



# TDSB Math Achievement Action Plan

**Presentation:  
Ward 8 Forum Trustee Shelley Laskin  
February 1, 2024**

Denise Humphreys, System Superintendent Mathematics  
Lisa Dilworth, System Superintendent Mathematics

# Acknowledgement of Traditional Lands

We acknowledge we are hosted on the lands of the Mississaugas of the Anishinaabe (A NISH NA BEE), the Haudenosaunee (HOE DENA SHOW NEE) Confederacy and the Wendat. We also recognize the enduring presence of all First Nations, Métis and Inuit people.

## Reconnaissance des Terres Traditionnelles

Nous reconnaissons que nous sommes accueillis sur les terres des Mississaugas des Anichinabés (A NISH NA BEY), de la Confédération Haudenosaunee (HOE DENA SHOW NE) et du Wendat. Nous voulons également reconnaître la pérennité de la présence des Premières Nations, des Métis et des Inuit



# Setting the Context

# Math Achievement Action Plan

# (MAAP)

### Student Achievement Plan

<b>PURPOSE:</b> Leveling up achievement outcomes and experiences for every student.  For each priority and indicator, school boards will use board-level data on their student populations to further refine actions.	 <b>PRIORITY: Achievement of Learning Outcomes in Core Academic Skills</b>	<b>Goal: Improve students' literacy learning and achievement.</b> <b>Indicators:</b> <ol style="list-style-type: none"><li>1. % of students who meet or exceed the provincial standard on:<ul style="list-style-type: none"><li>• Grade 3 EGAD Reading</li><li>• Grade 3 EGAD Writing</li><li>• Grade 6 EGAD Reading</li><li>• Grade 6 EGAD Writing</li></ul></li><li>2. % of fully participating, first-time eligible students who are successful on the OSS/PTFL.</li></ol>	<b>Goal: Improve students' math learning and achievement.</b> <b>Indicators:</b> <ol style="list-style-type: none"><li>3. % of students who meet or exceed the provincial standard on:<ul style="list-style-type: none"><li>• Grade 2 EGAD Math</li><li>• Grade 5 EGAD Math</li><li>• Grade 9 EGAD Math</li></ul></li></ol>
	 <b>PRIORITY: Preparation of Students for Future Success</b>	<b>Goal: Improve students' graduation rates and preparedness for future success.</b> <b>Indicators:</b> <ol style="list-style-type: none"><li>4. % of students who earn 30 or more credits by the end of Grade 10</li><li>5. % of students participating in at least one job skills program, Extended High Skills/Mature Dual Credits or Ontario Youth Apprenticeship Program</li><li>6. % of students graduating with an OSSD within five years of starting Grade 9</li><li>7. % of students enrolled in at least one Grade 12 math or Grade 11 or 12 science course</li><li>8. % of students who believe their learning has prepared them for the next step in their learning experience (i.e. next grade, post-secondary, etc.)</li></ol>	
	 <b>PRIORITY: Student Engagement &amp; Well-being</b>	<b>Goal: Improve students' participation in class time and learning.</b> <b>Indicators:</b> <ol style="list-style-type: none"><li>9. % of students in Grades 1-8 whose individual attendance rates in school for or greater than 90 percent</li><li>10. % of students in Grades 4-12 who were suspended at least once</li></ol>	<b>Goal: Improve student well-being.</b> <b>Indicators:</b> <ol style="list-style-type: none"><li>11. % of Grade 4, 9, and 10 students who report being aware of mental health supports and services in order to seek supports for mental health.</li></ol>

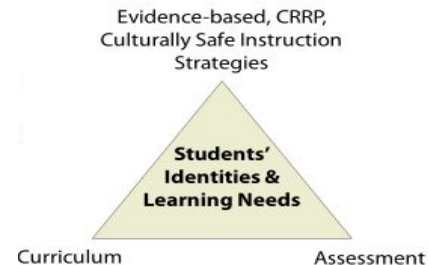
Ontario



# TDSB MATH STRATEGY

## TDSB Math Achievement Priorities

- Ensuring fidelity of curriculum implementation and use of instructional and assessment practices with a proven track record of enhancing student achievement
- Engaging in ongoing learning to strengthen mathematics content knowledge for teaching
- Knowing the mathematics learner, and ensuring mathematical tasks, interventions and supports are relevant and responsive





# System Level Goals for Each Priority

## Priority 1:

Ensuring Fidelity of Curriculum Implementation,

## System Goal:

We will prioritize understanding of the curriculum and the continuum of learning across grades.

