

# Breaking the Cycle of Innumeracy and Anxiety

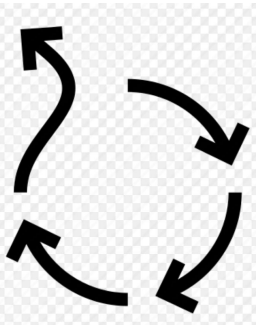
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# Layers of the Math Anxiety Cycle

This is the reality for many students and teachers.





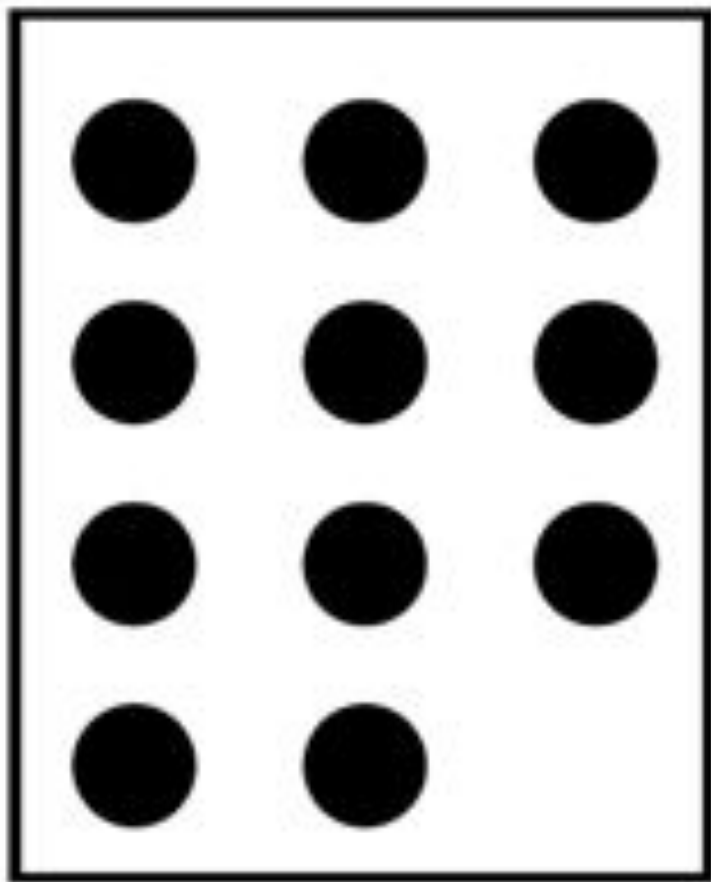
# The Traditional Approach: Why Memorization is not enough

*These methods may work short term, they often lead to long term disengagement and anxiety. Why?*



$$\begin{array}{r} \phantom{24} 54 \\ \hline 24 \overline{) 13032} \\ \underline{- 120} \phantom{0} \phantom{0} \phantom{0} \\ 103 \phantom{0} \phantom{0} \\ \underline{- 96} \phantom{0} \phantom{0} \\ 72 \phantom{0} \phantom{0} \end{array}$$

A long vertical arrow on the right side of the division problem points downwards from the top row to the bottom row, indicating the progression of the calculation.



