SI-05

SI-05: FRQ Command Verbs Cheat Sheet

What Each Verb Actually Wants — and How Long Your Answer Should Be

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who writes a full mechanism for an 'Identify' prompt wastes time without earning extra points; a student who writes a one-word answer to 'Explain' may leave multiple points on the table. This module is a fast visual reference — read it the morning of the exam.

All FRQs | 14 verbs | 4-pt and 9-pt questions | Time management

1. Why Command Verbs Are a Major FRQ Failure Mode

knowledge gap
You don't know the content.
You can study to fix this.

vs.

verb mismatch
You know the content but answer the wrong kind of question.
You lose easy points.

The grader has a rubric for each point, and that rubric maps to the verb in the prompt:

1. "Identify" → 1 short statement earns the point. Anything more is wasted ink.
2. "Explain" → must include a mechanism with a causal chain. A statement of fact alone earns 0.
3. "Justify" → must include a reason that connects evidence to a claim.

The exam isn't asking you to 'say everything you know about X.' It's asking you to perform a specific task. Match the verb, then write only what that task requires.

Page focus: match the verb before writing the answer.

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What each verb asks, what to write, the common trap, and the time cost.

2. The 14 High-Frequency Verbs (1–5)

1 IDENTIFY

What it asks
Name a specific thing.

What to write
A noun, structure, process, or term; usually 1 sentence, often less than 10 words.

Sentence template
"The [structure / process / molecule] is [name]."

Common mistake
Adding a paragraph of explanation; the point is awarded for the correct name only.

Time
30 seconds.

2 DESCRIBE

What it asks
State the features, trends, or observations.

What to write
Specific observations from the data or system — direction, magnitude, timing; no mechanism needed.

Sentence template
"[X] increases / decreases / remains constant from [start] to [end] by approximately [magnitude]."

Common mistake
Jumping to why; describe is observation, not explanation.

Time
1–2 minutes for a data trend.

3 EXPLAIN

What it asks
Provide a mechanism and a causal chain.

What to write
A multi-step chain showing how X leads to Y. Use connecting words: because, therefore, as a result, leading to.

Sentence template
"[Cause] leads to [intermediate effect], which then [downstream effect], because [biological principle]."

Common mistake
Re-stating the observation without explaining how.

Time
2–4 minutes depending on point value.

4 PREDICT

What it asks
State an outcome with a clear direction.

What to write
A directional answer (increase / decrease / no change) for the variable in question. Pair with brief reasoning when the prompt says predict and explain.

Sentence template
"[Variable] will [increase / decrease / stay the same] because [brief mechanism]."

Common mistake
Vague language such as "the cell will be affected"; predictions need direction and magnitude where possible.

Time
1–3 minutes.

5 JUSTIFY

What it asks
Provide reasoning that supports a claim or prediction with evidence.

What to write
Claim + evidence + reasoning (CER). The reasoning is the heart of the answer.

Sentence template
"[Claim] is supported by [evidence from data / known biology], because [biological principle linking evidence to claim]."

Common mistake
Restating the claim without adding the why.

Time
2–3 minutes.

Rule of thumb: short verbs need short answers; mechanism verbs need chain-style answers.

Page focus: memorize what these first 5 verbs demand.

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3. The 14 High-Frequency Verbs (6–10)

Numerical, visual, and data-based verbs still have specific scoring shapes.

	What it asks	What to write	Sentence template or response shape	Common mistake	Time
6 CALCULATE	Compute a numerical answer from given data.	Show the formula, plug in values, include units, give the final answer, round only as the prompt specifies.	Formula -> substitution -> arithmetic -> final answer with units.	Forgetting units, or showing only the final answer with no work.	2–4 minutes
7 DETERMINE	Use data, a model, or a calculation to decide a value, outcome, or relationship; sits between Calculate and Identify; sometimes numerical, sometimes data-based reasoning.	Show how the data, formula, or model leads to your answer. If numerical, show your work; if reasoned from data, cite the specific evidence.	"Using [the data table / formula / model], the value is [answer]" plus 1 sentence of evidence or arithmetic.	Stating an answer without showing how the data or calculation supports it.	1–3 minutes
8 CONSTRUCT	Produce a visual representation from given data or relationships.	A complete graph (see SI-02) or a labeled diagram. Use conventional symbols.	—	Treating it as a sketch instead of a scored deliverable; every label, axis, and arrow can be a separate rubric point.	5–7 minutes for a Q2 graph
9 DRAW	Produce a labeled visual; usually overlaps with Construct, sometimes lighter.	The visual element requested, with all required labels, arrows, or relative positions. Treat it the same as Construct: scored deliverable, not a sketch.	—	Omitting required labels because "draw" sounds informal.	same as Construct, scaled to the deliverable.
10 REPRESENT	Show how components relate, usually by completing or modifying a model.	Add or modify arrows, T-bars, X marks, and up/down indicators on the existing model.	—	Writing a paragraph instead of using the visual; Q5 wants the visual answer first.	4–6 minutes

