IMPLEMENTING

ECSD's MATHEMATICS FRAMEWORK

Edmonton Catholic Schools

Table of Contents

1. Executive Summary

This report outlines the purpose and design of Edmonton Catholic Schools' Mathematics Framework, the expectations for mathematics instruction and learning across the Division, and the structures supporting consistent implementation. It is written to clarify what classroom instruction and student engagement should look like, how instructional leadership is being strengthened, and how Division-focused professional learning (DFPL) is shifting into a coherent three-year plan.

The central message is that effective mathematics teaching is complex: it helps students' truly understand math, practice skills with confidence, explain their thinking and feel capable as learners. Teachers do this by using meaningful activities, and by encouraging students to talk about their thinking, using tools and visuals to support learning, and checking in often to adjust their teaching based on students' needs. The Mathematics Framework builds common language and helps ensure all students have fair access to high quality math learning, reducing differences between classrooms and leading to better outcomes for every learner.

Over the past three years, ECSD has implemented new Mathematics curriculum in grades K – 6. In the 2026-27 school year, we will be piloting the grades 7-9 curriculum, with implementation set for the 2027-28 school year. Alberta Education has indicated that changes to high school programming will follow soon after.

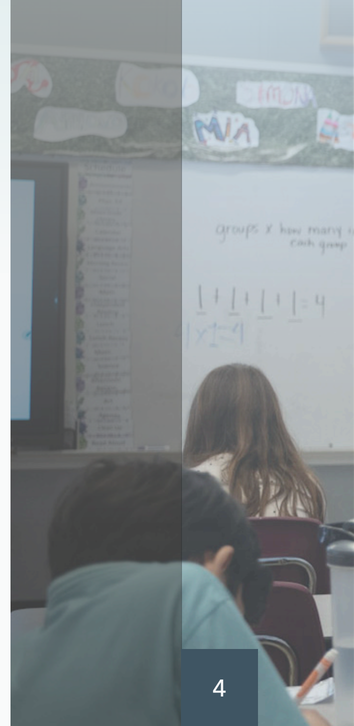
Over the past several years, we have noted that while Edmonton Catholic School students do well in mathematics relative to the province, we recognize there is still room to grow. We are committed to strengthening instruction to ensure more students achieve at higher levels. As part of this commitment to optimal learning and continuous improvement, our Mathematics Framework strives to establish consistency throughout the Division in our approach to math education, particularly as we are responsive to rapidly changing curricular expectations. This framework will help provide targets for school and Division improvement efforts.

2. The Importance of Mathematics

Mathematics is essential because it helps students make sense of the world around them. Math builds thinking skills like reasoning, problem-solving and decision making that students use in school, at work and in daily life. In a Catholic worldview, mathematics can be approached as a way of seeking truth, making sense of creation, and developing the habits of mind needed to serve others well: careful reasoning, ethical interpretation of information, perseverance, and thoughtful problem solving.

In practical terms, students need mathematics to interpret data and information in society, manage personal and family finances, access post-secondary options and skilled trades, and contribute to innovation and the common good. As we focus on career preparation skills through our implementation of Career Education and Financial Literacy and the establishment of St. Eligius Catholic Collegiate, we see more integration of mathematics in real-life applications.

Mathematics equips students with the reasoning, problem-solving, and decision-making skills needed to navigate an increasingly complex world.

