

Curriculum Planning & Assessment Resource

Mathematics Grade 3



**Alberta Regional Professional
Development Consortia**

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opportunities at the local, regional and provincial levels*



Curriculum Planning & Assessment Resource

Mathematics

Grade 3 - Number 2

About This Document

This Curriculum Planning & Assessment Resource is intended to be a collection of sample activities, assessments, and resources that teachers may wish to use as they develop their unit plans. This document is not intended to be a sequential list of activities. Rather, the intent is that teachers choose from this resource what is appropriate for their context, and sequence it in their planning.

The sample activities, assessments and resources included in this document have undergone an initial review to determine appropriateness and alignment to the curriculum. However, it is expected that teachers use their professional judgment in selecting activities, assessments and resources that are appropriate for their context.

While every attempt has been made to provide credit and receive permissions, some errors or omissions may have occurred. Please contact info@arpdc.ab.ca to report any error or omissions.

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			Interactive Numbered Outcomes Document with Skills

Acknowledgements

Thank you to all the teachers, numeracy specialists, and technical expertise from Alberta school divisions and ARPDC who collaborated to develop, review, and revise these planning and assessment documents to support curriculum implementation.

Grade 3 - Number 2

Organizing Idea

Number: Quantity is measured with numbers that enable counting, labeling, comparing, and operating

Guiding Question

How can processes be established for addition and subtraction?

Learning Outcome

3N2 Students apply strategies for addition and subtraction within 1000.

Summative Assessment(s) - Transfer *(In Progress)*

Summative assessments can include the following.

- *Understanding/making sense of a novel context from the real world using one or more concepts (eg. "How are place value and money related?").*
- *Understanding/making sense of a novel context using one or more understandings (eg. Students use money to model the conversion of base 10 values and relate them to base 10 block').*
- *Being able to describe why (linking concepts) something is true, a result, or what might be an extension using learned concepts and understandings.*
- *Apply learning (create products; undertake projects; taking action such as creating a campaign) in a novel context or taking action using the understanding(s).*
- *Construct arguments by taking a position and verifying/proving it with known understandings.*

Transfer/Summative Samples

[\[understanding surface vs deep vs transfer\]](#)

[3N1 Unlock The Box](#)



KUSP 3N2

[Literature Connections](#)

KUSP 3N2

Assumable Curriculum / Prerequisite Knowledge / Vocabulary

Addition facts with addends to 10 and related inverse facts; Equal (meaning & symbol); Equality; Unequal (meaning & symbol); Addition (meaning & symbol); Subtraction (meaning & symbol); Sum; Difference; Digit; Number; Numeral; Quantity

Student Language | Essential vocabulary & concepts

- **Estimate:** to find a number that is close to the actual number; close to an amount, but not exact
- **Regrouping:** means to rearrange groups in place value to carry out operations
- **Place value:** the value of each digit in a number
- **Value:** the numerical worth or amount
- **Standard algorithm:** a set of steps to complete a process once a strong conceptual foundation is built

I Know Statements | Metacognition

- I know estimation can be used to check an answer and when an exact answer isn't needed.
- I know that I can choose an addition or subtraction strategy based on the numbers involved.
- I know the standard algorithm can be used to add or subtract any natural numbers.

Pre-Assessments

Nelson Pre-Assessments 3: Finding Each Students Pathway

- Adding Mentally - p. 9
- Estimating Addition - p.10
- Adding to 1000 - p.11
- Subtraction Facts - p.12
- Subtracting Mentally - p.13
- Estimating for Subtracting - p.14
- Subtracting to 1000 - p.15

Nelson Leaps and Bounds Pages will be referenced in the Assessments to follow up for emerging learners.

