

Student Recovery Strategies for 2021-2022

***CEMC Bringing Teachers Together
Virtually Conference***

Wednesday, August 18, 2021

#CEMC2021

@GLewisOCT

HELLO!

Gerry Lewis

 @GLewisOCT

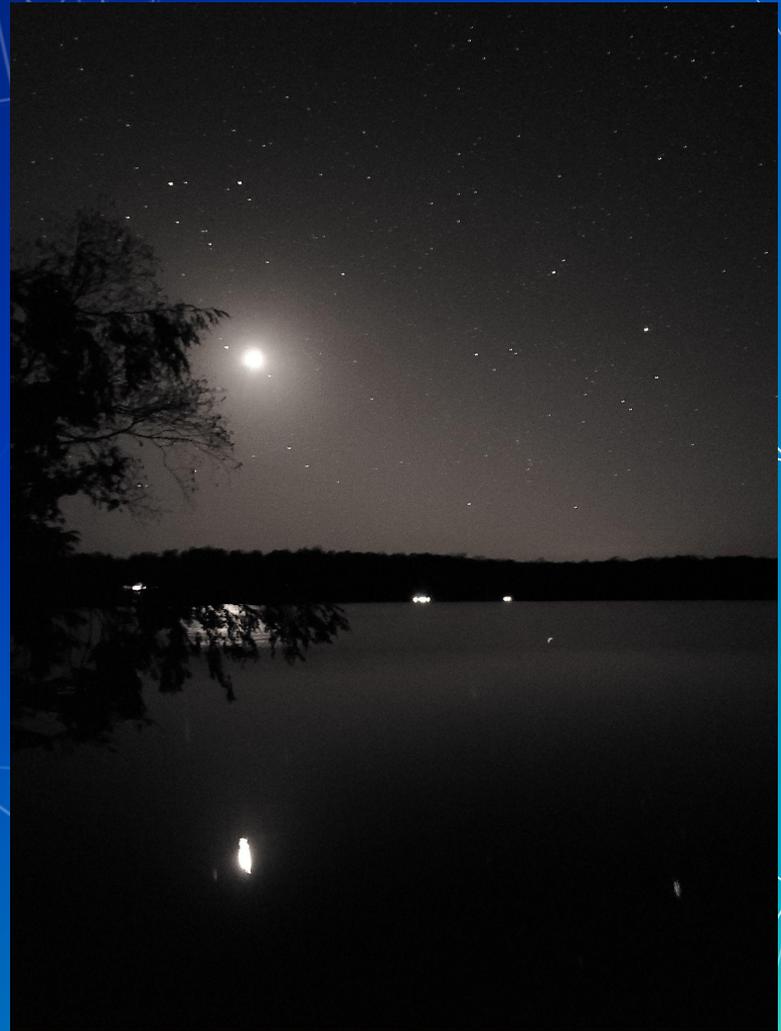
 lewisg@tcdsb.ca

bit.ly/LewisMath2020



**What do you notice?
What do you wonder?**

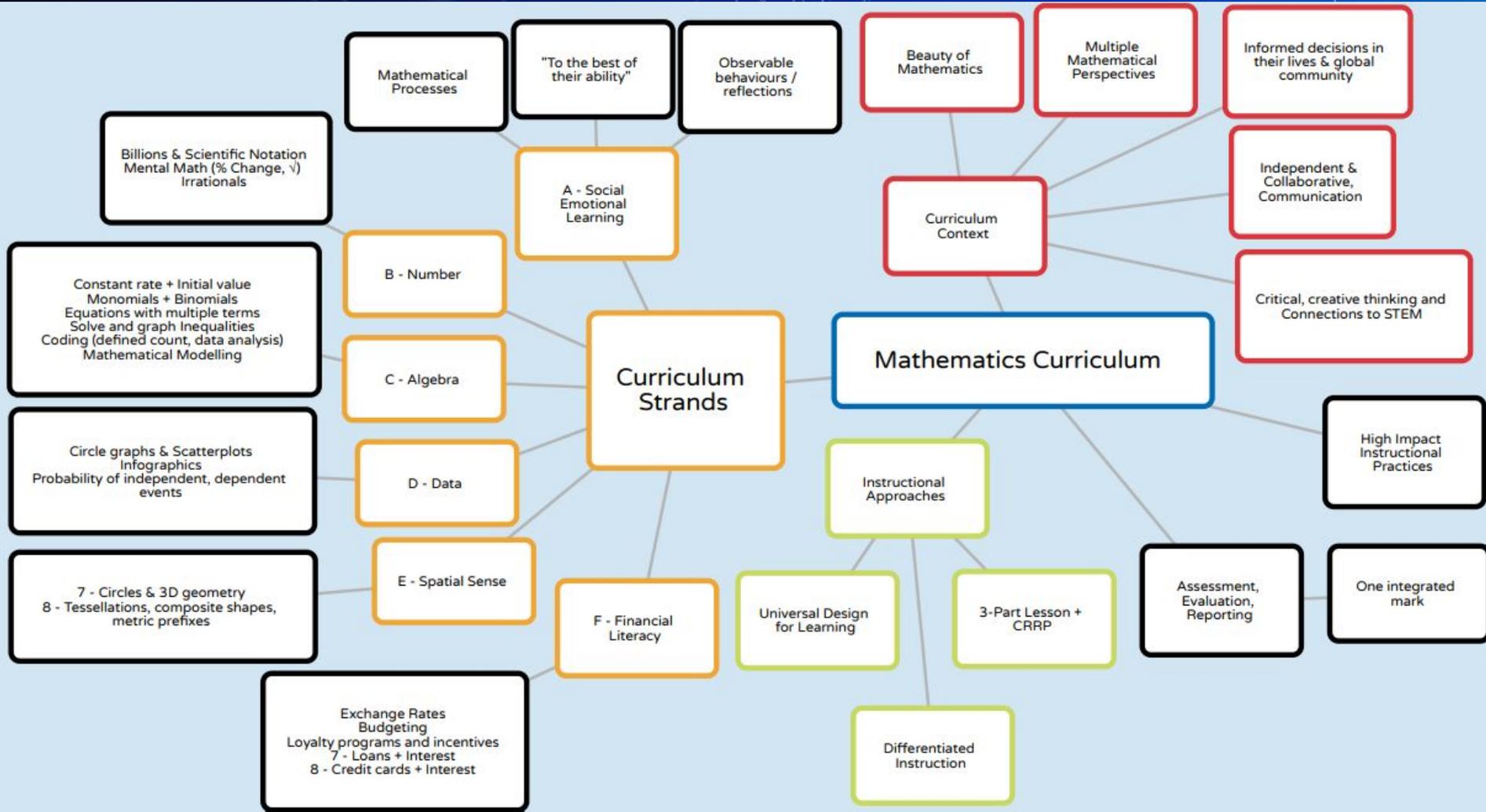
Takeaway: Use real-life examples from your life, the news, students' lives, or pop culture to engage student discussion & inquiry





**Takeaway: It's OK to not be OK.
You have the permission to say this is not what you
signed up for. You have the right to feel empty.**





**Self-check in.
What will
September look
like?**

THE ONTARIO CURRICULUM

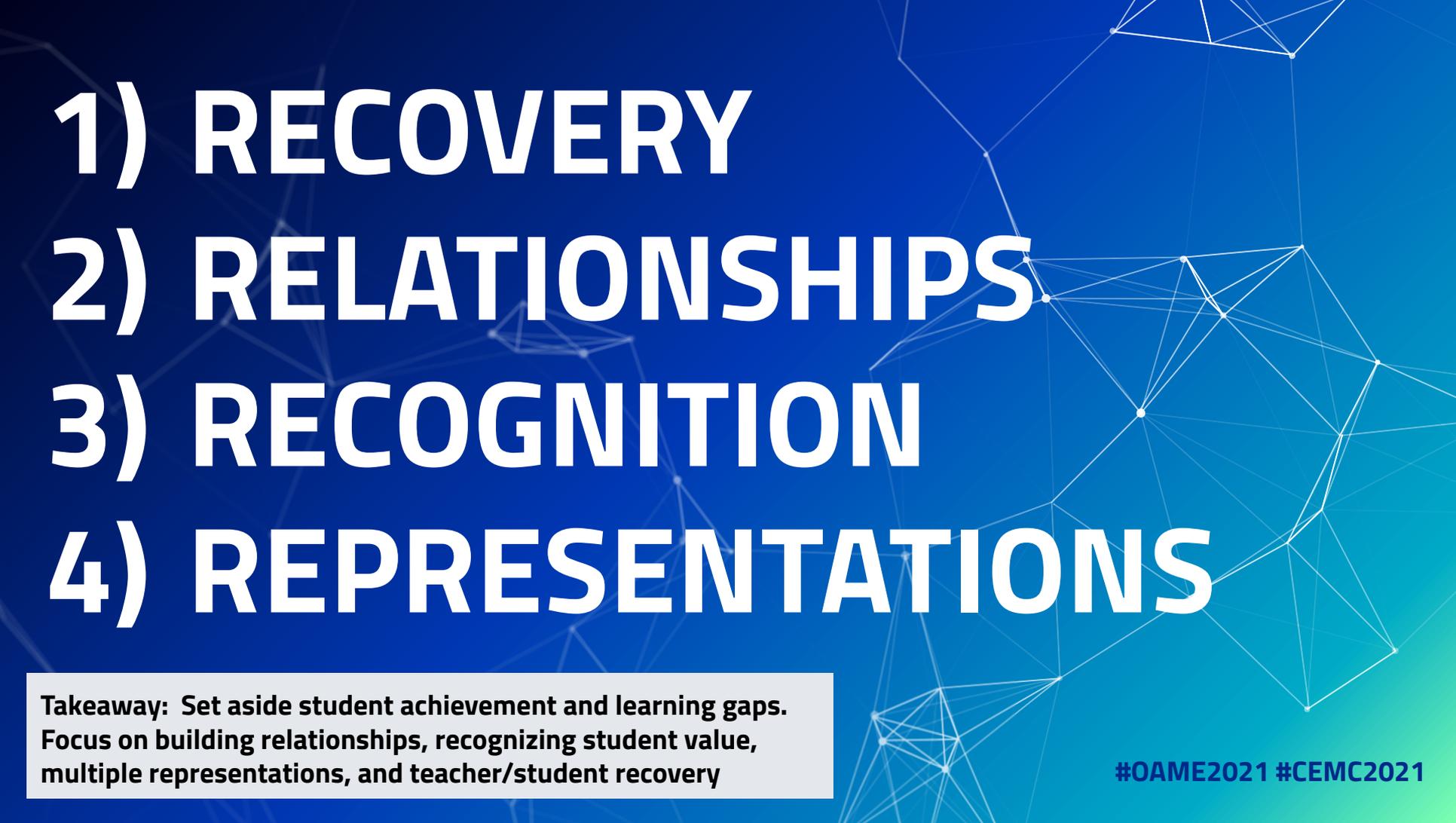
GRADES 1–8

MATHEMATICS

Curriculum Context

2020



- 
- 1) RECOVERY
 - 2) RELATIONSHIPS
 - 3) RECOGNITION
 - 4) REPRESENTATIONS

Takeaway: Set aside student achievement and learning gaps. Focus on building relationships, recognizing student value, multiple representations, and teacher/student recovery

#OAME2021 #CEMC2021



1) RECOVERY



A. SOCIAL-EMOTIONAL LEARNING (SEL) SKILLS IN MATHEMATICS AND THE MATHEMATICAL PROCESSES

This strand focuses on students' development and application of social-emotional learning skills to support their learning of math concepts and skills, foster their overall well-being and ability to learn, and help them build resilience and thrive as math learners. As they develop SEL skills, students demonstrate a greater ability to understand and apply the mathematical processes, which are critical to supporting learning in mathematics. In all grades of the mathematics program, the learning related to this strand takes place in the context of learning related to all other strands, and it should be assessed and evaluated within these contexts.