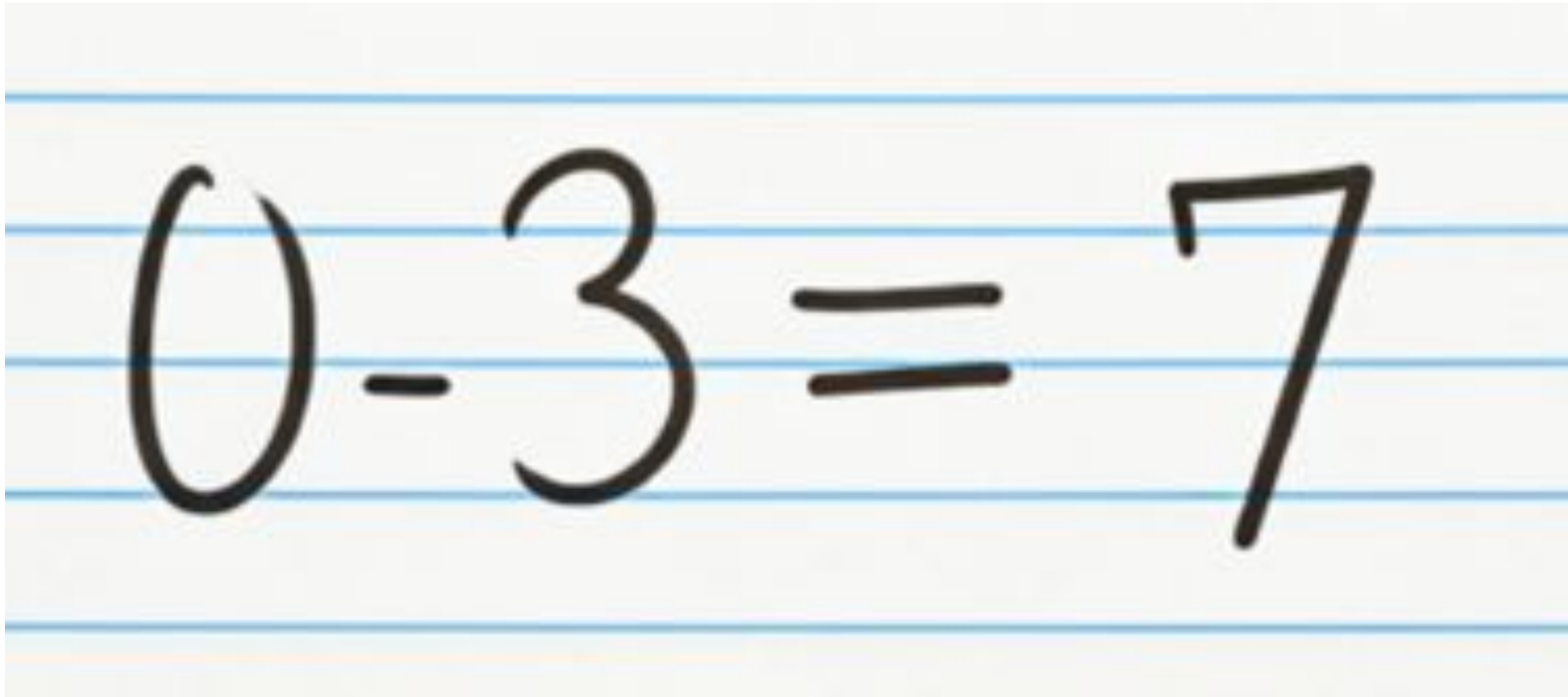
How many?

$$\begin{array}{r} 0 \quad 13 \\ \underline{1 \quad 3} \\ - \quad 7 \\ \hline 6 \end{array}$$

Why doesn't this make sense?

Student  
Work

Why might a student do this?



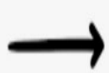
A photograph of a piece of lined paper with a handwritten equation in black ink. The equation is  $0 - 3 = 7$ . The paper has horizontal blue lines. The numbers and symbols are written in a simple, child-like cursive style.

# Moving Beyond Procedures: A Student-Centered

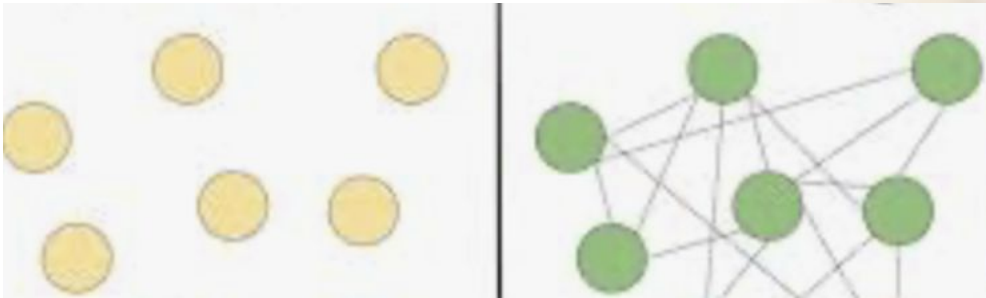
*A student-centered approach emphasizes conceptual understanding and problem-solving.*

- explore different strategies
- make sense of mathematical concepts.