## Priority 2:

Engaging in ongoing learning on mathematics content knowledge for teaching

## System Goal:

We will utilize student achievement data and student work to establish focus areas for mathematics professional learning.

## Priority 3:

Knowing the mathematics learner and ensuring mathematical tasks, interventions and supports are relevant and responsive.

## System Goal:

Build capacity in data analysis resources to understand mathematics achievement from a variety of sources, including alignment between EQAO, report cards, and locally-developed assessment tools/tasks.

Align the Math Improvement Action Plan with board improvement planning, including using student assessment and demographic data to identify areas of focus.

# How Do I feel About Math?



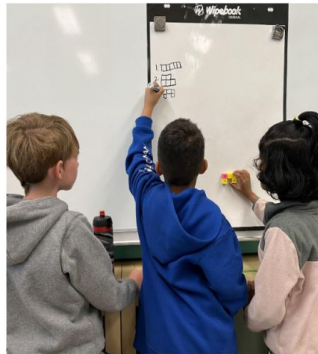
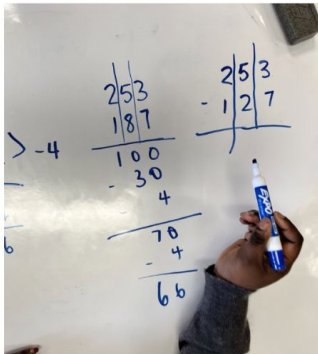
Find a picture that represents your feelings about your experience with math.



“Students’ attitudes towards mathematics education can have a significant impact on their engagement with math learning and their subsequent learning and achievement of the expectations. Students who are engaged in their learning and who have opportunities to solve interesting, relevant, and meaningful problems within a supportive, safe, and inclusive learning environment are more likely to adopt practices and behaviours that support mathematical thinking. More importantly, they are more likely to enjoy mathematics and to pursue their desire to learn math beyond the classroom setting.”

Ontario Math Curriculum 2020

## Students and Mathematics Learning



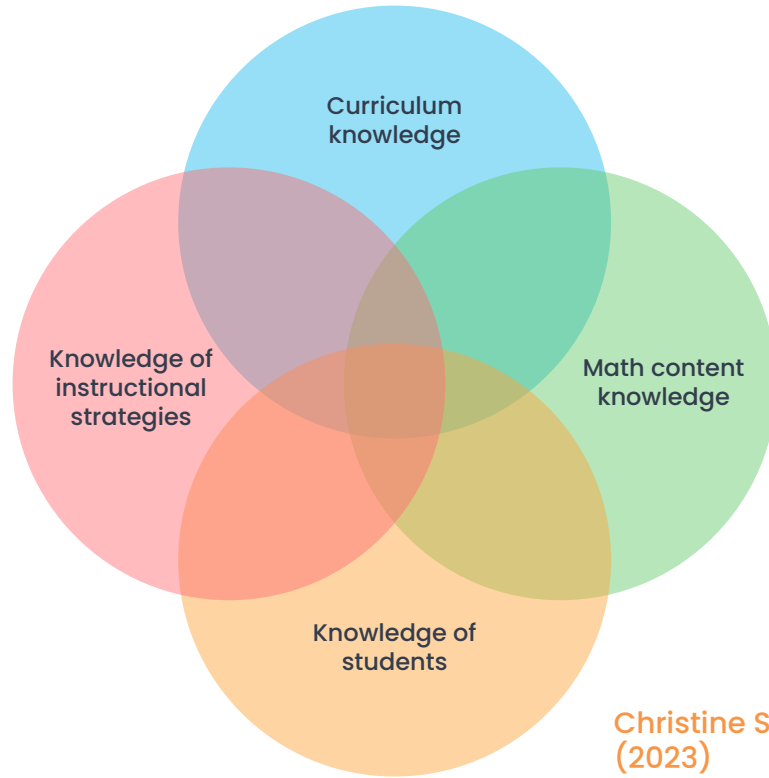
“Teachers are critical to the success of students in mathematics. Teachers are responsible for ensuring that all students receive the highest quality of mathematics education. This requires them to have high expectations of all students and to view all students as capable math learners. Teachers bring enthusiasm and skill in providing varied and equitable instructional and assessment approaches to the classroom, addressing individual students’ identities, profiles, strengths and needs, and ensuring equitable, accessible, and engaging learning opportunities for every student. The attitude with which teachers themselves approach mathematics is critical, as teachers are important role models for students.” Ontario Math Curriculum 2020

## Educator Learning





# Effective Math Teaching



Christine Suurtamm  
(2023)



# Understanding the Development of Student Math Thinking

$$16+7=???$$



# A Shift in Instruction...

I counted out 16 cubes, then I counted out 7 cubes. I put them together and counted them all.

