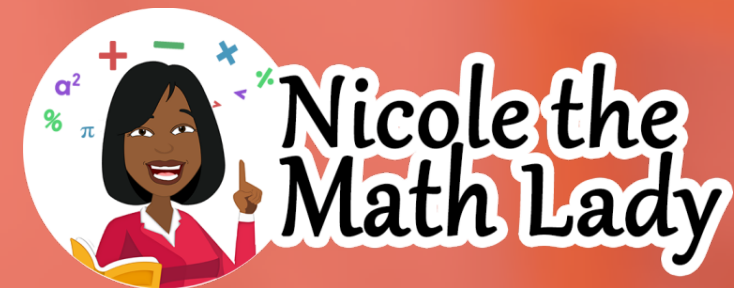
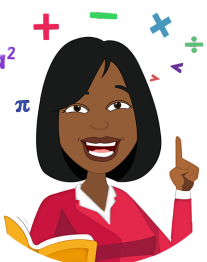


MATH GAPS: How to find them and fill them up!

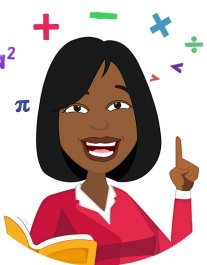


What is a math gap?

- A math learning gap refers to any math skill that a student should have previously mastered, but didn't.



Why are math gaps a problem?



The nature of math

Calculus

Trigonometry

Exponential Algebra

Geometry

Linear Algebra

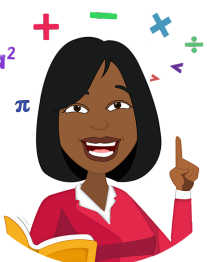
Pre-Algebra

Arithmetic



Where do we need multiplication?

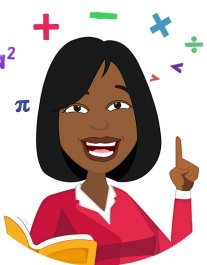
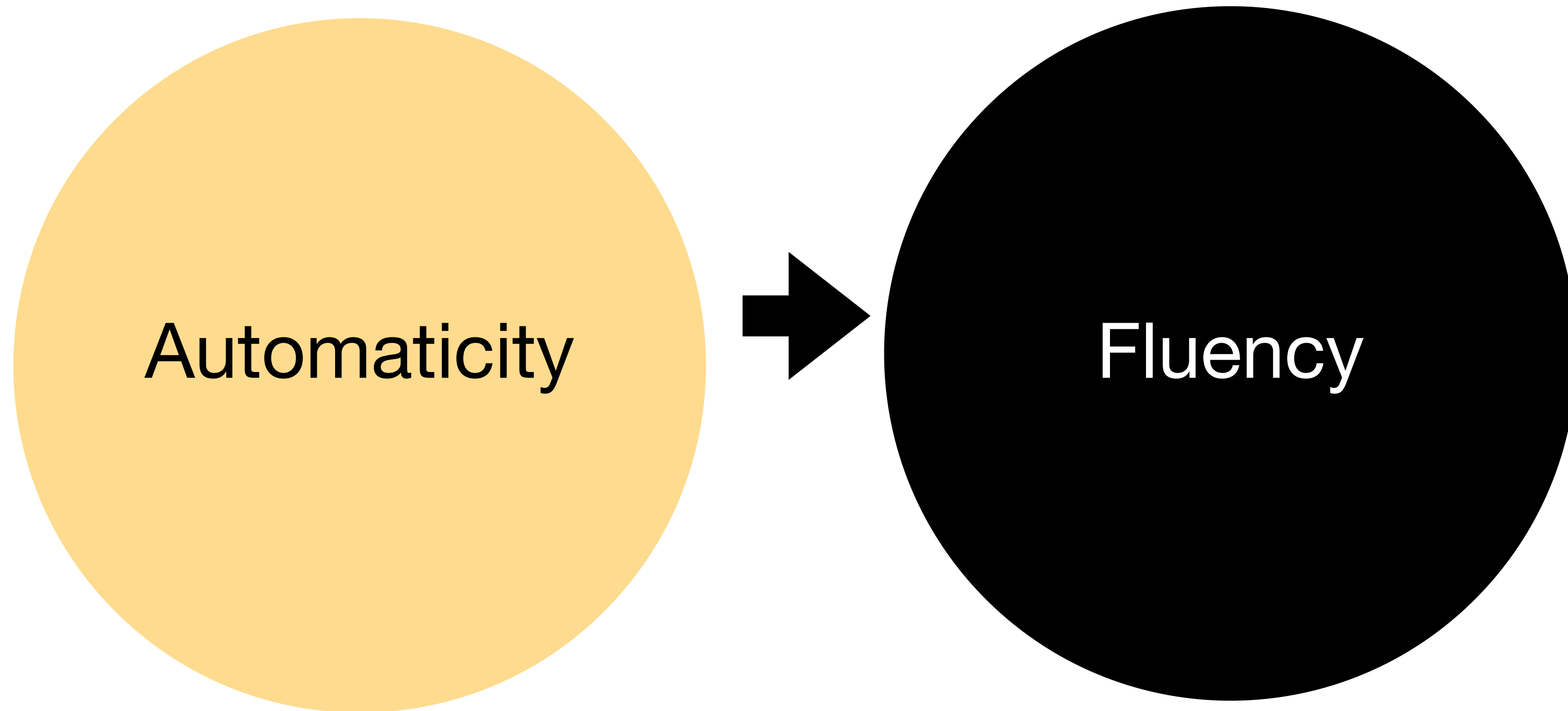
- Factors/Greatest Common Factor
- Multiples/Least Common Multiple
- Common denominator
- Simplifying Fractions
- Converting Mixed Numbers to Improper Fractions
- Equivalent Fractions
- Multiplying Fractions
- Dividing Fractions
- Measurement Conversions
- Roots
- Decimals
- Proportions
- Percents
- Rates
- Exponents and Square Roots



