Course notes

GRE General Test

Gre General

Short standard computer GRE General, from 22 September 2023

One 30-minute Analyze an Issue task. Verbal sections 12/18 min and 15/23 min; Quantitative 12/21 min and 15/26 min. Verbal and Quantitative are section-adaptive. The acquired paper-delivered book has 15/20-item sections and is not the standard computer mock.

Official scope: https://www.ets.org/gre/score-users/about/general-test/content-structure.html

V.R · Verbal: reading and argument structure

- Reading comprehension includes single-answer, select-one-or-more and sentence-selection tasks. Follow each instruction exactly.
- Identify the conclusion separately from observations. An assumption is an unstated bridge the argument needs.
- For select-all tasks, test each option independently. One correct option does not make the others false.
- An author can describe a theory before challenging it. Track whose position each sentence reports.

> ■ **Checked example**
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> Sales rose after advertising increased. "Advertising caused the rise" assumes no sufficient alternative explanation, such as a price reduction. A passage that only reports the timing supports an association, not that causal conclusion.

> ■ **Common error**
>
> Graduate verbal tasks reward precise scope. Avoid an answer whose always or only overstates the passage.

V.T · Verbal: text completion and sentence equivalence

- For text completion, predict each blank from the passage. Support for a later blank may appear earlier.
- A two- or three-blank item requires all blanks correct; do not treat choices as independent mini-scores.
- Sentence equivalence requires two choices that both fit and produce equivalent sentence meanings.

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- A pair of synonyms can both fail the sentence. Check grammar, tone and logic as well as word meaning.

Checked example

Although the design looked simple, building it was arduous. Although signals a contrast between appearance and effort. For equivalence, difficult and demanding could both fit this sentence; easy and effortless would reverse the needed contrast.

Common error

Do not search only for dictionary synonyms. The completed sentence controls equivalence.

Q.C · Quantitative comparison and number reasoning

- Quantitative Comparison has four fixed relationships: A greater, B greater, equal, or cannot determine.
- Check all constraints. A variable can be negative, zero or fractional unless the stem restricts it.
- Use strategic substitutions to disprove a fixed relation. They can show indeterminacy but a few examples do not prove universality.
- Simplify both quantities without silently dividing by a value that could be zero or negative.

Checked example

Given $x^2=9$, x can be 3 or -3. Quantity A=x; B=0. A is greater for 3 and smaller for -3, so the relationship cannot be determined. If x is positive, only 3 is allowed and A is greater.

Common error

Figures are not necessarily drawn to scale. Given labels and constraints carry the evidence.

Q.P · Quantitative problem solving and data

- GRE General quantitative content includes arithmetic, algebra, geometry and data analysis; calculus is not required.
- Read whether a problem asks for one answer, all answers or numerical entry. Check units and form before submitting.
- For data interpretation, identify the denominator and whether a percentage is conditional on a subgroup.
- The on-screen calculator is available for General quantitative sections. Estimate first to catch an entry error.

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■ Checked example

A class has 12 morning and 8 afternoon students. Of them, 3 morning and 4 afternoon students cycle. P(cycles)=7/20. P(afternoon given cycles)=4/7. The second denominator includes only cyclists.

■ Common error

Do not assume a geometric diagram is to scale or replace a conditional denominator with the whole population.

AW · Analytical Writing: Analyze an Issue

- The standard short GRE has one 30-minute Analyze an Issue task. Its specific instruction controls what you must discuss.
- Choose a position with a reasoned scope. You may qualify a general claim rather than simply agree or disagree.
- Explain examples. An anecdote alone does not show why a policy produces the claimed effect.
- Consider a serious objection and answer it. Revise organisation and clarity; the emphasis is analysis, not ornate vocabulary.

■ Checked example

A qualified position might support work experience in professional courses while allowing research alternatives in theoretical programmes. Explain how experience builds practical judgement, then consider unequal access to placements and a fair alternative.

■ Common error

Do not practise Analyze an Argument as a current standard GRE General writing component. Older materials can contain retired tasks.

V.T-multiblank · Text completion: dependent meanings across two and three blanks

- Read the complete passage before starting a blank. Mark contrast cues such as although, support cues such as because, and a qualification that limits an apparent claim. Predict a plain-language role for each blank before looking for a difficult word. A later sentence may supply the clearest evidence for an earlier blank.
- For two or three blanks, begin with the one whose context is most constrained. Use its proposed meaning to check the remaining passage, then return and verify the first choice. Answer columns do not restrict one another mechanically, but the resulting ideas must form one coherent account. Do not choose a superficially positive word merely because the subject sounds admirable.

