



Registration for any of these virtual sessions (using Adobe Connect) is available at rms.thelearningexchange.ca. School board approval is required for registration.

RMS Virtual Learning Series - Fall 2017

Addition and Subtraction involving Fractions

December 7, 2017 9:30am - 11:30am

Suggested Audience: Junior to Secondary (4-12)

Note: This is a new session for Fall 2017.

Through a variety of classroom ready activities participants will gain a deeper understanding of purposeful selection of representations, as well as foundations of addition and subtraction of fractions. Using both participant and student thinking, discussion will highlight mathematical thinking and anticipated responses. As well, the role of fraction number sense and connections to prior learning of operations will be explored.

Algebraic Reasoning: Equality, Representations and Proof

December, 5, 2017 9:30am - 11:30am

Suggested Audience: Classroom Teachers, Math Lead Teachers, Math Facilitators/Consultants/Coaches, Principals

Note: This is a new session for Fall 2017.

Based on Paying Attention to Algebraic Reasoning, this Adobe Connect session will explore equality, representations and proof. You will have an opportunity to solve problems and examine the connections between and among these topics. These problems can be used in primary, junior and intermediate divisions. Participants might also be interested in attending the Algebraic Reasoning: Functional Thinking session.

Algebraic Reasoning: Functional Thinking

October 3, 2017 9:30am - 11:30am

Suggested Audience: Classroom Teachers, Math Lead Teachers, Math Facilitators/Consultants/Coaches, Principals

Note: This is a repeat session from Spring 2017.

Based on Paying Attention to Algebraic Reasoning, this Adobe Connect session will explore generalizing relationships. Samples of primary, junior and intermediate (including Grade 9) specific tasks will be explored and discussed.

In this Adobe Connect session you will have opportunities to:

- deepen mathematical content knowledge of algebraic reasoning;



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- develop awareness of key concepts associated with algebraic reasoning, specifically functional thinking, multiple representation, and generalization; and
- develop pedagogical knowledge for teaching algebraic reasoning.

Participants might also be interested in attending the Algebraic Reasoning: Equality, Representations and Proof session.

Building Number Sense in the Primary Years

October 5, November 9, December 7, 2017 & January 11, 2018 1:00pm - 3:00pm

Suggested Audience: Teachers and Early Childhood Educators (K-3); Math Facilitators/Consultants/Coaches; Principals

Note: This is a repeat series from Spring 2017.

Session 1 (Oct 5) – How does mathematical thinking and understanding develop from counting into addition and subtraction?

How do students develop the “principles of counting” and a simultaneous understanding of quantity in a way that will set them up for long term success with addition and subtraction? This session will use pedagogical documentation to discuss the impact of games, materials and multiple models on learning and align key ideas in K-3 that heighten number sense and build fluency with addition and subtraction.

Session 2 (Nov 9) – Reciprocal Relationships: Number Sense and Algebraic Reasoning

What are the connections between number sense and algebraic reasoning? For example, how does our early introduction of the “equal” sign effect later thinking? What experiences, materials and models help to forge a solid base for algebraic reasoning? What can we notice and name (make visible), and why is this important to children?

Session 3 (Dec 7) – Reciprocal Relationships: Number Sense and Measurement

In K-3, measurement is easy to explore through activities, yet how can we design experiences to avoid misconceptions? What are the links between number sense and measurement? What experiences help to make this connection explicit and visible to children? What can we notice and name, and why is this important to children?

Session 4 (Jan 11) – Reciprocal Relationships: Number Sense and Geometry & Spatial Sense

Geometry and Spatial Sense is often taught in isolation, yet thinking about mathematics spatially doesn't happen only within this strand. What experiences, materials, and models can make the reciprocal connection between number sense, geometry and spatial sense visible? What can we notice and name, and why is this important to children?



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Comparing Fractions

November 9, 2017 9:30am - 11:30am

Suggested Audience: Primary - Intermediate (K-9)

Note: This is a new session for Fall 2017.

Through a variety of classroom ready activities participants will gain a deeper understanding of purposeful selection of representations, foundations of equivalency and comparing fractions. Using both participant and student thinking, discussion will highlight mathematical thinking and anticipated responses.

