Universal Math Learning Strategies

# Use Multiple Representations

* **Visual**: Graphs, diagrams, flowcharts (e.g., unit circle for trig, slope fields for calculus).
* **Symbolic**: Formulas and identities.
* **Verbal**: Explain steps aloud or write out reasoning.
* **Tabular**: Input-output tables for functions, truth tables for logic.

# Metacognitive Strategy Templates

* “*What do I know*?”
* “*What is being asked?*”
* “*What tools or rules apply here?*”
* “*Can I check this another way?*”

# Scaffolded Problem Solving

* Provide guided steps initially, fade over time.
* Break problems into parts (label steps 1, 2, 3…).
* Offer sentence stems for proofs or explanations.

# Color Coding and Visual Chunking

* Use consistent colors to represent:

o Like terms

o Function types

o Positive vs. negative

o Steps in a sequence

* Visually isolate operations or identities.

# Digital Tools & Supports

* **Desmos, GeoGebra, Wolfram Alpha** for visualization and checking work.
* **Speech-to-text** for writing equations.
* **Annotation tools** to draw directly on digital math sheets.

# Spaced Retrieval + Interleaving

* Practice different types of problems in mixed sets.
* Revisit topics over time, don’t cram.

## References

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