



Name: _____ **Date:** _____ **Score:** _____ / 59

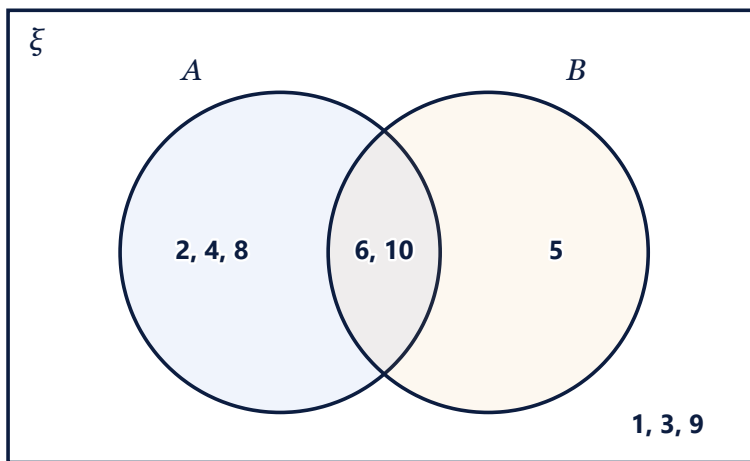
1 $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$A = \{\text{even numbers}\}$ $B = \{\text{multiples of 5}\}$

Kim draws a Venn diagram. She puts:

2, 4, 8 in A only 6, 10 in the intersection of A and B 5 in B only 1, 3, 9 outside both circles.

Write down **two** mistakes Kim has made.



(2 marks)

Answer _____

2 $A = \{\text{factors of 12}\}$ $B = \{\text{factors of 18}\}$

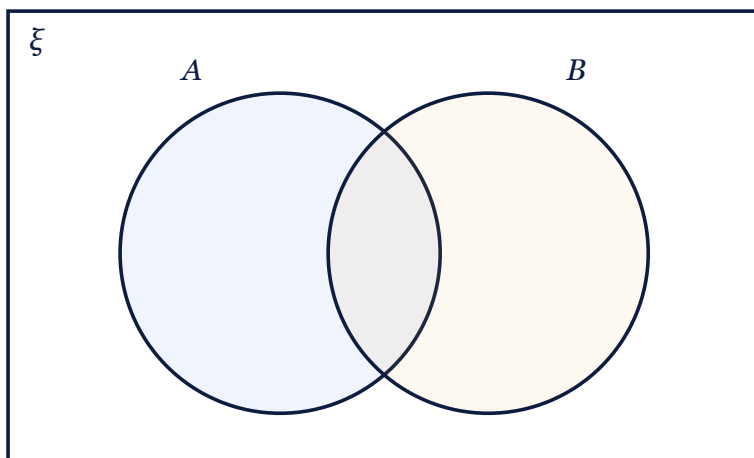
a. List the members of $A \cap B$.

b. Is 9 a member of $A \cup B$? Give a reason for your answer.

(3 marks)

Answer _____

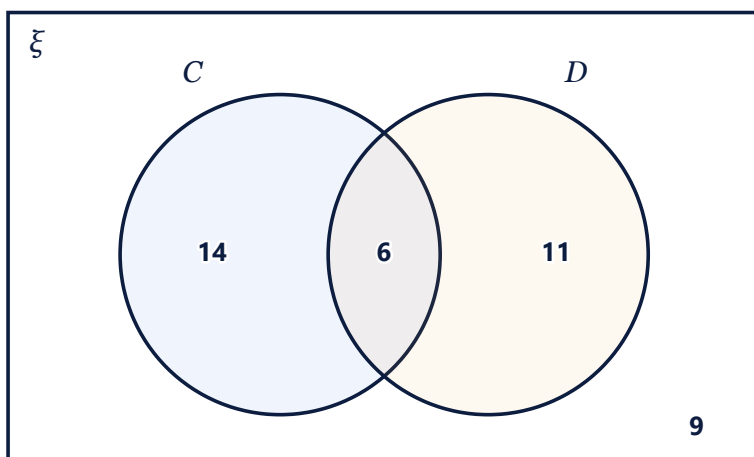
- 3 $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$
 $A = \{\text{multiples of 3}\}$ $B = \{\text{even numbers}\}$
 Complete the Venn diagram.