Effective Individual Education Plans (IEPs) to Support Mathematics Learning

October 3, November 7, December 5, 2017 & January 9, 2018 1:00pm - 3:00pm

Suggested Audience: Teachers (K-12); Special Education and Math Facilitators/Consultants/Coaches; Principals

Note: This is a repeat series from Spring 2017.

This series of four virtual sessions focus on developing and using Individual Education Plans (or IEPs) to effectively support students with special education needs, particularly those with learning disabilities, and their mathematics learning. The series offers learning opportunities for school teams, particularly those in schools receiving intensive support to rethink their collaborative processes in developing, implementing, and monitoring IEPs.

These four sessions can be viewed as a series or stand-alone sessions, depending on identified professional learning needs in your schools.

Session 1 (Oct 3) – Alignment of Assessment Data With Learner Profiles in Individual Education Plans(IEPs)

This session invite participants to reflect on:

Where are you as a whole school in understanding learning disabilities and building knowledge of diverse mathematics learners?

How is this understanding contributing to shifts in math assessment practices in your school?

How has the shift in math assessment practice brought new insights to mathematics learners?

How are these insights reflected in the description of learners in IEPs for students with learning disabilities, and others with special education needs?

Session 2 (Nov 7) – Putting Universal Design for Learning, Differentiated Instruction and Accommodations in IEPs into Practice



Registration for any of these virtual sessions (using Adobe Connect) is available at rms.thelearningexchange.ca. School board approval is required for registration.

This session explores using IEPs program strategies in the mathematics classrooms. For students with special education needs, particularly students with learning disabilities, the programming goal is to maximize their opportunities to access the curriculum. In this session, we will examine questions such as:

How are your assessment and instructional strategies reflecting this goal?

How do teachers make sense of Universal Design for Learning, differentiated instruction and accommodations in IEPs? How to connect them to the Ontario Mathematics Curriculum?

How are sound pedagogical decisions made to support students with special education needs in their mathematics learning?

Session 3 (Dec 5) – Accommodate and/or Modify Mathematics Learning for Learners with Learning Disabilities and Other Special Education Needs

This session delves deep into the conversation about matching accommodations and modifications in IEPs with learner profiles. This is a further opportunity to explore the alignment of accommodations and modifications with your knowledge of mathematics learners and the Ontario Mathematics Curriculum. How does the knowledge of the learner and curriculum contribute to developing learning goals and success criteria to support students with special education needs in their mathematics learning?

Session 4 (Jan 9) – Making a Difference: How Do You Know?

“How will we build a collaborative whole school approach that supports students with learning disabilities and leads to improved mathematics learning for all?” In this session we will examine how your IEP practice is making a difference in this inquiry journey. We will examine following questions:

How has a deeper understanding of diverse mathematics learners contributed to improved personalization and precision in IEPs? How do you know (e.g., how do you monitor the progress of IEP practice over time in your school)?

What structure or process is now in place to enable the collaboration between special education and math teachers in your school? How has the collaboration shifted mathematics assessment and instructional practices in your school to support students with special education needs? How do you know?

What’s the impact on students with special education needs in their mathematics learning? How do you know (e.g., what evidence did you gather? How is it reflected in your school improvement plan/PRISA?) How do you leverage this learning to support student learning in other subject areas?



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Engaging Students with Math Learning Tools: Grades 10, 11, 12

December 5, 2017 1:00pm - 3:00pm

Suggested Audience: Grade 10-12 Classroom Educators, Secondary Mathematics Leads, Math Facilitators/Consultants/Coaches, Principals and Vice Principals and anyone with an interest in learning more about how math tools can engage secondary students in secondary mathematics.

Note: This is a new session for Fall 2017.

"Learning tools such as manipulatives and technologies are important supports for teaching and learning mathematics" (The Ontario Curriculum, Grades 11 – 12, p3). In this session, we will explore how the learning tools available at mathies.ca provide powerful, visual platforms for developing conceptual understanding in the areas of algebraic reasoning, functions, trigonometry, probability and measurement. Come and engage in some interesting mathematics using visual representations.