I know 15 plus 5 is 20 and 1 plus 2 is 3, so it's 23.

I know it's 10 and 6 plus 7 is 13; 10 plus 13 is 23.

I KNOW 16 PLUS 4 IS 20,  
AND THERE ARE 3 LEFT, SO  
20 PLUS 3 IS 23.

# Why the shift in instruction?

Why is it important to support the development of a range of strategies for calculating?  
What is the impact on student learning?

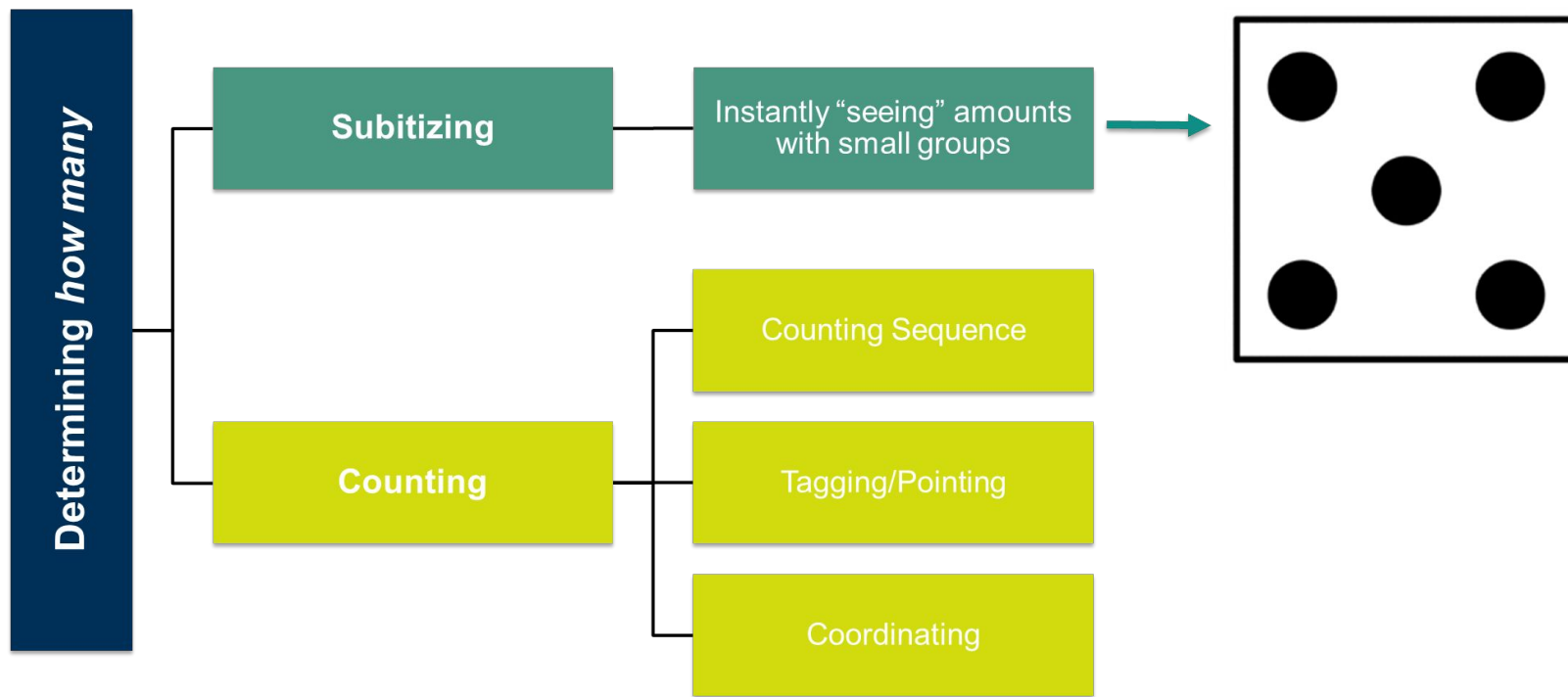
# The impact on student learning

Students have multiple opportunities to engage in learning settings as problem solvers and math thinkers.

They are able to communicate their ways of knowing with others and deepen their understanding over time.