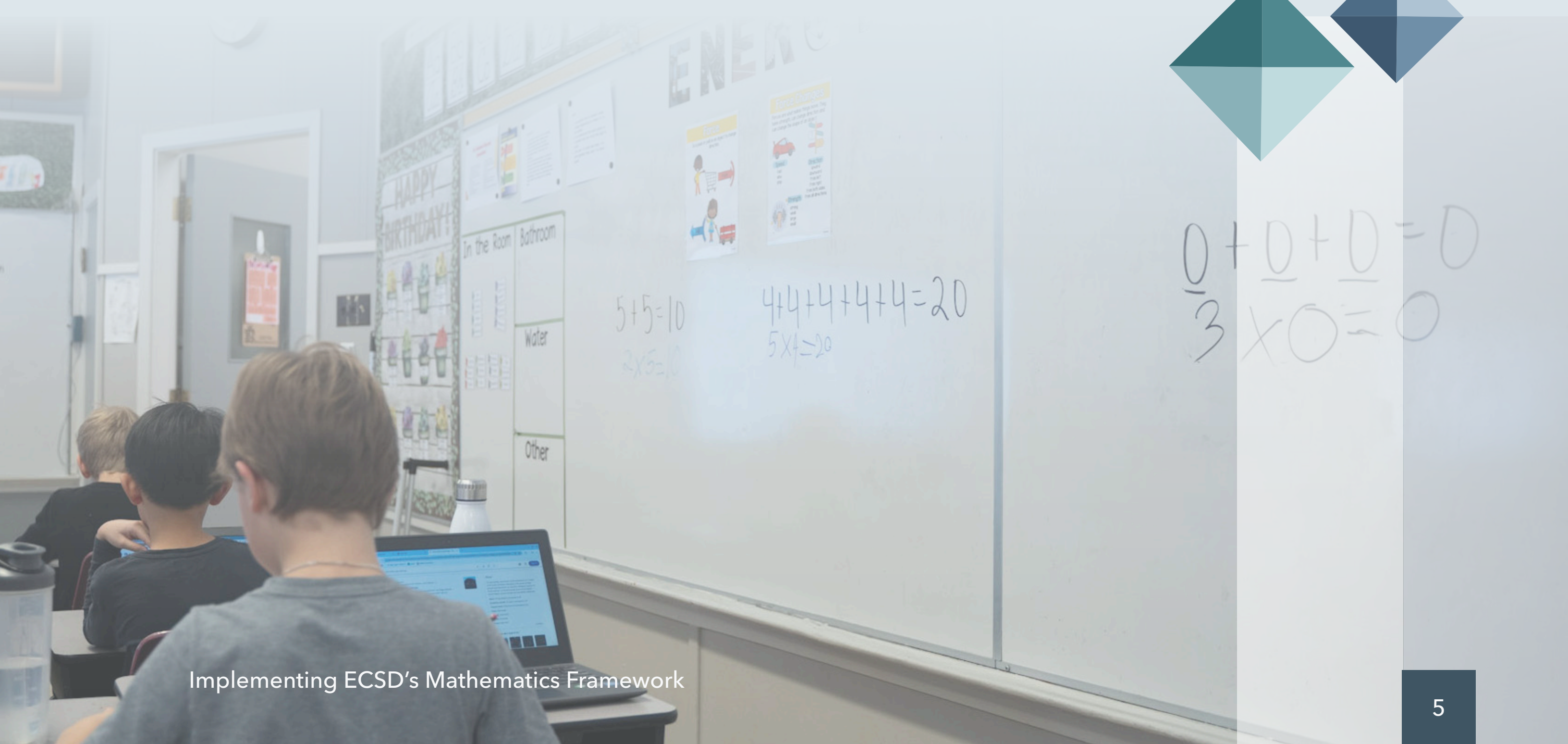


3. Mathematics Instruction:
Current Practice and Evolution

Good mathematics teaching involves much more than learning facts and formulas.

Over time, mathematics instruction has shifted from emphasis on memorization and speed toward a balanced approach that values understanding, reasoning, and communication alongside procedural skill. Research and evidence emphasizes that students learn mathematics deeply when they are active sense makers: exploring patterns and relationships, discussing and justifying ideas, using representations and tools, and consolidating learning through reflection and connection-making.

In Edmonton Catholic Schools, there are many elements that combine to ensure effective instruction. First and foremost, teachers ground their instruction in the curriculum. From there, they need to clearly set learning intentions for the lesson. Learning intentions may be for one lesson or span several lessons, but they define what students should know and be able to do. Teachers also need to determine the success criteria – those visible signs that students have reached the learning intention. If students have not yet met the success criteria, teachers provide descriptive feedback to let students know where they can improve. Teachers also must design high quality, research based tasks that are designed to elicit evidence of the success criteria. These are clearly defined through the Math Framework to remove guess-work for teachers. We want math instruction to be fluid and interactive, ensuring that students have rich opportunities for real-world problem-solving, strategy selection, and interaction with mathematic tools and representations. Math instruction is not simply answering questions on a page but fully alive in a dynamic classroom with purposeful questioning and math conversations. The goal is always to develop confidence and competence in mathematical skills and reasoning.



4. Expectations in Mathematics

Division expectations align to three interconnected areas: student learning and proficiency, instructional practice, and collaborative improvement.

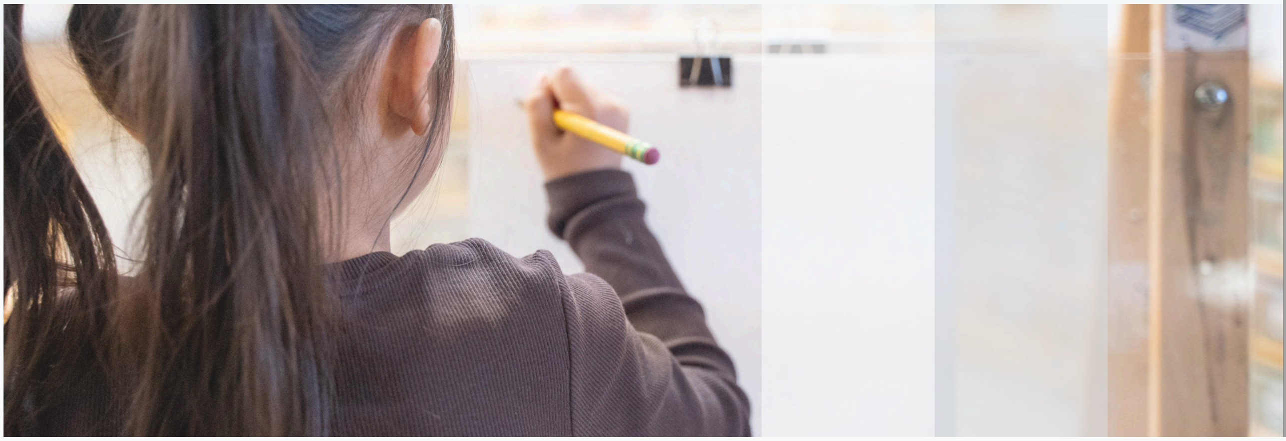
Student Learning and Proficiency Expectations