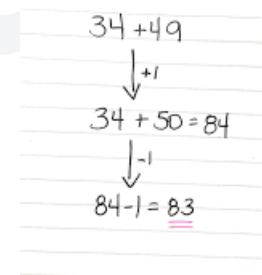
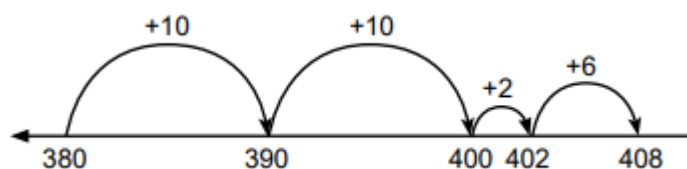
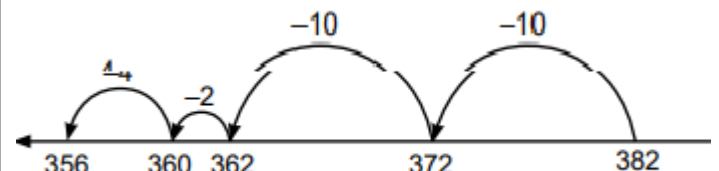
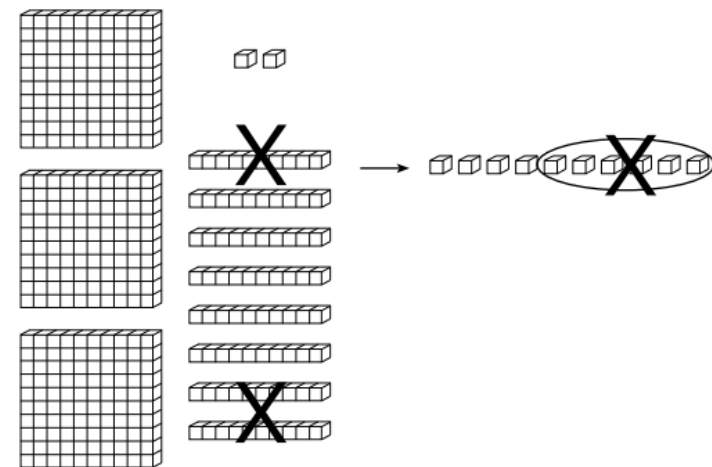
I Can Statements | Skills

- I can estimate sums and differences.
- I can use my number facts to help in addition and subtraction equations.
- I can add and subtract numbers using a strategy of my choice.
- I can model regrouping given an equation.
- I can add and subtract natural numbers using the standard algorithm.
- I can explain the standard algorithm for addition and subtraction.
- I can model regrouping for addition and subtraction.
- I can solve problems using addition and subtraction.

Learning Recovery

Enhancement

- Create an addition or subtraction story problem for a given solution.
- Solve a problem using multiple solutions

Learning Outcome		3N2 Students apply strategies for addition and subtraction within 1000.							
Knowledge	Understanding	Skills & Procedures	Achievement Indicators	Illustrative Examples	Assessments (Explainer)				
<p>Recall of addition and subtraction number facts facilitates addition and subtraction strategies.</p> <p>Standard algorithms for addition and subtraction are conventional procedures based on place value.</p> <p>Estimation can be used to support addition and subtraction in everyday situations, including</p> <ul style="list-style-type: none"> when an exact sum or difference is not needed to check if an answer is reasonable 	<p>Addition and subtraction strategies can be chosen based on the nature of the numbers.</p> <p>Standard algorithms for addition and subtraction may be used for any natural numbers.</p>	<p>Relate strategies for the addition and subtraction of two-digit numbers to strategies for the addition and subtraction of three-digit numbers.</p>	<p>Relate known strategies from grade 2 (multiples of 10, doubles, compensation, using partials) to demonstrate the addition and subtraction of three-digit numbers.</p>	<p>Add 452 + 152</p> <p>400 + 100 = 500 50 + 50 = 100 (Double) 2 + 2 = 4 (Double)</p> <p>Mental Math (using partials) 450 + 150 = 600 2 + 2 = 4 600 + 4 = 604</p> <p>Making Doubles</p> <p>$9 + 10$ $10 + 10 = 20$ $20 - 1 = 19$</p> <p>Compensation</p>  <p>Write the four number facts that this bar model shows.</p> <table border="1" data-bbox="1693 1270 1973 1340"> <tr><td colspan="2">540</td></tr> <tr><td>300</td><td>240</td></tr> </table> <p><input type="text"/> + <input type="text"/> = <input type="text"/> <input type="text"/> + <input type="text"/> = <input type="text"/> <input type="text"/> - <input type="text"/> = <input type="text"/> <input type="text"/> - <input type="text"/> = <input type="text"/></p> <p>Addition Strategies</p> <ul style="list-style-type: none"> ★ Ten Frames with 2 digit addition video ★ Place Value video ★ Hundreds Chart Addition video ★ Adding to 10, 50, 100 benchmarks ★ Partitioning: <p>Subtraction Strategies</p> <ul style="list-style-type: none"> ★ Ten Frame Subtraction 	540		300	240	<p>3N2 Addition Strategies - Surface/Deep</p> <p>Is the model below representing an addition or subtraction question? What is the question?</p>  <p>Is the model below representing an addition or subtraction question? What is the question?</p>  <p>Is the model below representing an addition or subtraction question? What is the question?</p>  <p>Diagram(s) source: Mathematics Supporting Documents for Teachers. Ministry of Education, Manitoba.</p>
540									
300	240								