- A correct response needs one answer for every blank. The official task gives three choices per blank for multi-blank items, with no partial credit. Our additional checkbox drill labels each column explicitly: select exactly one entry from each labelled blank. It checks the full answer set locally; it is a practice adaptation, not the official column interface.
- Read the completed passage using every chosen word. Check grammar, logical direction and strength. Reject a word that contradicts an explicit limitation even if it pairs well with one other blank. Keep a record of why each distractor fails: wrong polarity, wrong degree, wrong logical relation or wrong meaning in context.

■ Checked example

Original two-blank case: "Although the proposal was initially (i) _____, the pilot's consistent results made its critics (ii) _____." Blank i: plausible / dubious / settled. Blank ii: reconsider / celebrate failure / lose interest. Choose dubious and reconsider: initial doubt contrasts with subsequent evidence prompting reassessment. Original three-blank case: "The curator's account is (i) _____ about the object's origin: it distinguishes verified records from (ii) _____, and its final conclusion is therefore (iii) _____ rather than absolute." i: cautious / dogmatic / irrelevant; ii: certainty / conjecture / documentation; iii: qualified / categorical / unrelated. Cautious, conjecture and qualified preserve the passage's evidential restraint.

■ Common error

Independent columns do not mean independent interpretations. Getting two of three blanks right is not a correct complete answer.

V.E-pairs · Sentence equivalence: fitting context and matching complete meanings

- Predict what belongs in the blank from the whole sentence. Contrast and degree matter: "only a few errors" supports a different judgement from "errors throughout." Avoid choosing pairs before reading the context. The pair must yield two coherent sentences that convey alike meanings, rather than merely share a dictionary association.
- Group possible equivalents after establishing the needed sense. A word can have several meanings, and a candidate synonym may match the wrong one. "Reserved" can mean restrained in manner or set aside in advance. The complete sentence selects the sense, so test each candidate using a plain paraphrase.
- Sentence Equivalence has six choices and requires two selections. There is no partial credit for one correct word, and selecting a third word invalidates the answer. The practice check requires exactly the correct pair; it does not award an official GRE score.
- Compare the remaining plausible pair for scope and tone. Small versus negligible,

uncertain versus impossible, or critical versus hostile may differ in strength. If the passage supports modest gains, do not infer that no gains occurred. Keep a vocabulary record with the contextual sense and one contrasting use rather than learning isolated translation pairs only.

■ Checked example

Original case: "Despite the team's ambitious targets, the pilot produced only _____ improvements." Choices: dramatic, modest, erratic, slight, unprecedented, comprehensive. Modest and slight both fit the contrast between high ambitions and limited improvement. Dramatic and unprecedented may suggest a shared strong-result direction, but they do not fit only in this contrast. Original second case: "Far from being candid, the witness remained _____ about the missing receipt." Evasive and noncommittal can preserve reluctance to give a direct account; eloquent concerns fluency and is not equivalent to either.

■ Common error

Do not choose a pair solely because the words are related. Degree, direction and local sense must all match.

V.R-selection · Reading comprehension: independent option tests and sentence selection

- Read a passage for its claim and structure as well as local details. Identify what the author accepts, reports or questions. For select-one-or-more items, classify each option as supported or unsupported using the passage. An unsupported statement need not be disproved; absence of evidence is enough to reject it as a passage-based conclusion.
- For inference, retain the text's conditions and degree of confidence. If a study examined volunteers at one site, do not infer the result holds for every person or site. A statement consistent with the passage can still be unsupported. Select-all reading tasks use three choices, and require all correct choices with no extra selections.
- Select-in-Passage asks for a sentence performing a specified role within the allowed text. Name the requested function: evidence, concession, explanation, challenge or conclusion. Read complete sentences rather than choosing the one containing a keyword. A sentence repeating the topic may do a different job. The local lesson uses numbered sentences and option labels; official delivery selects a sentence in the passage itself.
- Create a short evidence note for every selected answer. For a rejected option, identify the extra assumption or scope change. This makes review productive and separates vocabulary difficulty from reasoning errors. These original short passages practise question types; they do not replicate adaptive routing or create an official

verbal score.