Throughout this grade, in order to promote a positive identity as a math learner, to foster well-being and the ability to learn, build resilience, and thrive, students will:

OVERALL EXPECTATION A1. apply, to the best of their ability, a variety of social-emotional learning skills to support their use of the mathematical processes and their learning in connection with the expectations in the other five strands of the mathematics curriculum

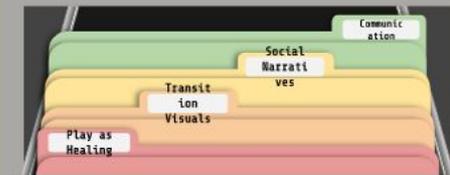
To the best of their ability, students will learn to:	... as they apply the mathematical processes:	... so they can:
1. identify and manage emotions	<i>problem solving:</i> develop and apply problem-solving strategies	1. express and manage their feelings, and show understanding of the feelings of others, as they engage positively in mathematics activities
2. recognize sources of stress and cope with challenges	<i>reasoning and proving:</i> develop and apply reasoning skills (e.g., classification, recognition of relationships, use of counter-examples) to justify thinking, make and investigate conjectures, and construct and defend arguments	2. work through challenging math problems, understanding that their resourcefulness in using various strategies to respond to stress is helping them build personal resilience
3. maintain positive motivation and perseverance	<i>reflecting:</i> demonstrate that as they solve problems, they are pausing, looking back, and monitoring their thinking to help clarify their understanding (e.g., by comparing and adjusting strategies used, by explaining why they think their results are reasonable, by recording their thinking in a math journal)	3. recognize that testing out different approaches to problems and learning from mistakes is an important part of the learning process, and is aided by a sense of optimism and hope
4. build relationships and communicate effectively	<i>connecting:</i> make connections among mathematical concepts, procedures, and representations, and relate mathematical ideas to other contexts (e.g., other curriculum areas, daily life, sports)	4. work collaboratively on math problems – expressing their thinking, listening to the thinking of others, and practising inclusivity – and in that way fostering healthy relationships
5. develop self-awareness and sense of identity	<i>communicating:</i> express and understand mathematical thinking, and engage in mathematical arguments using everyday language, language resources as necessary, appropriate mathematical terminology, a variety of representations, and mathematical conventions	5. see themselves as capable math learners, and strengthen their sense of ownership of their learning, as part of their emerging sense of identity and belonging
6. think critically and creatively	<i>representing:</i> select from and create a variety of representations of mathematical ideas (e.g., representations involving physical models, pictures, numbers, variables, graphs), and apply them to solve problems	6. make connections between math and everyday contexts to help them make informed judgements and decisions
	<i>selecting tools and strategies:</i> select and use a variety of concrete, visual, and electronic learning tools and appropriate strategies to investigate mathematical ideas and to solve problems	

A SEL

A SEL



The screenshot shows the YouCubed website interface. At the top left is the YouCubed logo. To its right is a language dropdown menu set to 'English', followed by social media icons for Facebook, Twitter, and Instagram. Further right are two buttons: a blue 'DONATE' button and a red 'SIGN UP' button. Below this is a navigation bar with links for 'IDEAS', 'TASKS', 'DATA SCIENCE', 'FILMS', 'COURSES', 'EVIDENCE', 'BOOKS', and 'NEWS'. The main content area features a large illustration of an orange rocket with a white cone and a blue circle containing 'WIM' on its side. The rocket is decorated with various math symbols like a plus sign, minus sign, and a pi symbol. The background of the main area is a dark blue gradient. To the right of the rocket, the text reads: 'Week of Inspirational Math(s)' in a large white font, followed by a paragraph of text: 'Choose your own maths adventure with our interactive tools that allow you to build a custom playlist of inspirational maths activities and messages! To build your WIM week, select one video, one resource for creating a positive maths community, and one task per day and add to your playlist. Then click "See Summary" to play videos, download materials and save/share your WIM week! Check out these pre-made playlists curated by the youcubed team for [first grade](#), [middle school](#) and [high school](#) and share your playlist on social media with #myWIM!

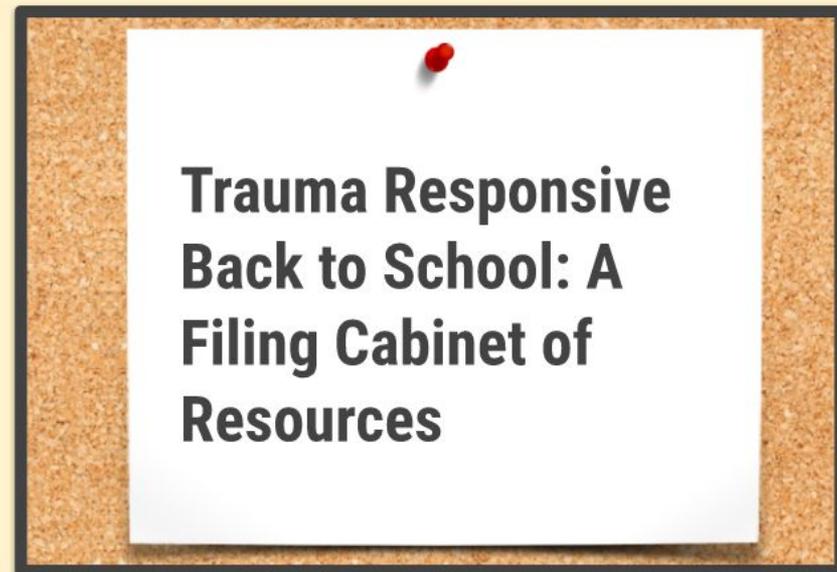


FDK and
Newcomers

Strategies

Safe
Spaces

Self Care



Trauma Responsive Back to School: A Filing Cabinet of Resources

Resources curated by
Kimiko Shibata (@ESL_fairy)
Updated Aug/13/2021



Welcome to the First 20 Days of Math!

The goals of the First 20 Days of Math are to co-create a positive, inclusive and collaborative learning environment and get to know learners through experiences that aim to:

- foster overall well-being
- support math learning to high levels for all learners
- develop social-emotional learning skills and the mathematical processes
- contribute to equitable opportunities and outcomes



These resources were developed by the SCDSB Math team in partnership with the Equity, Diversity and Inclusion, Indigenous Education and Well-Being departments.

#scdsbfirst20

FIRST FIVE DAYS of NON-CURRICULAR TASKS

1) Emoji Graph (YouCubed)

<https://www.youcubed.org/wim/emoji-graph-6-8/>

2) Four 4's (YouCubed)

<https://www.youcubed.org/wim/four-4s-5-cc/>

3) Building Shapes (YouCubed)

<https://www.youcubed.org/wim/building-shapes-6-8/>

4) Let's make squares (Math Equals Love)

<https://mathequalslove.net/lets-make-squares/>

5) The Answers Are (BTC - p169)



