Name	Date started	Target end date

WJEC GCSE Mathematics and Numeracy (Double Award) — Question Pack

Reading infographics and schedules, and using Venn diagrams to display and interpret set information. Sourced from legacy WJEC GCSE Mathematics Higher

REVISE
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1.14 — Infographics, schedules & Venn diagrams

Spec 1.7.1, 1.7.2, 1.7.3 — Unit 1 (calculator allowed)

Reading infographics and schedules, and using Venn diagrams to display and interpret set information. Sourced from legacy WJEC GCSE Mathematics Higher and Intermediate papers (Venn questions originally classified under U2.22 and re-tagged), organised for revision under the 2025 spec.

2025 SPECIFICATION

Estimated time for entire question pack: ~39 minutes

*Derived from the GCSE Higher pace of **~1.5 min/mark** (26 marks across 9 questions).*

*You are advised to **not** attempt to complete all of this in one sitting.*

ABOUT THIS QUESTION PACK

This is a **focused single-topic practice pack**, not a single mock paper. Questions are organised against the 2025 specification. Questions are ordered chronologically by sitting, with custom-written and SAM questions at the end.

INSTRUCTIONS

Use black ink or black ball-point pen. Show all working — method marks are awarded for clear setup.

A calculator is allowed on every question in this pack (Unit 1 is the calculator-allowed paper).

Infographics, schedules & Venn diagrams — what the new spec asks

WJEC GCSE Mathematics (first teaching 2025) · Unit 1: calculator-allowed.

Venn diagrams 1.7.3

- Two- and three-set Venn diagrams.
- ∪ (union), ∩ (intersection), ′ (complement).
- Always include the universal set ε around the circles.
- Number in each region = count of elements in that region only.

Infographics 1.7.1

- Read labels, units, and scale before doing any arithmetic.
- Common types: pie charts, bar charts, picto-graphs, dashboards.
- Sense-check totals (percentages sum to 100; bars sum to whole).

Schedules 1.7.2

- Bus/train timetables: rows = stops, columns = services.
- Time arithmetic: convert to minutes when crossing the hour.
- Watch 24-hour vs 12-hour; check AM/PM.

Set notation 1.7.3

- $A \cup B$ = union (or).
- $A \cap B$ = intersection (and).
- A' = complement (not).
- $|A|$ = number of elements in A.

Crib sheet »

Infographics, schedules & Venn diagrams in one page

Quick-reference notes — revisit before each question. Don't use during the questions.

Venn vocabulary

$A \cup B$ — *union*: everything in A or B (or both).

$A \cap B$ — *intersection*: only what's in both.

A' — *complement*: everything *not* in A.

Universal set ε

The rectangle around the circles holds *everything under consideration*.

Elements outside the circles still belong to ε — they're just not in A or B.

Filling the regions

Start with the centre (the *intersection*).

Subtract to get the rest: A-only = $|A| - |A \cap B|$.

Outside the circles gets whatever is left from ε.

Three-set Venns

Seven regions inside, one outside.

Always work from the very centre ($A \cap B \cap C$) outwards.

Marks awarded for systematic working.

Reading infographics

Look for the title, the units (£, kg, % …) and the scale.

Pie / bar segments often carry numeric labels — use those directly.

Sense-check the totals (e.g. percentages summing to 100).

Schedules & timetables

Read columns carefully — rows are stops, columns are services.

Time arithmetic: convert to minutes if subtraction crosses an hour.

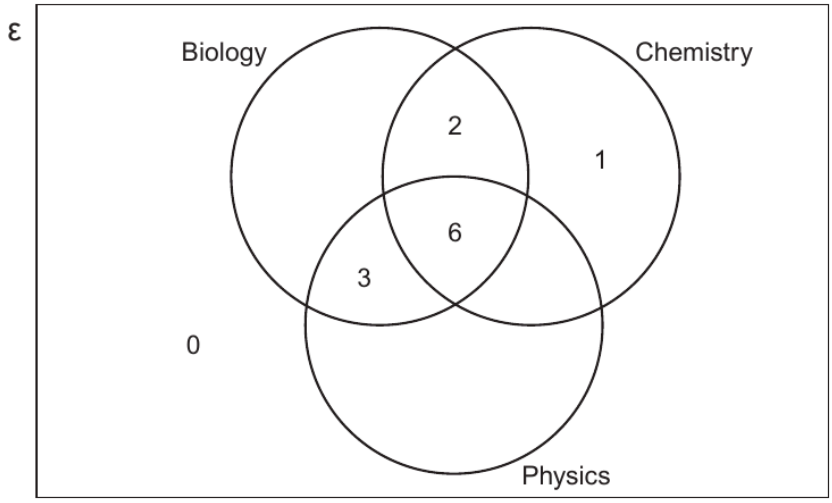
Watch for 24-hour vs 12-hour, and AM/PM hints.

