

Enhancing Mathematics Education in the Toronto District School Board

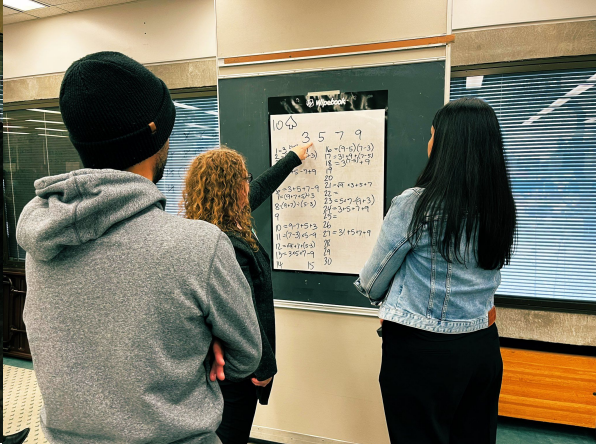
Jason To, OCT, M.Ed

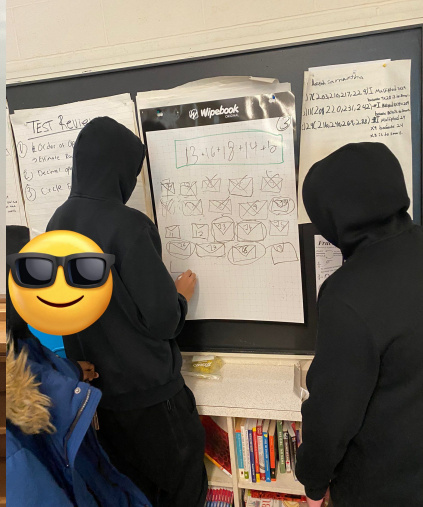
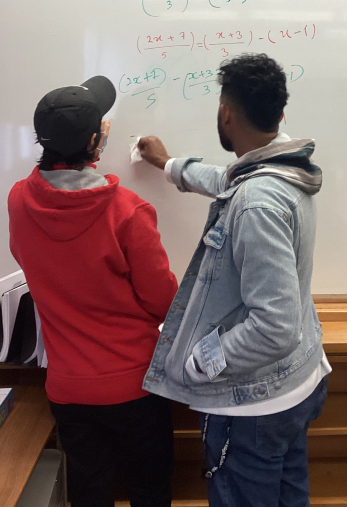
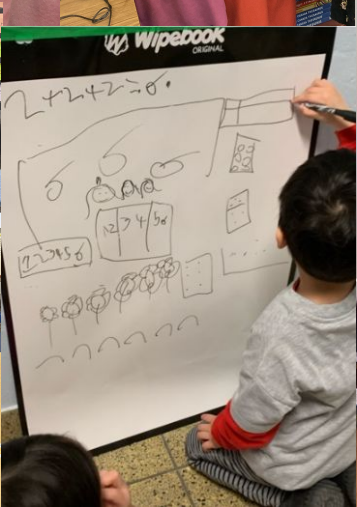
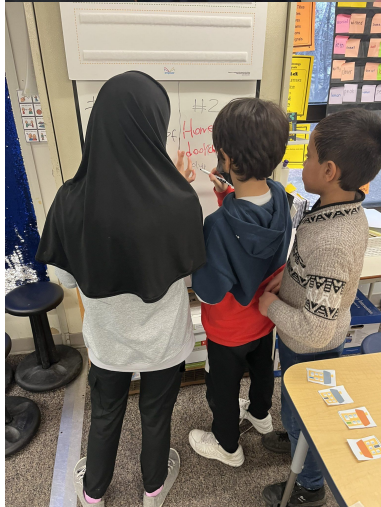
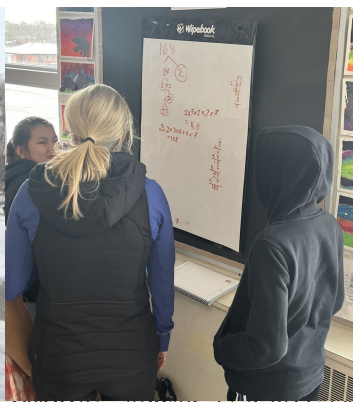
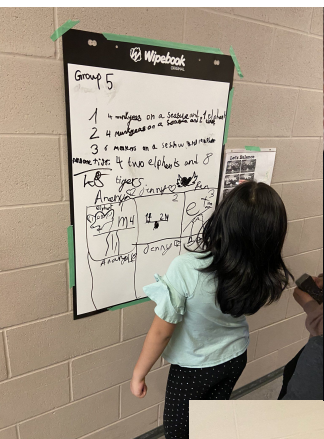
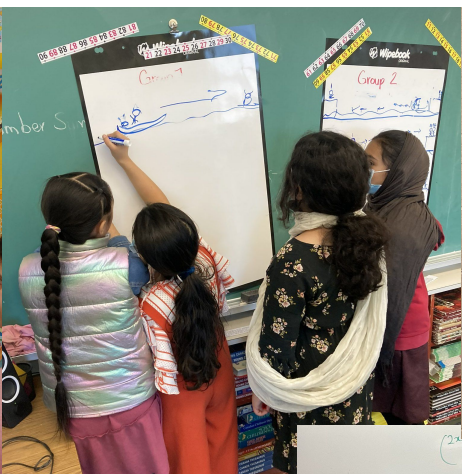
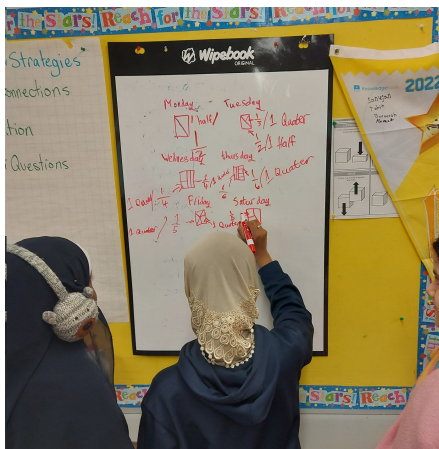
Coordinator, Secondary Mathematics and Academic Pathways
Toronto District School Board



