Your notes

GCSE Maths: revision notes

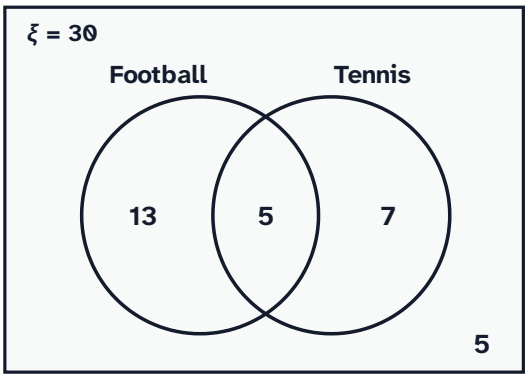
Venn diagrams and sets

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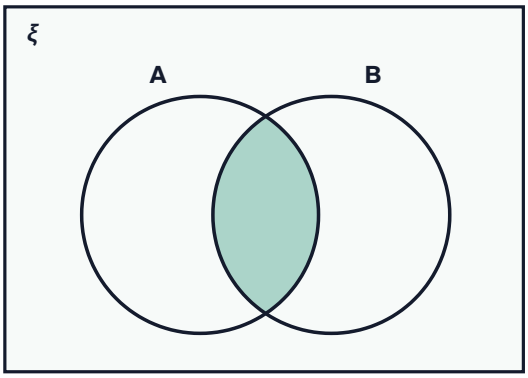
Venn diagrams

- A Venn diagram sorts things into overlapping circles inside a rectangle. The rectangle is the universal set, ξ: everything being considered.
- The overlap holds things in both sets. Things in neither set go inside the rectangle but outside the circles.



Set notation

- A ∩ B (A intersection B) means in both A and B. A ∪ B (A union B) means in A or B or both. A′ means not in A.
- If ξ = {1, 2, ..., 10}, A = even numbers and B = multiples of 3, then A ∩ B = {6} and A ∪ B = {2, 3, 4, 6, 8, 9, 10}.



Filling in a Venn diagram

- Start with the overlap, then work outwards. Don't forget the region outside the circles.
- In a class of 30, 18 play football, 12 play tennis and 5 play both. Football only = 13, tennis only = 7, and 30 – 25 = 5 play neither.

Probabilities from Venn diagrams

- Divide the number in the region you want by the total number in ξ.
- In the class above, P(plays exactly one sport) = (13 + 7) ÷ 30 = 20/30 = 2/3.

Key terms

Set	A collection of things, such as numbers, written in curly brackets.
Element	One member of a set.
Universal set (ξ)	Everything being considered.
Intersection (A ∩ B)	The elements in both A and B.
Union (A ∪ B)	The elements in A or B or both.
Complement (A′)	The elements not in A.

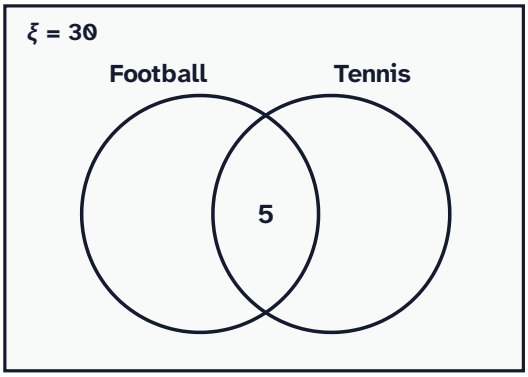
Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

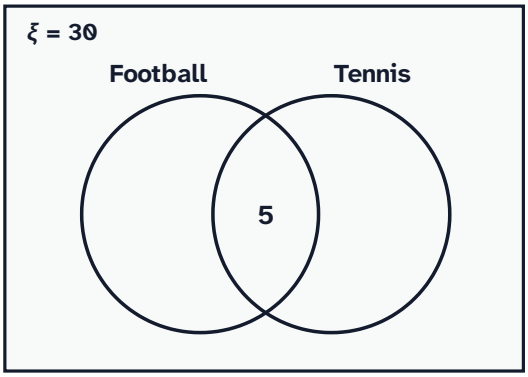
1. What does A ∩ B mean?
2. What does A ∪ B mean?
3. What does A′ mean?
4. What does the symbol ξ stand for?
5. ξ = {1, 2, …, 10}. A = even numbers and B = multiples of 3. What is A ∩ B?
6. Where do you start when filling in a Venn diagram?

Your notes

7. In a class of 30, 18 play football, 12 play tennis and 5 play both. How many play football only?



8. In a class of 30, 18 play football, 12 play tennis and 5 play both. How many play neither?



Answers

1. In both A and B
2. In A or B or both
3. Not in A
4. The universal set
5. {6}
6. The overlap
7. 13
8. 5

What to do next

Practise 12 questions on this topic

Try 4 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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