Engaging Students with the mathies Learning Tools: Grades 7, 8, 9

January 10, 2018 1:00pm - 3:00pm

Suggested Audience: Teachers (7,8,9); Math Facilitators/Consultants/Coaches; Principals

Note: This is a new session for Fall 2017.

The resources available at mathies.ca are a growing collection of powerful, visual, interactive learning tools for developing conceptual understanding and creating representations. In this session, participants will use mathies tools to explore some intermediate mathematics topics including: fractions, integers, linear growing patterns and more.

Engaging Students with the mathies Learning Tools: Primary/Junior

October 3, 2017 1:00pm - 3:00pm

Suggested Audience: Teachers (K-6); Math Facilitators/Consultants/Coaches; Principals

Note: This is a new session for Fall 2017.

The resources available at mathies.ca are a growing collection of powerful, visual, interactive learning tools for developing conceptual understanding and creating representations. In this session, participants will use mathies tools to explore some primary/junior mathematics topics including: representing whole numbers, money, operations, patterning and more. We will use freely available Ministry resources such as WINs and TIPS4Math to highlight the power of these tools and suggest ways they may be used by students and parents.



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Facilitating Mathematics Professional Learning

October 4, November 8, December 6, 2017 & January 10, 2018 1:00pm - 3:00pm

Suggested Audience: Math Facilitators/Consultants/Coaches/Math leads

Note: This is a new series for Fall 2017.

This series of sessions explores the visible and invisible actions of facilitators of mathematics inquiry. Discussion of the unique challenges and strategies for noticing and reflecting upon one's own practices allows participants to implement research-informed strategies into their practice. As the use of inquiry-based professional learning increases, the demand for nuanced and effective facilitation is expanding. However, this is a complex role which is difficult to articulate as the work is often invisible and the mathematics content knowledge is embedded and central to the inquiry. Furthermore, there has been limited information and learning opportunities for facilitation of mathematics inquiry. When facilitators can name the actions they use it allows them to expand and refine their understanding of the work. Participants will be asked to engage in an on-going examination of their practice throughout the four sessions and contribute insights and artefacts of their learning to the group conversation.

Language in Mathematics, Supporting English Language Learners

November 7, 2017 9:30am - 11:30am

Suggested Audience: Principals and Math Coaches

Note: This is a new session for Fall 2017.

In response to the increasing numbers of English language learners (ELLs) in Ontario schools, classroom educators are engaging in deep conversations about the kinds of instruction that make it possible for ELLs to learn English while achieving success with the mathematics curriculum.

Join us for a professional learning opportunity that explores how Principals, Vice Principals, and Math Coaches can support educators in these discussions.

- What language do students need to engage with the mathematical concepts, task and processes?
- What language do students need to communicate their mathematical thinking?
- What language do students need to participate in collaborative group work?

January 9, 2018 9:30am - 11:30am

Suggested Audience: Math and ELL Board Leads, Math Coaches

Note: This is a new session for Fall 2017.



Registration for any of these virtual sessions (using Adobe Connect) is available at rms.thelearningexchange.ca. School board approval is required for registration.

In response to the increasing numbers of English language learners (ELLs) in Ontario schools, classroom educators are engaging in deep conversations about the kinds of instruction that make it possible for ELLs to learn English while achieving success with the mathematics curriculum.

Join us for a professional learning opportunity that explores how Professional Learning Facilitators/Board Leads (e.g., ELL, Math, Literacy) support educators in these discussions.

- What language do students need to engage with the mathematical concepts, task and processes?
- What language do students need to communicate their mathematical thinking?
- What language do students need to participate in collaborative group work?

Leveraging Technology to Support Learners in Mathematics: Technology Enabled learning in Action

October 4, November 8, December 6, 2017 1:00pm - 3:00pm

Suggested Audience: School-based Educators, Math Coordinators, Consultants and Leads, Student Success Teachers

Please note that any of these sessions may be attended individually or as a three-part series. Each session will be engaging and may stand on their own!

Note: This is a repeat series from Spring 2017.