2) RELATIONSHIPS



**Rapport + Alliance =
Cognitive Insight**

*Culturally Responsive
Teaching and the Brain (p.75)*

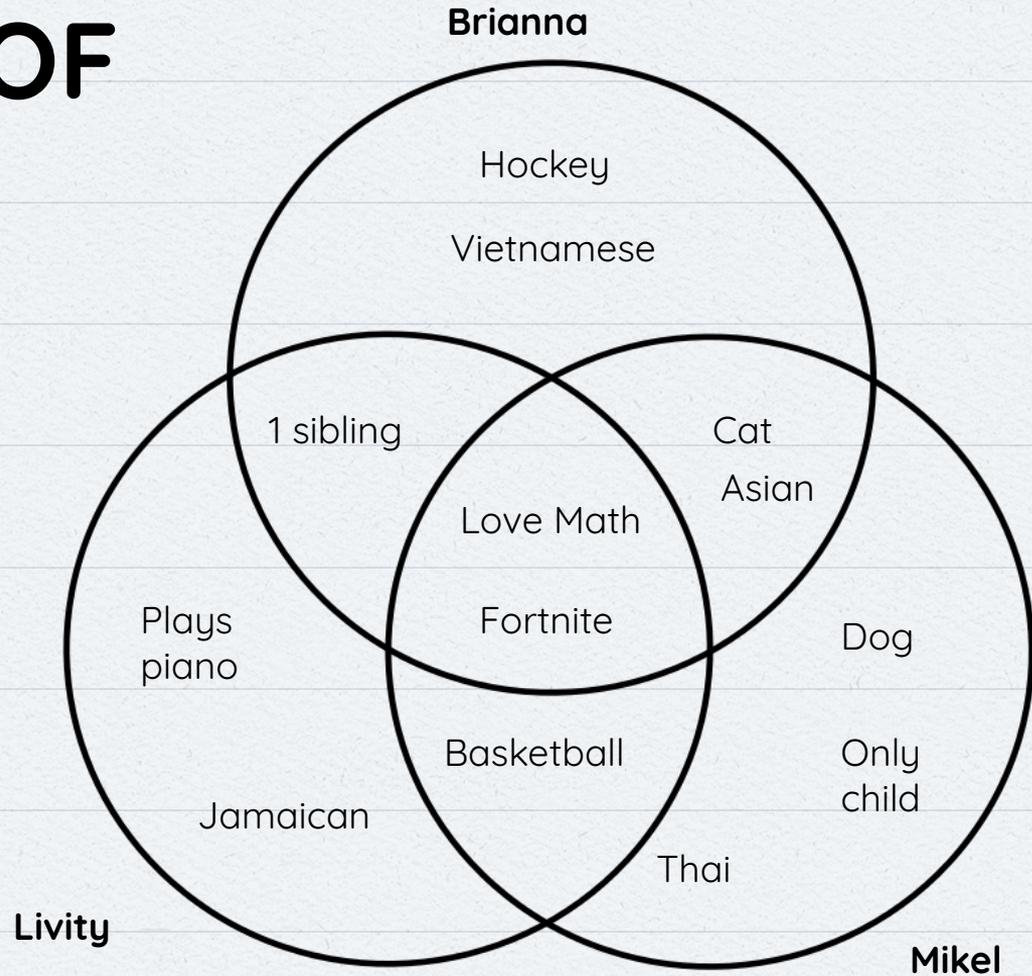
**Trust + Teamwork =
Visible Thinking**

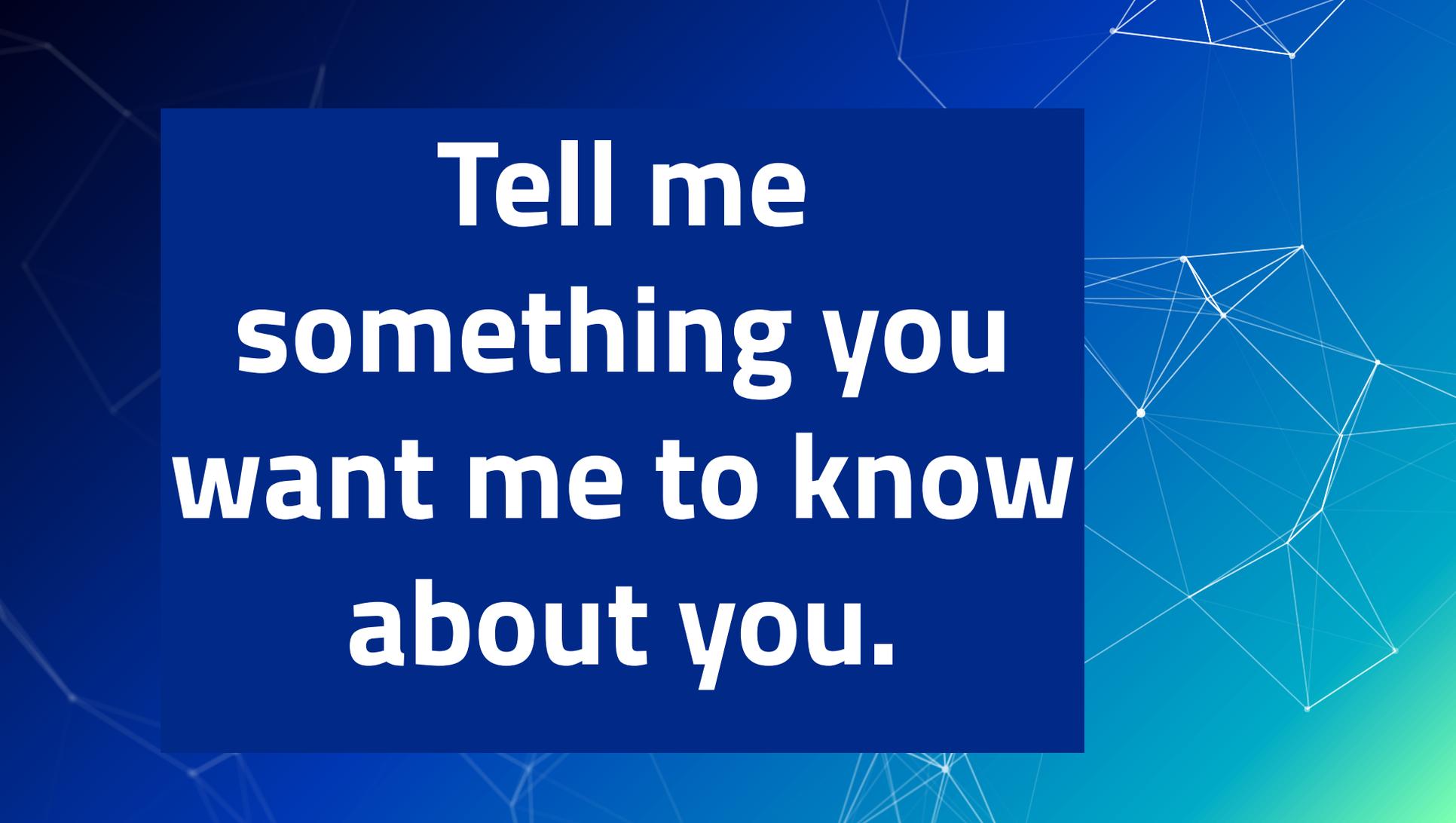
*Culturally Responsive
Teaching and the Brain (p.75)*

Thinking Classroom: Visibly Random Groupings



FIRST DAY OF SCHOOL





**Tell me
something you
want me to know
about you.**



3) RECOGNITION

Single-Point Rubric

Criteria	Working toward Proficiency: Areas that need work	Proficient: Meeting Expectations	Beyond Expectations: Evidence of exceeding expectations
C4 - Mathematical Modeling		I asked appropriate questions, made appropriate assumptions, and reflected about the model.	
		I used appropriate tools to represent the mathematics.	
F1.1 - Methods of payment with multiple currencies		I can describe some advantages and disadvantages of different methods of payment	
		I can convert between multiple currencies and exchange rates	

Planning a Trip - Single-Point Rubric

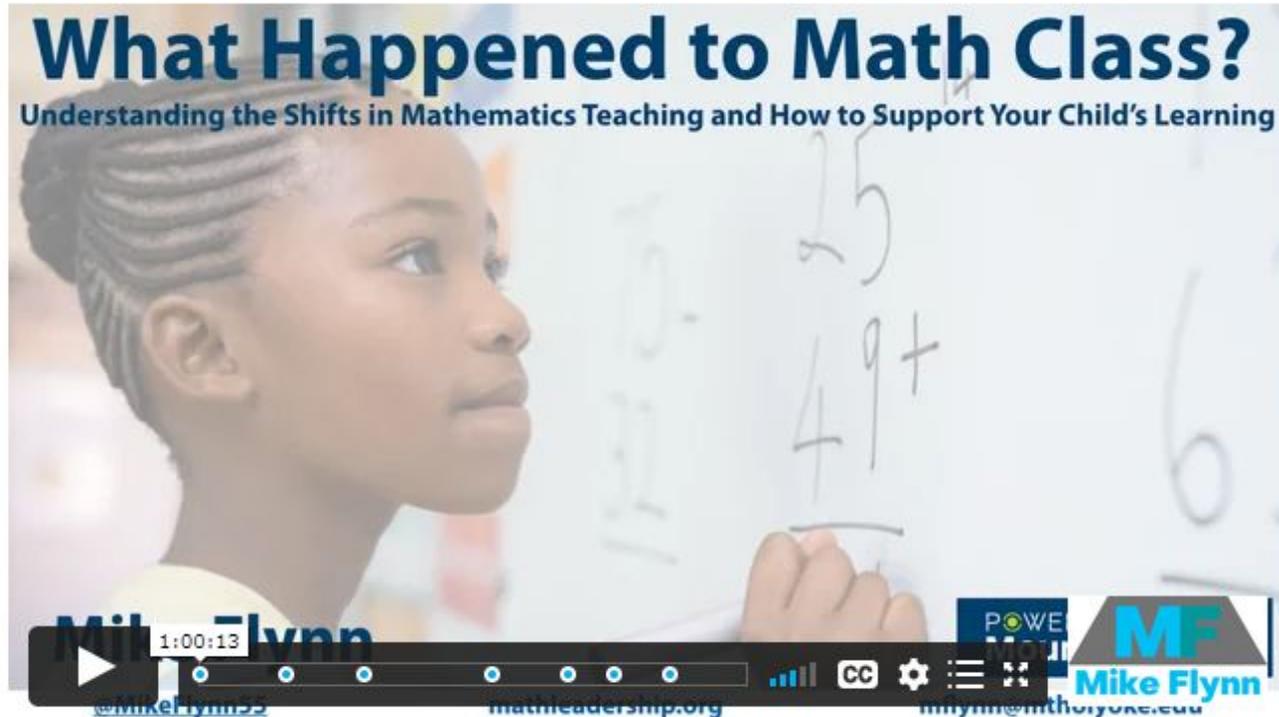
Criteria	Working toward Proficiency: Areas that need work	Proficient: Meeting Expectations	Beyond Expectations: Evidence of exceeding expectations
C4 - Mathematical Modeling	<i>Good questions about your destinations; continue to think about different assumptions you have to make about travelling (people, costs, materials)</i>	I asked appropriate questions, made appropriate assumptions, and reflected about the model.	
		I used appropriate tools to represent the mathematics.	<i>Excellent variety of graphs, charts and connections between the graphs, especially the unique scatterplot relationship!</i>
F1.1 - Methods of payment with multiple currencies		I can describe some advantages and disadvantages of different methods of payment <i>Good comparison of credit card vs ATM machine</i>	
	<i>Continue to set up ratios in fraction form to show equivalent ratios</i>	I can convert between multiple currencies and exchange rates	



4) REPRESENTATIONS

What Happened to Math Class?

Understanding the Shifts in Mathematics Teaching and How to Support Your Child's Learning



What Happened to Math Class?
Understanding the Shifts in Mathematics Teaching and How to Support Your Child's Learning

1:00:13

Mike Flynn
@mikeflynn22

mathleadership.org

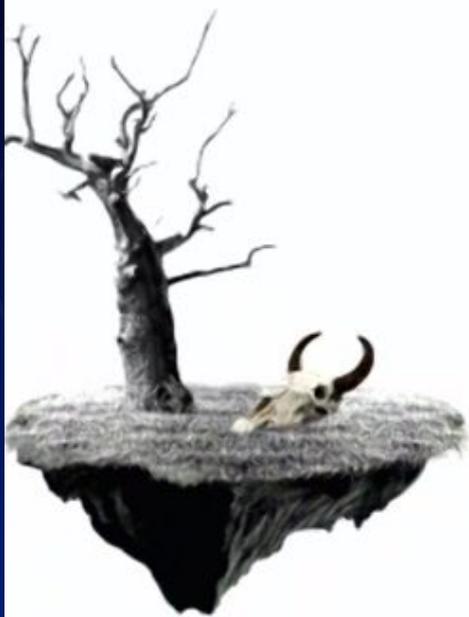
POWER UP
MF
Mike Flynn
mflynn@mathny.org

CC

Settings

Fullscreen





Concrete

@MikeFlynn55



Representational

mathleadership.org



Abstract

mflynn@mtholyoke.edu

$47 + 24$
 $47 + 3 = 50$
 $50 + 21 = 71$



Concrete

Representational

Abstract

Examples of Concrete

B - Number - Integers - Counters, Playing Cards, Number Lines

B - Number - Fractions - Pattern blocks, fraction towers/strips, Relational Rods

C - Algebra - Patterns - Snap Cubes, Pattern Blocks,

C - Coding - Robotics, Micro.Bit

D - Data - Physical data (people, objects, measurements)

E - Spatial Sense - Pattern blocks, mirrors, string/tape

F - Financial Literacy - Play money

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Takeaway: Set aside student achievement and learning gaps. Focus on building relationships, recognizing student value, multiple representations, and teacher/student recovery

#OAME2021 #CEMC2021

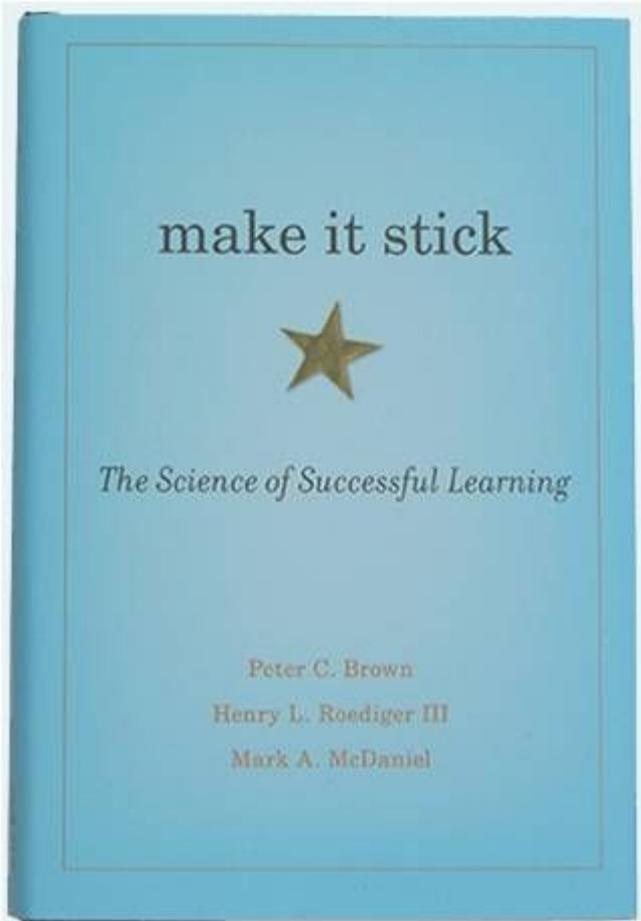


Questions?



