

# Enhancing Mathematics Education in the Toronto District School Board

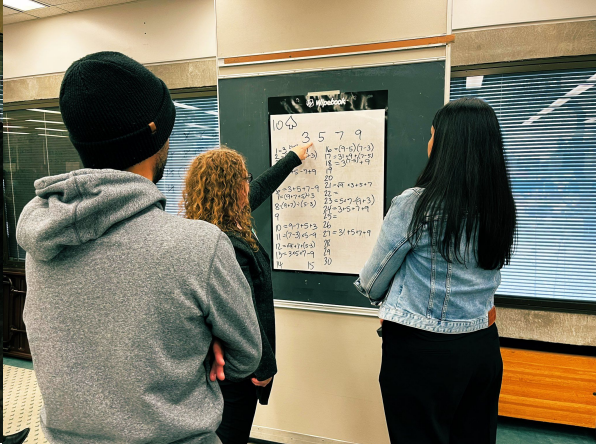
**Jason To, OCT, M.Ed**

Coordinator, Secondary Mathematics and Academic Pathways  
Toronto District School Board

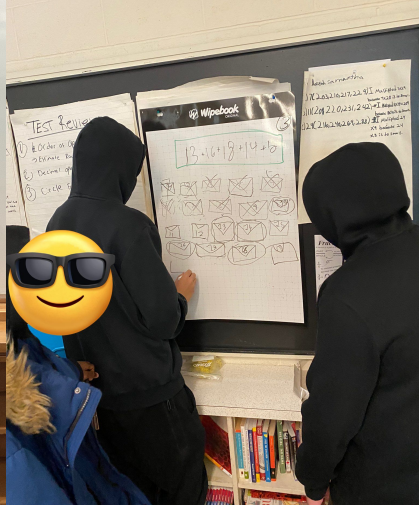
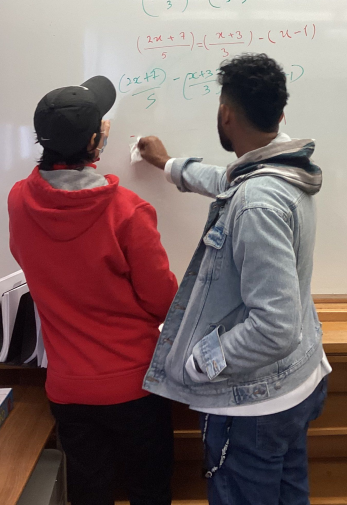
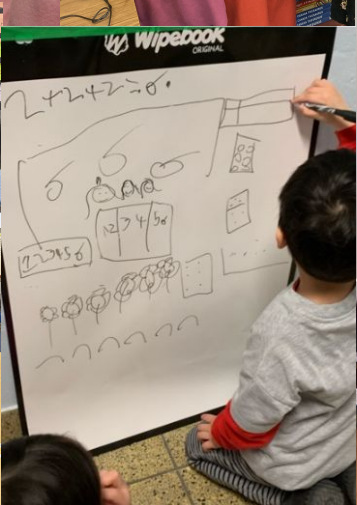
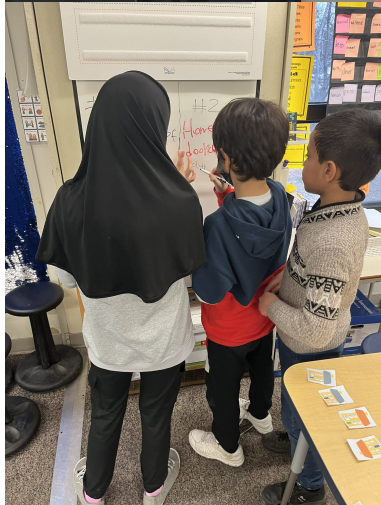
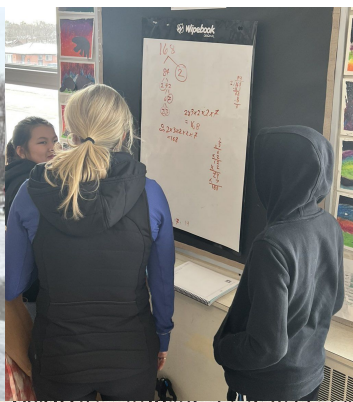
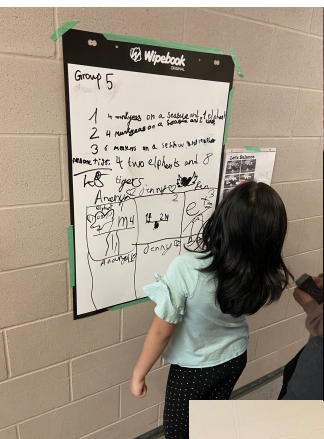
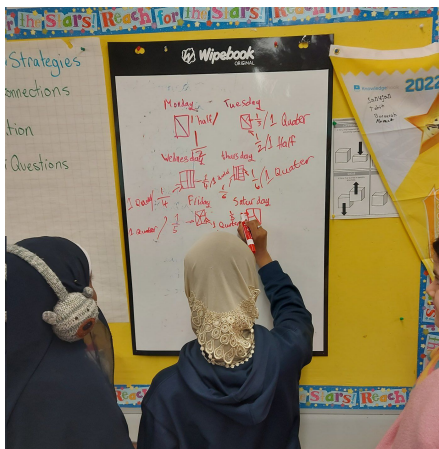