# How do students determine how many?



# Splitting

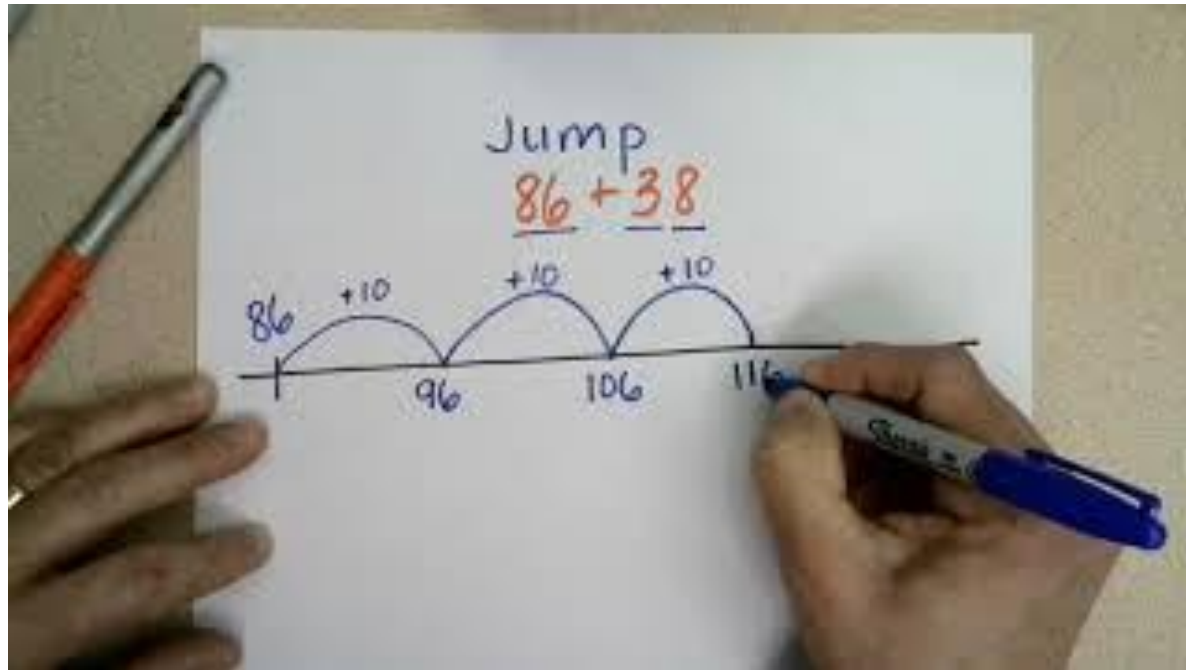
$$134 + 428$$




100	+	400	=	500
30	+	20	=	50
4	+	8	=	12




# Jumping using an open number line









In effective math classrooms,  
children can construct all the  
thinking of an alternative  
algorithm.





Practice and begin to  
automatize means...not simply  
memorizing facts and  
procedures.