Session 1 – The Role of Technology Enabled Learning

In this session, participants will learn how technology supports the deep learning and teaching of mathematics:

- TELO/Ministry support for the RMS for K-12 Students and Educators.
- infographic TELO Support of the RMS
- The TELT Contact, DeLC, and the Provincial Virtual Learning Environment (VLE)
- Specifically, how these personnel and technology can support RMS facilitators in local Boards
INTERACTIVE component will include, but is not limited to:

Participants will explore how each of these tools may be used to enrich the learning of mathematics
Participants will investigate instructional/professional uses of each of the tools with a focus on effective pedagogy first

Session 2 – Technology Enabled Learning in Action

Please note that any of these sessions may be attended individually or as a three-part series. Each session will be engaging and may stand on their own!



Registration for any of these virtual sessions (using Adobe Connect) is available at rms.thelearningexchange.ca. School board approval is required for registration.

In this session, participants will learn how TELO/Ministry are supporting the use of technology in school Boards:

- TELO staff (and TELT Contacts) will share models of implementation and capacity building in local Boards
- The Provincial Virtual Learning Environment (VLE) as a sharing /communication hub for RMS facilitators
- Effective uses of TELO/Ministry supported tools
- INTERACTIVE component will include, but is not limited to:

Participants will explore how models of implementation can be modified/differentiated to meet the needs of their school Boards

Participants will investigate instructional/professional uses of each of the tools with a focus on effective pedagogy first

Session 3 – Digging Deeper

Please note that any of these sessions may be attended individually or as a three-part series. Each session will be engaging and may stand on their own!

In this session, participants will develop knowledge and skill needed to facilitate learning sessions about TELO/Ministry supported tools using the Provincial Virtual Learning Environment (VLE):

- TELO staff (and TELT Contacts) will work alongside participants to develop models for professional learning about TELO/Ministry supported tools
- INTERACTIVE component will include, but is not limited to:
- Participants will choose which tool(s) they would like to learn more about and then develop learning sessions for educators / stakeholders
- Participants will create a learning space in e-Community Ontario that can be leveraged as a sharing /communication hub for RMS facilitators in their Board and beyond

Measurement from a Spatial Perspective

October 5, November 9, December 7, 2017 & January 11, 2018 9:30am - 11:30am

Suggested Audience: Teachers (K-12); Math Facilitators/Consultants/Coaches; Principals

Note: This is a new series for Fall 2017.

Session 1 - What does it mean to Measure?

What exactly is measurement? And why do students, from elementary to secondary, find it so challenging, especially when it is used so often in daily life? Building on some of the thinking from the Small and Northern Board project, this session uses video, online facilitation and google sharing



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environments to describe key measurement milestones that develop across the grades, examine how measurement differs from counting and explore some rather shocking – but all too common – misconceptions that student may hold because they have lost measurement’s connection to spatial reasoning.

Session 2 – What is a Unit?

It seems basic enough, but deeply understanding the meaning of a unit lies at the heart of understanding what it means to measure. And it’s not as straightforward as we might imagine! In this session we will explore big ideas underpinning the concept of a unit and some strategies to help students move from comparing to measuring. We will look at the role of accuracy, precision and estimation, the challenge of gaps and overlap, the differences between standard and non-standard units and relationships between and among our metric system – all from a spatial perspective.

Session 3 – Scales and Measurement Tools

Tired of seeing students do the protractor shuffle as they try to figure out the measure of an angle? Shocked at hearing that well over half of our grade six students have significant difficulties measuring a length when given a broken ruler? Maybe it’s because using a measurement tool is far more complex than we thought and for many students there are critical concepts missing in their understanding. This session will delve deeper into this idea and have us build our own scales and measuring devices in order to better understand and help students use the tools of the measurement trade.

Session 4 – From Relationships to Formulas

In the minds of many people – and students – measurement comes down to memorizing disconnected formulas. And that’s unfortunate because any formula is really just the final “ah ha moment” of recognizing very cool spatial relationships that exist among shapes and between attributes. Together we will explore these relationships and strategies for how students can reduce their myriad of area and volume formulas to a singular idea.