- ★ Place Value subtraction [video](#)
- ★ Think addition: 109-87
- ★ 87, 88, 89, 90 (that is 3) 90-100 (that is 10) then 100-109 (that is 9)
- ★ therefore 109-87= 23
- ★ Subtract to 100: 109-87
- ★ 109-100=9 then 100-90 is 10 then 90-87 is 3
- ★ Subtraction benchmarks- subtracting to 10, 50 and 100
- ★ Hundreds Chart Subtraction [video](#)

Partitioning:

$$54 - 13 =$$

$$54 - 10 = 44$$

$$44 - 3 = 41$$

Finally, you take off the units.

Place Value Partitioning

$$73 - 46 =$$

$$73 - 40 = 33$$

$$33 - 6 = 27$$

Empty Number Line

$$63 + 17 =$$

$$60 + 3 \quad 10 + 7$$

$$60 + 10 = 70 \quad 3 + 7 = 10 \quad \rightarrow 80$$

2 digit

3 digit

$$128 + 214 = 342$$

$$100 + 200 = 300$$

$$20 + 10 = 30$$

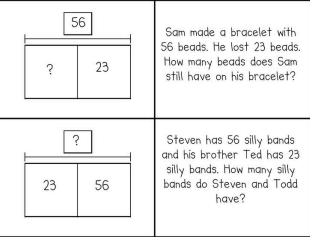
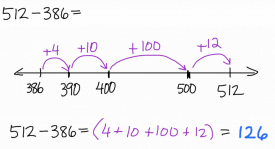
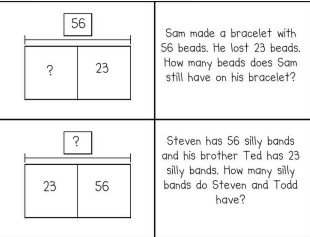

$$8 + 4 = 12$$

$$300 + 30 + 12 = 342$$

Empty Number Lines

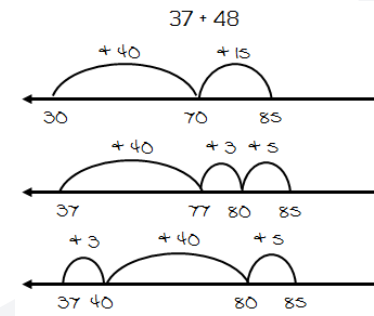
Using a blank number line
(adding on all the tens, bridging through ten)