SPIRALING

Spaced and Interleaved practice



JOIN MY 3-PART SPIRALLING VIDEO COURSE!

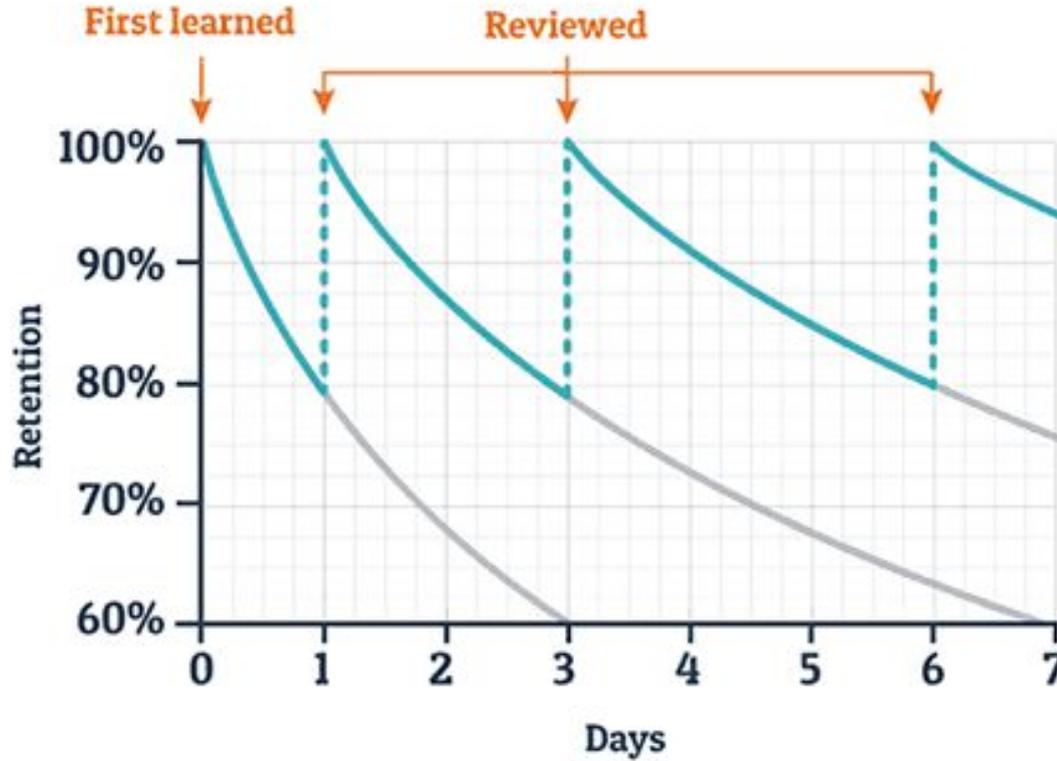
Grab all **3 Videos** and **3 E-Book Cheat Sheet Guides** plus receive email updates!



I. SPACING



Typical Forgetting Curve for Newly Learned Information



The power of FORGETTING

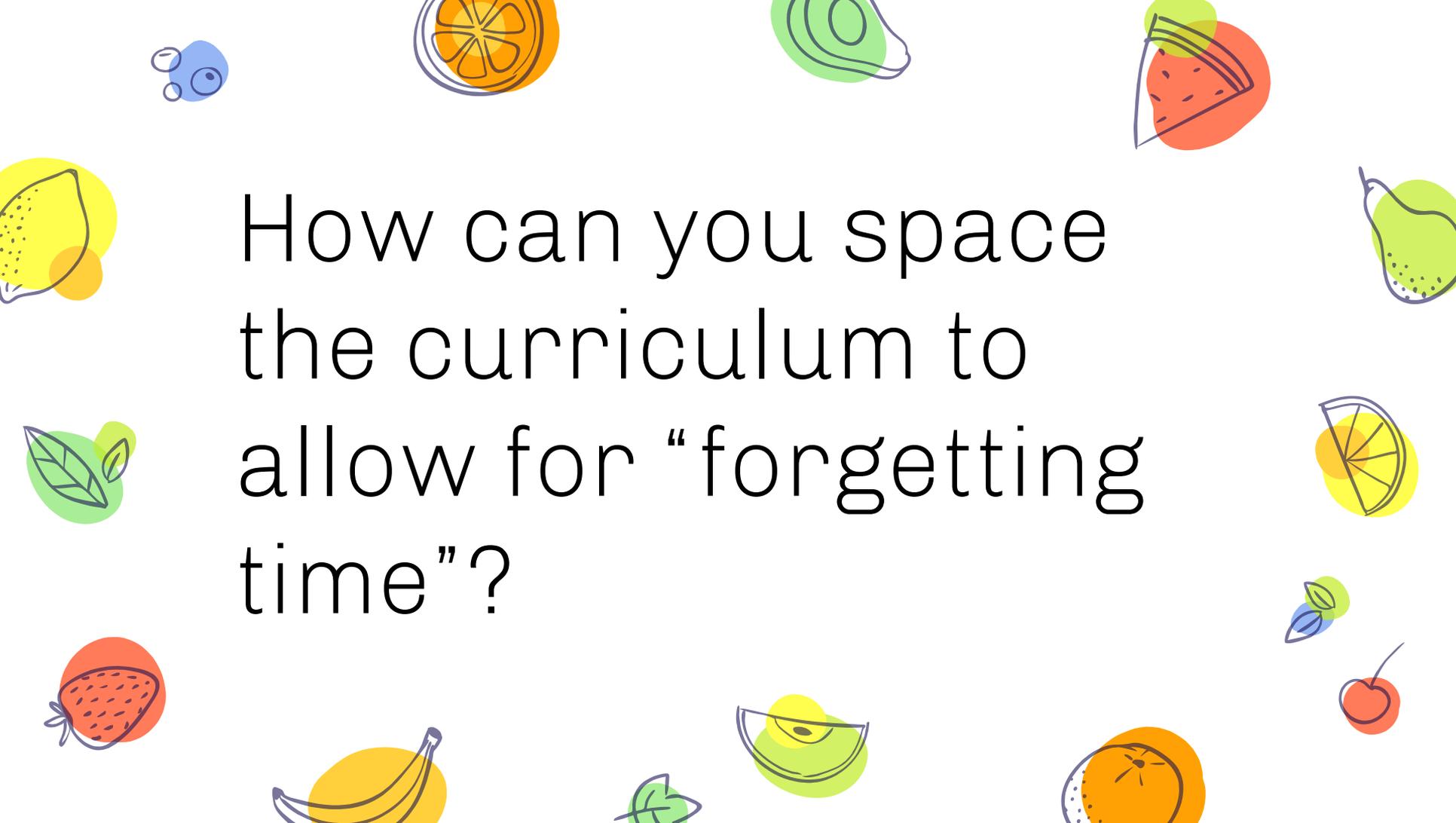
A situation which makes something harder to learn initially (harder to 'encode'), but makes it easier to recall and apply at a later time (easier to 'retrieve').

DESIRABLE DIFFICULTY

I. SPACED LEARNING TIPS

- Use regular low-stakes quizzing (retrieval practice)
- If possible, leave greater gaps as you go.
- Allow students to return to important content.
- Avoid a “day after day” or “practice, practice, practice” regime
- Avoid the “You should know this already” response
- Retrieval is best when it’s effortful, when some forgetting has set in.





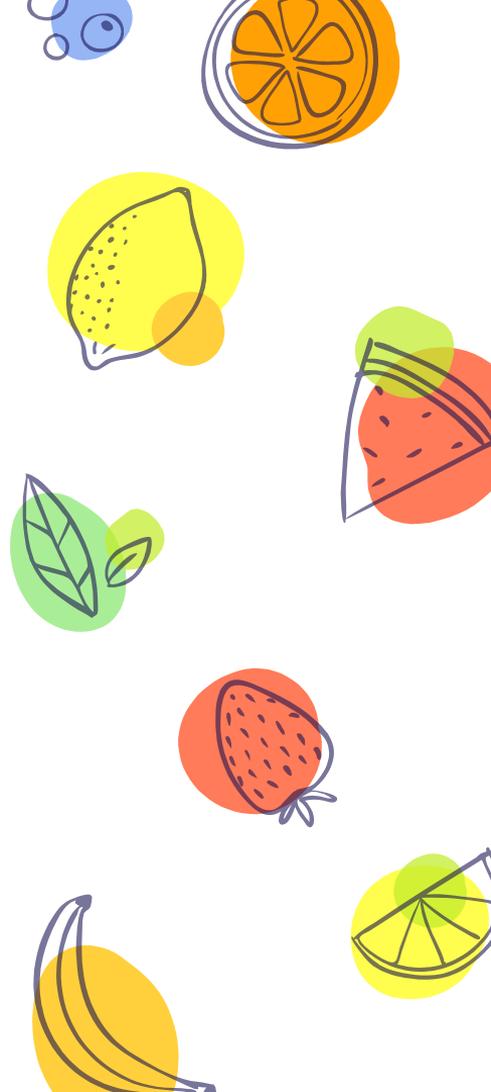
How can you space
the curriculum to
allow for “forgetting
time”?