Multiplication and Division involving Fractions

January 11, 2018 9:30am - 11:30am

Suggested Audience: Junior - Intermediate (Grades 4 through 10)

Note: This is a new session for Fall 2017.

Multiplication and division of fractions is frequently taught solely based upon the algorithms. This strategy obscures the mathematics, particularly in the case of division where multiplication is used. Research in Ontario classrooms has uncovered the importance of purposeful representations for fractions instruction, especially in the learning of multiplication and division of fractions. This session will explore these learnings through classroom ready tasks.



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Operation Sense: From Arithmetic to Algebra

October 4, November 8, December 6, 2017 & January 10, 2018 9:30am - 11:30am

Suggested Audience: Teachers (K-12); Math Facilitators/Consultants/Coaches; Principals

Note: This is a repeat series from Spring 2017.

Session 1 - Making Sense of Addition and Subtraction

What does it mean to add and subtract? And more importantly, how can students learn to translate word problems and everyday situations into number sentences that they can solve? This session explores the various addition and subtraction “problem structures” that students need to encounter, the types of representations students can use to make the operations visible, and the moves educators can make to help students advance in their learning, regardless of whether students are adding whole numbers, fractions or other types of numbers.

Session 2 - Developing Flexible Addition and Subtraction Strategies

How do students learn to add and subtract? This session looks at how the development of magnitude in the early years helps foster a robust and flexible fluency with addition and subtraction in later years. It explores the role of practice and the types of practice that builds understanding as the foundation for fluency. And it looks at the strategies educators can use to help students develop more efficient strategies through the years.

Session 3 - Making Sense of Multiplication and Division

What does it mean to multiply and divide? What does a “multiplicative situation” look like and how does it connect to proportional reasoning? And how can students learn to recognize these situations and represent them with the appropriate operation? This session explores the types of multiplication and division “problem structures” that students need to encounter, the relationship between multiplication and division and the various models students can use to make the operations visible. Furthermore, it looks at the role of paraphrasing as a strategy to help students advance in their learning, regardless of whether students are multiplying whole numbers, fractions or other types of numbers.

Session 4 - Developing Fluency with Multiplication and Division

How do students learn to multiply and divide? Why do some students have trouble with their “multiplication facts”? And what types of instructional moves can help close these gaps and strengthen efficiency? This session looks at the development of multiplicative thinking through the years, the role that models can play in building understanding and fluency and important mathematical ideas (unitizing, the distributive and associative properties, our place value system) and the role they all play in developing fluency with multiplication and division.



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Parent Engagement - I/S & Transition Focus

November 7, 2017 1:00pm - 3:00pm

Suggested Audience: School-based Educators, Math Coordinators, Consultants and Leads, Student Success Teachers

Note: This is a new session for Fall 2017.

Educators will be introduced to an array of resources to support mathematics learning for teens and adolescents, including Choose a Path That Includes Math; Homework Help; and Mathies. These multimedia resources, based on the Ontario Curriculum, include engaging activities that strive to reduce math anxiety, reinforce skills and understanding, and showcase the importance of math.

Parent Engagement - P/J Focus

January 9, 2018 1:00pm - 3:00pm

Suggested Audience: School-based Educators, Math Coordinators, Consultants and Leads

Note: This is a new session for Fall 2017.

The evidence is consistent and persuasive - student success is positively impacted by parent and family engagement.

Educators will be introduced to a suite of resources, including Inspiring Your Child to Learn and Love Math, Mathies, parent tip sheets, and a Math Story Time app. These multimedia resources focus on helpful, user-friendly strategies and engaging activities educators and parents can use to support children's mathematics learning. They provide activities, ideas and approaches parents and educators can use to foster meaningful parent engagement at home, and at school.

Proportional Reasoning

October 3, November 7, December 5, 2017 & January 9, 2018 1:00pm - 3:00pm

Suggested Audience: Primary, Junior, & Intermediate teachers, Coaches, Lead Teachers, Consultants/Coordinators, Administrators

Note: This is a new series for Fall 2017.