Examiner only

5. At a college, a total of 28 students study one or more of the science subjects: Biology, Chemistry and Physics.
The 28 students form the universal set, ε.
Some parts of the Venn diagram below have already been completed.

It is also known that:
- 5 students study only Biology
- 13 students study Chemistry

(a) Complete the Venn diagram. [3]



(b) How many students study Biology and Chemistry but not Physics? [1]

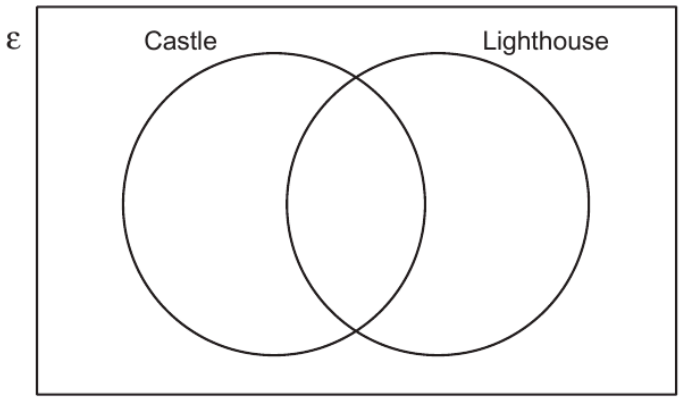
(c) One of the students is chosen at random.
What is the probability that this student studies Biology? [2]

Examiner only

7. A group of 20 people visited Anglesey for a weekend break.

- 10 of the group visited Beaumaris Castle.
- 13 of the group visited South Stack Lighthouse.
- 4 of the group did not visit either of these places.

(a) Complete the Venn diagram below to show this information.
The universal set, ε, contains all of the 20 people in the group. [3]



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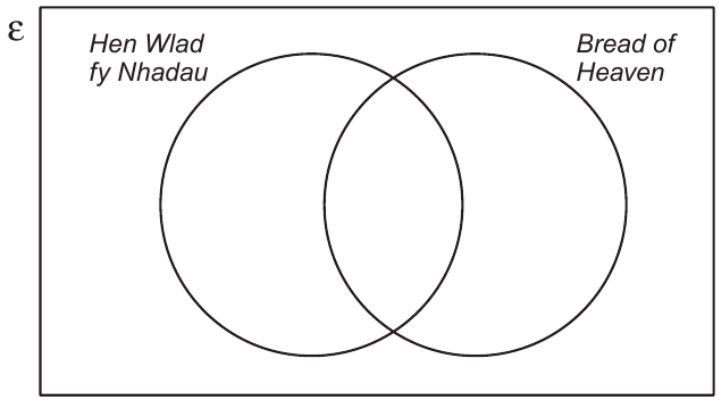
(b) One person is chosen at random from the group.
What is the probability that this person visited only one of the two places? [2]

Examiner only

2. 30 rugby supporters travel to Cardiff on a coach.
They decide to investigate how many of them can sing one, or both, of the songs *'Hen Wlad fy Nhadau'* and *'Bread of Heaven'*.

- 12 say they can sing both songs.
- 18 say they can sing *'Bread of Heaven'*.
- 5 say they cannot sing either of the songs.

(a) Complete the Venn diagram below to show this information.
The universal set, ε, contains all of the 30 supporters on the coach. [3]



(b) One of these supporters is chosen at random.
What is the probability that this person can sing *'Hen Wlad fy Nhadau'*? [2]

Examiner only

1. *(a)* A number is decreased by 12% of its value.
This is done 3 times, each time decreasing the previous value by 12%.
Circle the multiplier that you would use to find the value after the 3 decreases. [1]

$\times 0{\cdot}36$ $\times 0{\cdot}88^3$ $\times 0{\cdot}12^3$ $\times 0{\cdot}3^{12}$ $\times 0{\cdot}3^{88}$

(b) Calculate the percentage change when 42·5 is increased to 45·9. [3]