HELP



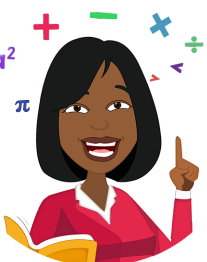
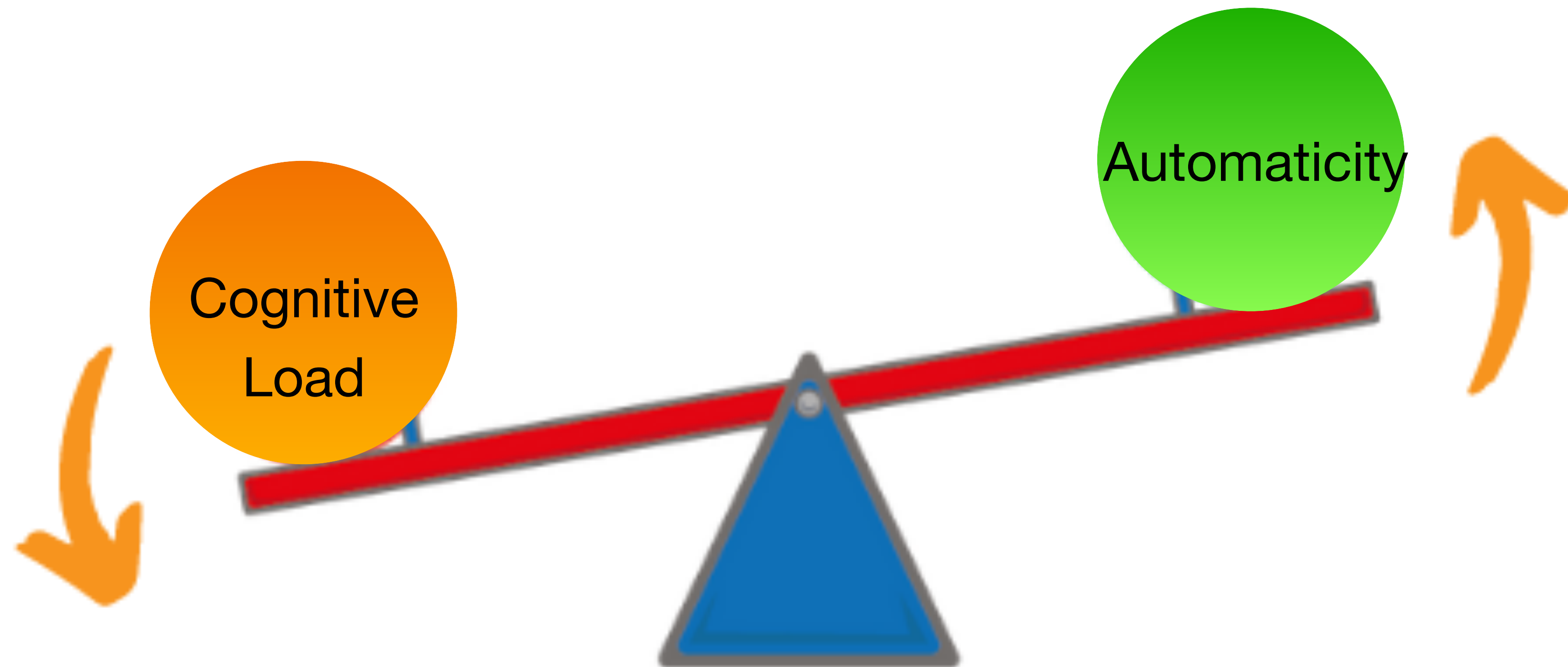
What's Missing?