Students are expected to develop comprehensive mathematical proficiency throughout their mathematics education. This includes building strong conceptual understanding, developing procedural fluency, strengthening strategic competence, engaging in adaptive reasoning, and cultivating a productive disposition toward mathematics. These competencies are not isolated skills, but interconnected dispositions that grow with ongoing instruction, practice, reflection, and experience.

Over time, students learn to make sense of mathematical ideas, understand why procedures work, and use them accurately and efficiently. They develop the ability to select appropriate strategies, solve problems flexibly, and adapt their thinking when faced with new or unfamiliar situations. Through regular opportunities to communicate their reasoning, students learn to explain and justify their thinking using mathematical language, representations, and evidence.

As students apply mathematics in meaningful and relevant contexts, they build confidence in their abilities and come to view mathematics as useful, worthwhile, and accessible. A productive disposition is fostered when students persist through challenges, take risks in their learning, and see mistakes as opportunities for growth. Together, these elements support the development of thoughtful, resilient, and capable mathematical thinkers who are prepared to engage with increasingly complex ideas across their academic journey and beyond.

While much has been made of students using standard algorithms with fluency and accuracy, this is only small element of learning mathematics. When we consider standard algorithms as the only way to understand mathematics, we miss many important skills students develop throughout their mathematics instruction. The following demonstrates different types of learning we are achieving through a more robust approach to mathematics education.



Examples of Student Learning Expectations in Mathematics

Mathematical Proficiency

- Explains how to solve a problem, carries out the calculation accurately, and reflects on whether the answer makes sense.
- Chooses an efficient method, applies it correctly, and justifies the solution.
- Uses multiple representations (numbers, diagrams, graphs, words) to show understanding.

Conceptual Understanding

- Describes how mean, median, and mode are affected by outliers.
- Demonstrates understanding of place value when working with large numbers or decimals.
- Explains the relationship between fractions, decimals, and percentages.

Procedural Fluency

- Accurately solves multi-step equations.
- Computes fractions, decimals, and percentages efficiently.
- Uses standard algorithms correctly and consistently.

Strategic Competence

- Chooses an appropriate method to solve a problem.
- Breaks a complex word problem into manageable steps.
- Selects mental math, paper-and-pencil, or technology strategically.

Adaptive Reasoning

- Justifies a solution using logical reasoning and evidence.
- Identifies and corrects errors in their own work.
- Explains why a particular strategy works.

Productive Disposition Toward Mathematics

- Persists when solving challenging problems.
- Views mistakes as opportunities to learn.
- Demonstrates confidence when discussing mathematical thinking.