Checked example

Original passage: [1] A workshop extended its opening by one hour during a four-week trial. [2] Evening attendance increased, but the same month a nearby workshop closed. [3] The director therefore cannot attribute the entire increase to longer hours. [4] A second trial, at a site without a nearby closure, would help separate the explanations. Supported statements: attendance increased; another event provides an alternative explanation. Unsupported: longer hours had no effect. For "select the sentence stating a limitation on the causal conclusion," choose sentence 3, not sentence 2: sentence 2 reports the confounding observation, while sentence 3 explicitly states the limit.

Common error

"Not proved to cause the increase" does not mean "proved to have no effect." Match the requested sentence function exactly.

V.A-arguments · Verbal arguments: assumptions, alternative causes and evidence direction

- Translate a short argument into evidence, conclusion and missing bridge. An assumption is what the reasoning needs but has not established. Avoid searching for a sentence that merely sounds reasonable or morally desirable. The target is the inference from these premises to this conclusion.
- For a causal claim, test alternative explanations, reverse direction and relevant baseline differences. Evidence that an outcome followed a change establishes sequence; it does not isolate the change's effect. A comparison group helps only if important conditions are sufficiently comparable or accounted for.
- Strengthening and weakening are directional rather than absolute. A relevant new fact can make the conclusion more or less plausible without proving or refuting it. Ask how the fact changes the link: supports a missing mechanism, removes a competing cause, exposes a selection bias or shows the result under opposite conditions.
- For a necessary-assumption task, negate a candidate carefully and ask whether the stated argument loses its support. This technique identifies dependence, not universal truth. Some options are sufficient for a conclusion but stronger than necessary. Keep claim scope precise: average improvement differs from every participant improving.

■ Checked example

Original argument: "Students who chose the optional revision workshop scored higher than those who did not. Therefore the workshop caused the higher scores." Missing bridge: self-selection did not adequately explain the difference. If workshop attendees were already scoring higher before it began, the conclusion weakens. If comparable students were randomly allocated and only attendance differed, the causal inference strengthens. Neither the workshop's popularity nor its colourful materials isolates an effect. For "every attendee improved," an average group increase alone is insufficient because individual outcomes can differ.

■ Common error

A fact can be relevant to the topic without affecting the inference. Identify the mechanism by which it changes support.

Q.N-response · Quantitative response formats: all valid values and numerical entry

- Read the response instruction before calculation. Select-one asks for one option; select-one-or-more can require several; Numerical Entry has no options to cue an approximate answer. Identify restrictions such as integer, positive or rounded to a stated precision. In select-all tasks, test every option against those restrictions.
- Solving a transformed equation yields candidates. A denominator restriction or a sign requirement in an unsquared radical can remove one. Substituting into the original is more reliable than recognising a familiar-looking list of roots. For inequality options, test the strict or inclusive boundary as written.
- A requested fraction and a requested decimal require different entry forms. Equivalent fractions are accepted in official Numeric Entry; simplify if needed to fit the boxes. Apply rounding only at the end when instructed. Check units: a percentage answer 25 differs from a probability answer 0.25. The free local numerical drill below requests an exact terminating decimal; it is a teaching check, not a replacement for the official two-box fraction interface.
- Estimate before using the on-screen General-test calculator and verify after entry. An implausible order of magnitude often reveals misplaced parentheses or a percent converted incorrectly. The GRE General mathematical level does not require calculus; sophisticated reasoning can still arise from elementary constraints and careful instructions.

■ Checked example

Original select-all: x is real and (x−2)(x+3)=0. Choices −3, −2, 0, 2, 3. Select −3 and 2, and verify each factorisation root in the original. If the stem additionally requires $x > 0$, only 2 remains. Original numerical entry: three of eight equally likely counters are marked; enter the probability as a decimal. P(marked)=3/8=0.375. Enter 0.375, not 37.5 (a percent value) or 3 (the count).

■ Common error

The number of correct select-all choices comes from the constraints, not from a guessed pattern. Numeric form is part of the task.

Q.A-number · Arithmetic: divisibility, remainders and multiplicative change

- An integer divisible by d can be written dk; a remainder r gives dk+r with 0≤r<d for a positive divisor. Prime factorisation identifies divisibility and common multiples. The greatest common factor takes shared prime powers at their smaller exponents; the least common multiple takes every needed prime power at its larger exponent.
- Keep odd/even and positive/negative properties separate. A product of two odd integers is odd; a product with an even integer is even. A statement about integers need not hold for real numbers. For quantitative comparison, exploit a remainder form to expose possible cases rather than assume the smallest positive example is the only value.
- A ratio a:b allocates a whole into a+b equal parts when the groups exhaust it. A percentage change multiplies the original value by 1+r or 1−r with r expressed as a decimal. Successive changes multiply factors. A part-of-a-part calculation changes the reference group at each stage; label the denominator before multiplying.
- Estimate magnitude and check integer restrictions after solving. Fractions, roots and negative exponents follow their ordinary domain restrictions; even roots represent the nonnegative principal value. Do not cancel a term in a sum as if it were a factor. Exact arithmetic can be faster and safer than decimal calculator entries.