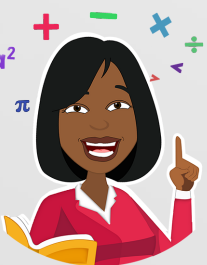
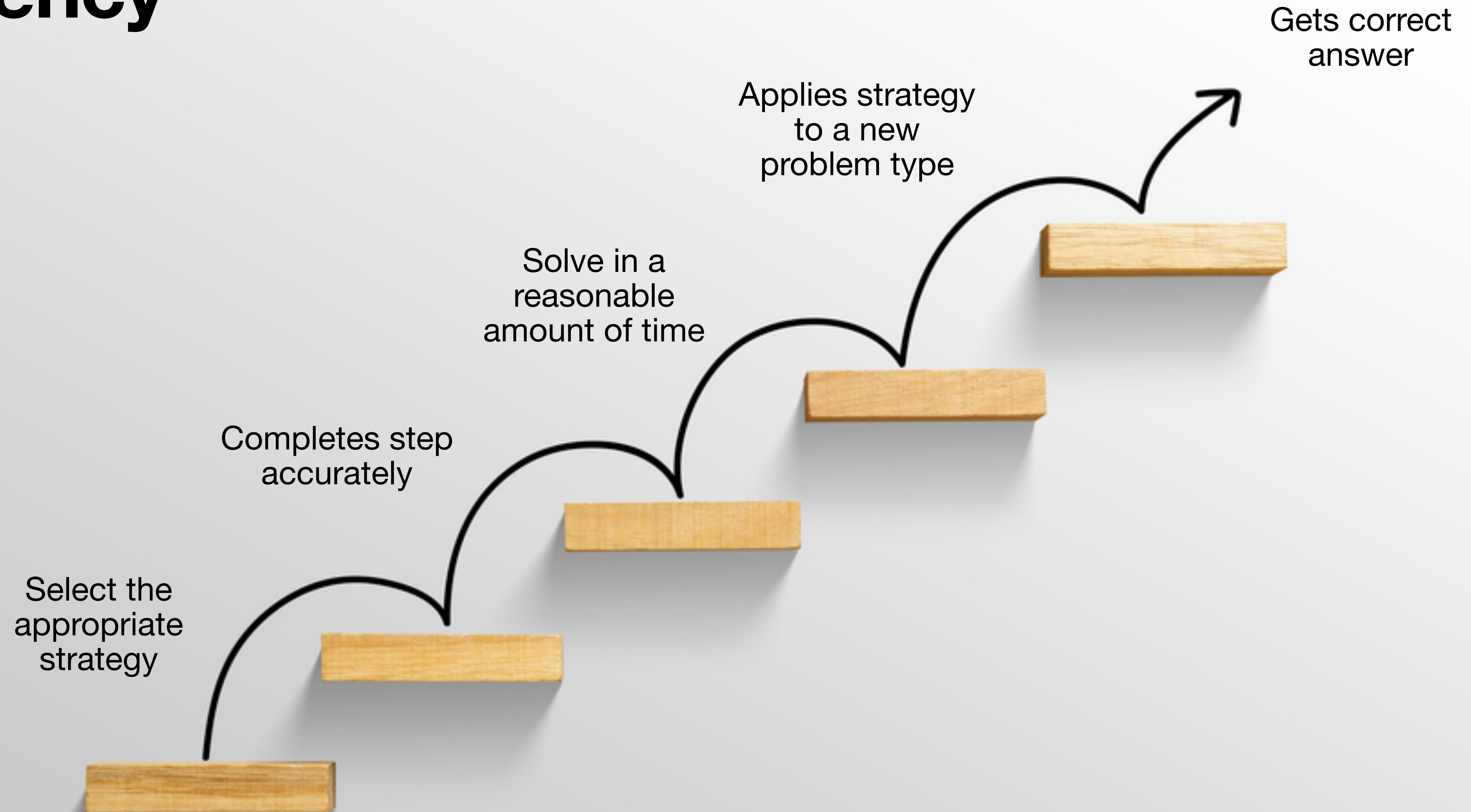
Automaticity

Automaticity is the ability to deliver a correct answer immediately from memory without conscious thought, as opposed to relying on calculation.

- Stickney et al. (2012)



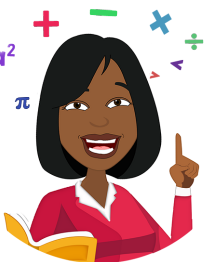
Fluency





Without automaticity in math facts and math fact families, it will be more difficult for students to engage in the **higher order thinking skills** that are necessary to solve many math problems.

Best way to handle math gaps

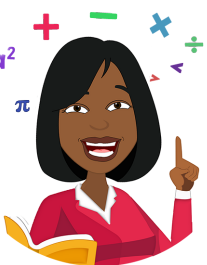
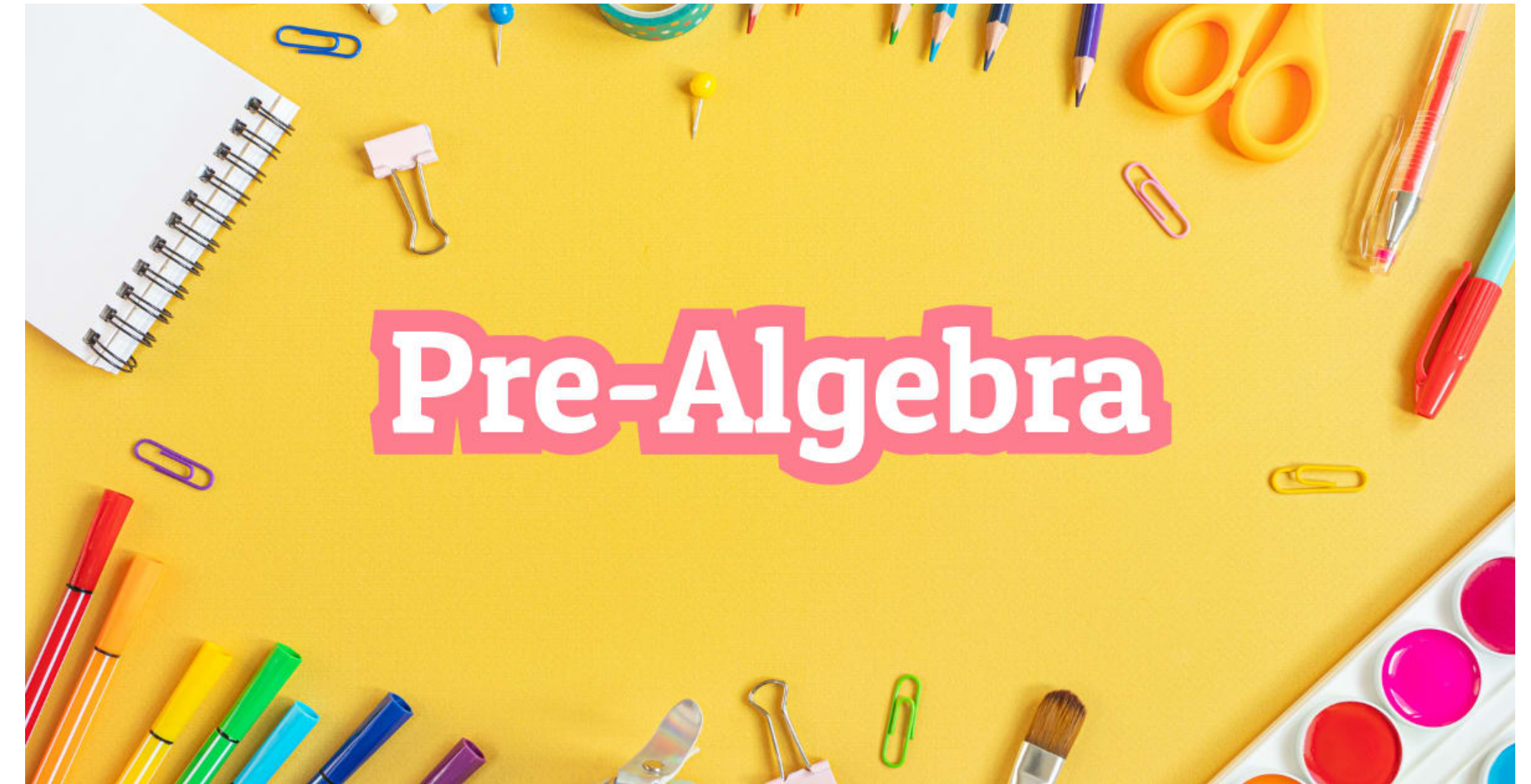