Rote  
Memorization



Conceptual  
Understanding

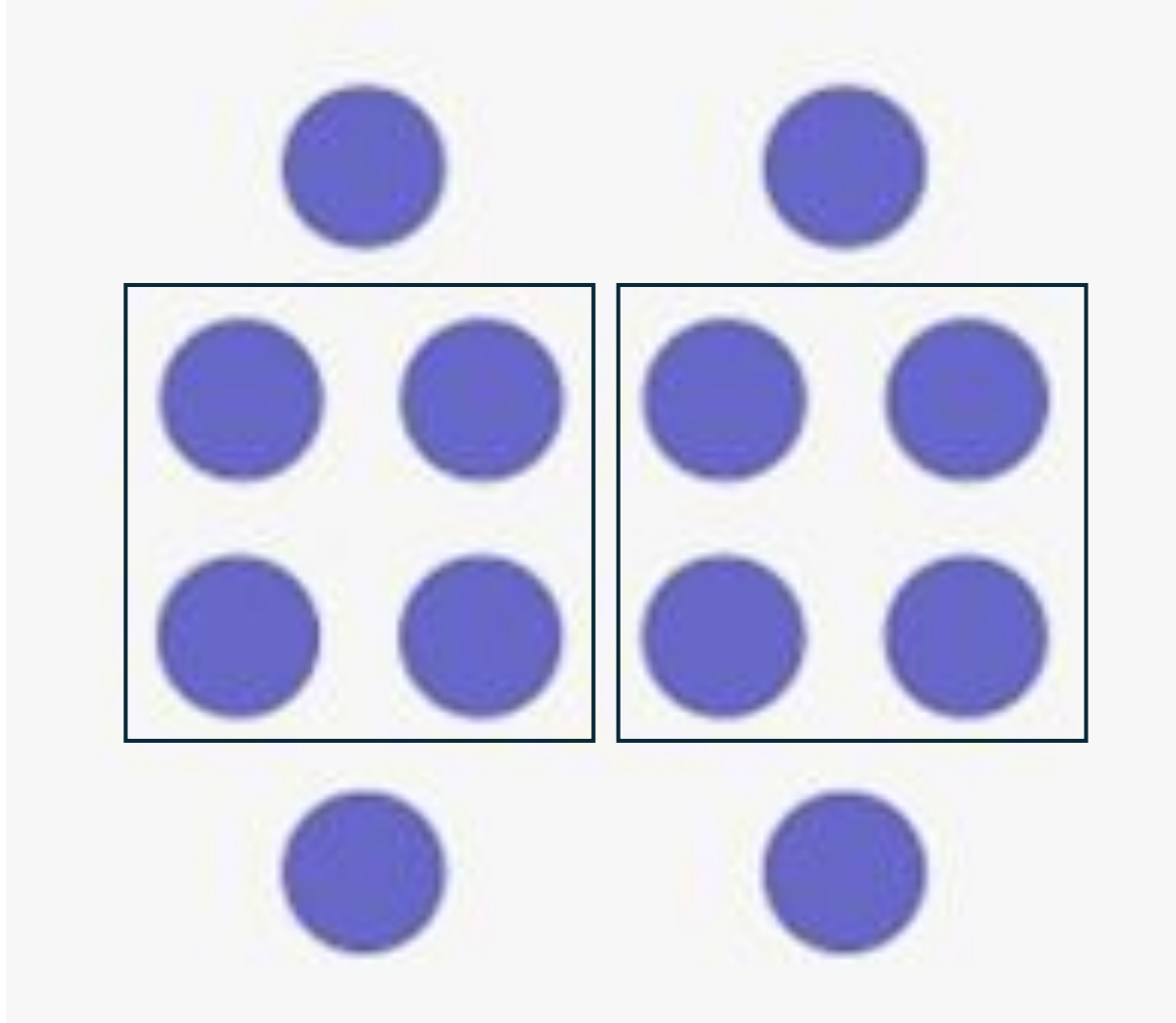






How many?