■ Checked example

Known: $18 = 2 \cdot 3^2$ and $24 = 2^3 \cdot 3$. Shared smaller powers give GCF six; needed larger powers give LCM seventy-two. If $n = 5k + 2$, then $2n = 5(2k) + 4$, so the remainder on division by five is four.
For a model price of 100 CNY decreased then increased by 20%, multiply the two changes:

$$P_{\text{final}} = P_{\text{initial}}(1 - 0.20)(1 + 0.20).$$

$$P_{\text{final}} = (100 \text{ CNY})(0.8)(1.2) = 96 \text{ CNY}.$$

The price is not restored because the second percentage uses a different base.
Dividing 250 in the ratio 2:3 gives 100 and 150: each of five parts is fifty.

■ Common error

Equal percentage increases and decreases use different bases. A remainder must be reported relative to the named divisor.

Q.L-algebra · Algebra: domains, systems, inequalities and functions

- Write restrictions before manipulating an equation. A denominator must be nonzero; a real even root needs a nonnegative argument. Cancelling factors preserves the expression only on its original domain. Squaring can introduce candidates because a square loses sign information; verify every candidate in the unsquared relation.
- Solving a system requires the same ordered pair to satisfy all relations. Substitution or elimination can expose one, no or infinitely many linear solutions. For an inequality, multiplication or division by a negative reverses direction. For a factored quadratic inequality, order roots and test interval signs, including endpoints only when equality is allowed.
- A function assigns one output to each permitted input. Evaluate the inner function first in a composition, preserving domain restrictions. Read a slope as change in output per input unit and an intercept as the output at input zero only when that input is meaningful. A verbal model should name variables and keep quantities in compatible units.
- For Quantitative Comparison, preserve all allowed values. A variable with $x^2=4$ could be -2 or 2 unless constrained. One counterexample can reject a universal relationship; several favourable substitutions cannot prove it for every real value. Algebraic structure can establish a relationship without exhaustive numerical sampling.

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■ Checked example

For $\sqrt{(x+2)}=x$, $x\geq 0$. Squaring gives $x^2-x-2=0$, candidates 2 and -1. Only 2 satisfies the original. For $(x-1)(x-4)\leq 0$, an upward quadratic is nonpositive on $1\leq x\leq 4$, including roots. In the system $x+y=10$, $x-y=2$, adding gives $2x=12$; $x=6$ and $y=4$. For $f(t)=2t+1$ and $g(x)=x^2$, $f(g(3))=2\cdot 9+1=19$, applying g first.

■ Common error

A transformed equation supplies candidates, not automatic original solutions. Negative inequality multipliers and strict endpoints need explicit checks.

Q.G-geometry · Geometry: labelled facts, coordinates, circles and solids

- Extract the facts a diagram supplies: lengths, right-angle marks, parallel lines, circle radii and stated shape properties. Avoid measuring the screen. Angle sums and similarity give relationships when their conditions hold. Pythagorean reasoning needs a right triangle; it does not apply to every drawn triangle.
- For two coordinates, use midpoint $((x_1+x_2)/2,(y_1+y_2)/2)$ and distance $\sqrt{((x_2-x_1)^2+(y_2-y_1)^2)}$. Slope is $\Delta y/\Delta x$ when $\Delta x\neq 0$. A vertical line has no finite slope. Combine coordinate and shape facts where useful; perpendicular nonvertical lines have slopes whose product is -1.
- A circle has circumference $2\pi r$ and area πr^2. An arc or sector uses its fraction of a full turn. Rectangular solids use volume lwh; cylinders use $\pi r^2 h$. Surface area counts exposed faces or surfaces, not the enclosed volume. Attach units so an area answer is not confused with a length or volume.
- For similar figures with linear factor k, corresponding areas multiply by k^2 and volumes by k^3. If a question provides only an area ratio, take a square root to recover the length ratio; do not copy the area ratio directly. General-test geometry uses elementary relationships, with no trigonometry or calculus required for this lesson's tasks.