Visual verbs = deliver the diagram, not a paragraph.

Page focus: visual and numerical verbs still need visible work.

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These verbs often appear in argument, evidence, and statistics tasks.

4. The 14 High-Frequency Verbs (11–14)

11 EVALUATE

What it asks	Judge whether a claim is supported, using criteria or data.
What to write	Take a position (supported / not supported / partially supported), then justify with specific evidence.
Sentence template	"The claim is [supported / not supported] because the data show [specific observation], which [does / does not] match the predicted outcome of [biological principle]."
Common mistake	Just describing the data without taking a position.
Time	3–4 minutes

12 MAKE A CLAIM

What it asks	State a defensible, specific position based on data.
What to write	A single declarative sentence that is specific, testable, and connected to the prompt.
Sentence template	"[Variable A] [increases / decreases / has no effect on] [Variable B] under [conditions]."
Common mistake	Claims that are too vague, such as "there is a relationship," or that restate the data without taking a position.
Time	1 minute

13 SUPPORT A CLAIM

What it asks	Provide evidence and reasoning that defend a stated claim.
What to write	Cite the specific data point or experimental result plus the biological principle that links evidence to the claim.
Sentence template	"This claim is supported by [specific data], because [biological principle]."
Common mistake	Generic evidence such as "the data show this" instead of citing specific values or trends.
Time	2–3 minutes

14 STATE the Null Hypothesis H_0

What it asks	Articulate the no-effect baseline expectation for a statistical test.
What to write	A specific sentence stating no difference / no effect / observed = expected.
Sentence template	"The null hypothesis is that there is no significant difference between [group A] and [group B]" or "the observed values do not differ significantly from the expected values."
Common mistake	Writing the alternative hypothesis instead of the null.
Time	1 minute

Quick memory hook
Evaluate = take a position. Claim = state it. Support = prove it. Null = no effect.

Page focus: know the difference between stating, supporting, and judging.

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Treat each verb as a separate scoring task, and size your answer to match the verb.

3. Verb Stacking: When Multiple Verbs Appear in One Stem

"Identify the variable, describe the trend, and explain the underlying mechanism."

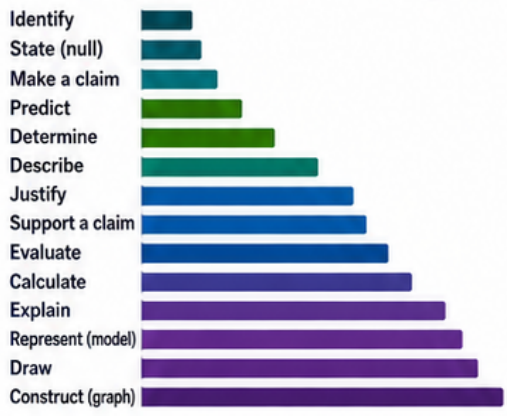
Verb	What you write	Approx. point share
Identify	The independent variable is [X].	1 pt.
Describe	Reaction rate increases from 0.5 to 8.0 umol/min as substrate concentration rises from 1 to 10 mM.	1 pt.
Explain	Increasing substrate concentration raises the probability of enzyme-substrate collisions; reaction rate rises until the enzyme is saturated, after which rate plateaus.	2 pts.

Number or paragraph-break your answer to match the verbs in the stem.
Don't combine them into one rambling response — graders may miss your work.