Building Thinking Classrooms in Mathematics







Use Thinking Tasks

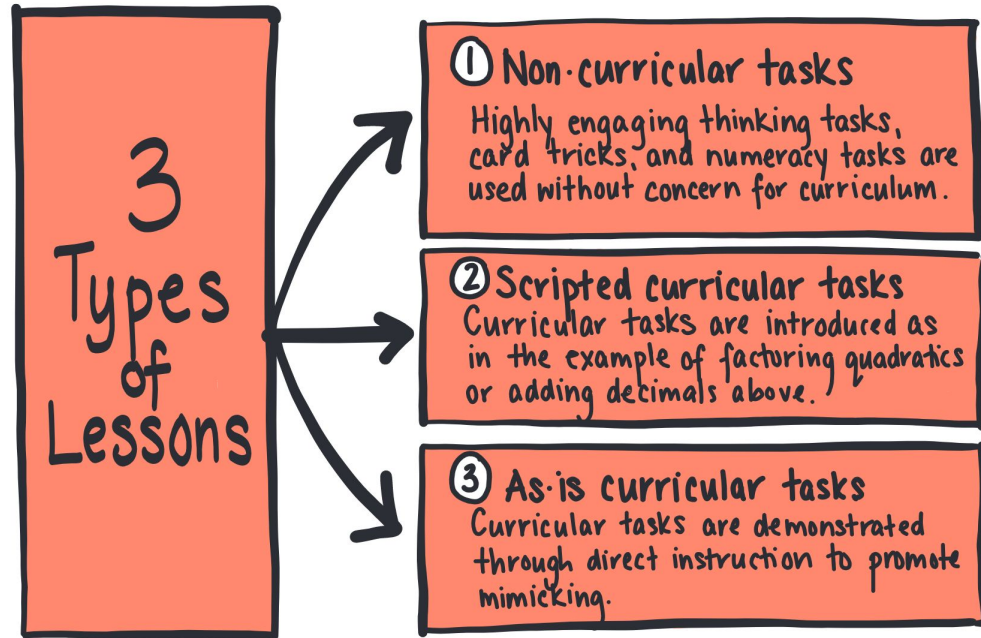


Figure 1.2 Three types of lessons.