2. INTERLEAVING

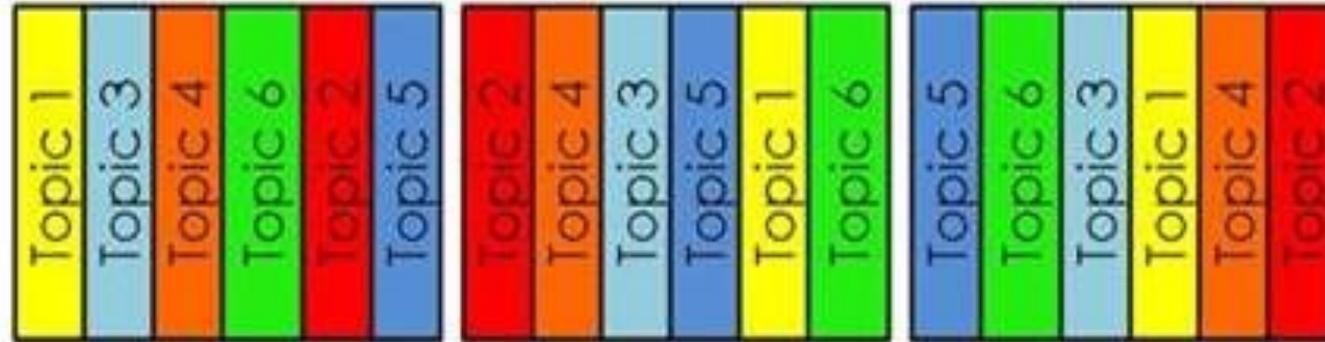
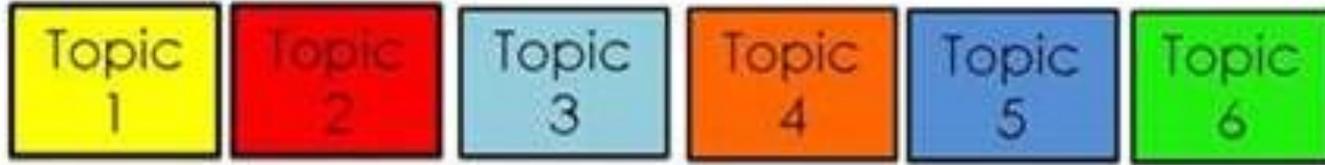


2. INTERLEAVED LEARNING TIPS

- Scatter problems from different strands throughout your teaching.
 - CEMC Problem of the Week!
- Learners and teachers do not *feel* like it is working. Even after taking part in studies, many say that they prefer massed practice.



Blocking vs interleaving



Examples



		Week 1 - YOUCUBED		
Monday (1 hour)	Tuesday (1 hour)	Wednesday (1 hour)	Thursday (1 hour)	Friday (1 hour)
			Venn Diagram Ice Breaker Emoji Graph (YouCubed) https://www.youcubed.org/wim/emoji-graph-6-8/	Four 4's (YouCubed) https://www.youcubed.org/wim/four-4s-5-cc/ Video Mindset: https://www.youcubed.org/wim-day-1/

		Week 2 - YOUCUBED		
Monday (1 hour)	Tuesday (1 hour)	Wednesday (1 hour)	Thursday (1 hour)	Friday (1 hour)
Building Shapes (YouCubed) https://www.youcubed.org/wim/building-shapes-6-8/ Video Brain Development: https://www.youcubed.org/wim-day-2/	Let's make squares (Math Equals Love) https://mathequalslove.net/lets-make-squares/ Video Speed: https://www.youcubed.org/wim-day-3/	The Answers Are (BTC - p169) Video Patterns: https://www.youcubed.org/wim-day-4/	The Tax Collector (BTC - p.107) Video Mistakes: https://www.youcubed.org/wim-day-5/	Nickels, Dimes, Quarters (BTC - p.143) Video Struggle: https://www.youcubed.org/wim/the-importance-of-struggle/

		Week 3 - NUMBER		
Monday (1 hour)	Tuesday (1 hour)	Wednesday (1 hour)	Thursday (1 hour)	Friday (1 hour)
Spiral Math-Aids	Spiral Estimation180	Spiral Would You Rather	Spiral Visible Patterns	Spiral Math Assessment
Content Exploration - 1.1	Content Practice - 1.2	Content Exploration - 1.3	Content Practice - 1.1-1.3	Review Homework
Minds On + Action + Success Criteria	Thinking Classroom + Consolidation + Textbook problems	Minds On + Action + Success Criteria	Throwback Thursday + Conference + Consolidation + Textbook problems	Puzzle, Riddle, POTW Project, Cross-curricular Video, Math appreciation
		Week 4 - DATA		
Monday (1 hour)	Tuesday (1 hour)	Wednesday (1 hour)	Thursday (1 hour)	Friday (1 hour)
Spiral Math-Aids	Spiral Estimation180	Spiral Would You Rather	Spiral Visible Patterns	Spiral Math Assessment
Content Exploration - 3.1	Content Practice - 3.1	Content Exploration - 3.2	Content Practice - 3.1-3.2	Review Homework
Minds On + Action + Success Criteria	Thinking Classroom + Consolidation + Textbook problems	Minds On + Action + Success Criteria	TBT (1.1-1.3) + Conference + Consolidation + Textbook problems	Puzzle, Riddle, POTW Project, Cross-curricular Video, Math appreciation

		Days	A	B	C	D	E	F	Activity	
Week 1	Sep 9-Sep 10	2	YouCubed	Non-Curricular Task - First 20 Days						
Week 2	Sep 13-Sep 17	4	YouCubed	Non-Curricular Task - First 20 Days						
Week 3	Sep 20-Sep 24	5		B1.1, B1.4		D2.2			Fraction, Probability	
Week 4	Sep 27-Oct 1	4			C1.1	D1.3			Patterning, Plotting	
Week 5	Oct 4-Oct 8	4		B2.8			E1.3		Ratio, Scale Drawing	

SPIRALED by TOPIC

Chapter 1:

Number, Algebra,
& Spatial Sense

Chapter 2:

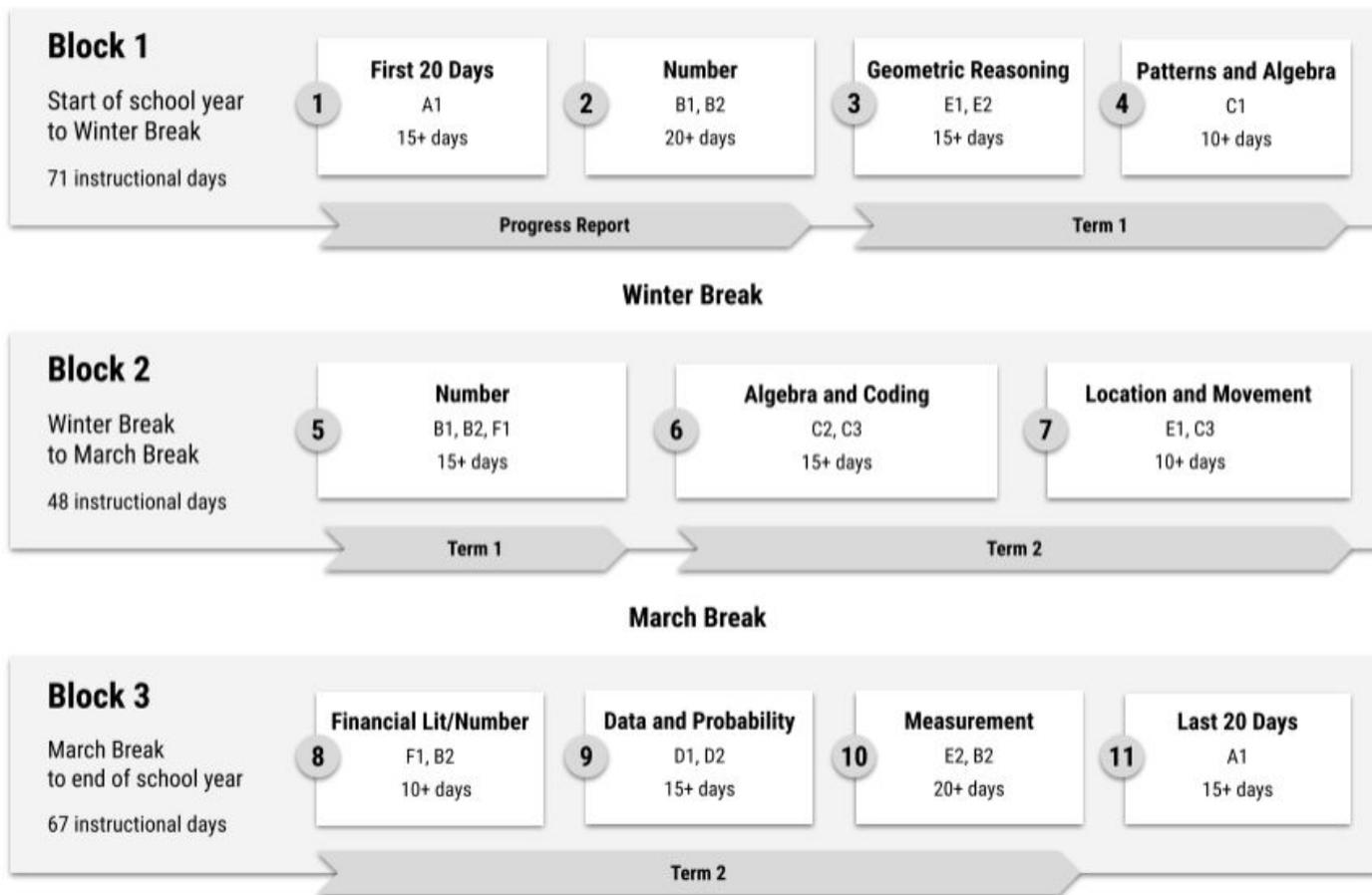
Number & Algebra

Chapter 3:

Spatial Sense & Coding

Grade 8
Numbers, Patterns, & Measurements in Everyday Life (10 days) Number, Algebra, Spatial Sense
Facts, Expressions, Equations & Inequalities (20 days) Number, Algebra
Transformations and Coding (10 days) Algebra, Spatial Sense
Data & Introduction to Mathematical Modelling (30 days) Algebra Data

Grade 7: Scope and Sequence



SPIRALED by QUESTION

Question 1: How do these compare?

B: Numbers to 1 billion as powers of 10

B: Rational numbers (positive & negative)

B: Fractions and decimals between quantities

C: Various patterns in various forms

D: Various graphs & purposes

E: Radius, diameter, circumference & pi

E: Radius, diameter, area & pi

	Grade 7
Sep	How do these compare? Number, Algebra, Data, Spatial Sense
Oct	How are things changing? Number, Algebra, Spatial Sense, Financial Literacy
Nov	How much is that? Number, Algebra, Data
Dec	What's the story? Number, Data

Month	Key Concepts (Curriculum Headings)
September	Playing with Numbers (Rational Numbers; Fractions, Decimals, and Percents; Properties and Relationships; Multiplication and Division; Probability)
October	Messages in the Media (Percents; Data Collection and Organization; Data Visualization and Analysis; Financial Management)
November	Sequences (Patterns; Location and Movement)
December	Powers and Circles (Rational Numbers; Multiplication and Division; Data Visualization; Circles)
January	International Travel (Multiplication and Division; Money Concepts; Financial Management)
February	Cooking and Chemistry (Fractions; Addition and Subtraction; Multiplication and Division; Location and Movement; The Metric System)
March	Innovation and 3D Product Design (Data Collection and Organization; Geometric Reasoning; The Metric System; Volume and Surface Area)
April	Borrowing (Mental Math; Addition and Subtraction; Consumer and Civic Awareness)
May	Unknowns (Properties and Relationships; Patterns; Variables and Expressions; Equalities and Inequalities)
June	Subsets and Testing (Coding Skills)

SPACED & INTERLEAVED by MATH MODELING



Neil Casey
@MrCasey27

Long Range Plans 2020-2021										
Juicy Units	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Screen-time of your life	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Sept 28th - Nov 16th</div> <div style="background-color: #90EE90; border: 1px solid black; padding: 2px; display: inline-block;">Juicy Questions</div> <div style="background-color: #66B3FF; border: 1px solid black; padding: 2px; display: inline-block;">Expectations</div>									
Our Growing City	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Nov 17th - Feb 11th</div> <div style="background-color: #90EE90; border: 1px solid black; padding: 2px; display: inline-block;">Juicy Questions</div> <div style="background-color: #66B3FF; border: 1px solid black; padding: 2px; display: inline-block;">Expectations</div>									
Making an Impact	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Feb 12th - Apr 16th</div> <div style="background-color: #90EE90; border: 1px solid black; padding: 2px; display: inline-block;">Juicy Questions</div> <div style="background-color: #66B3FF; border: 1px solid black; padding: 2px; display: inline-block;">Expectations</div>									
Passions fuel your Potential	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Apr 17th - END!</div> <div style="background-color: #90EE90; border: 1px solid black; padding: 2px; display: inline-block;">Juicy Questions</div> <div style="background-color: #66B3FF; border: 1px solid black; padding: 2px; display: inline-block;">Expectations</div>									

* Dates are approx

Our Growing City



Examples of some possible images, articles, artifacts to prompt student questioning...