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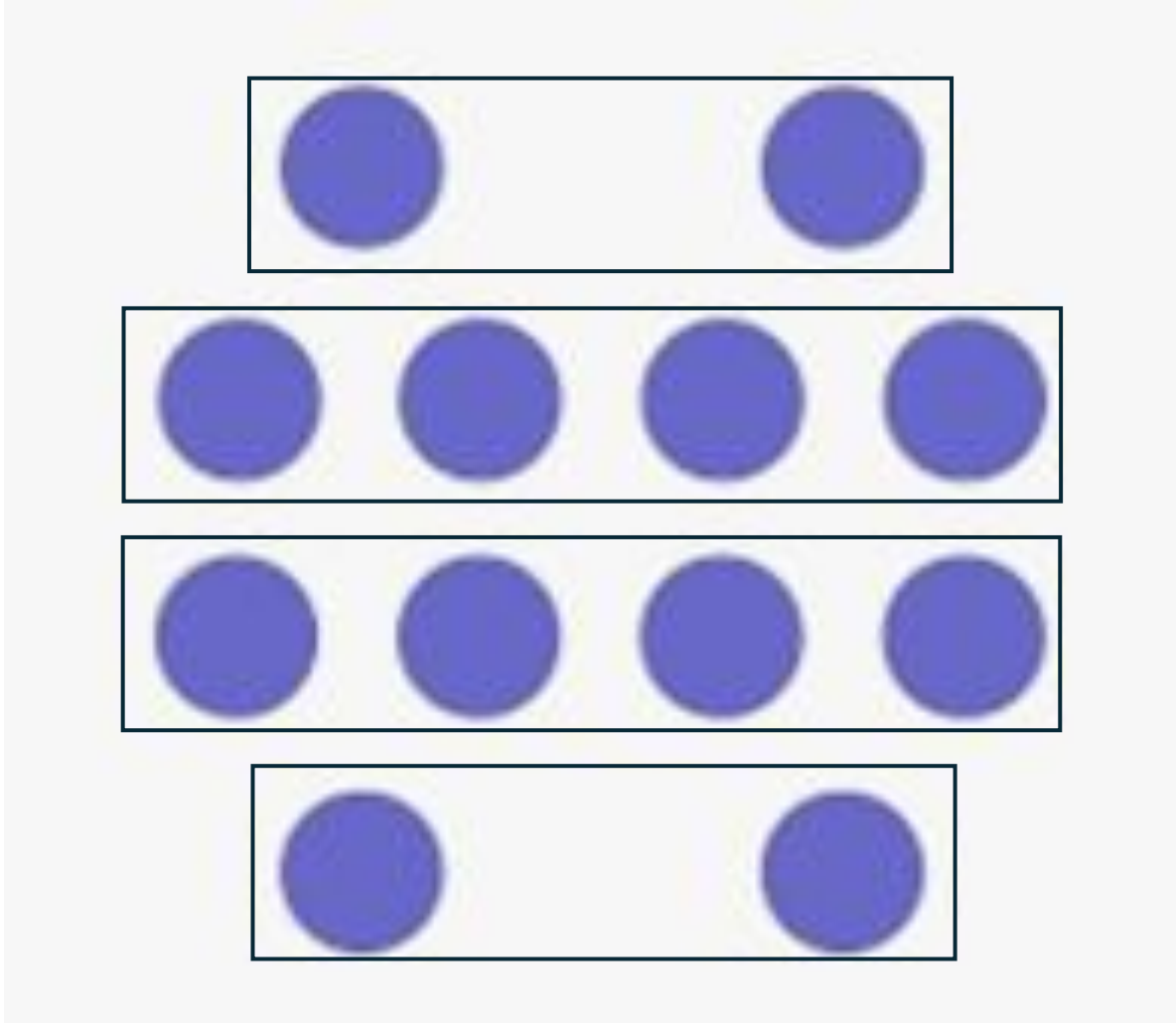
How many?