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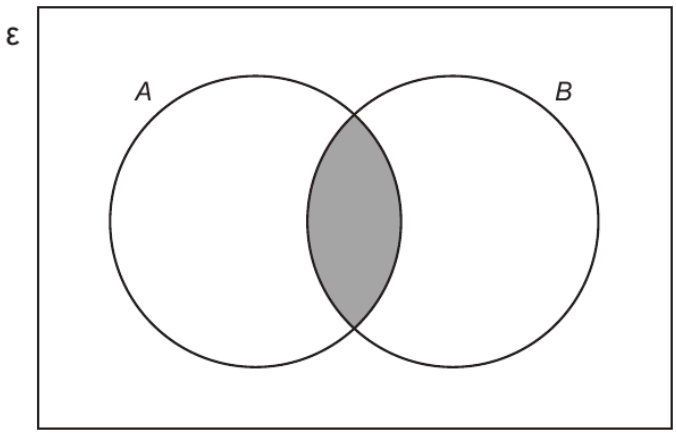
2. Display the following information in a Venn diagram. [3]

- Universal Set (ε): Integers between 74 and 80 inclusive.
- Set A: Even numbers.
- Set B: Multiples of 3.

Examiner only

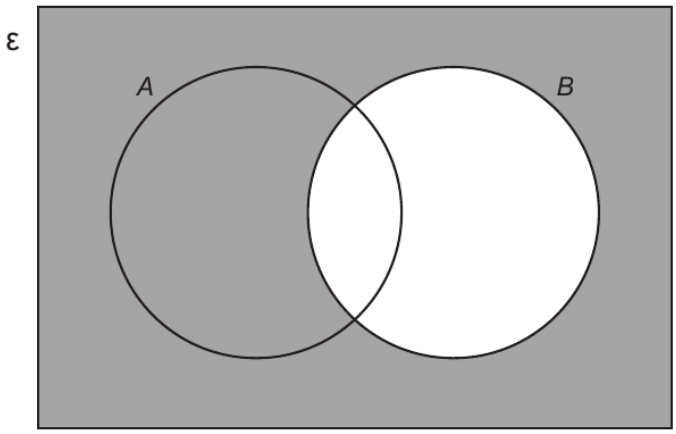
3. *(a)*



Which of the following sets represents the **shaded** area in the Venn Diagram shown above?
Circle your answer. [1]

A' $A \cup B$ B' $A \cap B$ $A' \cap B$ $A \cup B'$

(b)



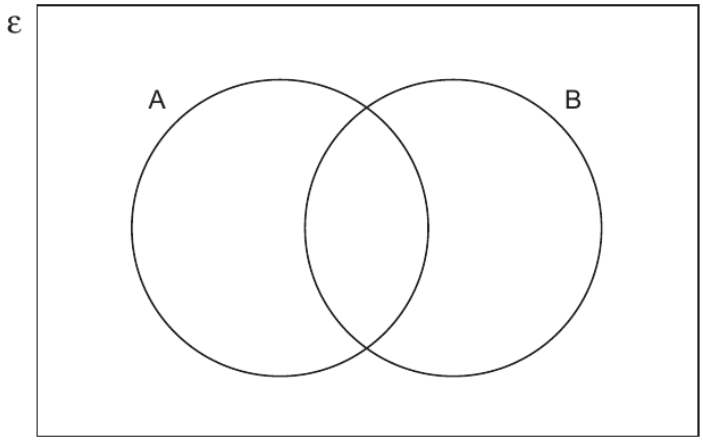
Which of the following sets represents the **shaded** area in the Venn Diagram shown above?
Circle your answer. [1]

A' $A \cup B$ B' $A \cap B$ $A' \cap B$ $A \cup B'$

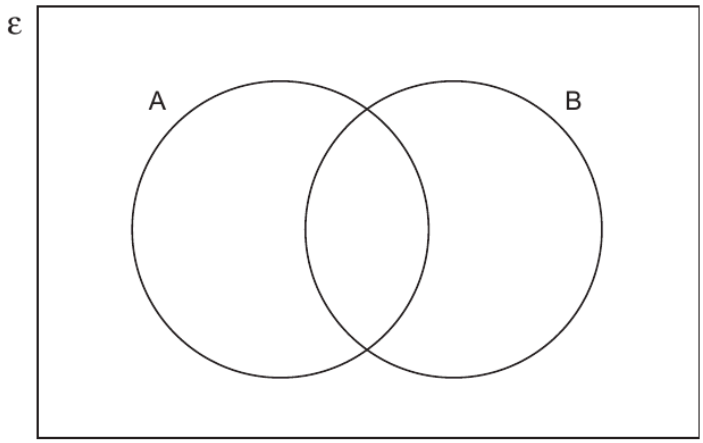
Examiner only

2. *(a)* On each Venn diagram, shade the region that represents the given set.