DETAILS	
Balcony	145 sq ft
Price	\$375.00 Est. Maintenance (\$ / month)
Maintenance Fees	
Est. Maint	\$0.57 / sq ft / month
Locker Maint	\$19.95 / month
Parking Maint	\$44.95 / month
Est. Property tax	1% of the price / year
Notes: Plus Utilities, Rogers Smart Home Monitoring \$9.99/month HST, Rogers Bulk Internet \$30/month HST	



Sources:

<https://www.realtor.ca/>

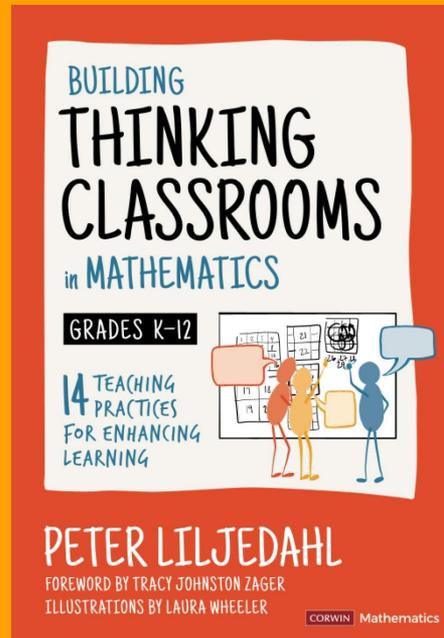
<http://www.ttc.ca/>

QUESTIONS



The Thinking Classroom

Dismantling the
system



Peter Liljedahl

[@pgliljedahl](#)

[Presentations](#)



Peter Liljedahl

@pgliljedahl

building thinking classrooms • creativity •
teacher beliefs • classroom practice •
teacher professional growth • numeracy •
instructional design • assessment

📍 Simon Fraser University

🌐 [peterliljedahl.com](#)



Elements of Math Classroom Practice

Used with Permission from @pgjijedahl

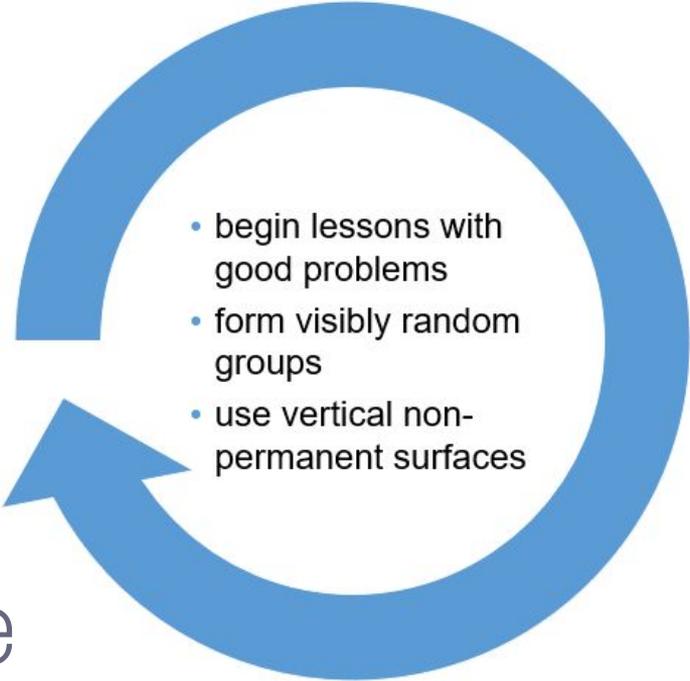
OPPORTUNITIES FOR THINKING	OPTIMAL PRACTICES FOR THINKING
1 problems	begin lessons with good problems
2 how we give the problem	use verbal instructions
3 how we answer questions	answer only <i>keep thinking questions</i>
4 room organization	<i>defront</i> the classroom
5 how groups are formed	form visibly random groups
6 student work space	use vertical non-permanent surfaces
7 autonomy	foster autonomous actions
8 how we give notes	have students do <i>meaningful notes</i>
9 what homework looks like	use <i>check your understanding</i> questions
10 hints and extensions	manage <i>flow</i>
11 how we consolidate	consolidate from the bottom
12 formative assessment	show where they are and where they are going
13 summative assessment	evaluate what you value
14 reporting out	report out based on data (not points)

The Thinking Classroom

Let's try it :)

Toolkit 1

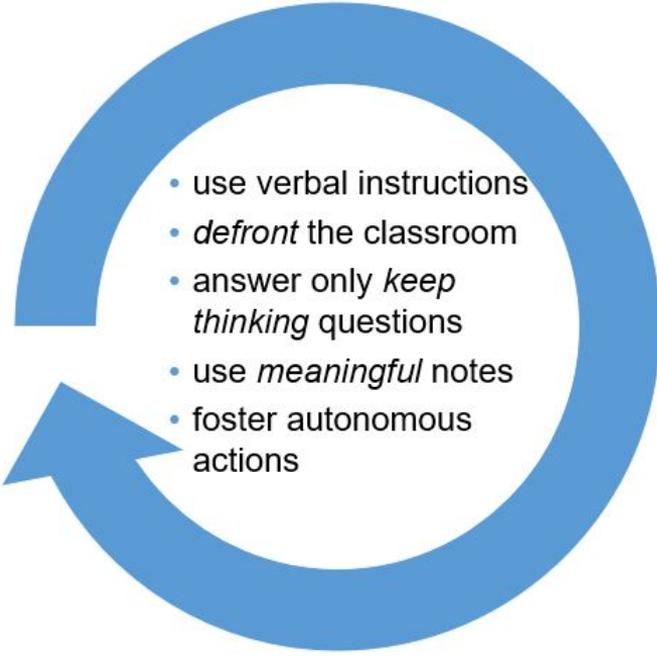
- Student experience
- All at the same time

- 
- begin lessons with good problems
 - form visibly random groups
 - use vertical non-permanent surfaces



Toolkit 2

- What teacher says, does, goes
- In any order

- 
- use verbal instructions
 - *defront* the classroom
 - answer only *keep thinking* questions
 - use *meaningful* notes
 - foster autonomous actions

Meaningful Notes

Today, I learned about:

What do you need to record today for your future forgetful self?

VOCABULARY

???

EXAMPLES TO REMEMBER

Anything else? Formulas? Special steps?

MEANINGFUL NOTES

This stood out to me today.

POWER WORDS

What do you need to record today for your future forgetful self?

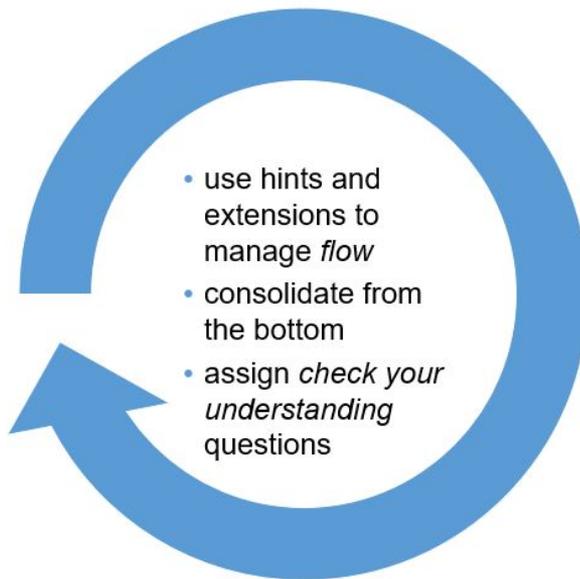
Key Examples

Reminder!

Sample Graphic Organizers for Notes
(Grade 7-9)

Toolkit 3

- Teacher navigates thinking
- In order

- 
- use hints and extensions to manage *flow*
 - consolidate from the bottom
 - assign *check your understanding* questions