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$$4 + 4 = 8$$

9, 10, 11,

**12**

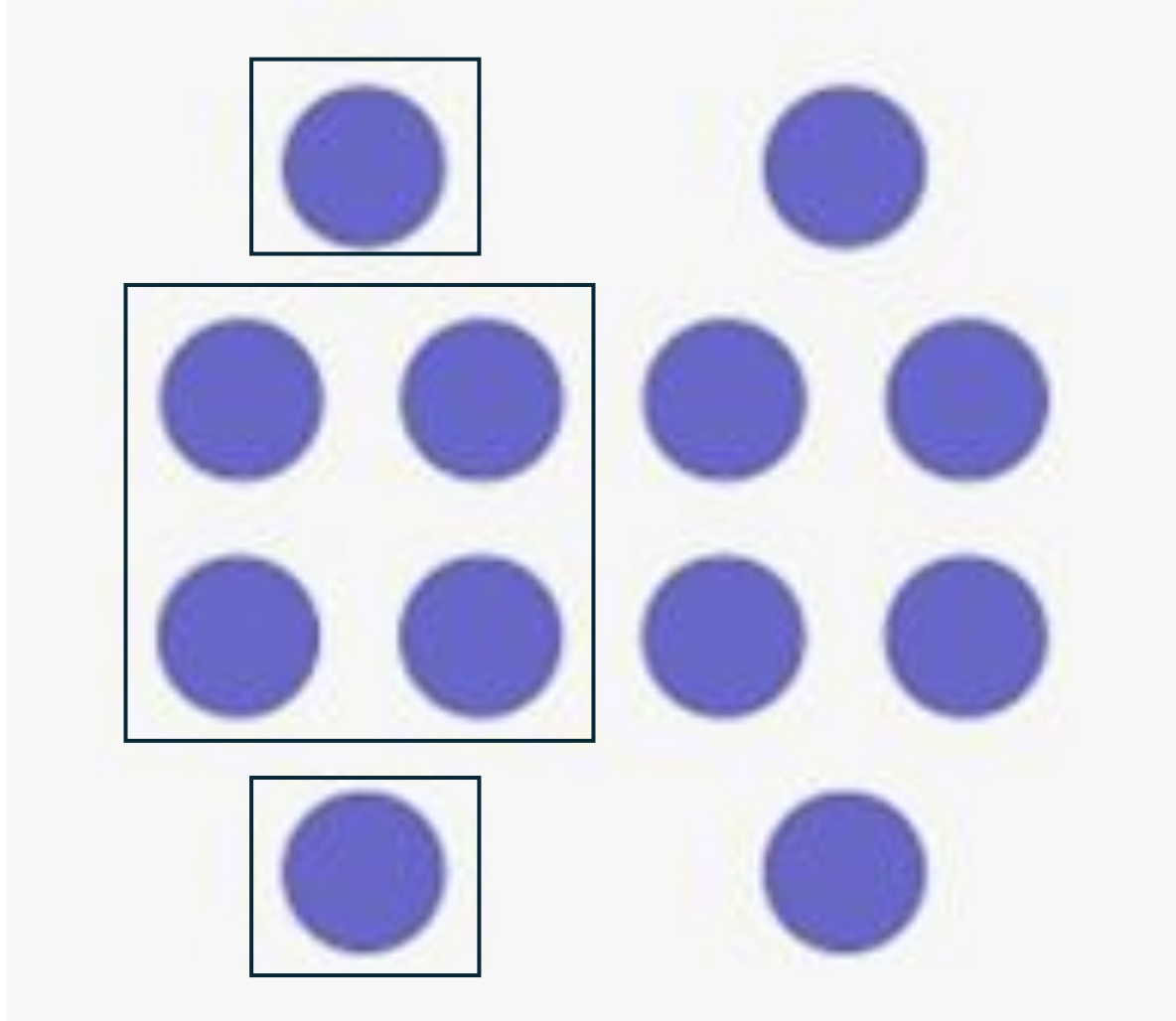


How many?

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$$2 + 4 + 4 + 2 = 12$$





How many?

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4, 5, 6

$$6 \times 2 = 12$$

$$\frac{1}{2} \times \frac{2}{3}$$

Think about the prompt.

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What is half of two-thirds?

How would you know?

$$\frac{1}{2} \times \frac{2}{3}$$





$$\frac{1}{2} \times \frac{2}{3}$$



$$\frac{1}{2} \times \frac{2}{3}$$

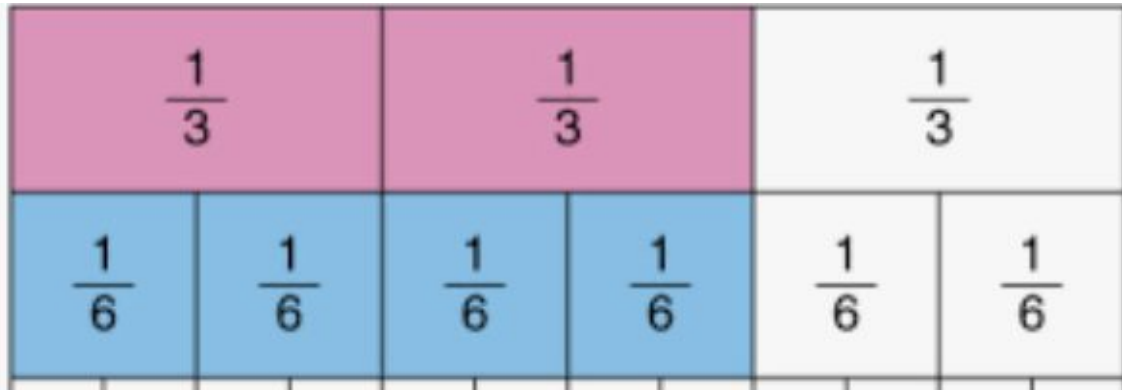


$$\frac{1}{2} \times \frac{2}{3}$$




# Equivalency

$$1/3 = 2/6$$



# Breaking the Cycle: Empowering Educators and Students



Fostering Deep Understanding



# A Call to Action



*It's time to revolutionize math education.* By focusing on conceptual understanding and fostering curiosity, we can create a more positive and inclusive learning environment for all (teachers and students).