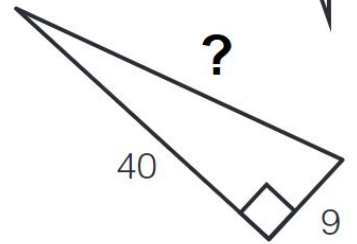
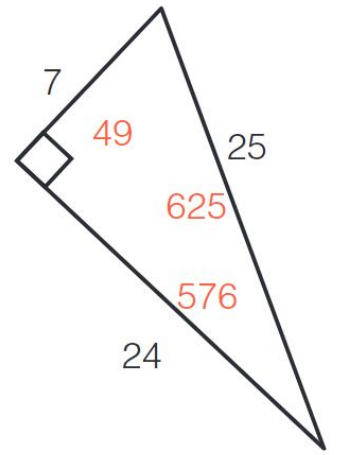
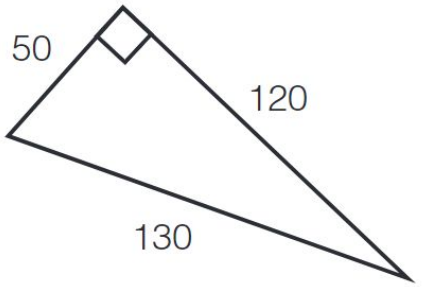
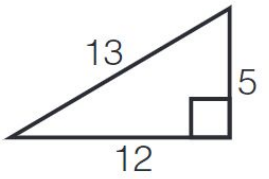
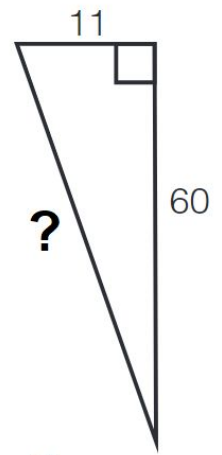
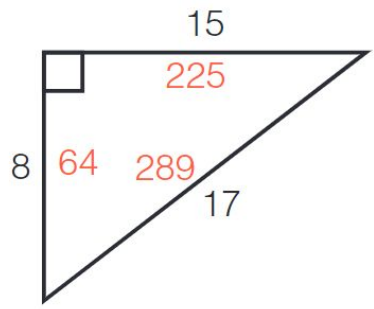
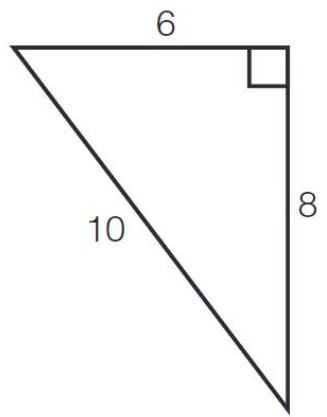
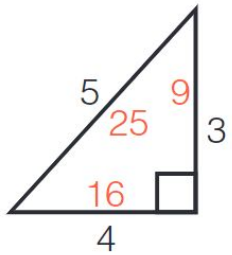
1. $(x+2)(x+3) = x^2 + 5x + 6$
2. $(x+2)(x+2) = x^2 + 7x + 6$
3. $(x+2)(x+4) = x^2 + 7x + 12$
4. $(x+2)(x+6) = x^2 + 14x + 24$
5. $(x+2)(x+8) = x^2 + 10x - 24$
6. $(x+2)(x-6) = x^2 + 4x - 12$
7. $(x+2)(x-8) = x^2 - x - 12$
8. $(x+2)(x-12) = x^2 - 2x - 24$
9. $(x+2)(x-14) = x^2 - 6x - 16$
10. $(x+2)(x-16) = x^2 - 0x - 16$
11. $(x+2)(x-15) = x^2 - 25$
12. $(x+2)(x-17) = x^2 - 49$
13. $(x+2)(x-19) = x^2 - 10x + 24$
14. $(x+2)(x-21) = x^2 - 13x + 12$



Sequence: Simplifying Algebraic Expressions

Stage	Questions
A	<p>Simplify these mathematical statements</p> <ol style="list-style-type: none"> 1. $5 \text{ MOOSE} + 4 \text{ SHEEP} + 3 \text{ MOOSE} - 2 \text{ SHEEP}$ 2. $8 \text{ MOOSE} + 5 \text{ SHEEP} - \text{MOOSE} - 4 \text{ SHEEP}$ 3. $6 \text{ MOOSE} + 2 \text{ SHEEP} - 5 \text{ MOOSE} + 3 \text{ SHEEP} + 8 \text{ MOOSE} - \text{SHEEP}$ <p>**CHECK WITH MR. TO!**</p>
B	<p>Simplify these algebraic statements</p> <ol style="list-style-type: none"> 4. $8M + 5S - 2M + 3S$ 5. $6M + 8S - M + 2S$ 6. $9x + 3y + 2x + 4y$ <p>**CHECK WITH MR. TO!**</p>
C	<p>Simplify:</p> <ol style="list-style-type: none"> 7. $9x + 3 + 2x + 4$ 8. $7x + 6 - 3x + 5$ 9. $9x - 4 + 3x + 6x - 3 + 5x$ <p>**CHECK WITH MR. TO!**</p>
D	<p>Simplify:</p> <ol style="list-style-type: none"> 10. $6x^2 + 5x + 8 + 3x^2 - 2x - 1$ 11. $8x^2 - 2x + 4 - 6x^2 - 3x - 7$