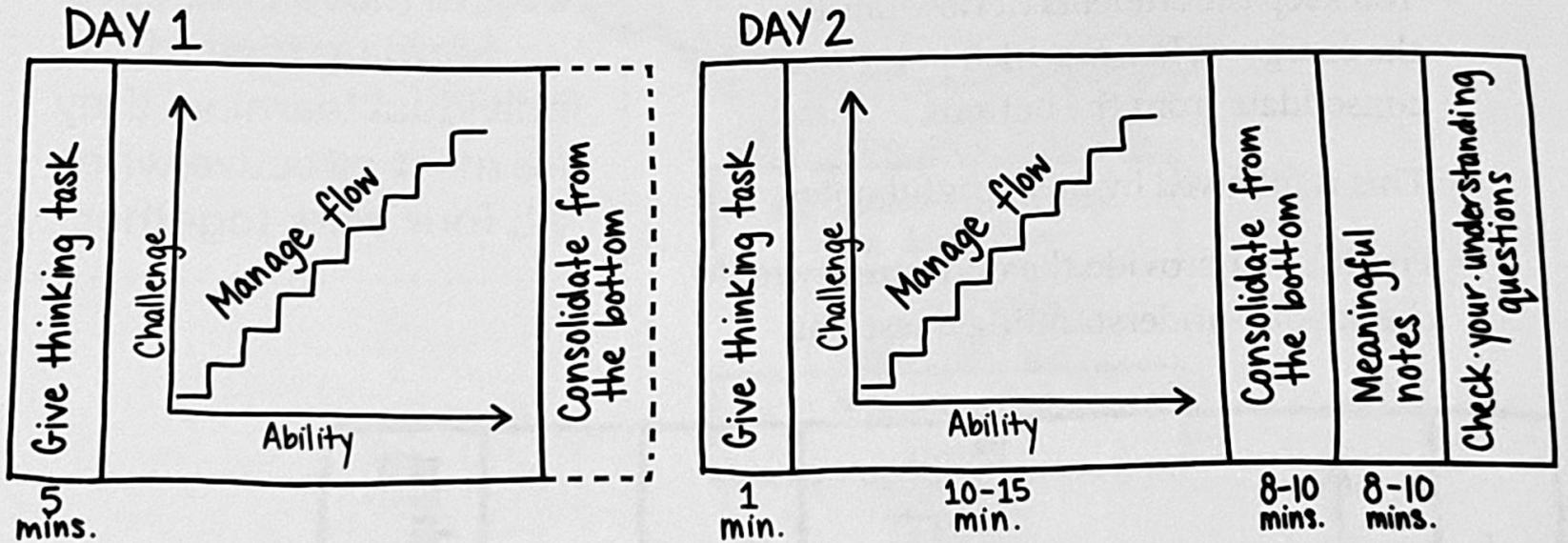
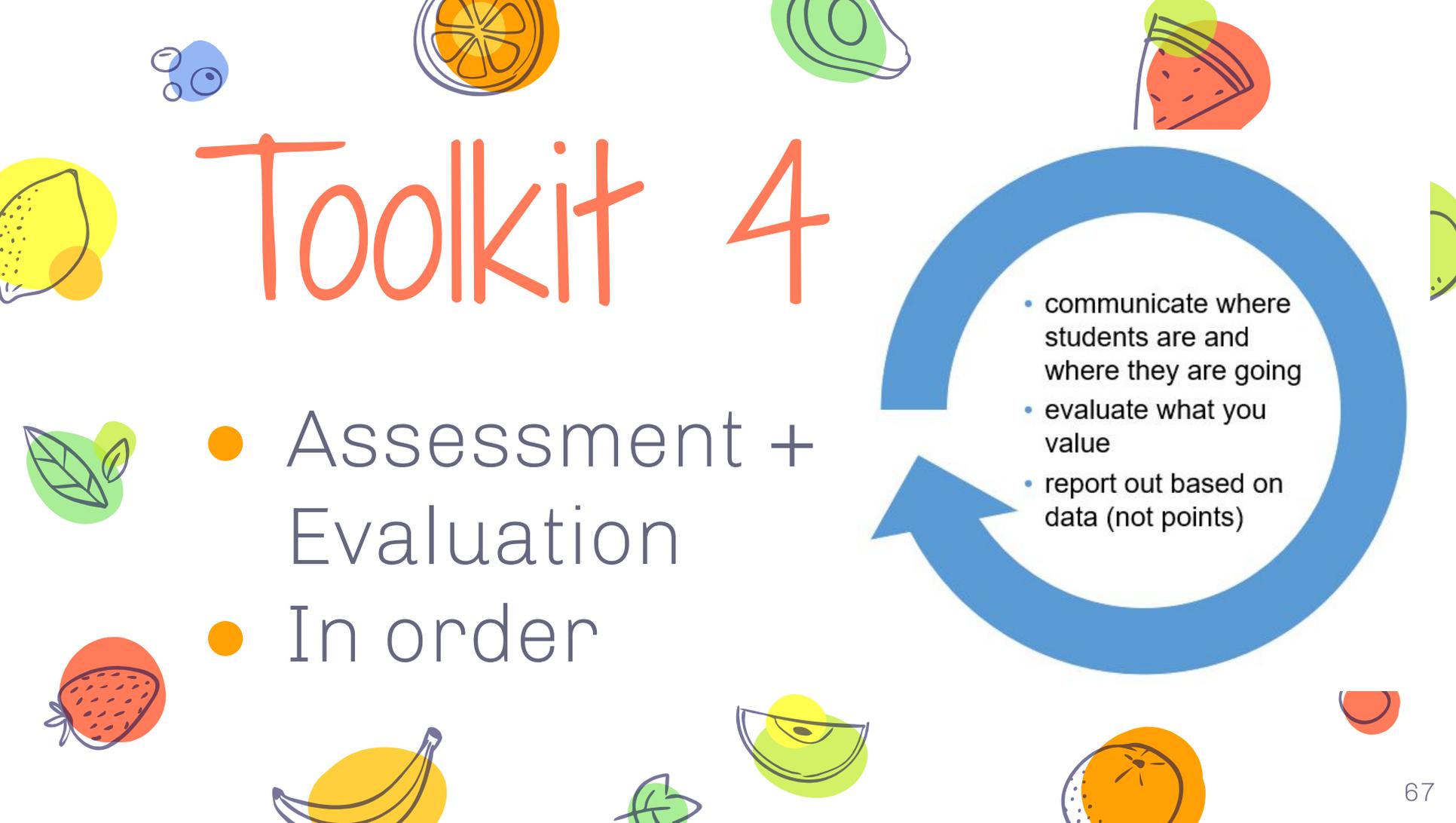
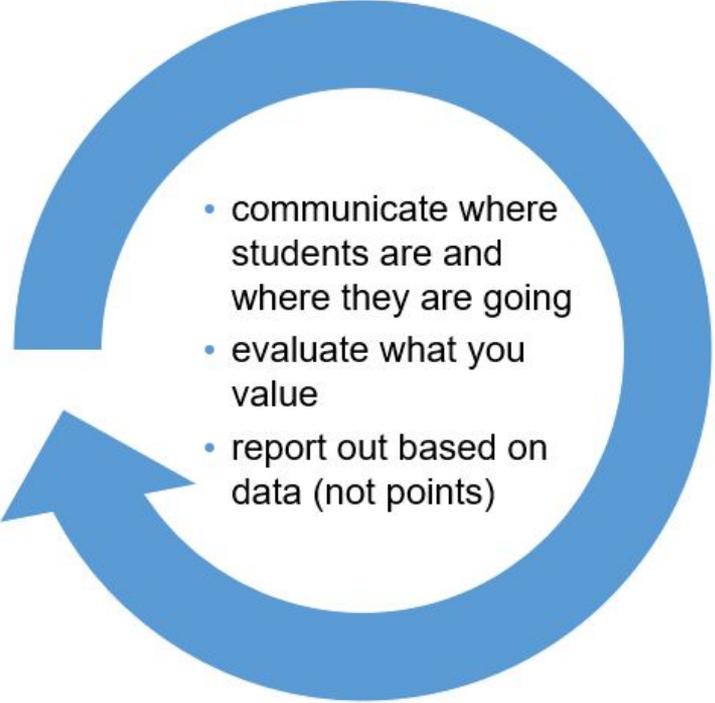


Figure 15.4 Typical lesson sequence spread over two days.



Toolkit 4

- Assessment + Evaluation
- In order

- 
- communicate where students are and where they are going
 - evaluate what you value
 - report out based on data (not points)

The diagram features a large black arrow pointing to the right, centered at the top of a grey rectangular area. Below the arrow is a table with two columns. The left column lists negative characteristics, and the right column lists positive characteristics. The central area between the columns is empty.

<ul style="list-style-type: none">• closed to others' ideas• disrespectful of others• actively excluding• hogging the marker• discouraging		<ul style="list-style-type: none">• open to others' ideas• respectful of others• actively inclusive• sharing the marker• encouraging
--	--	--

Figure 12.2 Collaboration rubric.

ALICIA

	FRACTIONS	BASIC	INTERMEDIATE	ADVANCED	OUT OF	MARK
1	Definitions	✓✓			2	2
2	Add and subtract proper fractions	✓✓	✓✓	✓✓	4	4
3	Add and subtract mixed fractions	✓X✓	✓S X ✓✓	S ✓✓	4	4
4	Multiply and divide proper fractions	XX✓✓	NNX✓X	✓✓✓	4	4
5	Multiply and divide mixed fractions	XX✓✓	XS	XXH✓✓	4	4
6	Solve order of operation tasks with proper and mixed fractions	XS	NNX	✓✓	4	4
7	Solve contextual problems involving fractions		N✓✓	✓XS X	4	3
8	Estimate solutions for problems involving fractions	XXN✓	XN✓S	✓✓✓	4	4
		2	3	4	30	29

Figure 14.6 Alicia's performance on the fractions unit.

$$(25 - 2^3 \sqrt{6^2 - 3^3}) \times 10^0$$

$$(25 - 2^3 \sqrt{36 - 27})^4 \times 10^0$$

$$(25 - 2^3 \sqrt{9})^4 \times 10^0$$

$$(25 - 2^3 \times 3)^4 \times 10^0$$

$$(25 - 8 \times 3)^4 \times 10^0$$

$$(25 - 24)^4 \times 10^0$$

$$1^4 \times 10^0 = 1$$

You explained
well

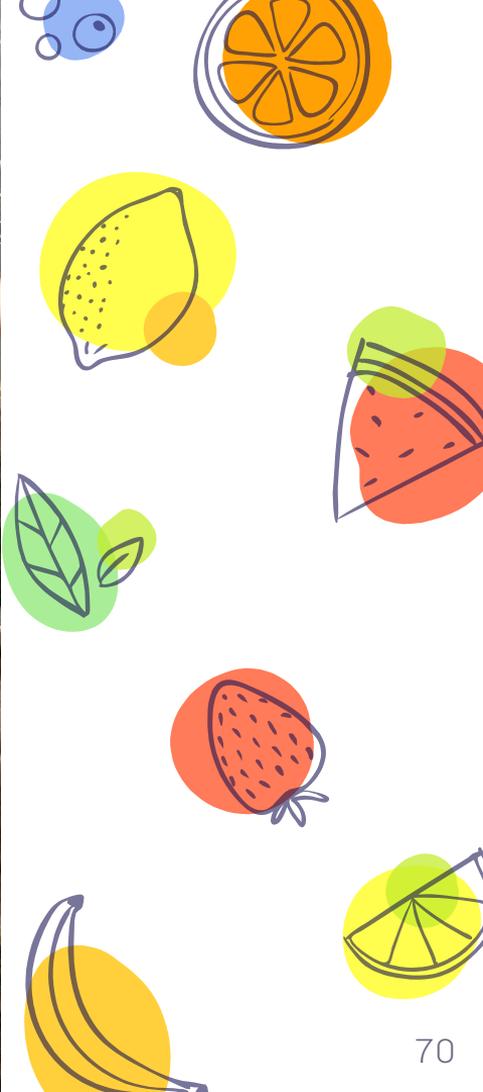
Good
Job

easy to un

✓

😊

$$16$$
$$[(2 \times 8) - 9 + 1]$$
$$16$$
$$[16]$$



RESOURCES:

The background features a complex network of white lines and dots, resembling a molecular structure or a data network. The lines connect various points, creating a web-like pattern. The background color transitions from a deep blue on the left to a lighter blue and then a hint of green on the right.