(3 marks)

Answer _____

- 4 40 people were asked whether they drink coffee (C) and whether they drink tea (D).
 14 drink coffee only, 6 drink both, 11 drink tea only and 9 drink neither.
 One of the 40 people is chosen at random.
 a. Find the probability that this person drinks both coffee and tea.
 b. Find the probability that this person drinks coffee or tea or both.



(3 marks)

Answer _____

5

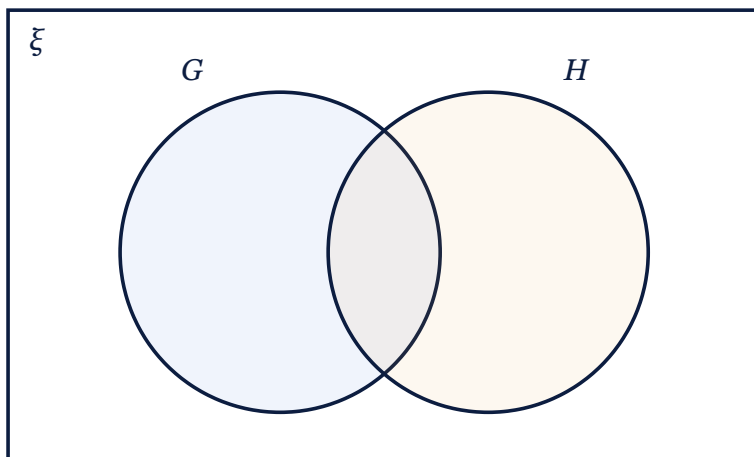
There are 50 students in a year group.

23 study geography (G).

19 study history (H).

8 study both geography and history.

Complete the Venn diagram to show the number of students in each region.



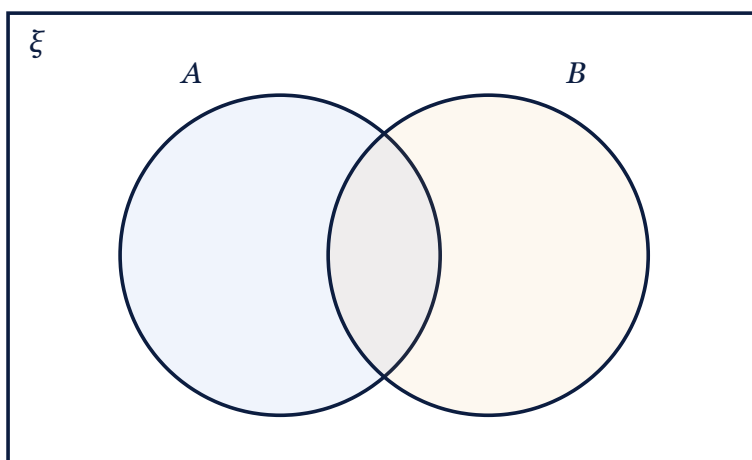
(4 marks)

Answer

6 $\xi = \{\text{odd numbers between 0 and 20}\}$

$A = \{\text{multiples of 3}\}$ $B = \{\text{numbers less than 10}\}$

Draw a Venn diagram to show the sets A and B , putting every member of ξ in the correct region.



(4 marks)

Answer _____

7 $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20\}$

$A = \{\text{prime numbers}\}$ $B = \{\text{odd numbers}\}$

a. Write down the numbers that go in each region of a Venn diagram: A only, A and B , B only, and neither.

b. A number is chosen at random from ξ . Find the probability that it is in $A \cap B$.

