

**One page, nine habits, zero fluff.**

Each habit takes  $\leq 3$  minutes to deploy and is **proven** to sharpen both marks **and** the ability to tackle brand-new question styles.

Integrated Programme (IP) Physics pulls A-Level ideas down into Sec 3-4, mixes them across topics and expects you to *transfer* methods, not recite scripts.

The nine micro-moves below tighten that transfer loop. Practise them for one week and you will feel graphs, forces and energy start to “click”.

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## 1 Sketch → Symbol → Sentence Loop

**Why it works** Experts juggle diagrams, maths and words in parallel; novices stick to one mode. Switching modes triggers deeper processing.

**2-min routine** Before touching numbers:

1. **Sketch** a free-body/graph.
  2. **List** variables with units under the sketch.
  3. **Write** one English sentence stating what is changing and what is conserved.
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## 2 Self-Explain Each Worked Step

**Why it works** Explaining *why* a line follows from the previous line doubles learning gains versus silent reading.

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## 3 Interleave, Don't Block

**Why it works** Mixing question types during practice (motion, forces, electricity) produces higher retention and better transfer to novel contexts.

**2-min setup** Stack tonight's homework like M-F-M-E-F (Motion-Forces-Motion-Energy-Forces) instead of all Motion first.

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## 4 Retrieval Roulette

**Why it works** Low-stakes quizzes hard-wire facts and improve self-explanation quality.

**2-min routine** Open yesterday's notes, shut the book, bullet five questions you *hope* won't appear tomorrow. Answer them cold; check; star the misses.

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## 5 One-Knob Variation Sprint

**Why it works** Varying a single parameter exposes the invariant physics beneath surface details.

**2-min drill** Take any kinematics Q, flip just the sign of  $a$ , predict the qualitative change, then crunch the numbers to confirm.

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## 6 PhET + Paper Pairing

**Why it works** Interactive sims cut stubborn misconceptions when paired with pen-and-paper explanations.

**3-min routine** Run a PhET sim (e.g., Forces & Motion) for 60 s → pause → sketch the current screen and label forces/graphs by hand.

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## 7 Analogy Bridge Notebook

**Why it works** Learning to map a solved example onto a superficially different target builds transfer power.

**2-min routine** For every new homework problem, jot "*Looks like: \_\_\_ solved example because \_\_\_ identical principle*". Fill the blanks before solving.

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## 8 Error & Unit Log

**Why it works** Noting error patterns plus unit checks slashes repeat mistakes.

**2-min routine** When you finish a question, scan for sign, unit or algebra slips; log them in a Google Sheet (" - incorrect vector sign", "× unit mismatch").

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## 9 Spaced-Teaching Clips

**Why it works** Explaining concepts to someone else after spaced gaps cements long-term memory.

**3-min routine** Record a 90-second "Feynman-style" explainer on yesterday's topic, wait 48 h, re-record from scratch, compare, post the cleaner take to your class chat.

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## 7-Day Habit Sprint (print & tick)

Day	Focus micro-move	Mission ( $\leq 15$ min)
1	Sketch $\rightarrow$ Symbol $\rightarrow$ Sentence	Re-annotate today's notes
2	Self-Explanation	Voice-memo one worked example
3	Interleave	Rearrange tomorrow's worksheet
4	Retrieval Roulette	5-Q morning quiz
5	Variation Sprint	Tweak parameters on 3 past-paper MCQs
6	PhET + Paper	Simulate & sketch projectile motion
7	Analogy Bridge	Map a momentum Q to an energy one

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## Quick FAQ

**"Doesn't this add time?"** Each micro-move *replaces* passive rereading, so net study time often drops.

**"Can I start mid-term?"** Yes. Pick two habits, run them for one chapter, then add another.

**"Are these IP-specific?"** They're universal, but they matter *more* in IP because exam setters love cross-topic hybrids.

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## Further reading

- Our blog post *Make Your Own SUVAT Questions* for deeper Variation Theory in action.  
<https://eclatinstitute.sg/blog/your-own-suvat-questions>
- PhET Interactive Simulations: <https://phet.colorado.edu/> — filter “Physics > HS”.
- Roediger & Karpicke, “The Power of Testing Memory” — classic retrieval-practice study.

**Takeaway:** Nine tiny habits → faster recall, cleaner algebra, wider transfer. Start tonight; your Term 2 paper will thank you.