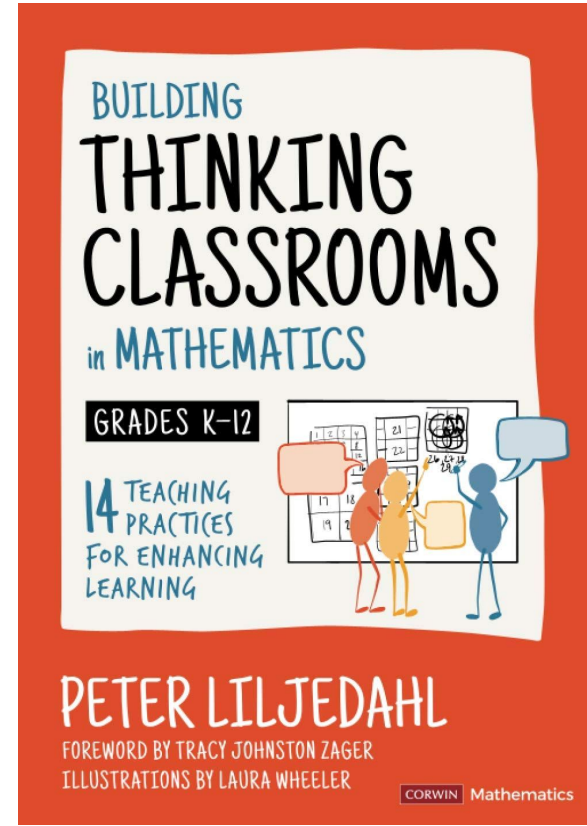
Adapted from: Liljedahl, P. (2021). *Building Thinking Classrooms in Mathematics, Grades K-12: 14 Teaching Strategies for Enhancing Learning*. Corwin: Thousand Oaks.



Learning Together

TDSB Math Bookcase

bit.ly/tdsbmathbookcase



Let's do more math together

$$27 + 34$$



Let's do more math together

$$15 \times 8$$



Number Talks at Home & School

Provide a thoughtful question and time to think

Give a chance to share their strategy (and not just the final answer)

Ask for another strategy

Make connections between strategies (compare and contrast)

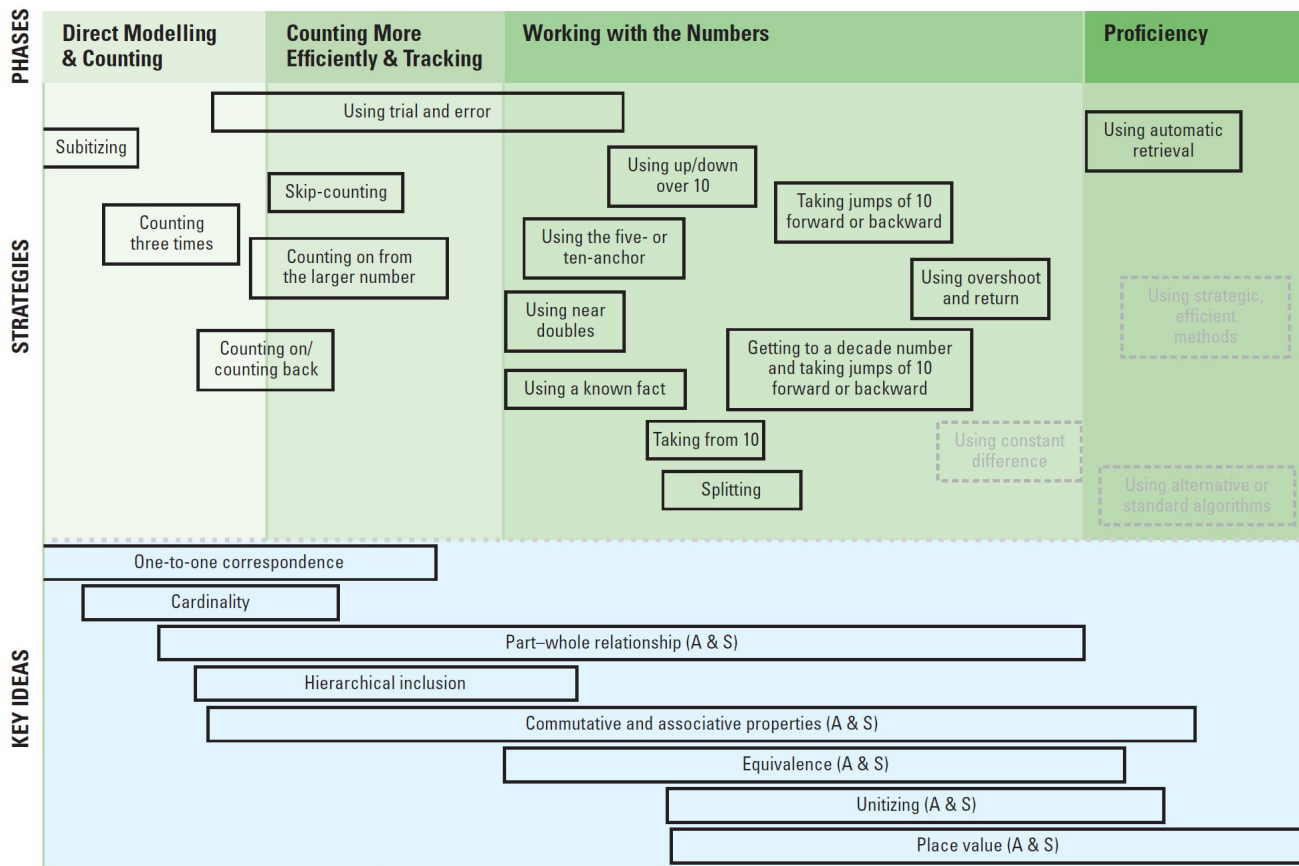
Praise the effort and thinking!