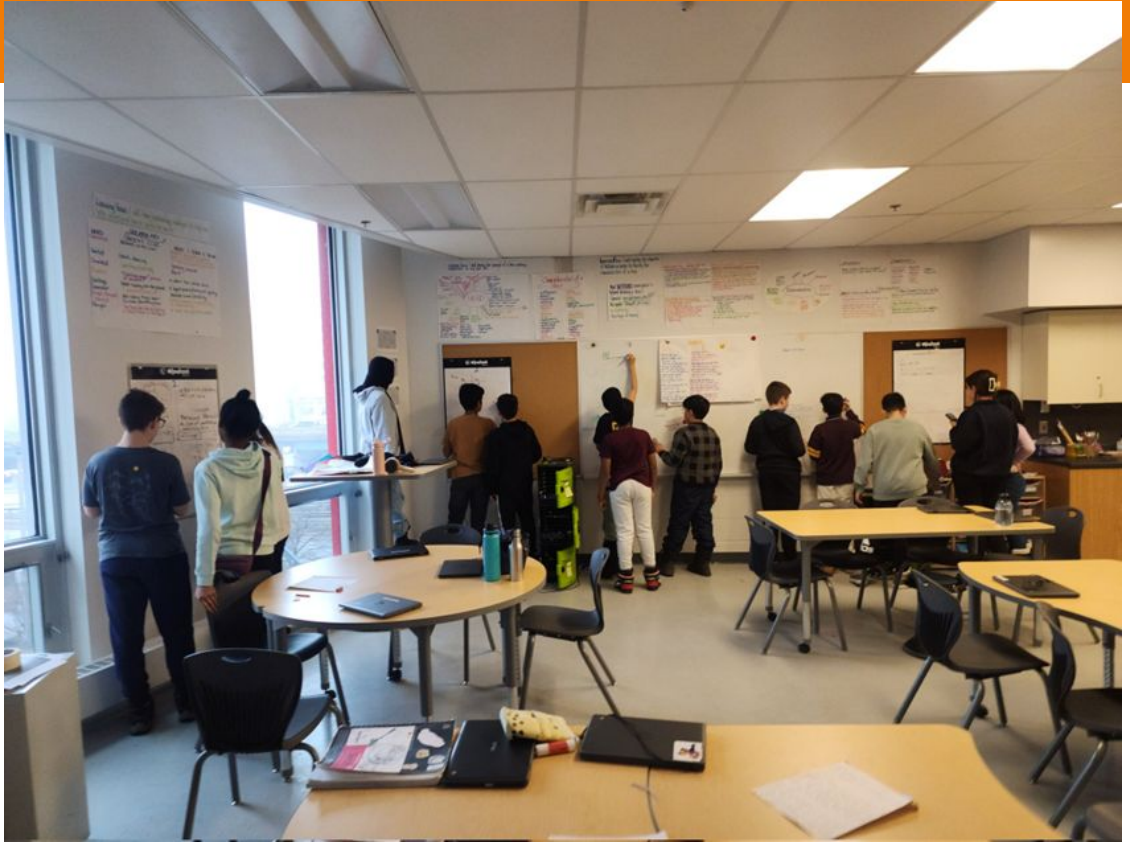


**School: Jean Lumb PS**

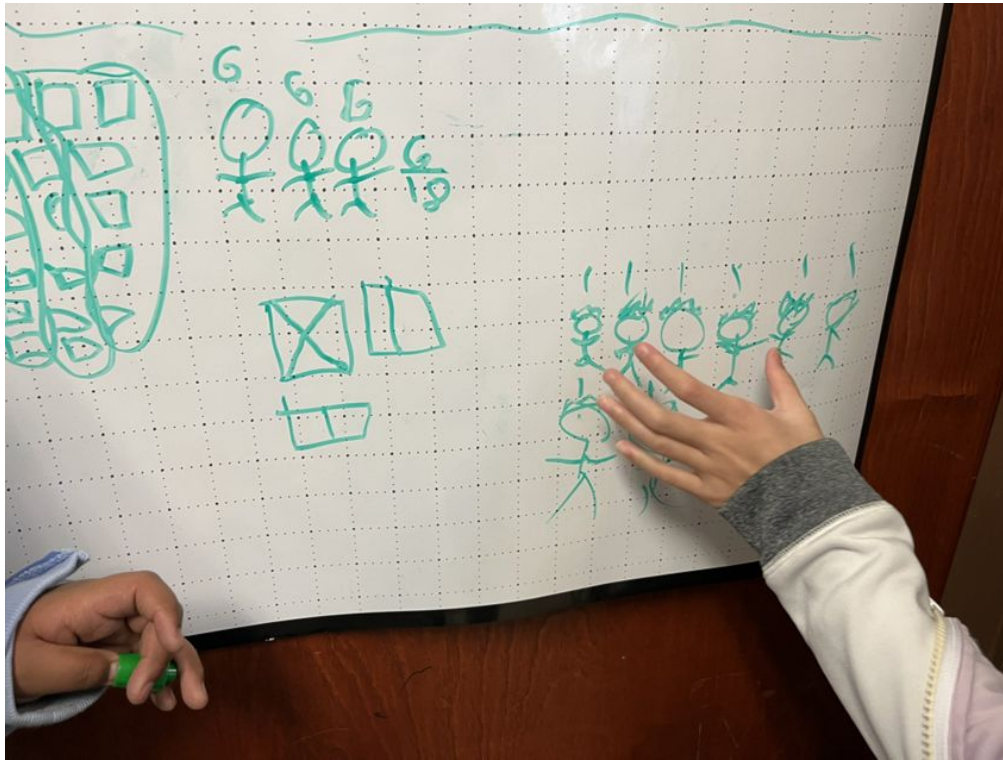
**Grade: unknown**

**Topic: Growing patterns**

**Educator: "The energy in the class was electrifying – a testament to their engagement & passion for learning."**



**"You made 8 pieces but they aren't equal. You can't do that! It's not fair to the other people."**



**School: Gateway PS**

**Grade: 3**

**Math Topic:  
Equipartitioning**

**Student: "You made 8 pieces but they aren't equal. You can't do that! It's not fair to the other people."**

**"Students were engaged from beginning of class to consolidation at the end."**

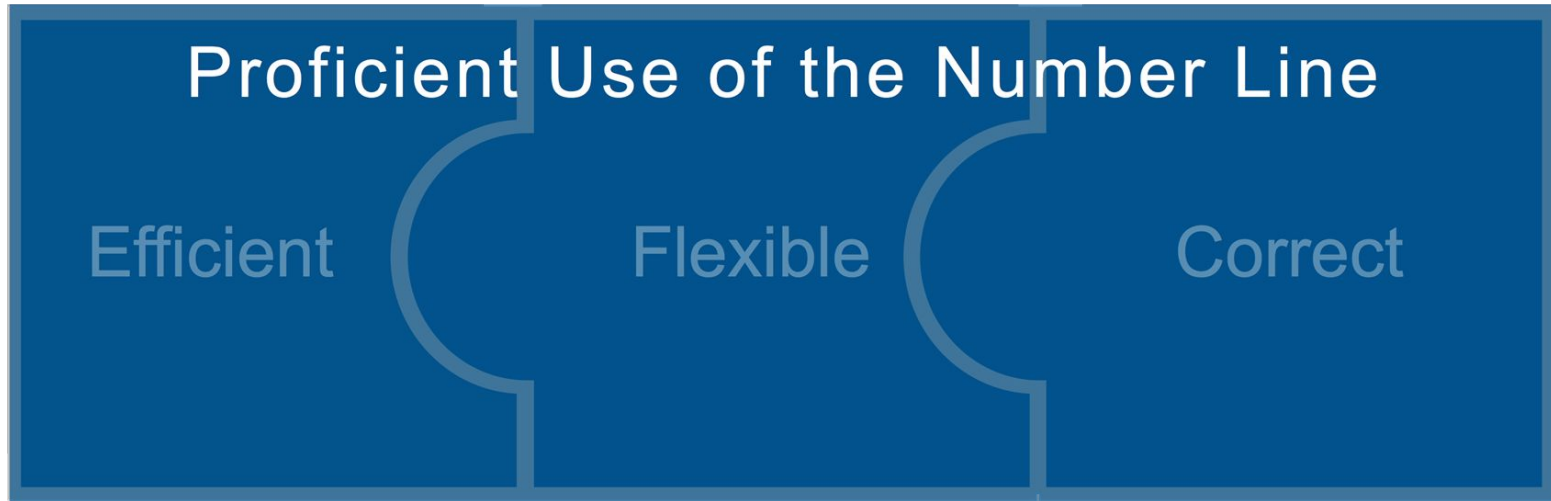