(i) $A \cup B$ [1]



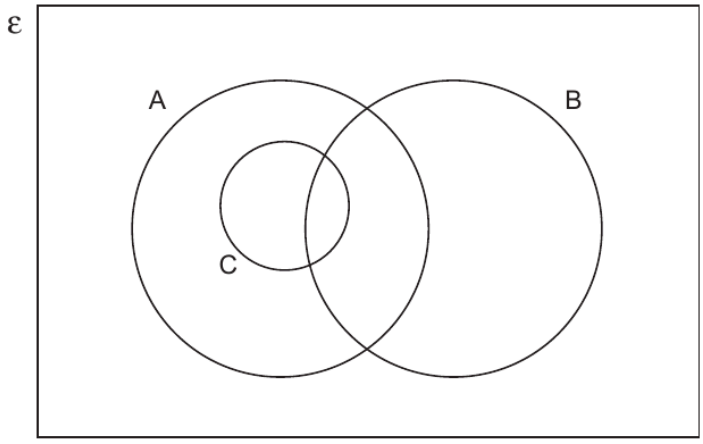
(ii) $A' \cap B$ [1]



Examiner only

(b) In the Venn diagram below:

- Set A = multiples of 3,
- Set B = multiples of 5,
- Set C = multiples of 6.



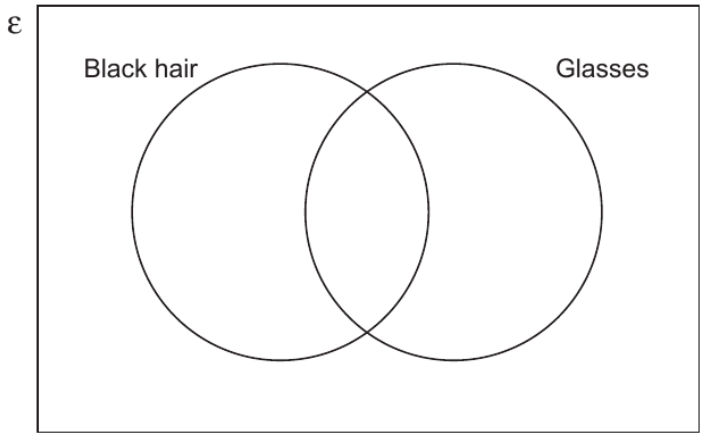
Explain why the circle representing Set C is drawn inside the circle drawn to represent Set A. [1]

Examiner only

1. In a group of 200 people:

- 105 people do not have black hair and do not wear glasses
- 20 people have black hair and wear glasses
- 70 people have black hair.

(a) Complete the Venn diagram below to show this information.
The universal set, **ε**, contains all 200 people. [3]



(b) One of these people is chosen at random.
What is the probability that this person wears glasses? [2]

Examiner only

2.

Tram timetable from Kemp Station to Rowe Place

Trams leave the station:

- every 12 minutes from 8 a.m. until 10 a.m.
- every 20 minutes from 10 a.m. until late.

It takes 22 minutes from Kemp Station to Rowe Place.

(a) At what time does the first tram after 20:30 leave Kemp Station?
Circle your answer. [1]

20:50 20:40 21:00 20:36 20:42

(b) Nesta looks at the timetable shown above.
She decides to take the latest possible tram from Kemp Station to be at Rowe Place by 10:15 a.m.

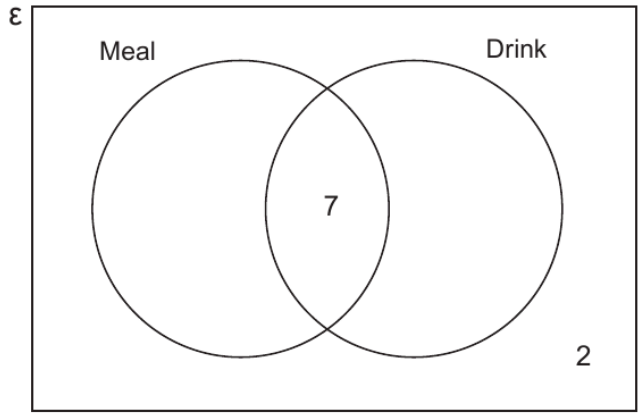
At what time will Nesta's tram arrive at Rowe Place?
You must show all your working. [3]

Examiner only

3. At lunchtime on Wednesday, a café had **19 customers**.

- 7 of these customers bought a meal **and** a drink.
- 2 of these customers did not buy a meal **or** a drink.
- The total number of customers who bought a meal was **twice** the total number of customers who bought a drink.

(a) Complete the Venn diagram below to show this information. [2]



(b) One of these customers is chosen at random.
What is the probability that this customer bought a meal? [2]