# Building Thinking Classrooms in Mathematics









# Use Thinking Tasks

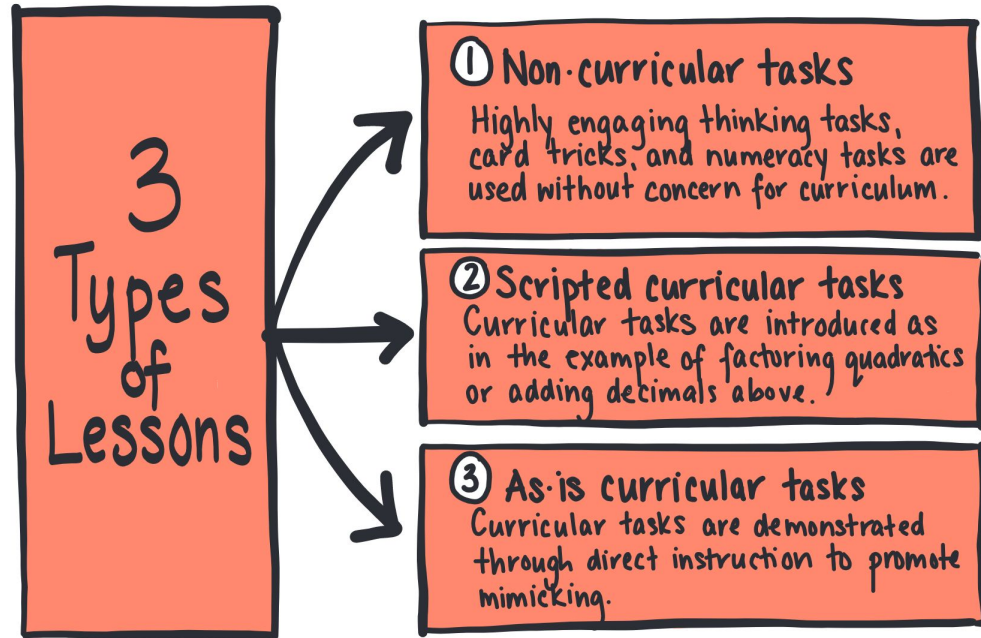


Figure 1.2 Three types of lessons.

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.  $(x+2)(x+4) = x^2 + 4x - 12$
7.  $(x+2)(x-6) = x^2 - x - 12$
8.  $(x+2)(x-12) = x^2 - 2x - 24$
9.  $(x+2)(x-8) = x^2 - 6x - 16$
10.  $(x+2)(x-8) = x^2 - 0x - 16$
11.  $(x+2)(x-13) = x^2 - 25$
12.  $(x+2)(x-13) = x^2 - 49$
13.  $(x+2)(x-13) = x^2 - 10x + 24$
14.  $(x+2)(x-13) = x^2 - 13x + 12$