(4 marks)

Answer _____

8

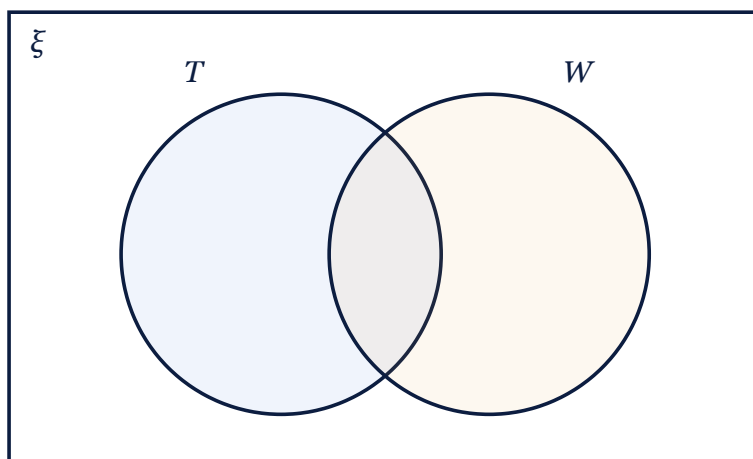
A gym has 80 members.

47 members use the treadmill (T).

39 members use the weights (W).

21 members use both the treadmill and the weights.

- Complete the Venn diagram to show the number of members in each region.
- One of the 80 members is chosen at random. Work out the probability that this member uses neither the treadmill nor the weights.



(5 marks)

Answer

9

60 people were asked whether they have a dog (D) or a cat (C).

32 people have a dog.

27 people have a cat.

11 people have both a dog and a cat.

- a. Work out the number of people who have a dog but not a cat.
- b. Work out the number of people who have neither a dog nor a cat.
- c. One of the 60 people is chosen at random. Work out the probability that this person has a dog but not a cat.

(5 marks)

Answer

10 The Venn diagram regions for sets A and B contain these numbers of people:

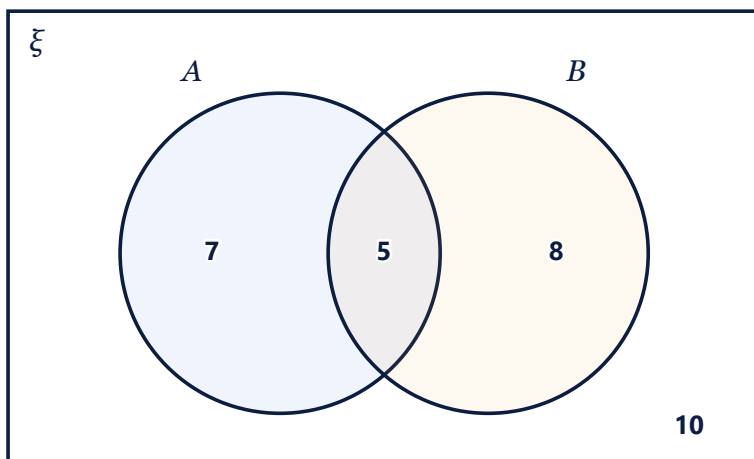
A only: 7 $A \cap B$: 5 B only: 8 outside both: 10

One of the people is chosen at random.

a. Find $P(A \cap B)$.

b. Find $P(A')$.

c. Find $P(A \cup B)$.



(5 marks)

Answer _____

11 $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$

$A = \{\text{even numbers}\}$ $B = \{\text{factors of 12}\}$

a. List the members of $A' \cap B$.

b. List the members of $(A \cup B)'$.

c. A number is chosen at random from ξ . Find the probability that it is in $A \cap B'$.

(4 marks)

Answer _____

12 100 people went to a music festival.

58 saw band X.

45 saw band Y.

23 saw both bands.

- a. Work out the number of people who saw neither band.
- b. One person who saw band X is chosen at random. Work out the probability that this person also saw band Y.

(5 marks)

Answer _____

13

80 students were asked which sports they play from football (F), rugby (R) and cricket (C).