4. Time and Length, Proportional to the Verb

Relative Time Investment

Shortest → Longest



Verb	Suggested length	Suggested time
Identify	1 sentence (often <10 words)	30 sec.
State (null hypothesis)	1 sentence	1 min.
Make a claim	1 sentence	1 min.
Predict	1–2 sentences	1–2 min.
Determine	1–3 sentences + work if numerical	1–3 min.
Describe	2–4 sentences	1–2 min.
Justify	3–4 sentences	2–3 min.
Support a claim	3–4 sentences	2–3 min.
Evaluate	3–4 sentences	3–4 min.
Calculate	show work + result	2–4 min.
Explain	4–6 sentences	2–4 min.
Represent (model)	visual + 1 line note	4–6 min.
Draw	labeled visual	4–6 min.
Construct (graph)	full graph	5–7 min.

Total Section II budget: 90 minutes for 6 FRQs.
★ Long FRQs (Q1, Q2): about 25 min each. | ★ Short FRQs (Q3–Q6): about 8–10 min each.

Page focus: if the stem stacks verbs, your answer should stack tasks.

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6. Practice: Identify the Dominant Verb

Read the stem, spot the verb, and match the answer type instantly.

1	Identify two factors that could affect the rate of photosynthesis in this experiment.	**Verb: Identify.** Just name them — 1 sentence each. Don't explain how they affect rate.
2	Describe the trend in dissolved oxygen concentration shown in the graph.	**Verb: Describe.** Observation only — direction and magnitude. No mechanism.
3	Predict the effect of removing magnesium from the medium on the rate of photosynthesis. Justify your prediction.	**Verbs: Predict + Justify.** Two scoring tasks. Direction first, then biological reason.
4	Explain how the structure of the mitochondrial inner membrane supports its function in ATP synthesis.	**Verb: Explain.** Mechanism required — connect cristae folding -> surface area -> ETC -> ATP synthase.
5	Using the data in the table, evaluate the student's claim that increasing temperature always increases enzyme activity.	**Verb: Evaluate.** Take a position. Use specific data points to support or refute.

Fast method: circle the verb first, then decide your response type *before* writing.

Page focus: dominant verb first, content second.

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Know the distinction before you start writing.

7. The Five Verbs That Most Often Get Confused

1 Describe vs. Explain

Describe = what you observe.
Explain = why it happens.
Don't write a mechanism when describe is asked; don't restate observation when explain is asked.

2 Justify vs. Support a claim

Both want claim + evidence + reasoning. Justify leans more on the reasoning (the why); support a claim leans more on the evidence (specific data citations). The rubric points are similar — write both elements either way.

3 Predict vs. Explain

Predict = directional outcome.
Explain = mechanism.
If the prompt says predict and explain, do BOTH — direction first, then mechanism.

4 State vs. Identify

Often interchangeable, but state is more common for hypotheses (null/alternative); identify is more common for variables, structures, or organisms.

5 Construct vs. Represent

Construct usually means build from scratch (graph, diagram).
Represent usually means modify or complete an existing model.
In Q5, watch which one is asked — your output looks different in each case.

Pre-Writing Verb Check (15 seconds)

1. What is the dominant verb in this prompt?
2. How many verbs are stacked? *(One task per verb.)*
3. What is the expected length for this verb?
4. What is the scoring shape — 1 pt for naming? 2 pts for mechanism? 4 pts for full graph?
5. Have I matched the verb to my response type? *(Don't write a mechanism for identify; don't write a name for explain.)*

Page focus: disambiguate the verb before you launch into the answer.

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8. One-Page Cheat Card

Ultra-compact review: match the verb to the response type.

Verb	Core action	Length
Identify	Name it	1 sentence.
State	State it (often null hypothesis)	1 sentence.
Describe	What you see	2–4 sentences.
Predict	Direction (up / down / no change)	1–2 sentences.
Calculate	Show work + units	Formula + answer.
Determine	Decide using data/work	Show evidence.
Make a claim	Defensible position	1 sentence.
Justify	Why it's true	3–4 sentences.
Support a claim	Cite specific data + reason	3–4 sentences.
Explain	Mechanism + causal chain	4–6 sentences.
Evaluate	Take a position + data	3–4 sentences.
Construct	Build the visual	Full deliverable.
Draw	Labeled visual	Full deliverable.
Represent	Modify the model	Visual + note.

The one-line meta-rule:
Match the verb to your response type, then deliver only what the verb asks.
Extra writing earns no extra points.

Name it. Describe it. Explain it. Justify it. Show work. Draw the deliverable.

End of SI-05 content — review complete.

Page focus: use this page the morning of the exam.