Instructional Practice Expectations

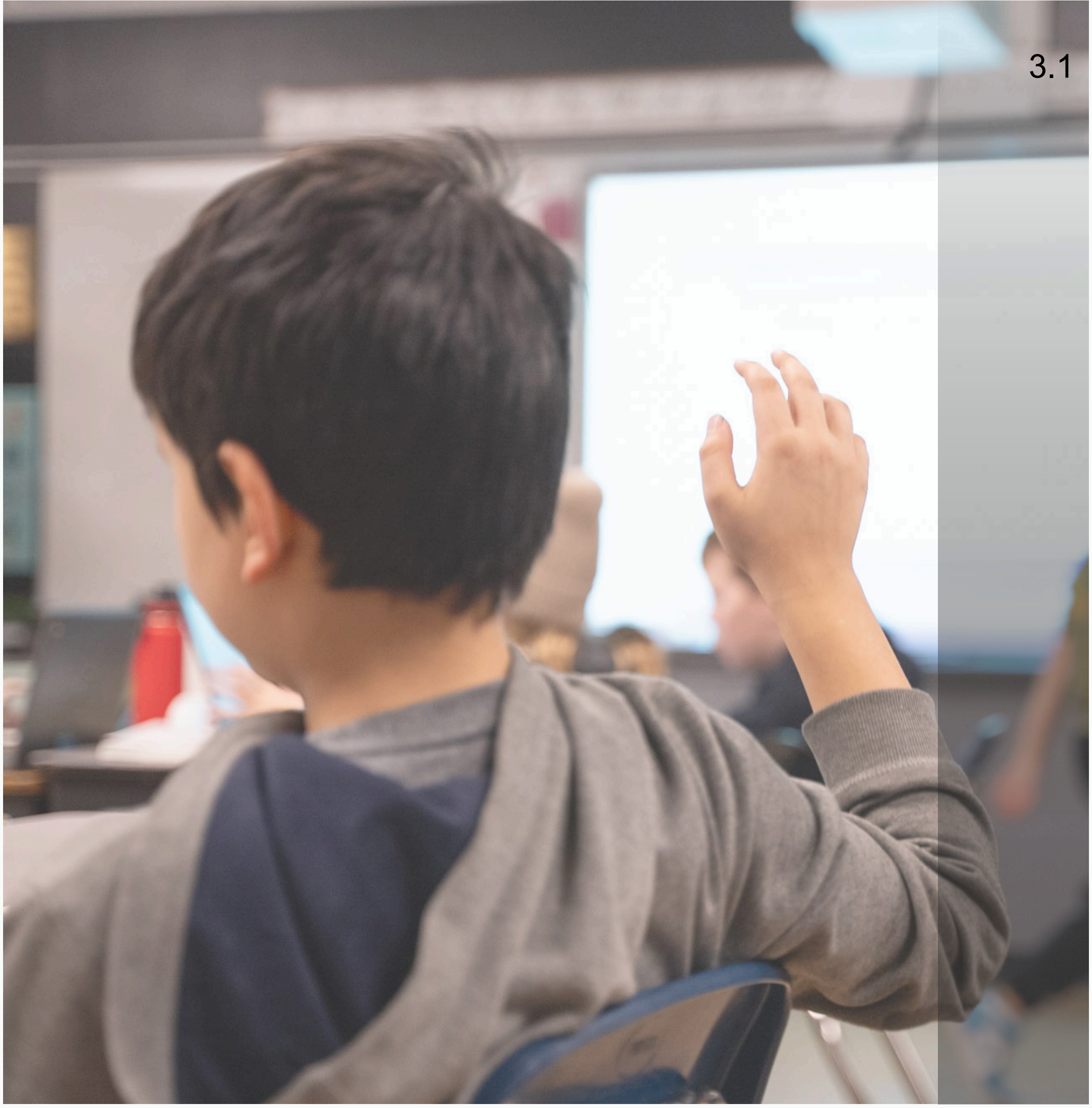
Teaching mathematics means making thoughtful choices about how to teach, based on what students need and what they are expected to learn. Teachers select strategies that best support each child's understanding and help them meet grade level learning goals.

Our Mathematics Framework is grounded in research practices that create learning experiences that are engaging, meaningful, and help students truly understand math. Teachers are expected to implement high-impact mathematics practices, including explicit and responsive instruction. We want to see active evidence of student thinking through conversation, observation, and products! We also need to see students discussing math with each other and with their teacher through common routines that become transparent (students know they are using them) and transportable (students can take them from class to class).

One key element we need to see in all math classrooms is the purposeful use of representations and tools – ensuring students are moving in a deliberate way from the concrete to the abstract. Students need to see math happening in their classroom – in doing so, they are better able to conceptualize mathematical concepts. Rather than rote drill worksheets, teachers select deliberate practice activities that build fluency and understanding in a logical manner. Gone are the days of just opening a math textbook! We need to see a shift away from the memorization of traditional algorithms towards a deeper understanding of math that allows for flexible and innovative thinking.

Assessment and Responsiveness Expectations

Assessment is expected to be used to support learning. Teachers and teams regularly gather evidence through observations, conversations, and products, supplemented by common assessments, to adjust instruction and provide timely reteaching, practice, or extension.



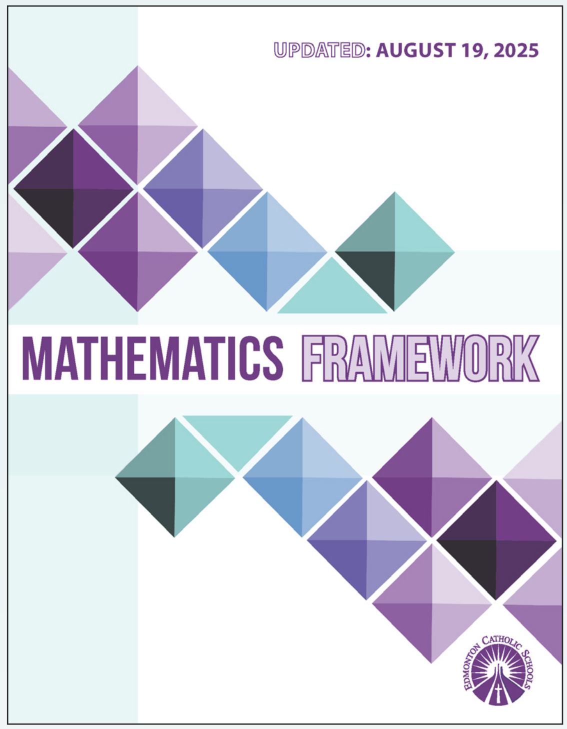
A key part of strong assessment is helping students think about their own learning. This means students learn to understand what they know, what they are still working on, and what helps them improve. When students can reflect on their thinking, they become more confident, independent, and successful learners.