4 students play all three sports.

12 students play football and rugby.

10 students play football and cricket.

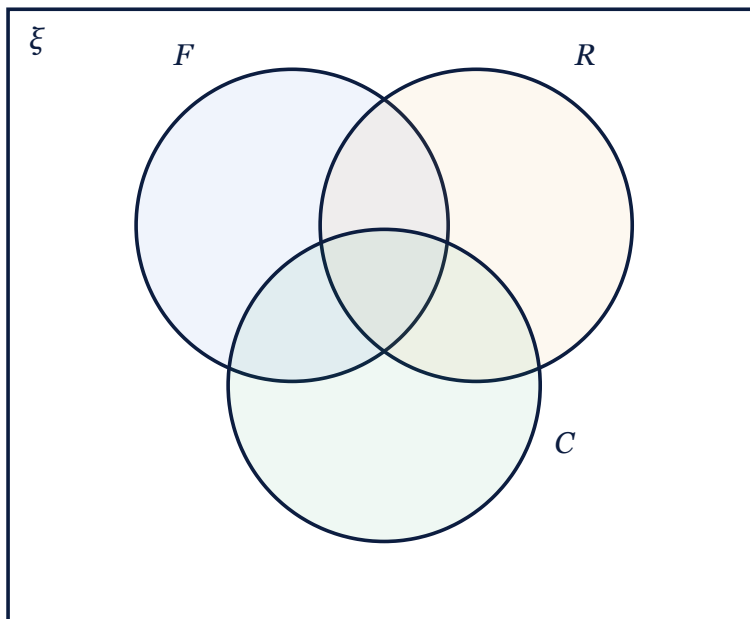
9 students play rugby and cricket.

36 students play football.

29 students play rugby.

25 students play cricket.

- Complete the Venn diagram to show the number of students in each region.
- One of the 80 students is chosen at random. Work out the probability that this student plays none of the three sports.



(6 marks)

Answer

14 90 people were asked which streaming services they use from A, B and C.

5 people use all three services.

14 people use A and B.

11 people use A and C.

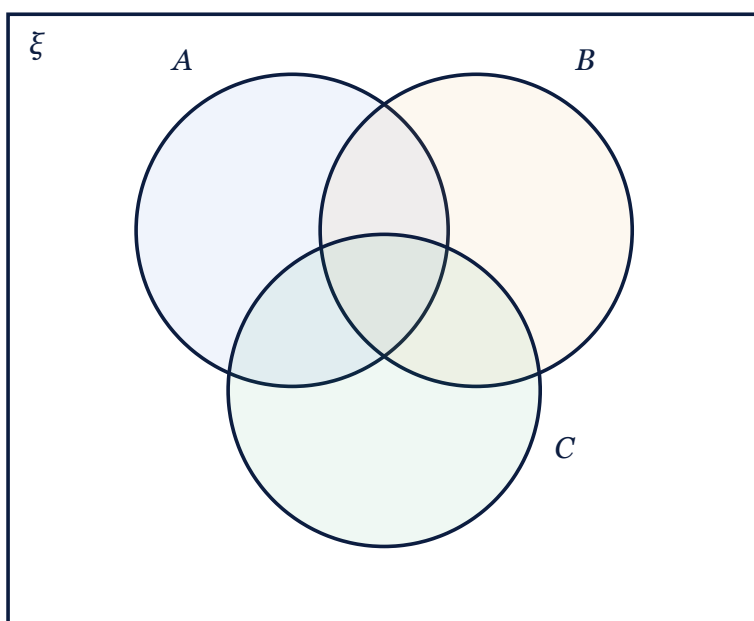
13 people use B and C.

40 people use A.

35 people use B.

30 people use C.

- Complete the Venn diagram to show the number of people in each region.
- One person who uses service A is chosen at random. Work out the probability that this person also uses service C.



(6 marks)

Answer _____

End of questions | Total 59 marks