

the

10

MATH HACKS

That Instantly Adds 2 Grades

**the
bold
room.**

helping Sec 1s to 4s jump from F9 to A1

Intro

I wasn't always good at Math.

In fact, I used to be one of the worst students in my cohort.

Near the bottom. Failing multiple subjects.

I remember what it felt like to:

Not understand anything in class

Feel embarrassed to ask questions

Think that maybe I just wasn't "smart enough"

But everything changed when I realised this:

It wasn't about intelligence.

It was about how I was learning.

Once I started using the right methods,

my grades didn't just improve...

They jumped.

This guide contains the exact kind of exam shortcuts, clearer thinking frameworks, and clarity that changed everything for me and for many of my students today

If you're willing to give this a real shot...

This might be the moment things finally click for you

1. Difference between subset and proper subset

Sec 4

What is a proper subset?

If A is a proper subset ($\subset$) of B

A must be strictly smaller than B

What is a subset?

If C is a subset ($\subseteq$) of D

Every element in C is inside D

and C can also be equal to D

For example, {Restrooms} is a subset ($\subseteq$) of {Toilets}

10 Seconds Way to Remember

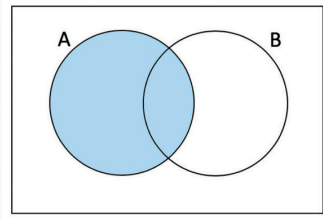
- Subset ($\subseteq$) → “can be same” there is an equal sign in $\subseteq$
- Proper subset ($\subset$) → “confirm smaller” and not equal

Videos speak a thousand words
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2. Sets shading technique

Sec 4



The Universal Method (Works Every Time)

1. Work from inside brackets
2. SHADE step by step using different patterns
Shade what you see first
3. Translate symbols into actions
 - $\cap$ $\rightarrow$ Intersect (overlap) $\rightarrow$ Take the crosshatch pattern
 - $\cup$ $\rightarrow$ Union (combine) $\rightarrow$ Take everything that my pencil touched
 - $'$ $\rightarrow$ Complement/Prime (outside) $\rightarrow$ I do not want this, so exclude and take opposite



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3. Probability And/Or Statement

Sec 4

The 3 Mistakes Students Always Make

Mistake 1: Ignoring multiple scenarios

They see “one red and one blue” → only do one case

Mistake 2: Not rewriting

They jump straight into calculation → confusion

Mistake 3: Mixing AND and OR

They add when they should multiply, or vice versa

In exams:

- Questions are written in words
- Situations are unclear
- Students mix up when to use + or ×

Therefore we need a structure to get it right every time

Step 1: Count the number of scenarios

Ask: "Are there multiple possible cases happening?"

Step 2: Convert the question into AND / OR

Translate English into logic:

Step 3: Change the statements to the respective probabilities

Question:

A bag has 3 red and 2 blue balls.

Find the probability of picking one red and one blue ball (without replacement).

Thinking:

There are TWO possible cases:

1) Red then Blue 2) Blue then Red

Translate english to logic using AND/OR:

$P(\text{Red AND Blue})$ OR $P(\text{Blue AND Red})$

Change the statements to the respective probabilities

$$P = \left(\frac{3}{5} \times \frac{2}{4} \right) + \left(\frac{2}{5} \times \frac{3}{4} \right)$$



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4. Mean and Standard Deviation using calculator

Sec 4

The hard truth

Students are not losing marks because they don't know the formula.

They:

- Square numbers wrongly
- Add wrongly
- Copy values wrongly

One small mistake results in the entire answer being wrong

The real exam strategy

Use your brain for thinking

Use your calculator for computation

Top students do not waste energy on repetitive calculations.

Step 1: Enter STAT mode

As shown in the video:

MENU → 3 (Statistics) → 2 ($y=a+bx$)

Step 2: Input the data

x	f
2	1
4	2
6	1

Then:

'x' column = values

'y' column = frequencies

Step 3: Go to the stats summary

OPTN → 1 (2-Var Calc)

Step 4: Find the required calculations

These are the most common calculations/substitutions I should look out for

$$\Sigma(fx^2) \rightarrow \Sigma(x^2y)$$

$$\Sigma fx \rightarrow \Sigma xy$$

$$\Sigma f \rightarrow \Sigma y$$

**Calculator Method
(Watch + Follow
Along)**



5. Converting between Degrees and Radians

Sec 3

DID YOU KNOW YOUR CALCULATOR CAN
CONVERT DEGREES $\leftrightarrow$ RADIANS FOR YOU?

