It may be helpful to draw a rough sketch for the problem to get an idea of how the things work

Phase	Step	Action	Execution Prompt (What you write down)
1. Setup & Deep Structure (No Math)	**1.1. Major Idea Identification**	Define the overarching physical law.	What is the major governing law / idea? (e.g., "Coupled Harmonic Oscillator," "Non-inertial fluid").
	1.2. Constraints & Coordinates	Define the physical space and translate text to math.	Define system boundary and coordinate axes. What implicit constraints (spatial, time regime, physical, you get the idea) are hidden in the text?
2. Representation (Chunking)	**2.1. Heuristic Selection**	Identify the specific idea/trick that exploits the constraints.	What specific heuristic or Kalda idea to reduce the cognitive load? For example, using effective gravity, free fall reference frame, method of virtual displacement, you get the idea.
	2.2. Scientific Diagram	Draw the necessary simplified diagram(s)	What visualization method can be used to reduce cognitive load? Velocity space diagram, velocity polygon method, free body diagram, energy state, potential energy curve, field flux, etc.
	2.3. Mental Animation Check	Verify the diagram against physical intuition.	What happens to the system as it evolves with time? What happens if I remove a component? Does the

			modeled trajectory map to the global potential minimum?
3. Mathematical Execution	**3.1. DoF Check (Mandatory)**	Verify solvability before calculating.	Do my independent equations exactly match my degrees of freedom? (If not, return to 1.2).
	3.2. Operator Application	Execute the math based on the chosen heuristic, constraints, and major laws..	Write the equations dictated strictly by Phase 2.
4. Evaluation	**4.1. Symmetry Check**	Verify geometric or algebraic symmetry.	Does the final expression mirror the physical symmetry of the system?
	4.2. Limiting Cases	Test extreme boundaries.	What happens as variables approach zero? Approach infinity? What if they're all equal! (e.g., small angle approximation, terminal limits).
	4.3. Scaling Laws	Verify proportional relationships.	Can I derive the form of this expression purely through scaling arguments? What is the order of magnitude estimate for this case? Does it make sense with reality?
	4.4. Dimensional Analysis	Verify units.	Do all additive terms possess identical dimensions?