Darren Luoma (SCDSB) - <http://bit.ly/greatthinkingproblems>

BC Association of Math Teachers - Non-Curricular Tasks

<https://www.bcamt.ca/weeklymathtasks/>

Peter Liljedahl's Questions - <https://www.peterliljedahl.com/teachers/good-problem>

Alicia Burdess's Questions -

<http://www.aliciaburdess.com/problems-worth-solving-in-a-thinking-classroom.html>

Building Thinking Classroom - Facebook Group - Google Sheet

<https://docs.google.com/spreadsheets/d/11U5TqWgHXZOSGTCTo0DCpxHOabxS5Px0nTcNBLtI20w/edit>

Math Talks:

<https://docs.google.com/presentation/d/1ip7BTDtsiCwupqhgR8k0anvSMbNTa2TF1o4CxcP4Pd4/mobilepresent?slide=id.p>



Gerry Lewis
Math Facilitator K-8
Toronto Catholic DSB
@GLewisOCT
lewisg@tcdsb.ca

<http://bit.ly/LewisMath2020>

- B1.** demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life
- B2.** use knowledge of numbers and operations to solve mathematical problems encountered in everyday life

Grade 7

Rational Numbers

- B1.1** represent and compare whole numbers to 1 billion, including expanded form using powers of 10
- B1.2** perfect squares, square roots
- B1.3** rational numbers to thousandths

Fractions, Decimals, and Percents

- B1.4** equivalent fractions
- B1.5, 1.7** fractions, decimals, percents ordering and converting
- B1.6** round decimal numbers to nearest tenth, hundredth, or whole

Properties and Relationships

- B2.1** positive rational orders (multiple step/multiple operation), involving whole numbers, decimal numbers, fractions, ratios, rates, and percents

Math Facts:

- B2.2** percents, fractions, and decimal equivalents

Mental Math:

- B2.3** increase, decrease by 1%, 5%, 10%, 25%, 50%, 100%

Addition and Subtraction

- B2.4, B2.5** add and subtract integers and fractions

Multiplication and Division

- B2.6** GCF for whole numbers to 144 and LCM for 2 and 3-digit whole numbers
- B2.7** exponents
- B2.8-2.9** multiply and divide fractions and decimals
- B2.10** proportional ratios

Grade 8

Rational Numbers

- B1.1** represent and compare large and small numbers, including scientific notation
- B1.2** rational and irrational numbers
- B1.3** square roots

Fractions, Decimals, and Percents

- B1.4** fractions, decimals and percents, including percents over 100% and percents under 1%

Properties and Relationships

- B2.1** rational orders, involving rational numbers, ratios, rates, and percents, including multi-step and multi-operation

Math Facts

- B2.2** square numbers and square roots

Mental Math:

- B2.3** multiply and divide whole and decimal numbers up to thousandths by powers of 10

Addition and Subtraction

- B2.4, B2.5** add and subtract integers, fractions

Multiplication and Division

- B2.6, B2.7** multiply and divide fractions, integers
- B2.8** proportional ratios, including with unknown values

B

NUMBER

B

NUMBER

BETWEEN 2 NUMBERS

[1-10](#) [11-20](#) [21-30](#) [31-40](#) [41-50](#) [51-60](#) [ABOUT/CONTACT](#)



A garden snail's average speed is about 0.029 mi/h.

The North American X-15's top speed is about 4,520 mi/h.

How much time would it take for each to travel across the United States, a distance of about 2,800 miles?

FRACTION
TALKS.com

Would You Rather...

Read 12 pages every night in a chapter book with 144 pages?

Read 50 pages 3 times a week in a chapter book with 132 pages?

- C1.** identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts
- C2.** demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts
- C3.** solve problems and create computational representations of mathematical situations using coding concepts and skills
- C4.** apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations

Grade 7

Patterns

- C1.1** repeating, growing, and shrinking patterns and comparing positive linear patterns based on initial value and constant rate
- C1.2** repeating, growing and shrinking patterns involving whole numbers and decimal numbers, using various representations, including algebraic expressions and equations
- C1.3** pattern rules, extending patterns, making and justifying predictions, and missing elements in repeating growing and shrinking patterns involving whole numbers and decimal numbers, and using algebraic representations to solve for unknown values
- C1.4** relationships among integers

Variables and Expressions

- C2.1** monomial addition and subtraction
- C2.2** algebraic expressions involving whole numbers and decimal tenths

Equalities and Inequalities

- C2.3** solve equations involving multi-terms, whole numbers and decimals
- C2.4** solve inequalities involving multi-terms and whole numbers

Coding Skills

- C3.1, C3.2** code that involves events influenced by defined count and/or sub-program and other control structures

Grade 8

Patterns

- C1.1** repeating, growing, and shrinking patterns and comparing linear growing and shrinking patterns based on initial value and constant rate
- C1.2** repeating, growing and shrinking patterns involving rational numbers, including algebraic expressions and equations for linear growing and shrinking patterns
- C1.3** pattern rules, extending patterns, making and justifying predictions, and missing elements in growing and shrinking patterns involving rational numbers using algebraic representations
- C1.4** patterns in relationships in rational numbers

Variables and Expressions

- C2.1** Integer monomial/binomial addition and subtraction
- C2.2** evaluate expressions with rational numbers

Equalities and Inequalities

- C2.3** solve equations involving multiple-terms, integers, and decimals
- C2.4** solve inequalities with integers, graph solutions

Coding Skills

- C3.1, C3.2** code that involves the analysis of data in order to inform and communicate decisions



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Express Course (2020)

Learn computer science by trying the lessons below at your own pace! Learn challenges! Make games and creative projects to share with friends, family,

Try Now Get Help

Warm-Up

AFEMO
A
M
E

Elementary Math Curriculum Resource Project

Grade resources: 1 2 3 4 5 6 7 8 SUPPORTS WEBINARS

Subject resources: Coding Financial Literacy Mathematical Modelling Number

Coding Resources

FILTER

Screen-Time of your life

Examples of some possible images, articles, artifacts to prompt student questioning...

2020 This is What Happens in An Internet Minute

Sources:
https://www.common SenseMedia.org/sites/default/files/assets/pdf/2019a_usa_techuse_digitalusage.pdf
<https://www.verywellfamily.com/the-negative-effects-of-too-much-screen-time-1049472/>

JUICY MATH

Marbleslides: Lines

By Desmos | 45-60 minutes | Development

Mobile Tablet Laptop

In this delightful and challenging activity, students share their ideas by launching the marbles and will h

1-20 21-40 41-60 61-80 81-100 101-120 121-140 141-160 161-180 181-200 201-220 221-240 241-260 261-280 281-300 301-320 321-340 341-360 361-380 381-400 401-420 421-440 441-460 461-480 481-500 Gallery

Visual Patterns

Click on a pattern to see a larger image and the answer to step 43. What is the equation?

AFEMO
A
M
E

Elementary Math Curriculum Resource Project

Grade resources: 1 2 3 4 5 6 7 8 SUPPORTS WEBINARS

Subject resources: Coding Financial Literacy Mathematical Modelling Number

Mathematical Modelling Resources

FILTER

D1. manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life

D2. describe the likelihood that events will happen, and use that information to make predictions

Grade 7

Data Collection and Organization

D1.1 Percent distribution

D1.2 Collect qualitative and discrete/continuous quantitative data: using percents

Data Visualization

D1.3 select from among a variety of graphs, including circle graphs

D1.4 create an infographic about a data set, including in tables, and circle graphs

Data Analysis

D1.5 impact of adding/removing data from a data set

D1.6 misleading data

Probability

D2.1 difference between independent and dependent events

D2.2 theoretical and experimental probabilities of two independent and two dependent events

Grade 8

Data Collection and Organization

D1.1 one-variable and two-variable data

D1.2 collect continuous data involving two variables, organize in a table of values

Data Visualization

D1.3 select from among a variety of graphs, including scatter plots

D1.4 create an infographic about a data set, including in tables, and scatter plots

Data Analysis

D1.5 correlations and outliers

D1.6 misleading data

Probability

D2.1 solve probability problems using Venn and tree diagrams

D2.2 theoretical and experimental probabilities of multiple independent and dependent events

D

DATA

D

DATA



Social Media
Grades 5-12

Melting Ice
Grades K-12

Growth Mindset
Grades K-12

Favorite Season
Grades K-12

What do you notice?
What do you wonder?
An example of a data talk

What is a "Data Talk"?
A PDF on ways for students to practice considering and interpreting a variety of data and data representations

Women's Soccer
Grades K-12

One Through Ten
Grades K-16

Search

GAPMINDER

Donate Resources About Login

Female bosses

Global warming

Plastic in oceans

Suicide trend

Import taxes

Poor vs. poor

We have tested thousands of people and they were systematically wrong about all this.

Upgrade your worldview

E1. describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them

E2. compare, estimate, and determine measurements in various contexts

Grade 7

Geometric Reasoning

E1.1 cylinders, pyramids, prisms (plane, rotational symmetry)

E1.2 3-D drawing

Location and Movement

E1.3 dilations and similarity

E1.4 translations, reflections, and rotations on Cartesian plane

The Metric System

E2.1 compare volume and capacity (mL and cm³)

E2.2. perimeter, area, and volume involving metric conversion

Circles

E2.3 radius, diameter, and circumference

E2.4 construct circles

E2.5 area of circles

Volume and Surface Area

E2.6 surface area of cylinders using nets

E2.7 volume of cylinders and prisms

Grade 8

Geometric Reasoning

E1.1 tessellations

E1.2 3-D modelling

E1.3 scale drawings and ratios

Location and Movement

E1.4 translations, reflections, rotations, and dilations on Cartesian plane

The Metric System

E2.1 base-ten (exponential) measurement to mega, giga, tera, micro, nano, and pico

Lines and Angles

E2.2 angle properties including Intersecting and parallel lines, transversals, polygons

Length, Area, and Volume

E2.3 perimeter, circumference, area, volume, and surface area of composite 2-D shapes and 3-D objects

E2.4 pythagorean relationship and theorem

E

SPATIAL SENSE

E

SPATIAL
SENSE

Transforming Shapes

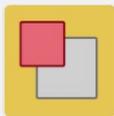
Add Collection

By Desmos 8 Activities

These activities are designed for middle school or geometry students who are studying congruence and transformations of geometric figures in the plane.

Describing Transformations Informally

Informal descriptions of original and transformed figures help develop important ideas of geometry.



Transformers

By Desmos | 15-30 minutes

In this lesson, students explore transformations of plane figures and describe these movements in everyday language using words like "slide," "shift," "turn," "spin," "flip," and "mirror." Students are not expected to use formal math vocabulary yet. This lesson provides both the intellectual need for agreeing upon common language and the chance for students to experiment with different ways of describing some transformations in the plane.



DAYS

LESSONS

PODCAST

RESOURCES

SPEAKING

Math Lessons
that Build Number Sense

F

FINANCIAL LITERACY

F1. Grades 4 to 8: demonstrate the knowledge and skills needed to make informed financial decisions

Grade 7

Money Concepts

F1.1 exchange rates

Financial Management

F1.2 reliable financial information

F1.3 sample budgets for long-term goals

F1.4 societal and personal factors influencing financial decisions

Consumer and Civic Awareness

F1.5 interest rate impact on savings, investments, and cost of borrowing

F1.6 interest rates and fees for different accounts and loans

Grade 8

Money Concepts

F1.1 Various Methods of payment - multiple currencies and exchange rates

Financial Management

F1.2 financial Plan - long term goal (income, expenses, tax)

F1.3 balanced budget and tools for tracking

F1.4 simple and compound Interest

Consumer and Civic Awareness

F1.5 consumer value (sales, loyalty, and incentive programs)

F1.6 interest rates, fees, and rewards for credit cards and consumer contracts

F

FINANCIAL
LITERACY



Products

We believe in student success

Simple student portfolios and career
education resources



Talk
with our kids
about money™

A PROGRAM OF **CFEE** SUPPORTED BY **Scotiabank.**

Resources

Money Fairs

About