$$34 + 28 =$$

				<p>Bar Diagrams</p>  <p>Compensating- 38+56 $38+60=98-4=94$ (I added 4 too much, so I subtracted 4)</p>  <p>Bar Diagrams</p>  <p>Compensating: 52-28+ $52-30=22+2=24$ (I subtracted 2 too much so I added 2 at the end) *can also be done on an empty number line*</p>	
		<p>Add and subtract natural numbers using standard algorithms.</p> <p>Model regrouping by place value for addition and subtraction.</p>	<p>Model regrouping using place value for addition and subtraction.</p>	<p>$1296 + 3457 =$</p> <p>Use manipulatives to solve the addition question. Standard algorithm, base ten, number line, mental math</p> <p>Standard Algorithm</p> <p>Add the numbers.</p>  <p>Base Ten Blocks</p>	<p>3N2 Addition and Subtraction - Surface</p> <p>3N2 Model Regrouping - Surface</p> <p>3N2 Modeling Addition and Subtraction - Deep</p>

$$426 + 266$$

Number Line



Mental Math

$$671 + 595 =$$

$$600 + 500 = 1100$$

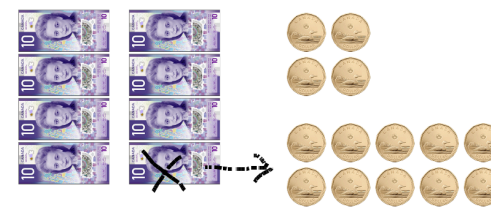
$$70 + 90 = 160$$

$$5 + 1 = 6$$


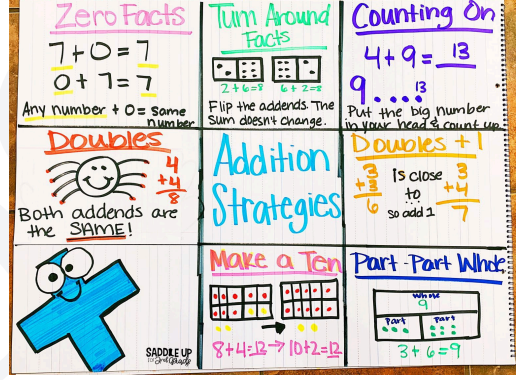
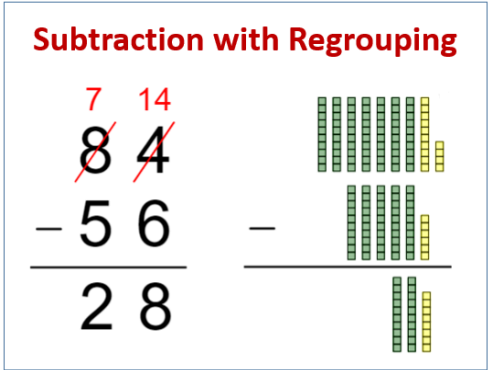
$$1100 + 160 = 1260$$

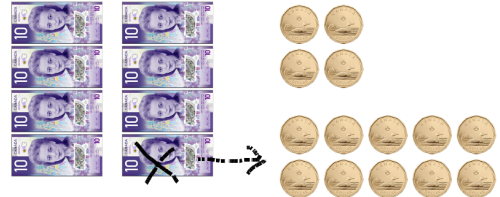

$$1260 + 6 = 1266$$

Model regrouping for $84 - 56$ with money:
Explain 8 tens to 7 tens by adding 10 more ones.



$$\begin{array}{r}
 7 \quad 14 \\
 \cancel{8} \quad \cancel{4} \\
 - 5 \quad 6 \\
 \hline
 2 \quad 8
 \end{array}$$