The mistake most students make

Students:

- Memorise formulas
- Do manual conversion

This leads to:

- Slower working
- Calculation mistakes
- Losing time in exams

**Calculator Method
(Watch + Follow
Along)**



6. Finding shape of graph/functions by subbing

Sec 3

Why students struggle

When they see:

$$y = \frac{1}{x}$$
$$y = \frac{1}{x^2}$$

Students try to recall shapes they have memorised

In exams:

They forget, mix them up, or sketch wrongly

The smarter method

if you cannot recall what you have memorised,
Substitute values of x and let the graph reveal itself

Example:

$$y = \frac{1}{x^2}$$

Step 1: Choose smart x-values

Avoid $x=0$ (undefined)

Use:

$x=-10, -1, 1, 10$

Step 2: Draw a plotting box

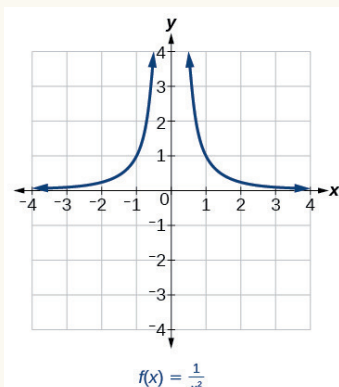
x	-10	-1	1	10
y	0.01	1	1	0.01

What you should notice

- All y-values are positive
- Left side mirrors right side

So:

Graph is in upper half



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7. Solve quadratic equations using calculator

Sec 3

The primary method should be to use quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Use calculator method when checking your answers

Example:

$$x^2 - 5x + 6 = 0$$

$$ax^2 + bx + c = 0$$

$$a=1, b=-5, c=6$$

Step 1: Enter Equation Mode

On your calculator:

MENU → 5(Equation) → 2(Polynomial) → Degree 2

Step 2: Input coefficients

Enter:

$$a = 1, b = -5, c = 6$$

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Step 4: Read your answers

Calculator will give:

$$x=2$$

$$x=3$$



8. Fastest Way to Complete the Square

Sec 3

It would take me many words to explain this, the video is only 3 mins long

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9. Proportion

Sec 2

y varies directly with the cube root of x.

Find the percentage increase in y when x is doubled.

Step 1: Write the equation

"Varies directly" means:

$$y \propto x^3$$

$$y = kx^3$$

$$y_{\text{old}} = k\sqrt[3]{x}$$

Step 2: Compare OLD vs NEW

When x is doubled:

$$x \rightarrow 2x$$

$$y_{\text{new}} = k\sqrt[3]{2x}$$

Step 3: Split the cube root

$$y_{\text{new}} = k\sqrt[3]{2}\sqrt[3]{x}$$

Step 4: Key Comparison

$$y_{\text{new}} = \sqrt[3]{2} \times y_{\text{old}}$$

So the change depends ONLY on:

$$\sqrt[3]{2}$$

$$\sqrt[3]{2} \approx 1.2599$$

Step 4: Percentage Increase

$$\begin{aligned}\text{Increase} &= (1.2599 - 1) \times 100\% \\ &= 0.2599 \times 100\% \\ &= 25.99\% \approx 26.0\%\end{aligned}$$

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10. Adding & Subtracting Time Using Calculator (FAST METHOD)

Sec 1

Most students make careless mistakes when adding time.

2 h 45 min + 1 h 35 min

$2.45 + 1.35 = 3.80$

There is no such thing as 80 minutes

Why?

Because time is base 60, not base 10.

The Correct Calculator Method

Most calculators have this button:

° ' " (Degrees Minutes Seconds DMS button)

This is your BEST FRIEND for time.



Step 1: Enter using DMS format

$$2 \left[\text{°}'''' \right] 45 \left[\text{°}'''' \right] + 1 \left[\text{°}'''' \right] 35 \left[\text{°}'''' \right]$$

Step 2: Press =

You'll get: **4° 20'**

Final Answer: 4 h 20 min

Founder Story – The Bold Room

There was a period in my life where I felt completely behind. I had just left my corporate work. I thought I was ready to build something of my own.

I tried everything. A latte art academy. A marketing agency. E-commerce.

None of it worked. For almost two years, I made close to zero income.

At an age where I thought I should be building independence, I was relying on my parents again.

It was humbling.

But the hardest part wasn't the money.

It was watching everyone else move forward while I stood still.

And I remember thinking quietly:

"Maybe I'm just not that kind of person."

"Maybe I should just go back into the corporate world."

That sentence is dangerous.

Because once I believe it, I shrink.

I stop trying for things that feel slightly out of reach.

I start choosing safety over possibility.

I started playing small. Not because I lack ability, but because I lack courage.

Founder Story – The Bold Room

That season broke something in me.

But it also built something.

It forced me to confront how much of my identity was tied to results.

It forced me to detach from comparison.
It forced me to rebuild confidence without external validation.

My current results do not define my trajectory.
My starting point does not define my ceiling.

Most people don't fail because they lack intelligence.

They fail because they lock themselves into fixed identities.

"I'm average."

"I'm not good at math."

I know how dangerous those labels are. Because I've believed them before.

That's why at The Bold Room.

I focus on offering powerful mental shortcuts and delivering quick wins within a couple of lessons that shatters the old identity. So that the students here can lead a free, fearless, and fulfilled life.

**If you or your child is currently:
struggling with Math
wants to get results quickly
but not improving despite effort**

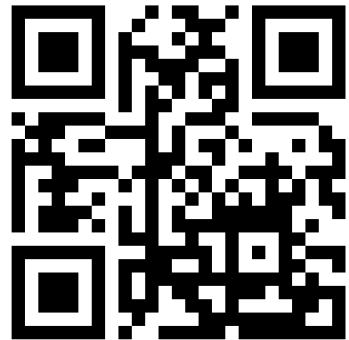
I am offering a free Math Diagnostic Session

I will identify:
your weakest topics
exam mistakes
fastest way to improve.



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