This strengthens their ability to transfer learning between contexts and communicate their understanding effectively to others. For example, a teacher gives students a short math task and listens to how they explain their thinking. Noticing that some students need more support while others are ready for a challenge, the teacher adjusts the next lesson using visuals and hands on tools for some students and deeper problem solving for others. Students reflect on what strategies worked for them, helping them understand their own learning and next steps.

5. Purpose and Intention of the Mathematics Framework

The Mathematics Framework is designed to create shared language, clear and consistent expectations, and high-quality practice across schools. It serves as a replicable guide for staff learning and instructional decision-making, and it is intentionally organized so that schools can work through it as a whole or focus on specific components as needed. Rather than a prescriptive manual, the Framework is designed to provide choice and flexibility as schools work towards improvement in Mathematics.

The Framework centers the learner by focusing first upon student mathematical identity and agency, emphasizes instructional leadership as essential for building a positive mathematics culture, and connects day-to-day classroom practice to data-informed improvement cycles. Indeed, the mathematics identity of all parties is critical. All of us are math people! We are all capable of rigorous and challenging mathematics with the right support. By defining our belief statements and working towards a growth mindset in Mathematics, we can encourage and normalize productive struggle within an encouraging and supportive environment.



This Framework creates opportunity for focused discussion and clear professional learning for all adults who support learning in the classroom. From this Framework, expectations are made clear and background knowledge is strengthened, ensuring confidence in improvement efforts throughout the Division.

Rather than a prescriptive manual, the Framework is designed to provide choice and flexibility as schools work toward improvement in mathematics.

6. Understanding the Complexity of Mathematics Education

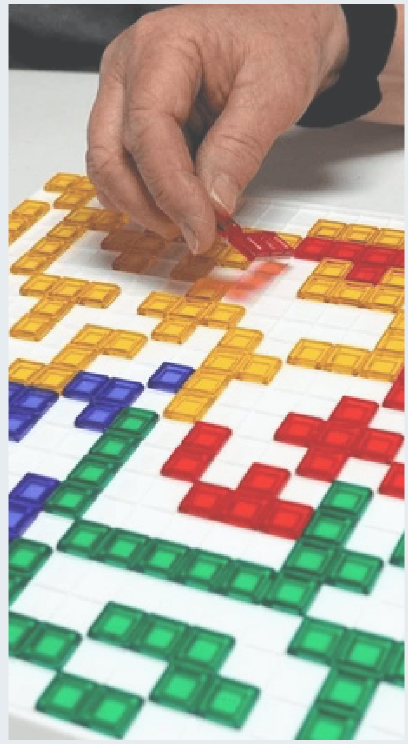
The Reality of Mathematics Learning

Learning mathematics is cumulative and often non-linear. Students bring varied experiences, language skills, and confidence levels. Ensuring that all students have access to high quality instruction and are able to achieve equally to their peers is not achieved by lowering expectations, but by widening access: multiple entry points, strategic scaffolds, and strong discourse routines. In other words, students are able to enter into mathematics learning at many points along a learning continuum. We do this by ensuring that activities are designed so students can see themselves as competent and capable "doers" of mathematics, no matter their entry level.

One example of a "low floor, high ceiling" activity that provides entry points for all students is an open ended problem such as "How many different ways can you show 24?" where some students use drawings or manipulatives and others use equations or patterns. Students reveal many ways in which they are thinking mathematically – are they thinking in fractions? Perhaps counting by ones. Can they represent 24 as a percentage of something else? Maybe they show it as a product of multiplication. Allowing students to enter into a question such as this and building upon their strengths reinforces a positive disposition and ensures universal access for all learners.

What Observers Should Expect to See in Classrooms

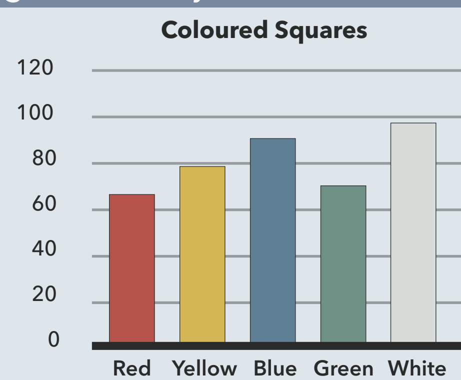
In classrooms, we should expect to see students engaged in thinking, talking, representing, and reasoning—not only completing pages of questions. You may see manipulatives, drawings, number lines, models, and digital tools used to make ideas visible. You should also expect to see mistakes treated as learning opportunities, teachers probing student thinking with purposeful questions, and students comparing strategies during consolidation. In math classes, everyone should see students not only "doing math," but talking to one another, debating strategies, and actively engaging in explaining the "why" of the strategy they chose.