**them as they
are forming**

Where do math gaps occur?



A woman with dark curly hair, wearing a yellow long-sleeved shirt and a black wristband with white circular patterns, is covering her ears with both hands. She has a frustrated or angry expression on her face, with furrowed brows and a slightly open mouth. The background is plain white.

Skip counting

Stories

Songs

Drills

Which method works?

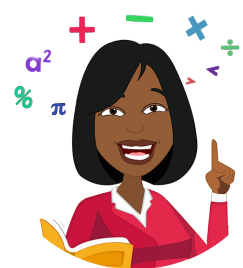
The research shows....

**It
All
Works**



So find something your kids will enjoy!

It's not the what, it's the HOW!



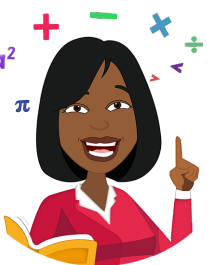


We need intentional, targeted practice to reinforce these foundations and fill the math gaps.



To gain automaticity, take...

S I D E S



S

Speak it

I

D

E

S

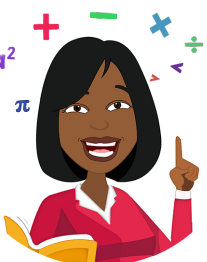




The Production Effect

The dual action of speaking and hearing oneself has the most beneficial impact on long-term memory.

- *The University of Waterloo*



S

Speak it

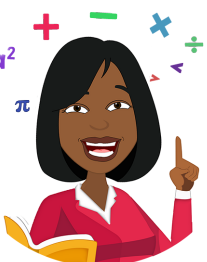
I

Interesting/Active

D

E

S





S

Speak it

I

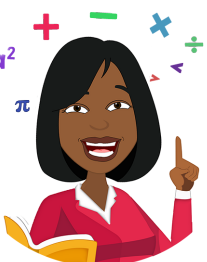
Interesting/Active

D

Dedicate Time

E

S





hello
Summer





S

Speak it

I

Interesting/Active

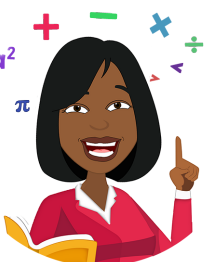
D

Dedicate Time

E

Easy Ones First

S



Recommended order for Teaching Addition Facts

- Doubles (Dark Orange)
- Sums of 10 (Dark Green)
- 10 Plus (Dark Blue)
- Plus 0 (Dark Purple)

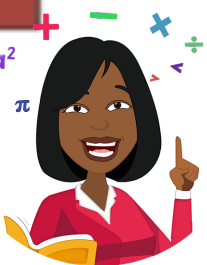
| + | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 0 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 2 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 3 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 4 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 6 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 7 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 8 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 9 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 10 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |



Recommended order for Teaching Multiplication Facts

- Times 0 (Dark Purple)
- Times 1 (Dark Purple)
- Times 2 (Dark Green)
- Times 10 (Dark Red)

| X | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|---|----|----|----|----|----|----|----|----|----|-----|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2 | 0 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| 3 | 0 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
| 4 | 0 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
| 5 | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| 6 | 0 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| 7 | 0 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
| 8 | 0 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| 9 | 0 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
| 10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |



S

Speak it

I

Interesting/Active

D

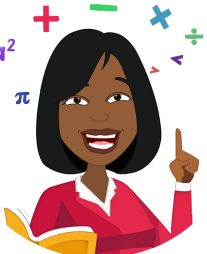
Dedicate Time

E

Easy Ones First

S

Slow and Steady Wins the Race



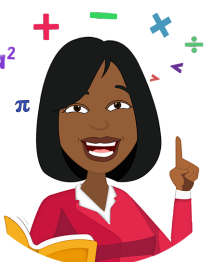
$$1 \times 4 = \underline{4}$$

$$2 \times 4 = \underline{8}$$

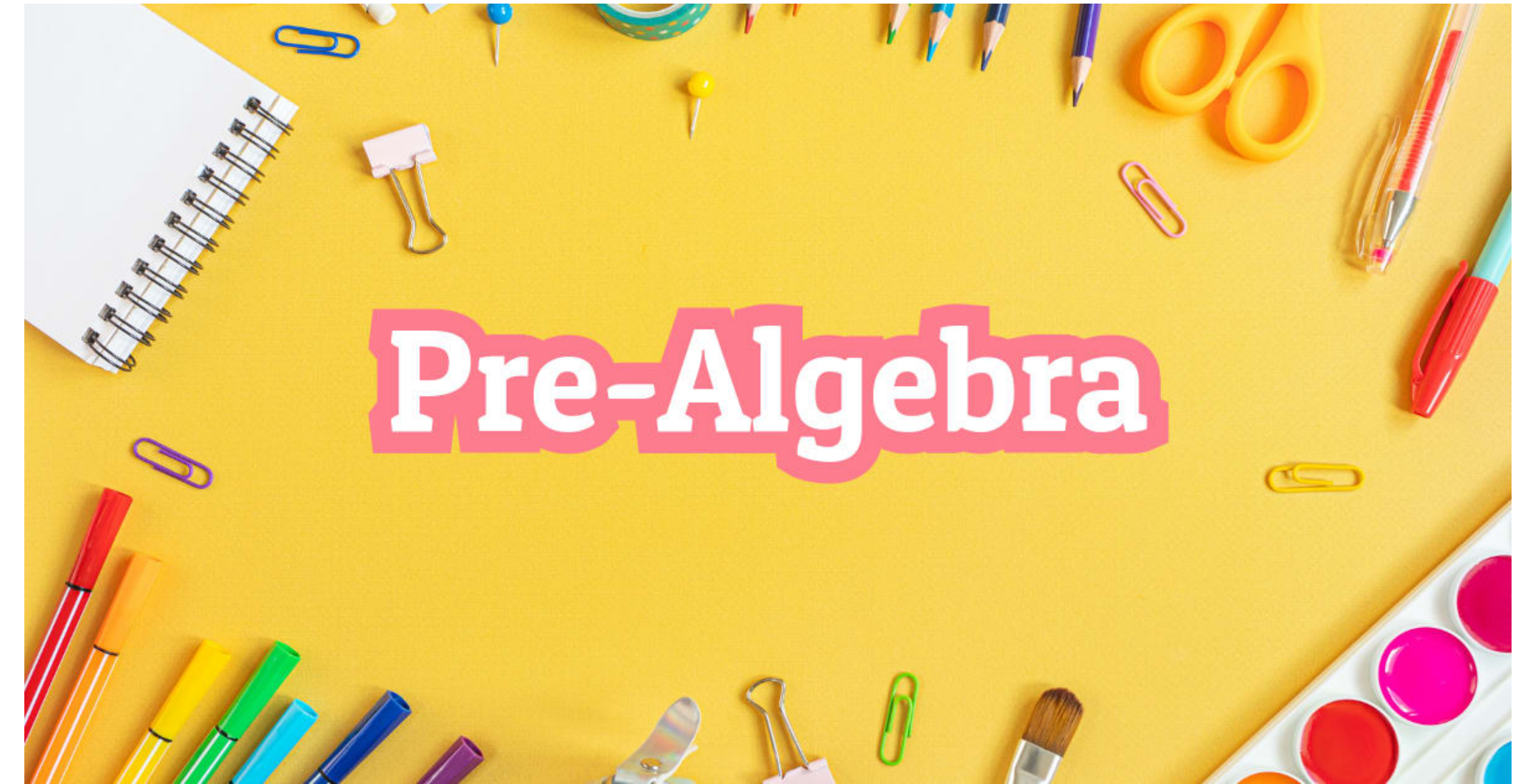
$$3 \times 4 = \underline{12}$$



**Teach three
at a time**



How do you fix gaps in



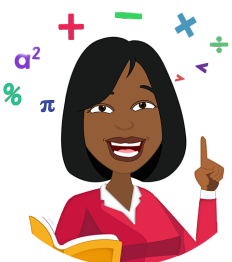
?