**School: Central Technical School**

**Grade: 10**

**Topic: Solving linear systems**



# What does *proficiency* mean?





# Ontario Mathematics Curriculum

## Curriculum and Resources

Curriculum ▾

Assessment and Evaluation

Resources

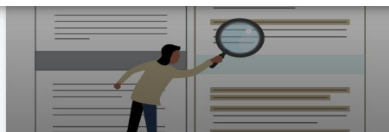
Parents



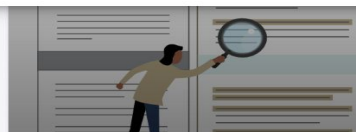
Financial literacy modules for students



Key Changes – Grades 1–3 Social Studies



Key Changes – Grade 9 English (ENL1W)

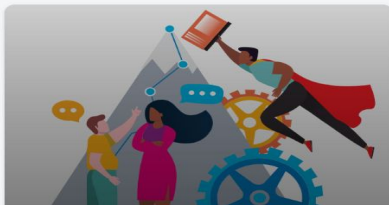


Key Changes – Language, Grades 1 to 8

## Mathematics



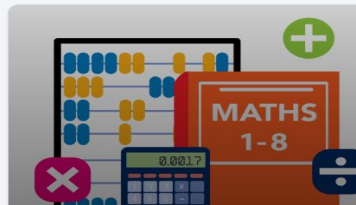
Sample course plans for Grade 9 Mathematics



Introduction to Effective Teaching Practices for the De-streamed Grade 9 Math...