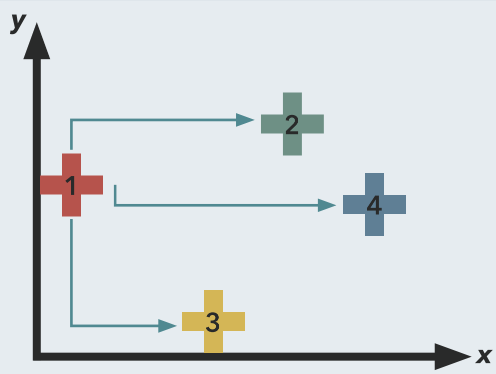
An activity that supports multiple entry points for students could be incorporating game play into the math curriculum being taught. Students at various levels can enter different domains of math simply by analyzing the game board during and after playing.

Representing Mathematical Thinking Through Game Play

Organizing color pieces into various graphs or visuals.



Discussing the movement of specific game pieces located on the board.

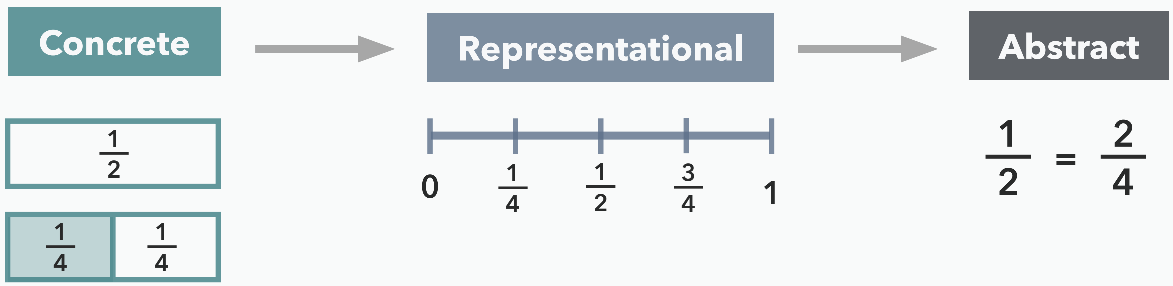


Using math notation to represent the pieces that have been played.

$$P(red) = \frac{\square}{400}, \quad P(yellow) = \frac{\square}{400} \ \ldots$$

7. From Concrete to Abstract:
An Illustrative Learning Process

To illustrate how the same mathematics can be approached differently, consider the idea of equivalent fractions (for example, showing that 1/2 is the same as 2/4). A traditional approach might emphasize a rule (multiply numerator and denominator by the same number). A framework-aligned approach builds the rule from meaning.



Concrete Thinking

Students use fraction strips or area models to physically show that two one-quarter pieces cover the same amount as one half. The teacher prompts students to describe what stays the same (the whole) and what changes (how it is partitioned).

Representational Thinking

Students draw models (rectangles, circles, or number lines) and label partitions to record the equivalence they observed with tools. They compare different drawings and explain why they represent the same quantity.

Abstract Thinking

Students generalize: if we partition each half into two equal parts, the same amount is now described as two fourths. Only after meaning is established do students connect to symbolic methods (multiplying numerator and denominator by the same factor) and consider efficiency.

This sequence strengthens conceptual understanding and supports procedural fluency through understanding, while also building language, reasoning, and confidence.