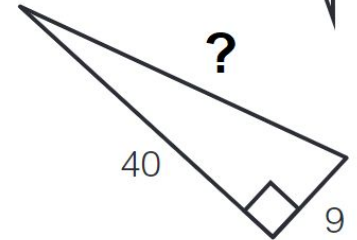
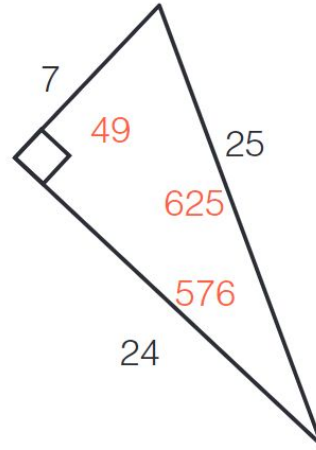
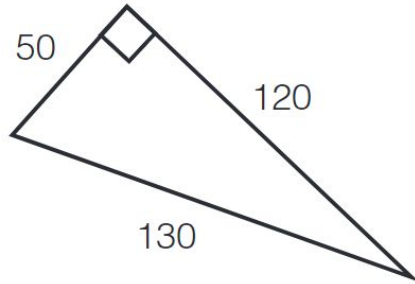
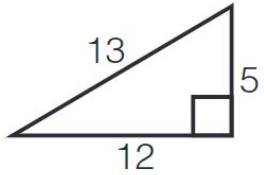
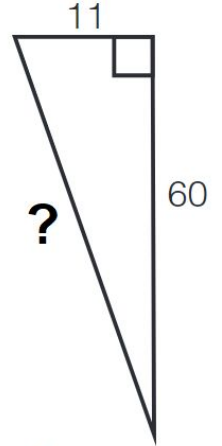
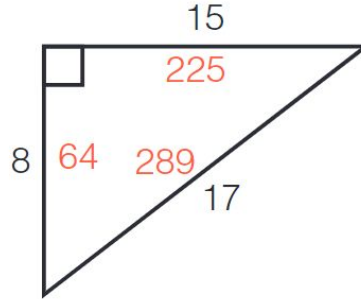
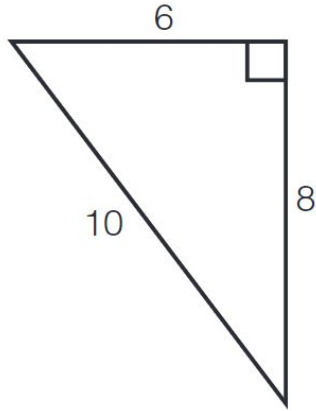
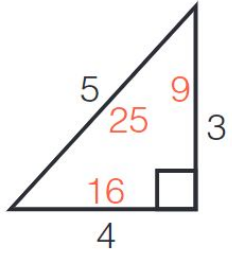


### Sequence: Simplifying Algebraic Expressions

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







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

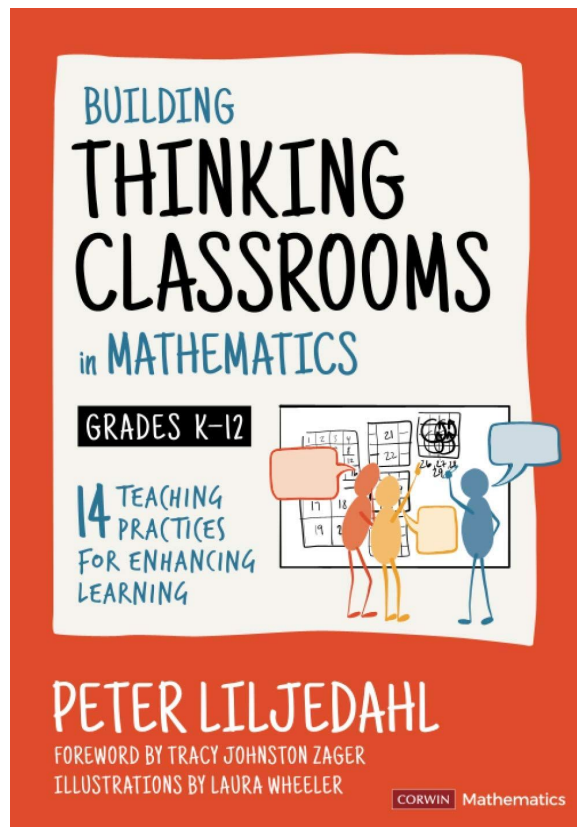




# Learning Together

TDSB Math Bookcase

[bit.ly/tdsbmathbookcase](https://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!