High-Impact Instructional Practices in Mathematics | Resource and Supports



Long-Range Plans

**OVERALL EXPECTATION B2. use knowledge of numbers and operations to solve mathematical problems encountered in everyday life**

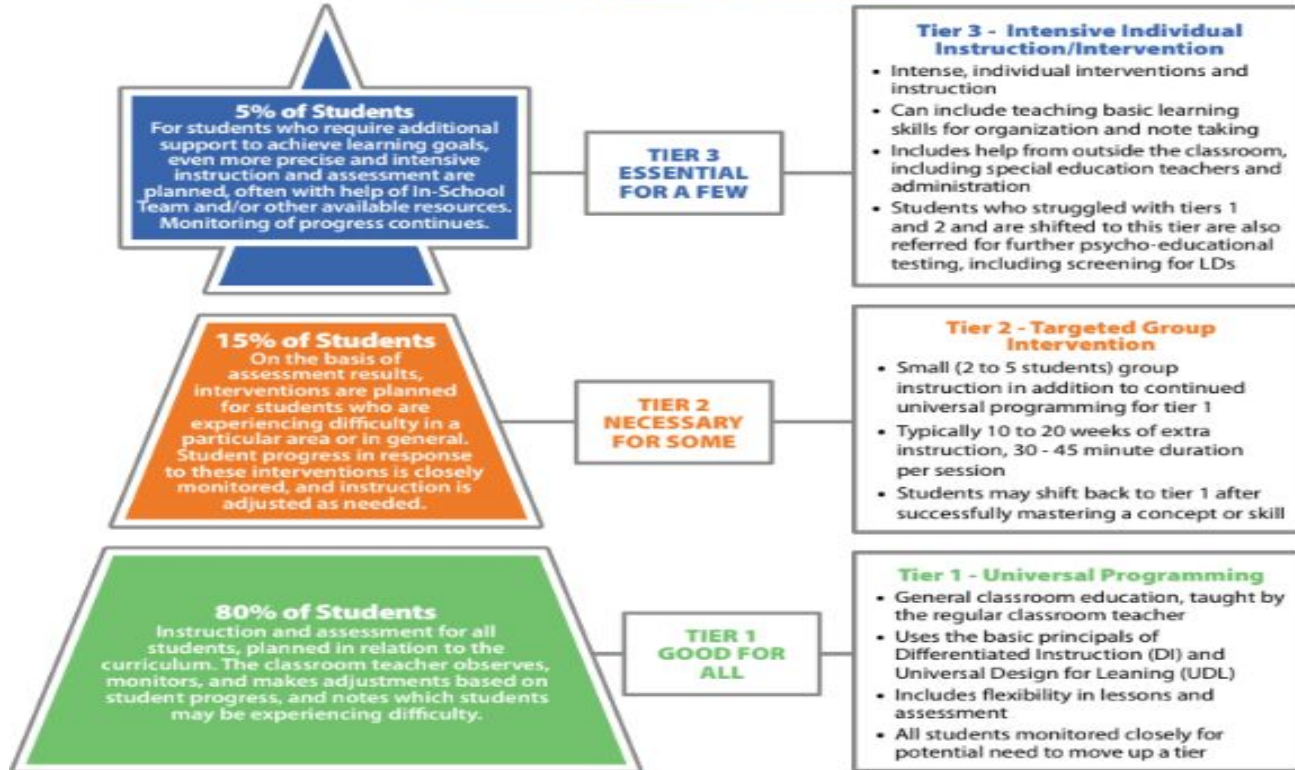
**SPECIFIC EXPECTATIONS**

Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
<b>Properties and Relationships</b>							
<b>B2.1</b> use the properties of addition and subtraction, and the relationship between addition and subtraction, to solve problems and check calculations	<b>B2.1</b> use the properties of addition and subtraction, and the relationships between addition and multiplication and between subtraction and division, to solve problems and check calculations	<b>B2.1</b> use the properties of operations, and the relationships between multiplication and division, to solve problems and check calculations	<b>B2.1</b> use the properties of operations, and the relationships between addition, subtraction, multiplication, and division, to solve problems involving whole numbers, including those requiring more than one operation, and check calculations	<b>B2.1</b> use the properties of operations, and the relationships between operations, to solve problems involving whole numbers and decimal numbers, including those requiring more than one operation, and check calculations	<b>B2.1</b> use the properties of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operations	<b>B2.1</b> use the properties and order of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and percents, including those requiring multiple steps or multiple operations	<b>B2.1</b> use the properties and order of operations, and the relationships between operations, to solve problems involving rational numbers, ratios, rates, and percents, including those requiring multiple steps or multiple operations
<b>Math Facts</b>							
<b>B2.2</b> recall and demonstrate addition facts for numbers up to 10, and related subtraction facts	<b>B2.2</b> recall and demonstrate addition facts for numbers up to 20, and related subtraction facts	<b>B2.2</b> recall and demonstrate multiplication facts of 2, 5, and 10, and related division facts	<b>B2.2</b> recall and demonstrate multiplication facts for $1 \times 1$ to $10 \times 10$ , and related division facts	<b>B2.2</b> recall and demonstrate multiplication facts from $0 \times 0$ to $12 \times 12$ , and related division facts	<b>B2.2</b> understand the divisibility rules and use them to determine whether numbers are divisible by 2, 3, 4, 5, 6, 8, 9, and 10	<b>B2.2</b> understand and recall commonly used square numbers, fractions, and decimal equivalents	<b>B2.2</b> understand and recall commonly used square numbers and their square roots