Building Foundational Math Skills in the Early Years



Student Continuum of Numeracy Development: Addition and Subtraction



Accessing Digital Math Tools at Home



TDSB Virtual Library

Make & Do



www.tdsb.on.ca/library/HOME/Read-Watch-Learn



Knowledgehook

What is it?

Math activities and questions in a game-based environment.

The screenshot displays a user interface for a math question. At the top, a dark grey bar contains the text "Question 1" followed by three numbered tabs: "1", "2", and "3". The "1" tab is highlighted with a blue underline. Below this bar, the question is titled "Question 1" in blue. The text of the question asks, "What will Figure 4 in this pattern look like?". Three figures are shown: "Figure 1" is a single yellow square; "Figure 2" is two yellow squares side-by-side; "Figure 3" is three yellow squares side-by-side. Below the figures is a toolbar with three icons: a lightbulb for "Hint", a leaf for "Example", and a grid for "Calc". To the right of the question is a "Select an Answer" panel with four options, each represented by a letter in a blue circle and a set of yellow squares: "A" has four squares, "B" has two squares, "C" has one square, and "D" has three squares. At the bottom of this panel is a blue button labeled "Select an Answer...".



Free Online Tutoring



www.tdsb.on.ca/School-Year-2022-2023/Tutoring/Free-Online-Tutoring



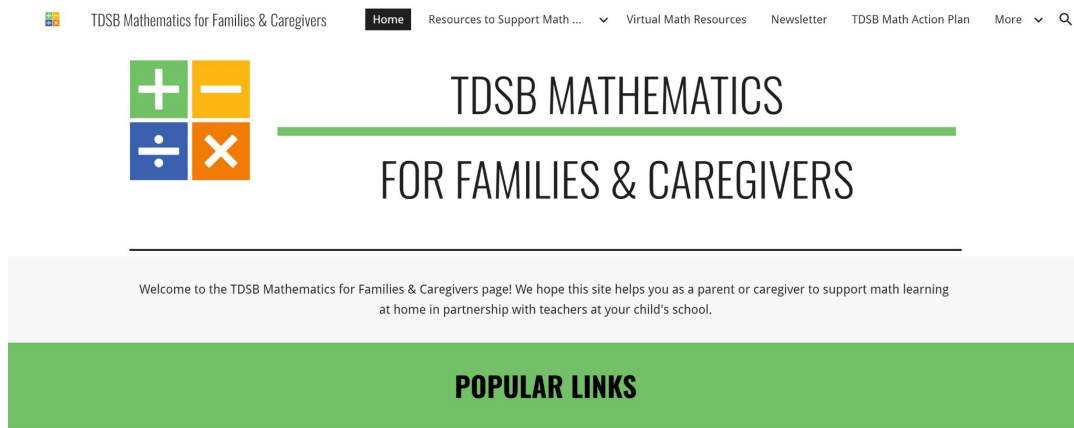
Summary

The TDSB is working to:

- Build thinking classrooms to accelerate learning
- Build foundational math skills in the early years
- Provide digital math tools to schools and families



Visit TDSB Math For Families



bit.ly/tdsbmathforfamilies





Toronto
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