■ Checked example

Points $A(-1,2)$ and $B(5,10)$ have $\Delta x=6$, $\Delta y=8$. Distance $d=\sqrt{(6^2+8^2)}=10$ and midpoint $M=((-1+5)/2,(2+10)/2)=(2,6)$. For a circle of radius 6, a 60° sector is 1/6 of a full circle: area$=(60/360)\pi 6^2=6\pi$; arc length$=(60/360)2\pi 6=2\pi$. Enlarging every length by 3 multiplies area by 9 and volume by 27, not 3.

■ Common error

Use labelled facts, include required π or units, and distinguish a perimeter from an area or a sector from its arc.

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Q.D-data · Data analysis: spread, weighted averages and conditional probability

- Mean is sum divided by count; median is the central ordered value or the mean of the middle two. Range is maximum minus minimum. An extreme value can alter mean and range without changing the median. Standard deviation measures spread about the mean; adding a constant changes the centre but not spread, while multiplying all values by c multiplies standard deviation by |c|.
- Combine groups with their counts, not an unweighted mean of group means unless sizes are equal. A group of 10 with mean 6 contributes total 60; a group of 30 with mean 10 contributes total 300. The combined mean is (60+300)/40=9. A percentage of a subgroup uses that subgroup's denominator.
- For equally likely discrete outcomes, probability is favourable count over total count. Conditional probability restricts the denominator to the given condition. Without replacement changes later counts. Overlapping events need subtraction of the overlap when counting a union. Independence must be given or justified; it is not the same as mutually exclusive.
- Read displays for their axes, units and sample description before making inferences. A correlation does not isolate a cause. A convenience sample may not represent the target population. Basic counting can use ordered multiplication when roles differ, or divide duplicated arrangements when order does not matter. Keep the events and outcomes explicitly defined.

■ Checked example

A bag holds four red counters, three marked, and six blue counters, one marked. There are four marked counters in total. P(red)=4/10, P(marked)=4/10, P(red given marked)=3/4. P(two red without replacement)=(4/10)(3/9)=2/15, not $(4/10)^2$. For data 1,2,3,4,20, mean=30/5=6 and median=3. Adding 5 to each shifts mean and median by 5 but leaves their pairwise deviations and standard deviation unchanged.

■ Common error

A condition changes the reference population. Group means need weights, and no-replacement draws need changing denominators.

A.W-instructions · Analyze an Issue: instruction families and a reasoned qualified position

- The current standard GRE writing measure has one 30-minute Issue task. The issue and the instruction together define the response. Some instructions ask when a statement holds; some ask when a recommendation helps; others ask for the strongest challenge to your position. Identify the requested reasoning action before

generating examples. A generic agree/disagree template can omit the central task.

- A two-view instruction requires engagement with both views, not just a chosen side. A claim-and-reason instruction requires evaluation of the claim and the stated justification separately. The conclusion may be reasonable while its reason is weak, or vice versa. Make the relationship explicit in the thesis and development rather than leaving the reader to infer it.
- For a policy instruction, explain consequences and how they shape your view. Separate intended benefits from plausible unintended costs. Use concrete mechanisms and circumstances: who benefits, what resources are needed, where the recommendation may fail and what limit improves it. Hypothetical examples can illuminate reasoning when labelled as such; unsupported invented statistics should not be presented as measured evidence.
- Use a flexible plan, not a required paragraph count. A suggested practice budget is four minutes to interpret and outline, twenty-three to write and three to revise. Check task fit, development, logical organisation and clear language. An original classroom response is reviewed by a teacher; the local formative checks do not produce an official GRE writing score. Current Issue practice must not be relabelled as the retired Argument task.

■ Checked example

Original claim-and-reason case: Claim: universities should let every student replace a laboratory requirement with independent reading. Reason: all meaningful learning comes from books. A qualified thesis might reject universal replacement while accepting reading as preparation. The reason overlooks learning from direct measurement, procedural errors and collaboration. Model development: "In a hypothetical introductory measurement course, a student may correctly describe uncertainty after reading but still misalign an instrument during use. A supervised trial exposes the difference between knowing a rule and applying it. Reading therefore supports the laboratory rather than always replacing it. A student with verified equivalent practical experience could reasonably receive an alternative task, so preserving a laboratory requirement need not mean ignoring individual circumstances." This evaluates both the recommendation and its reason, gives a mechanism and introduces an explained exception.

■ Common error

Do not merely label an example impressive. Explain its connection to the claim, the required instruction and the limits of your conclusion.

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