Proportional Reasoning has been called the capstone of the elementary curriculum. This four part series is based on the Paying Attention to Proportional Reasoning document. Through the use of specific examples for each division, and by making connections across grades, we will examine the big ideas and concepts of



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proportional reasoning. We will look at classroom examples, and specific tools and strategies that are powerful methods to help students become proportional thinkers. Individual sessions will look at:

- Creating the transition from additive to multiplicative reasoning
- Beyond unit rate to unitizing
- Co-variance: the challenge of creating the flexible thinker
- Creating Proportional Reasoning across grades and strands

Redefining the Secondary Mathematics Classroom

October 3, November 7, December 5, 2017 & January 9, 2018 9:30am - 11:30am
Suggested Audience: Teachers (7-12); Secondary Math Facilitators/Consultants/Coaches; Secondary Principals; SSLs

Note: This is a new series for Fall 2017.

In this series of session we will explore structures, strategies, and tasks that inspire deeper conceptual understanding, provoke student discourse, and promote critical thinking and inquiry in the secondary mathematics classroom. In particular, we will explore how to develop a thinking classroom and math talk community (October 3), the development of number sense and algebra through the intermediate and senior grades (November 7), rethinking assessment and evaluation practices (December 5), and the power of cross-curricular learning in the mathematics classroom (January 9).

Spatial Reasoning

October 4, November 8, December 6, 2017 & January 10, 2018 9:30am - 11:30am
Suggested Audience: Teachers (K-12); Math Facilitators/Consultants/Coaches; Principals/Vice-Principals.
School teams are suggested to support collaborative learning within and in between sessions.

Note: This is a repeat series from Spring 2017.

During this series, participants will explore the power of spatial reasoning and its positive impact on students' mathematics learning. Interactive learning experiences will enable participants to examine the various aspects of spatial reasoning presented in the *Paying Attention to Spatial Reasoning* document, and consider the implications for planning for instruction and assessment. A variety of stands will be examined.

Supporting Indigenous Learners, in Mathematics

October 5, November 9, December 7, 2017 & January 11, 2018 1:00pm - 3:00pm
Suggested Audience: Teachers (K-8); Indigenous Consultants/Coordinators; Math Facilitators/Consultants/Coaches; Principals/Vice-Principals; Indigenous Community Partners (ex., Elder, Knowledge Keeper, Artist, Education Liaison, etc.) Participants are encouraged to register as a team with



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Indigenous community partners.

Note: This is a new series for Fall 2017.

This series focuses on a multi-year participatory community-based research project that has brought together artist, educators, Elders and community members of Pikwakanagan First Nation, non-Indigenous educators, and First Nations and non-Indigenous students to explore the mathematics inherent in First Nations cultural practices. Participants will learn through the lens of a shared journey done 'in relation' and discover the power of placing Indigenous culture at the heart of mathematics teaching and learning. As researchers, teachers, artists, and students have done, it is hoped that participants will broaden their understanding of culture and what it means to 'do math' and 'think mathematically'.

In this series participants will develop an understanding of:

- The project Protocols and Framework for engagement and collaborative work with Indigenous partners
- Importance of doing the work "in a good way"
- Components of a cyclical and iterative process
- Ethnomathematics
- Learning Mathematics through culture to develop mathematical and cultural identity
- Authentic culturally responsive teaching and learning
- Robust mathematical thinking
- Connections to the Ontario mathematics curriculum
- The project in relation to the FNMI Framework
- Reflect on individual local context

October 5, 2017 1:00 - 3:00pm

In this session, we will focus on the importance of relationships and the necessity for a framework for engagement and collaborative work that upholds the UN Declaration on the Rights for Indigenous Peoples and The Truth and Reconciliation Commission: Calls to Action. Through video, tasks and discussions, we will explore the design and creation of Algonquin bone pipe bracelets and looming in Primary classrooms and unpack how these activities within a cultural context support students' mathematical thinking. Emphasis will be placed on Early Number Sense and Operation, unitizing, connections between spatial and numeric representations such as composing and decomposing quantity, patterning, algebraic balancing and the introduction to multiplicative thinking.