<b>Mental Math</b>							
<b>B2.3</b> use mental math strategies, including estimation, to add and subtract whole numbers that add up to no more than 20, and explain the strategies used	<b>B2.3</b> use mental math strategies, including estimation, to add and subtract whole numbers that add up to no more than 50, and explain the strategies used	<b>B2.3</b> use mental math strategies, including estimation, to add and subtract whole numbers that add up to no more than 1000, and explain the strategies used	<b>B2.3</b> use mental math strategies to multiply whole numbers by 10, 100, and 1000, divide whole numbers by 10, and add and subtract decimal tenths, and explain the strategies used	<b>B2.3</b> use mental math strategies to multiply whole numbers by 0.1 and 0.01 and estimate sums and differences of decimal numbers up to hundredths, and explain the strategies used	<b>B2.3</b> use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used	<b>B2.3</b> use mental math strategies to increase and decrease a whole number by 1%, 5%, 10%, 25%, 50%, and 100%, and explain the strategies used	<b>B2.3</b> use mental math strategies to multiply and divide whole numbers and decimal numbers up to thousandths by powers of ten, and explain the strategies used



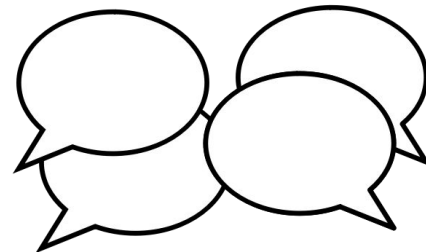
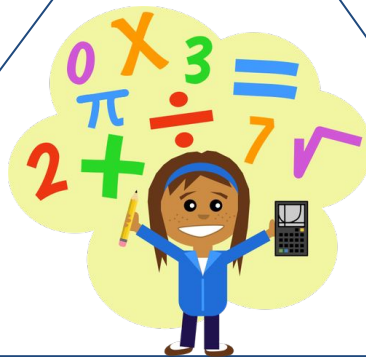
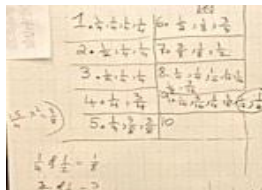
# Tiered Approach to Intervention

## The Tiered Approach to Intervention



# Student Thinking in Mathematics

products

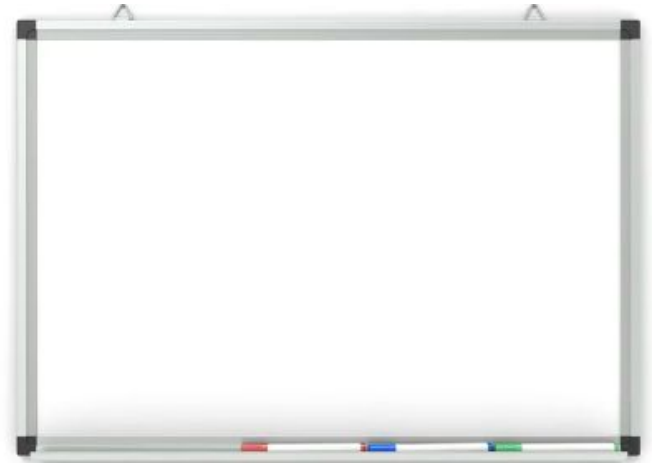


observations

conversations



# Tools to support math thinking



# TDSB Math Achievement Action Plan



“**Parents\*** are their children’s first role models. It is important for schools and parents to work together to ensure that home and school provide a mutually supportive framework for young people’s mathematics education.

Research assures us of the positive results of parent engagement on student success – and parent-child communication about mathematics, including parents’ fostering of positive attitudes towards mathematics, is one of the many important ways parents may be involved.”

Ontario Math Curriculum 2020

## Parents and Caregivers as partners



