

GCSE ONLINE TUTORING

IN PARTNERSHIP WITH RS REMOTE TUTORING

WJEC EDUQAS GCSE (9-1) MATHEMATICS

COMMON MISTAKES & DIAGNOSTIC REPAIR HANDBOOK

Foundation and Higher | specification-mapped error database

Qualification	Eduqas C300QS Foundation C300PF Higher C300PH
---------------	---

INDEPENDENT PUBLICATION NOTICE

This independently authored resource is organised from the publicly available WJEC Eduqas GCSE Mathematics specification and published grade-boundary/examiner-support material. It is not produced, approved or endorsed by WJEC Eduqas. No past-paper question, mark-scheme wording, WJEC/Eduqas logo, screenshot or proprietary illustration is reproduced. WJEC and Eduqas are marks of WJEC CBAC Ltd.

Copyright © 2026 GCSE Online Tutoring and RS Remote Tutoring. All rights reserved.

DIAGNOSE • REPAIR • RETEST

Evidence policy

This handbook does not invent “most common” percentages. Each entry is a specification-derived diagnostic risk (SPEC) unless a public Principal Examiner report is explicitly cited. The purpose is to turn the official mathematical demand into a practical error-check and repair routine.

01. Signs and operation order

Area / evidence	Number SPEC-derived diagnostic FN1–FN3 / HN1–HN3
Typical error	Treating a negative sign as decoration or applying operations left-to-right without priority.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Rewrite the line with brackets and name the next operation before calculating.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

02. HCF/LCM confusion

Area / evidence	Number SPEC-derived diagnostic FN4 / HN4
Typical error	Using HCF where a “smallest shared cycle” is needed, or LCM where equal grouping is required.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Translate the context first: largest equal group → HCF; first common repeat → LCM.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

03. Standard form normalization

Area / evidence	Number SPEC-derived diagnostic FN9 / HN9
Typical error	Leaving a coefficient outside $1 \leq A < 10$.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Move the decimal until the coefficient is in range, then adjust the power in the opposite direction.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

04. Bounds without interval logic

Area / evidence	Number SPEC-derived diagnostic FN15–FN16 / HN15–HN16
Typical error	Using rounded values directly in an upper/lower-bound calculation.
Why marks are lost	The response either uses an invalid mathematical step,

	does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Write the error interval first, then choose the extreme values that maximise/minimise the expression.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

05. Collecting unlike terms

Area / evidence	Algebra SPEC-derived diagnostic FA4 / HA4
Typical error	Combining x and x^2 or constants with variable terms.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Label the power/variable part before combining coefficients.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

06. Sign error in expansion

Area / evidence	Algebra SPEC-derived diagnostic FA4 / HA4
Typical error	Losing the negative when multiplying through a bracket.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Write one multiplication per term before simplifying.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

07. Factorising without checking

Area / evidence	Algebra SPEC-derived diagnostic FA4 / HA4
Typical error	Stopping at an incorrect factor pair.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Re-expand your factorised result as a compulsory check.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

08. Changing subject by “moving” terms

Area / evidence	Algebra SPEC-derived diagnostic FA5 / HA5
Typical error	Using informal move-and-change-sign rules that fail with products/fractions.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.

Repair routine	Apply the same inverse operation to both sides, one line at a time.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

09. Gradient/intercept swapped

Area / evidence	Algebra SPEC-derived diagnostic FA9–FA10 / HA9–HA10
Typical error	Reading c as gradient or m as intercept.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	State $m = \text{change in } y / \text{change in } x$ and $c = \text{value when } x=0$ before using $y=mx+c$.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

10. Quadratic root vs turning point

Area / evidence	Algebra SPEC-derived diagnostic FA11 / HA11
Typical error	Treating the vertex as an x-intercept.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Name the feature first: root $\rightarrow y=0$; turning point $\rightarrow \text{max/min}$.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

11. Simultaneous-equation elimination sign error

Area / evidence	Algebra SPEC-derived diagnostic FA16 / HA19
Typical error	Adding equations when subtraction is needed or vice versa.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Align terms vertically and choose the operation that makes one coefficient zero.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

12. Higher: incomplete quadratic method

Area / evidence	Algebra SPEC-derived diagnostic HA18
Typical error	Factorising when the quadratic does not factorise conveniently.
Why marks are lost	The response either uses an invalid mathematical step,

	does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Decide between factorising, completing square and quadratic formula before calculation.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

13. Higher: iteration without sufficient precision

Area / evidence	Algebra SPEC-derived diagnostic HA20
Typical error	Stopping after too few iterations or quoting unsupported decimals.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Repeat until the stated degree of accuracy is stable across consecutive iterations.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

14. Part:part vs part:whole

Area / evidence	Ratio SPEC-derived diagnostic FR5–FR9 / HR5–HR9
Typical error	Turning a ratio part directly into a fraction using the wrong denominator.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Add ratio parts to obtain the whole before forming fractions/percentages.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

15. Reverse percentage

Area / evidence	Ratio SPEC-derived diagnostic FR10 / HR10
Typical error	Subtracting the percentage from the final value.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Represent final value as a multiplier of the original and divide by that multiplier.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

16. Direct vs inverse proportion

Area / evidence	Ratio SPEC-derived diagnostic FR11/14 / HR11/14
Typical error	Assuming every proportional relationship has $y=kx$.

Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Test how y changes when x doubles: same direction → direct; reciprocal behaviour → inverse.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

17. Angle facts without reasons

Area / evidence	Geometry SPEC-derived diagnostic FG3 / HG3
Typical error	Giving a correct number but no mathematical justification in a reasoning question.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Write the angle fact beside each step: parallel, straight line, triangle, polygon, etc.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

18. Congruence criteria mixed with similarity

Area / evidence	Geometry SPEC-derived diagnostic FG5–FG7 / HG5–HG7
Typical error	Using AAA as a congruence condition.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Congruence needs equal size and shape; AAA establishes similarity only.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

19. Scale factor applied to area/volume directly

Area / evidence	Geometry SPEC-derived diagnostic FG17 / HG19
Typical error	Multiplying area or volume by k instead of k^2 or k^3 .
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Write length k, area k^2 , volume k^3 before substituting.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

20. Pythagoras on non-right triangle

Area / evidence	Geometry SPEC-derived diagnostic FG18 / HG20
Typical error	Using $a^2+b^2=c^2$ without a right angle.

Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Check for an explicit or deducible 90° angle first.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

21. SOHCAHTOA side labels fixed to diagram

Area / evidence	Geometry SPEC-derived diagnostic FG18 / HG20
Typical error	Calling a side “opposite” without reference to the selected angle.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Circle the working angle, then label O/A/H relative to that angle.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

22. Higher: sine/cosine rule choice

Area / evidence	Geometry SPEC-derived diagnostic HG22
Typical error	Using sine rule without a known opposite pair.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Sine rule needs a side-angle opposite pair; cosine rule handles SAS or SSS.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

23. Higher: circle theorem named vaguely

Area / evidence	Geometry SPEC-derived diagnostic HG10
Typical error	Stating “circle theorem” without the relationship.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	State the actual theorem, then identify the matching points/angles in the diagram.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

24. Adding when multiplying is required

Area / evidence	Probability SPEC-derived diagnostic FP6–FP8 / HP6–HP9
Typical error	Adding probabilities across sequential independent

	stages.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Use branches: multiply along a route, add mutually exclusive routes.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

25. Dependent-event denominator unchanged

Area / evidence	Probability SPEC-derived diagnostic FP8 / HP8
Typical error	Failing to update totals after an item is removed.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Write the new numerator and denominator at every branch.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

26. Mean from grouped data treated as exact

Area / evidence	Statistics SPEC-derived diagnostic FS4 / HS5
Typical error	Presenting grouped-data mean as exact.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Use class midpoints and label the result as an estimate.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

27. Correlation interpreted as causation

Area / evidence	Statistics SPEC-derived diagnostic FS6 / HS7
Typical error	Claiming one variable causes another from a scatter graph.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Use association language unless a causal design supports causation.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

28. Higher: histogram height = frequency

Area / evidence	Statistics SPEC-derived diagnostic HS4
Typical error	Ignoring class width.

Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Frequency density = frequency/class width; area, not height alone, represents frequency.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

29. Higher: box plot comparison incomplete

Area / evidence	Statistics SPEC-derived diagnostic HS5
Typical error	Comparing medians but ignoring spread, or vice versa.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Give one comparison of centre and one of spread, each in context.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

30. Calculator answer with no method

Area / evidence	Exam technique SPEC-derived diagnostic AO1/AO2/AO3
Typical error	Providing only a decimal where method marks may matter.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Write the equation/substitution before using the calculator.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

31. Premature rounding

Area / evidence	Exam technique SPEC-derived diagnostic FN14–FN16 / HN14–HN16
Typical error	Rounding intermediate values and losing final accuracy.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Keep full calculator values; round once at the end unless instructed.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

32. Units missing or inconsistent

Area / evidence	Exam technique SPEC-derived diagnostic FN13 / FR1 / FG12
Typical error	Combining cm with m or omitting squared/cubed units.
Why marks are lost	The response either uses an invalid mathematical step, does not satisfy the stated requirement, or gives an answer that cannot be justified from the method shown.
Repair routine	Convert first and annotate units on every intermediate quantity.
Retest rule	Complete two fresh questions: one direct skills item and one unfamiliar multi-step item. Mark secure only if both are correct without prompts.

Student note: What caused this error in my work? _____

Diagnostic log

Date	Mistake #	Topic	Cause	Repair completed	Retest result

References and source basis

- S1:** WJEC Eduqas GCSE Mathematics Specification C300QS, official FN/FA/FR/FG/FP/FS and HN/HA/HR/HG/HP/HS content references.
- S2:** Eduqas Online Exam Review and Principal Examiner report archive (used as corroborating assessment context; no proprietary question wording reproduced).
- S3:** Eduqas assessment objectives: AO1 techniques, AO2 reasoning/communication, AO3 problem solving.

Source-use rule: specification wording has been paraphrased into independent study guidance. Grade-boundary figures are transcribed from official Eduqas grade-point publications. Component boundaries are described as notional where Eduqas does so. Diagnostic risks are not presented as frequency statistics unless an examiner report explicitly supports such a claim.