer _____

- 5 There are 50 guests in a hotel.
23 of the guests had breakfast in the hotel.
19 of the guests used the pool.
8 of the guests had breakfast and used the pool.

Leah draws this Venn diagram.

ξ = 50 guests B = had breakfast P = used the pool



- (a) Explain the mistake Leah has made.

[1 mark]

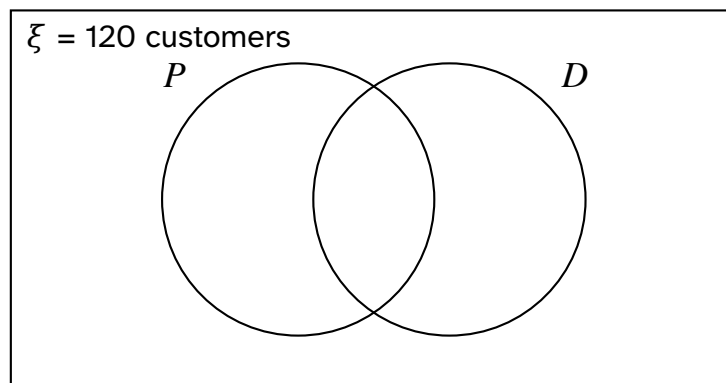
- (b) Work out how many of the guests did neither.

[1 mark]

Answer _____

- 6 A cinema asked 120 customers what they bought.
 40% of the customers bought popcorn.
 38 customers bought a drink.
 55 customers bought neither popcorn nor a drink.
 $\xi = 120$ customers
 P = customers who bought popcorn
 D = customers who bought a drink

Complete this Venn diagram to represent the information.

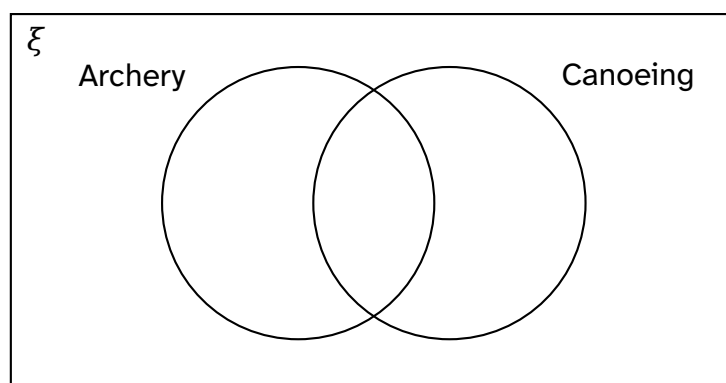


[3 marks]

- 7 At a summer camp, every child did archery or canoeing or both.
 45 children did archery only.
 28 children did canoeing only.
 One third of the children who did canoeing also did archery.

How many children were at the camp?

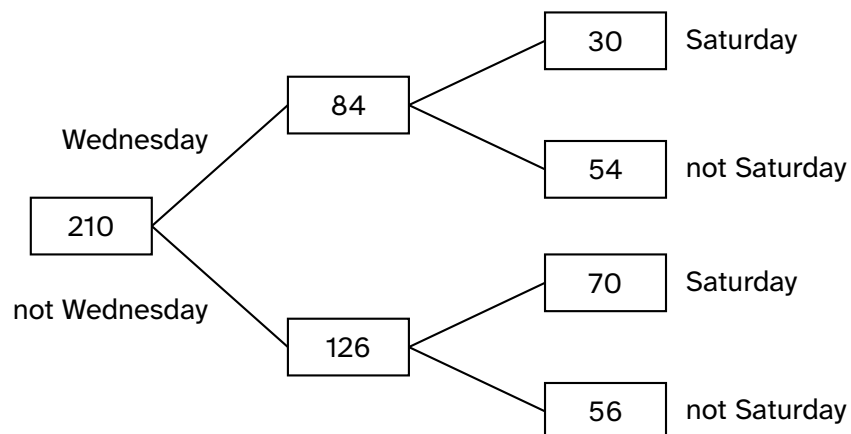
You can use the Venn diagram for your working.



[4 marks]

Answer _____

- 8 A walking group has 210 members.
One week, the group organised a walk on Wednesday and a walk on Saturday.
The frequency tree shows how many members went on the walks.

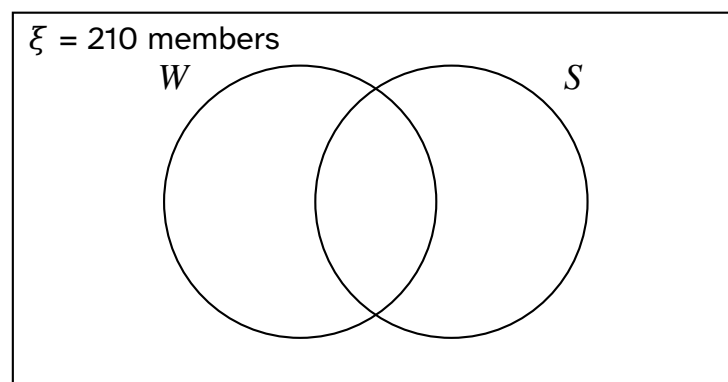


ξ = 210 members

W = members who went on the Wednesday walk

S = members who went on the Saturday walk

Show the information on the Venn diagram.



[4 marks]