November 9, 2017 1:00 - 3:00pm

Session two will focus on community engagement and protocols when working with First Nations communities, specifically the importance and role of tobacco, story and beads/beading. The co-plan and co-teach aspects of the framework for engagement will be discussed in detail and project partners from the Algonquin community of Pikwakanagan will share their views and key learnings from a leadership perspective within the work. Through tasks, videos and discussion we will continue to look at bead looming with a focus on Grade 3. Collectively we will look at the progression of complexity of



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thinking from early primary and the connection between repeating and growing patterns. We will further unpack thinking in relation to Spatial Reasoning and Number Sense, specifically multiplicative thinking with a focus on unitizing, “groups of” language.

December 7, 2017 1:00 - 3:00pm

We will go deeper into the robust mathematical thinking in Grade 3 related to bead looming in this third session. The focus will be on proportional reasoning, transformations, and the transition from patterning to algebraic thinking with an emphasis on unitizing, multiplicative thinking, generalizing and making far predictions. Supporting community goals for the revitalization of Algonquin culture and language, as well as how Indigenous pedagogical approaches benefit both Indigenous and non-Indigenous students’ mathematical learning will be explored and discussed.

January 11, 2018 1:00 - 3:00pm

In this final session of the series, we will transition the focus from Grade 3 to Grade 6 mathematical thinking in relation to bead looming with an emphasis on algebra, proportional, and spatial reasoning. The central role of design will be explored through a 20 x 20 template. The sharing and re-consulting phases of the framework will be emphasized and the impact on student mathematical and cultural identity explored and celebrated.

Supporting Students with Learning Disabilities, in Mathematics

October 3, November 7, December 5, 2017 & January 9, 2018 9:30am - 11:30am

Suggested Audience: Teachers (K-12); Special Education Resource Teachers; Math and Special Education Facilitators/Consultants/Coaches; Principals

Note: This is a repeat series from Spring 2017.

Join with your colleagues as we engage in learning experiences that deepen mathematics knowledge of proportional reasoning, and expand understanding of cognitive profiles of students with learning disabilities. Participants will experience simulations to better understand the struggles that students with learning disabilities face when learning mathematics, engage in a protocol to support the collaborative analysis of students' math thinking, and consider instructional and assessment strategies that leverage student strengths while support student needs.

TIPS4Math Grade 7 and 8

November 8, 2017 1:00pm - 3:00pm

Suggested Audience: Teachers (Grade 7 -8); Math Facilitators/Consultants/Coaches; Principals/Vice-Principals

Note: This is a repeat session from Spring 2017.



Registration for any of these virtual sessions (using Adobe Connect) is available at rms.thelearningexchange.ca. School board approval is required for registration.

Based on Ontario Mathematics Curriculum and current research, including effective use of technology in the classroom, participants in this session will explore a continuum of learning resource that is aligned from grades 1 to 8. This session will focus on grades 7 and 8 Scope and Sequences and Lesson Overviews that make links to mathematics blended learning units and other resources.

TIPS4Math Grade 9 Applied

October 4, 2017 1:00pm - 3:00pm

Suggested Audience: Teachers (Grade 9 Applied); Math Facilitators/Consultants/Coaches; Principals/Vice-Principals

Note: This is a repeat session from Spring 2017.

Based on Ontario Mathematics Curriculum, current research and TIPS4RM, this Adobe Connect session will explore the classroom resource supporting educators with a mix of face-to-face and online learning. Grade 9 Applied mathematics blended learning units will be explored and discussed.

In this Adobe Connect session you will have opportunities to:

- deepen knowledge of mathematics classroom resources aligned with the curriculum
- deepen knowledge of concrete and digital learning resources for classroom instruction that builds conceptual understanding and develop procedural fluency
- develop pedagogical knowledge for teaching mathematics that is a blend of face-to-face and online learning

TIPS4Math Junior

December 6, 2017 1:00pm - 3:00pm

Suggested Audience: Teachers (Grades 4 - 6); Math Facilitators/Consultants/Coaches; Principals/Vice-Principals

Note: This is a repeat session from Spring 2017.