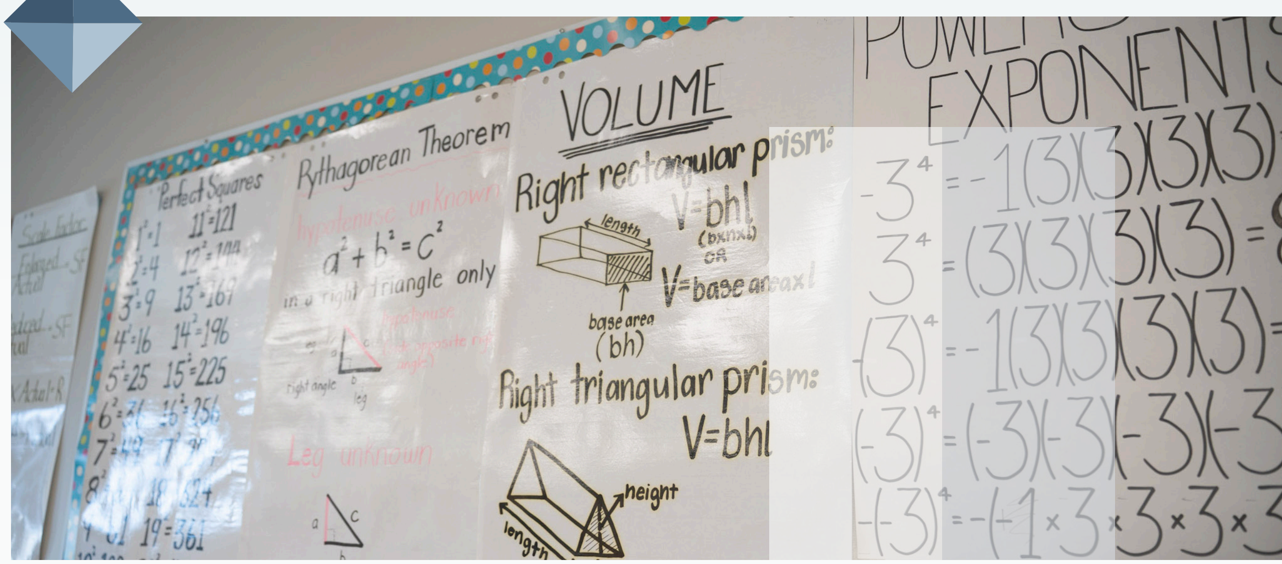
8. Actioning the Framework

Implementation of the Mathematics Framework is supported through a coherent system that aligns expectations, professional learning, instructional leadership, and evidence of impact. This approach is intentionally designed to support consistency and cohesion across schools while allowing for flexibility in how the Framework is actioned in local contexts.

Division Structures for Consistency and Cohesion

Key structural elements include:

- A common Division framework with shared language and clear instructional expectations shared with Principals and Instructional Coaches.
- School-based collaborative structures such as Collaborative Response, Professional Learning Communities (PLCs) and grade teams focused on student work, assessment evidence, and responsive instruction occurring on an ongoing basis. The third Thursday of each month has been set aside for schools to engage in Collaborative Response; this is one time when schools could engage in looking at student work in mathematics.
- Instructional coaching and consultant support to model practices, co-plan lessons, and strengthen educator capacity happening "at the elbow" in classrooms.
- Leadership walkthroughs and feedback cycles aligned to framework look-fors (task quality, discourse, tools/representations, assessment for learning).
- Use of Common Summative Assessments (CSAs) and agreed-upon evidence sources to monitor trends and inform next steps.



Implementation Focus

This year's focus is on orientation and early implementation: building shared understanding of the Framework, selecting a small number of high-leverage practices, and establishing common evidence routines. A typical sequence includes:

Shared Learning

Principals and school teams build common language for high-impact practices.

Pilot Practices

Schools select 1–2 high-leverage practices (e.g., learning goals/success criteria/feedback; math conversations; representations).

Evidence Cycles

Teams collect short-cycle evidence (e.g., student work samples; observation notes; common assessment results) and adjust instruction.

Support & Calibration

Coaching and leadership walkthroughs focus on feedback and consistency (not evaluation).

Mid-Year Reflection

Identify what is strengthening learning and refine the implementation focus.

Implementation is supported through structured learning, focused practice selection, short-cycle evidence collection, and leadership calibration. This sequence ensures that implementation remains focused on strengthening student learning rather than adding new initiatives.

Instructional Leadership in Mathematics

Instructional leadership is central to strong mathematics outcomes. Leaders shape conditions for success by setting clear expectations, protecting collaborative time, supporting teacher learning, and monitoring implementation through evidence-informed conversations.

Building Instructional Leadership Capacity

Instructional leadership skills are built over time in a supportive environment in which leaders have the opportunity for reflection, conversation, and practice. Across the Division, instructional leadership capacity is strengthened through a focus on:

Shared Instructional Language

Develop shared look-fors and a common language for classroom practice aligned to the Mathematics Framework.

Learning-Focused Walkthroughs

Strengthen leaders' ability to engage in walkthroughs that focus on learning and provide specific, actionable feedback.

Evidence-to-Action PLCs

Build capacity to facilitate Professional Learning Community (PLC) conversations that move from evidence to action, rather than reporting alone.

Psychologically Safe Cultures

Support leaders to create environments where productive struggle is valued for both students and adults.

This work is supported through ongoing Principal as Instructional Leader sessions, Assistant Principal Catholic Education Leadership (CEL) sessions, Instructional Coach sessions, and optional Communities of Practice (COPs), which strengthen shared leadership practices and support consistent implementation of the Mathematics Framework across schools.