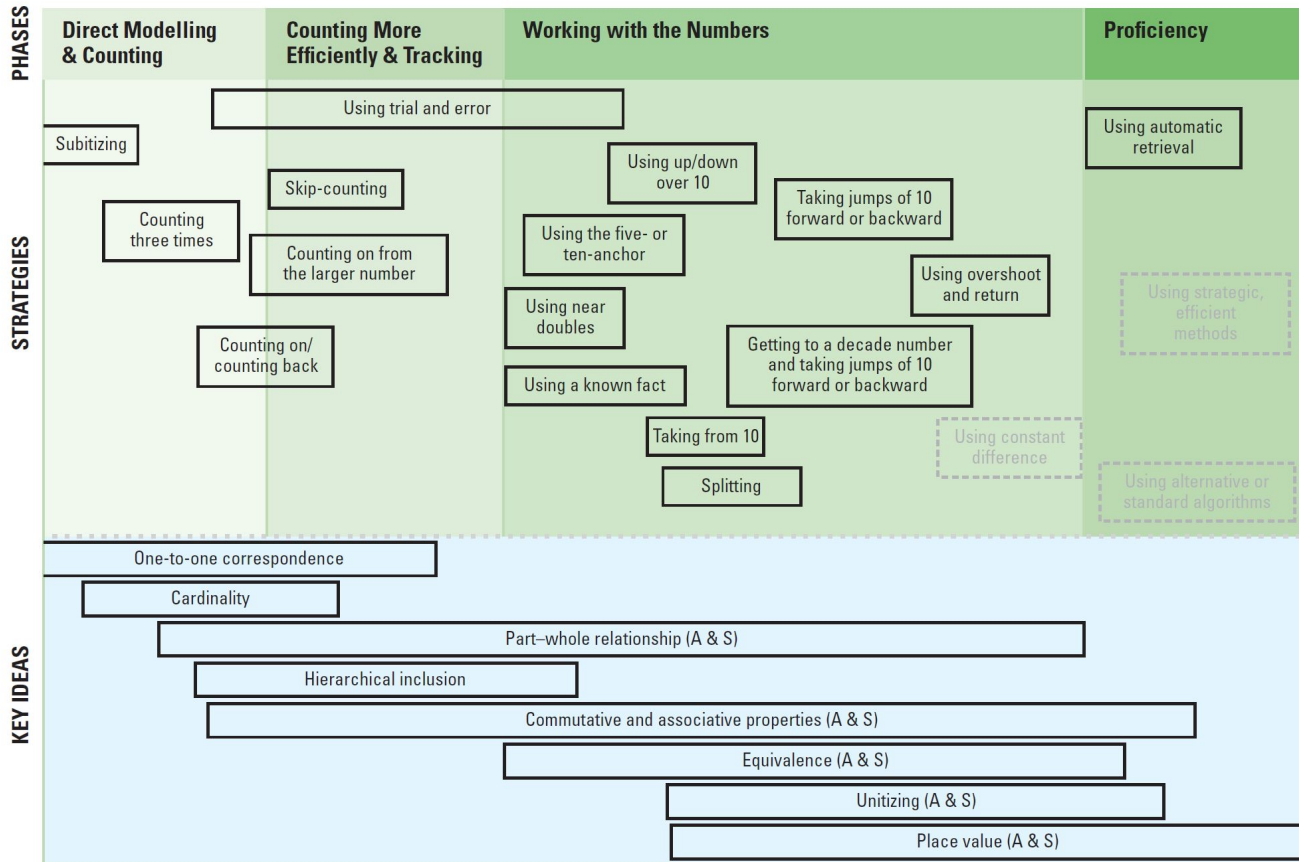




# Building Foundational Math Skills in the Early Years



# Student Continuum of Numeracy Development: Addition and Subtraction

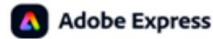


# Accessing Digital Math Tools at Home



# TDSB Virtual Library

## Make & Do



[www.tdsb.on.ca/library/HOME/Read-Watch-Learn](http://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 is "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 grey bar with three buttons: "Hint" (with an information icon), "Example" (with a leaf icon), and "Calc" (with a grid icon). To the right of the question is a "Select an Answer" panel with a dark grey header. It contains four options, each with 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 the panel is a blue button labeled "Select an Answer...".



# Free Online Tutoring



[www.tdsb.on.ca/School-Year-2022-2023/Tutoring/Free-Online-Tutoring](http://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

The screenshot shows the top navigation bar of the website with links for Home, Resources to Support Math, Virtual Math Resources, Newsletter, TDSB Math Action Plan, and More. Below the navigation is a logo consisting of four colored squares (green, yellow, blue, orange) containing mathematical symbols: a plus sign, a minus sign, a division sign, and a multiplication sign. To the right of the logo, the text reads "TDSB MATHEMATICS FOR FAMILIES & CAREGIVERS". Below this is a horizontal line and a paragraph of introductory text: "Welcome to the TDSB Mathematics for Families & Caregivers page! We hope this site helps you as a parent or caregiver to support math learning at home in partnership with teachers at your child's school." At the bottom of this section is a green bar with the text "POPULAR LINKS".



[bit.ly/tdsbmathforfamilies](https://bit.ly/tdsbmathforfamilies)







Toronto  
District  
School  
Board