Filling Pre-algebra gaps

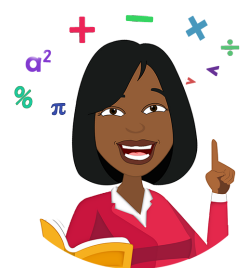


$$5\frac{2}{4} - 2\frac{3}{5}$$



$$5\frac{2}{4}$$

$$-2\frac{3}{5}$$



$$4\cancel{5}\frac{2}{4} = \frac{10}{20} + \frac{30}{20}$$

$$- 2\frac{3}{5} = \frac{12}{20}$$

$$2 \frac{18}{20}$$

$$2 \frac{18}{20} \div \frac{2}{2} = \frac{9}{10}$$

$$2 \frac{9}{10}$$

Step 1: Find a common denominator

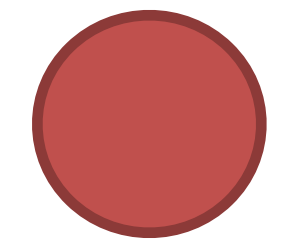
Step 2: Make equivalent fractions

Step 3: Regroup

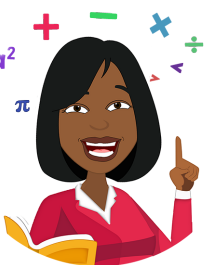
Step 4: Subtract mixed numbers

Step 5: Simplify

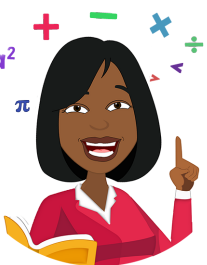


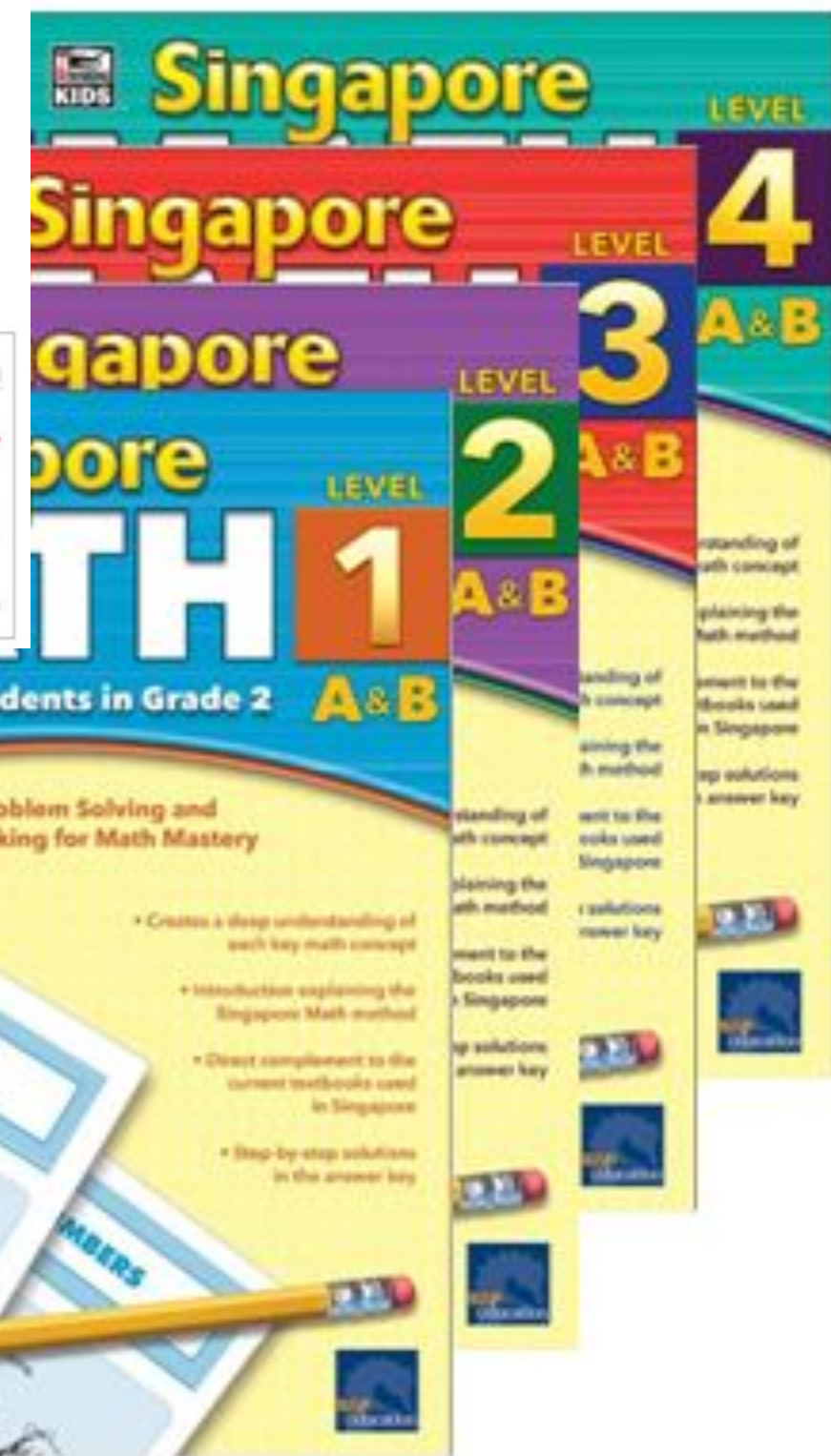
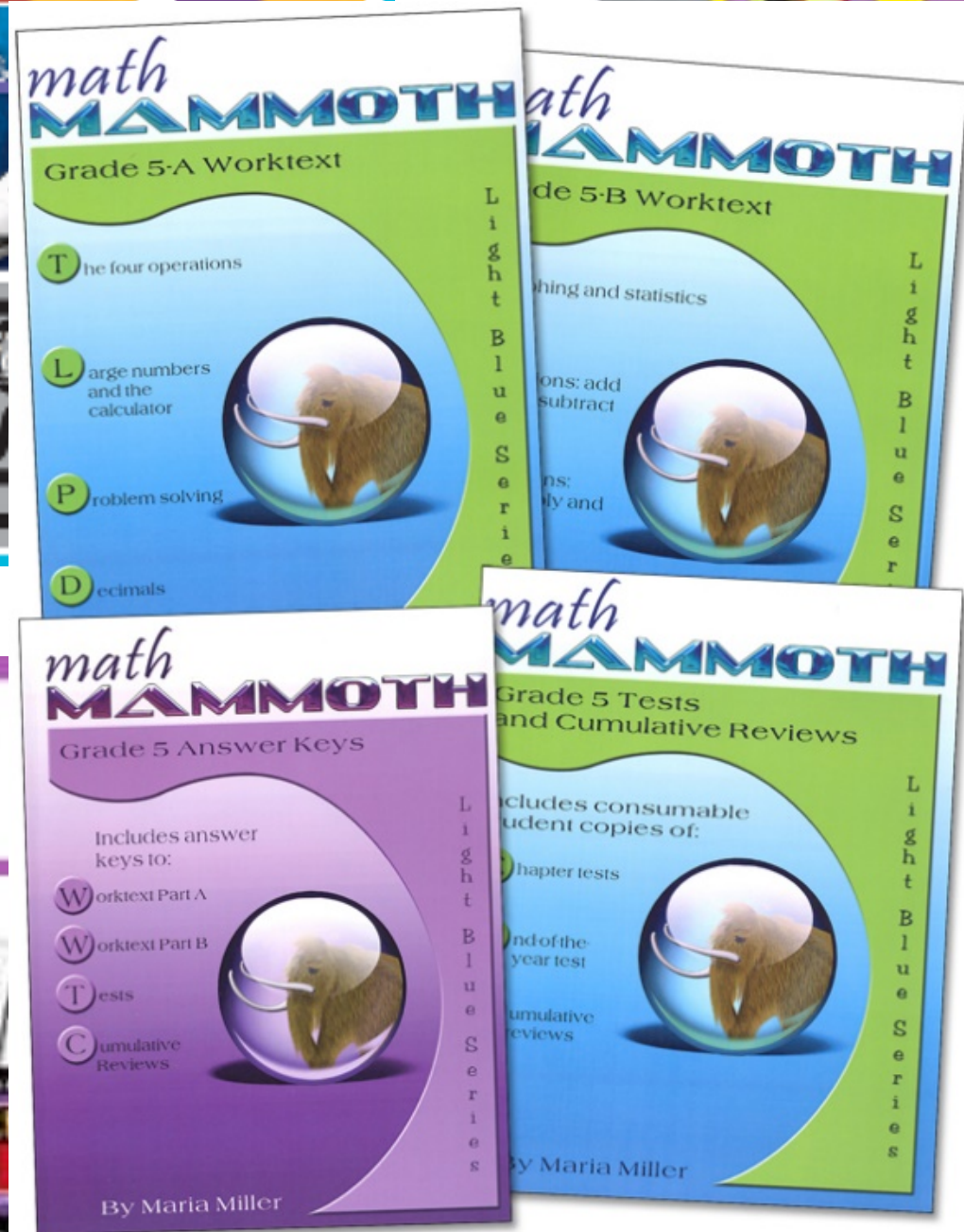