Shift in DFPL to a Three-Year Plan

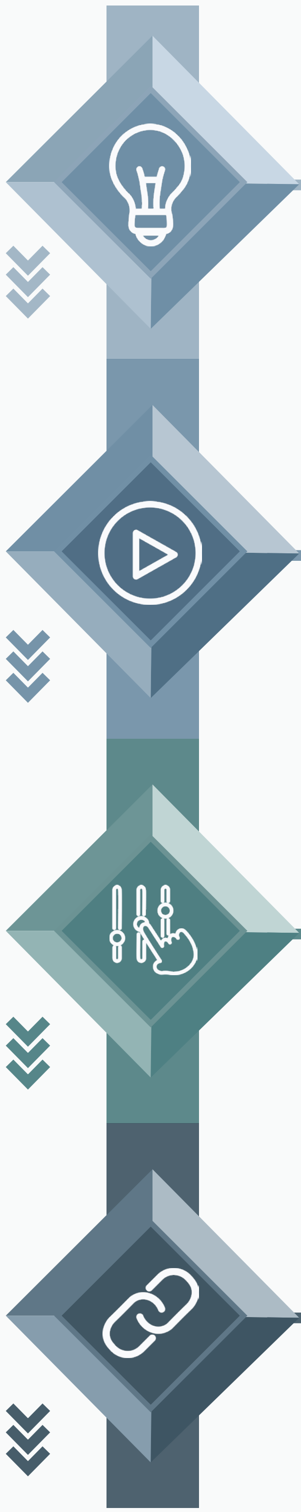
To reduce initiative fatigue and increase coherence, Division-Focused Professional Learning (DFPL) is shifting from single-year topics to a staged three-year implementation plan that deepens practice over time.

Proposed Three-Year Arc

Year	Primary Focus	What Changes in Classrooms / Teams
Year 1 2025 - 2026	Shared language and foundational high-impact practices	Consistent learning goals/success criteria/feedback; routine math discourse; purposeful tools/representations; short-cycle evidence routines.
Year 2 2026 - 2027	Task quality, cognitive demand, and strengthening proficiency strands	More frequent rich problem solving; improved task design; strategic sequencing of student thinking; stronger consolidation routines.
Year 3 2027 - 2028	Equity, intervention coherence, and sustaining system capacity	Refined tiered supports; stronger progress monitoring; deeper supports for language learners; leadership calibration and sustainability practices.

9. Learning Progressions for Educators

Educator learning is strongest when it follows a progression from awareness to routine practice to refinement. The following progression supports consistent implementation:



Awareness

Understand the Framework components and shared language; identify one high-leverage practice to strengthen.

Supported Enactment

Co-plan and rehearse the practice with coaching; use common routines and sentence stems; anticipate misconceptions.

Evidence-Informed Refinement

Analyze student work and observation evidence to adjust task design, questions, scaffolds, and consolidation.

Sustained Integration

Connect practices across units and grades; mentor peers; contribute exemplars and resources to shared repositories.

10. Conclusion

The Mathematics Framework represents an innovative Division response to the need for coherent, practical supports for implementation. Where provincial guidance may not provide sufficient clarity, exemplars, and professional learning structures for consistent classroom enactment, the ECSD Mathematics Framework offers a locally developed, coherent map that is aligned to research-informed practice and the needs of Edmonton Catholic Schools. The innovation lies in the clearly articulated expectation, goals, and vision of the Mathematics Framework which will drive professional learning, leadership conversations, and instructional practice.

As the Framework is implemented over the next three years, mathematics classrooms will increasingly reflect consistent high-impact practices: students engaging in reasoning and discourse, using representations, and applying mathematics through rich problem solving; teachers using evidence to respond; and leaders strengthening coherence through supportive instructional leadership. The end goal is improved student growth and achievement and confidence in mathematics, supported by a stable, multi-year improvement approach.

11. Appendix

Top Five Advocacy Priorities for Strengthening Mathematics Instruction in Alberta

1. Curriculum Implementation Timing

The implementation of new curriculum over multiple grade levels causes significant gaps in student understanding and leads to a challenge with professional learning supports. Implement one year at a time so student and teacher knowledge and skill can be supported in a staged approach.

2. Resources

Resources to support new curriculum are inconsistent. There is no clear teacher guide to support teacher implementation. Teachers require a clear, coherent plan to support a complex and challenging position.

3. Pre-Service Teacher Training

It is important that we advocate for improved mathematics instruction at the post-secondary level for Elementary generalists as they regularly only have two courses for their degree completion in Mathematics. Further, we need recruitment strategies to develop specialists in mathematics in Education programs.

4. Sustained, Job-Embedded Professional Learning

Effective Mathematics instruction depends upon ongoing, job-embedded professional learning, not one-time workshops. Dedicated funding is needed for sustained professional development and the recruitment and retention of specialized Mathematics teachers to build system-wide capacity. To do this, we require additional staff in a system with too few teachers available. Advocating for further Education spaces in post-secondary, with quality instruction in mathematics, would be very helpful.

5. Clear Provincial Guidelines for Student Achievement

In implementing new curriculum, exemplars of student performance assist teachers in understanding the standard or degree to which a student must demonstrate proficiency. Exemplars help teachers prepare students for standardized exams such as Provincial Achievement Tests. At minimum, there needs to be clear provincial guidelines for student achievement to correspond to curricular expectations.