Based on Ontario Mathematics Curriculum and current research, including effective use of technology in the classroom, participants in this session will explore a continuum of learning resource that is aligned from grades 1 to 8. This session will focus on Junior Scope and Sequences and Lesson Overviews that make links to mathematics blended learning units and other resources.



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TIPS4Math Primary

January 10, 2018 1:00pm - 3:00pm

Suggested Audience: Teachers (Grade 1 - 3); Math Facilitators/Consultants/Coaches; Principals/Vice-Principals

Note: This is a repeat session from Spring 2017.

Based on Ontario Mathematics Curriculum and current research, including effective use of technology in the classroom, participants in this session will explore a continuum of learning resource that is aligned from grades 1 to 8. This session will focus on the Primary Scope and Sequences and Lesson Overviews that make links to key mathematics resources.

Transitions 7, 8,9 - Year 2

November 9, 2017 1:00pm - 3:00pm

Suggested Audience: Coming Soon!

Note: This is a new session for Fall 2017.

More information coming soon!

Unit Fractions

October 5, 2017 9:30am - 11:30am

Suggested Audience: Junior - Intermediate (Grades 4 through 10)

Note: This is a repeat session from Spring 2017.

Based on Paying Attention to Fractions and related research, this Adobe Connect session will explore the role that unit fractions play in developing a solid fraction number sense across K-12 learning.

In this Adobe Connect session you will have opportunities to:

- understand what a unit fraction is and how this changes the way we think about fractions;
- examine how unit fractions can support learning across number systems and algebraic contexts;
- develop deeper understanding of fraction as a number by engaging in the actions of partitioning, iterating and disembedding.



Registration for any of these virtual sessions (using Adobe Connect) is available at rms.thelearningexchange.ca. School board approval is required for registration.

Using the Assessment Process to Unpack Mathematics Curriculum

October 4, November 8, December 6, 2017 & January 10, 2018 9:30am - 11:30am

Suggested Audience: K-12 Classroom Educators, Math Teachers, Principals and Vice Principals, Instructional Coaches and anyone with an interest in learning more about how the Assessment Process can be used to effectively unpack curriculum.

Note: This is a new series for Fall 2017.

This series of four sessions will walk participants through a process for linking curriculum and assessment in order to unpack mathematical expectations in a way that meets learners where they are, and engages students in assessing their knowledge and skills to move learning forward.

In the first session, participants will be introduced to, or revisit, the assessment process, and how it can be used to develop cohesive learning experiences that incorporate additional curricular areas as well as learning skills and work habits, and global competencies. Links to equity and well-being will be explored.

During session two, participants will engage in learning around developing or selecting a task that engages students in the learning goal and allows them to monitor their learning using success criteria.

Session three will focus on engaging students in the assessment process. Descriptive feedback is a powerful tool for students to engage in assessment as learning, and time will be spent exploring how this can be leveraged in a variety of teaching and learning contexts.

The fourth and final session will close the loop for participants, as we consider the role and place of evaluation (Assessment for Learning) in the assessment process, and the teacher's role in determining a grade.

Throughout all four sessions, opportunities to work independently, as a large group, and in smaller, division-specific groups will be provided. Please consider registering as a team!

A Whole School Approach to Improvement in Mathematics

October 5, November 9, December 7, 2017 & January 11, 2018 9:30am - 11:30am

Suggested Audience: School Leadership Teams (e.g. Principal/Vice Principal, School based math facilitator, school math leads, special education resource teacher, department head/lead secondary math lead teacher)

Note: This is a new series for Fall 2017.

This series will focus on supporting school math lead teams in the work of school improvement (e.g., needs assessment, identifying goal(s), strategies / actions, resources, professional learning, monitoring). School teams will reflect on the processes in place for their school improvement plan, and identify successes. Teams will explore key supports and resources to address challenges that they face in the work. They will reflect on and leverage facilitation and leadership moves identified throughout the series, building the collective efficacy



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of the group in mathematics leading, teaching and learning. Teams will also reflect upon the facilitation, responsive and adaptive planning experienced throughout the series, and consider applications of this learning within their context. Each session will build on the learning from the previous session.