Math Topics by Grade Level



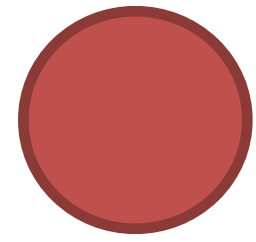
Should I change my math curriculum?





Math·U·See.
Building Understanding





Rainbow Resource Math Comparison Chart

MATH CURRICULUM COMPARISON CHART

©2021

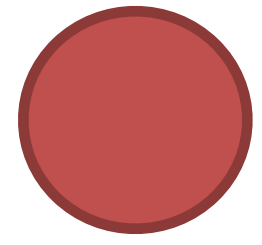
| MATH Programs | Grades | | | | | | | | | | | | Religious Content | | Price Range | | | | |
|---|--------|---|---|---|---|---|---|---|---|---|---|----|-------------------|----|-------------|-----------|----|------|--------|
| | PK | K | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Christian | N/Secular | \$ | \$\$ | \$\$\$ |
| 1. Saxon K-3 * | * | * | * | * | | | | | | | | | | | * | | | | * |
| 2. Saxon 3-12 * | | | | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 3. Bob Jones | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 4. AOP Horizons Math * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 5. AOP LIFEPAK Math * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 6. AOP Monarch / Switched-On Schoolhouse | | | | | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 7. Math-U-See * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 8. Abeka Math | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 9. Primary Math 2022 (Singapore) | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 10. Primary Math (US) (Singapore) * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 11. Primary Math Standards Edition (SE) (Singapore) * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 12. Primary Math Common Core (CC) (Singapore) | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 13. Math in Focus (Singapore) * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 14. Calvert Math | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 15. Exploring Creation with Mathematics (Apologia) | | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 16. Good & Beautiful Simply Math | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 17. Shaping Maths (Singapore) | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 18. Christian Light Math | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 19. Life of Fred | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 20. A+ Tutorsoft Math | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 21. Starline Press Math | | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 22. ShillerMath | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 23. enVision Math (2017/2018) | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 24. Purposeful Design Math (2nd Ed.) | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 25. Making Math Meaningful | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 26. RightStart Mathematics * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 27. MCP Mathematics | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 28. Conventional (Spunky Donkey) / Study Time Math | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 29. Liberty Mathematics | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 30. MiQuon Math | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 31. Math Mammoth (Light Blue series) * | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 32. Ray's Arithmetic | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 33. Ray's for Today | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 34. Rod & Staff Mathematics | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 35. Jump Math | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 36. ThemeVille Math * | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 37. Beast Academy (from Art of Problem Solving) * | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 38. Strayer-Upton Practical Arithmetic | | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 39. Art of Problem Solving * | | | | | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 40. Paradigm Accelerated | | | | | | | * | * | * | * | * | * | * | * | * | * | | | * |
| 41. Principles of Mathematics/Algebra 2 | | | | | | | * | * | * | * | * | * | * | * | * | * | | | * |
| 42. A Fresh Approach | | | | | | | * | * | * | * | * | * | * | * | * | * | | | * |
| 43. Jacobs Math | | | | | | | * | * | * | * | * | * | * | * | * | * | | | * |
| 44. Foerster Math (Math Without Borders) | | | | | | | * | * | * | * | * | * | * | * | * | * | | | * |
| 45. VideoText | | | | | | | * | * | * | * | * | * | * | * | * | * | | | * |
| 46. Math Lessons for a Living Education | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 47. Mathematical Reasoning | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 48. Developmental Math | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |
| 49. Math Power Basics | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | * |

Placement tests are available on our website for programs marked with an [*].
Find them at: <https://www.rainbowresource.com/hSearch.htm?keyword=math+placement+tests>

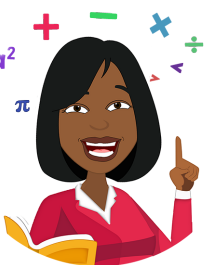
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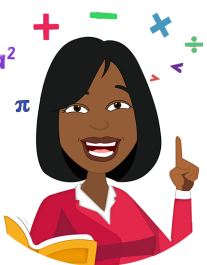
| | Approach | | | Manipulatives | | | Teacher Involvement | | | CCSS Aligned | Notes |
|-----|----------|------------|--------------------|---------------|-----|---------|---------------------|-----|------|--------------|---|
| | Spiral | Sequential | Conceptual/Topical | Req | Opt | RRC kit | Low | Med | High | | |
| 1. | * | | | * | | * | | | * | | Scripted teacher manuals. |
| 2. | * | | | | * | | | * | | | Teaching tutorials available separately. |
| 3. | * | | | | | | | | * | | Paper manipulatives included. |
| 4. | * | | | | * | * | | * | | | Grades 4-8 contain some religious content. |
| 5. | | * | | | | | | * | | | |
| 6. | | * | | | | | | * | | | Monarch is online only. SOS is computer-based. |
| 7. | | * | | | * | | | * | | | Mastery-based. Optional songs some Christian content. |
| 8. | * | | | | * | | | * | | | |
| 9. | | * | | | * | | | * | | | Digital manipulatives. Online components. |
| 10. | | * | | | * | | | * | | | |
| 11. | | * | | | * | | | * | | | Aligned to 1997 CA Standards. 2008 Ed. |
| 12. | | * | | | * | | | * | | * | |
| 13. | | * | | | * | * | | * | | * | |
| 14. | | * | | | * | | | * | | | |
| 15. | | * | | | * | | | * | * | | Projects included with each lesson. |
| 16. | * | | | | * | | | * | | | K-3: parent taught & includes manipulatives; AK online. |
| 17. | | * | | | * | | | * | | * | 2013. Singaporean money. Metric. Online component. |
| 18. | * | | | | * | | | * | | | Suggested manipulatives for lower grades. |
| 19. | | * | | | * | | | * | | | Brief Christian references in elementary levels. |
| 20. | | * | | | * | | | * | | | Computer-based. |
| 21. | | * | | | * | | | * | | | |
| 22. | | * | | | * | | | * | * | | Discovery, Montessori approach. |
| 23. | | * | | | * | | | * | | * | Digital component. |
| 24. | | * | | | * | * | | * | | | E-book option for teacher edition. |
| 25. | | * | * | | * | | | * | * | | |
| 26. | * | * | | | * | | | * | * | * | |
| 27. | | * | | | * | | | * | | | Modified Sequential. |
| 28. | * | | | | * | | | * | | | Optional manipulatives for Spunky. |
| 29. | | * | | | * | | | * | | | Consumable workbooks. |
| 30. | | * | * | | * | | | * | * | | Uses Cuisenaire rods. |
| 31. | | * | | | * | | | * | | | B & W or color versions available. |
| 32. | | * | | | * | | | * | | | |
| 33. | | * | | | * | | | * | | | |
| 34. | | * | | | * | | | * | | | |
| 35. | | * | | | * | | | * | * | * | |
| 36. | * | * | | | * | | | * | * | | Manipulatives used at all levels. |
| 37. | | * | | | * | | | * | | | Recommended for gifted students. |
| 38. | | * | | | * | | | * | | | No Teacher Guide. |
| 39. | | * | | | * | | | * | | | Recommended for gifted students. |
| 40. | | * | | | * | | | * | | | |
| 41. | | * | | | * | | | * | | | |
| 42. | | * | | | * | | | * | | | |
| 43. | | * | | | * | | | * | | | Teaching tutorials available separately. |
| 44. | | * | | | * | | | * | | | MWB Teaching tutorials available separately. |
| 45. | | * | | | * | | | * | | | DVD or online format. |
| 46. | | * | * | | * | | | * | * | | Extra practice (L1-3). Teaching Companion avail. |
| 47. | * | | | | * | | | * | | | |
| 48. | | * | | | * | | | * | | | Skill-based levels. |
| 49. | | * | | | * | | | * | | | Written at 4th grade level / for struggling students. |





Rainbow Resource Math Comparison Chart





Consistency
is The Key

A hand holding a red marker is shown in the lower right, drawing a red oval around the text. The text is written in a black, cursive font on a white background.



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