		<p>Solve problems using addition and subtraction.</p>	<p>Solve a given problem involving the sum or difference of two given numbers.</p>	<p>Same strategies as above</p> <p>26 toys were left on the playground on Wednesday. 34 toys were left on the playground on Thursday. How many toys were left on the playground on both days? What other question could you ask with this information?</p>	<p>3N2 Word Problems to Check for Understanding - Surface and Deep</p> <p>Dicey Operations</p> <p>Dicey Operations in Line</p> <p>Find a partner and a die (preferably 0 - 9 but if you don't have one you can use a 1 - 6 die).</p> <p>Each of you draw an addition layout like this:</p> <p><input type="text"/> + <input type="text"/> + <input type="text"/> = <input type="text"/></p> <p>Take turns to throw the die and decide which of your cells to fill in.</p> <p>Throw the die nine times each until all the cells are full.</p> <p>Whoever has the sum closest to 1000 wins.</p>  <p>nrich.maths.org</p>
			<p>Use a mental mathematics strategy to provide a solution to a given basic addition fact or a related subtraction fact.</p>	<p>Use a mental math strategy like making 10, add a number to 10, doubles, one more, two less, zero, count on/back making ten, using partials, compensation</p>  <p>Marcy Bernethy Saddle up for 2nd grade math</p>	
		<p>Explain the standard algorithms for addition and subtraction of natural numbers.</p>	<p>Add and subtract natural numbers using the standard algorithm and explain the process.</p>	<p>Subtraction with Regrouping</p>  <p>Show 84 - 56 regrouping with money:</p>	<p>3N2 Using the Standard Algorithm - Surface/Deep</p>

				 <p>Explain 8 tens to 7 tens by adding 10 more ones.</p> $ \begin{array}{r} 41716 \\ \cancel{586} \\ - 294 \\ \hline 292 \end{array} $	
		<p>Estimate sums and differences.</p>	<p>Round numbers to estimate sums and differences</p>	<p>Round with use of the open number line.</p>  <p>Add 153 + 157 using doubles 150+150, add 10 (or any other efficient strategy).</p> <p>Add 356 + 343 using doubles 300+300, multiples of ten 50+40, add 9 (or any other efficient strategy).</p>	<p>3N2 Estimating - Surface/Deep</p>

Resources

Mathology

[ARPD Math Little Books for Alberta Curriculum](#)
[Mathology Free Resources on New Learn Alberta](#)

Mathology Little Books

Mathology Little Book: [Calla's Jingle Dress](#)
Mathology Little Book: [Planting Seeds](#)
Mathology Little Book: [Math Makes Me Laugh](#)
Mathology Little Book: [The Street Party](#)

Mathology Activities

Mathology Grade 3: Number Unit 5, Addition and Subtraction: Activities 19, 20, 22, 24, 25, 26

Mathology Interactive Tools:

- [Model with a Number Line](#)
- [Hundred Chart](#)

Math UP

Estimating and Comparing Whole Numbers

- Lesson 1: Using Benchmark Numbers to Estimate
- Lesson 2: Comparing and Ordering Four-Digit Numbers
- Lesson 3: Using Estimates to Solve Problems

Adding and Subtracting Numbers Less Than 100

- Lesson 1: Addition and Subtraction Facts
- Lesson 2: Estimating Sums and Differences
- Lesson 3: Relating Addition and Subtraction
- Lesson 4: Addition and Subtraction Strategies
- Lesson 5: Solving Problems Using Mental Strategies
- Lesson 6: Creating Addition and Subtraction Problems

Adding and Subtracting Greater Numbers

- Lesson 1: Adding Three-Digit Numbers
- Lesson 2: Subtracting Three-Digit Numbers
- Lesson 3: Solving Addition and Subtraction Problems

Money

- Lesson 1: Counting Money
- Lesson 2: Representing Amounts of Money
- Lesson 3: Making Change

Existing Textbooks

Math Focus 3 - Chapter 6: Lessons 3 - end of chapter

Math Makes Sense 3 - Unit 3 - Lessons 3-11

NCETM (teacher guides and resources)

[NCETM - Securing mental strategies: calculation up to 999](#)

(Spine 1; Year 3; 1.19)

[NCETM - Algorithms: column addition](#)

(Spine 1; Year 3; 1.20)

[NCETM - Algorithms: column subtraction](#)

(Spine 1; Year 3; 1.21)

Websites/Other

Books for Addition and Subtraction Activities:

Box Car and One Eyed Jacks

[Mathematics Developmental Continuum](#) - Indicators of Progress Tasks/Activities (Australia)

Websites for Addition and Subtraction Activities:

Gizmos

New Learn Alberta (Teacher Login Required)

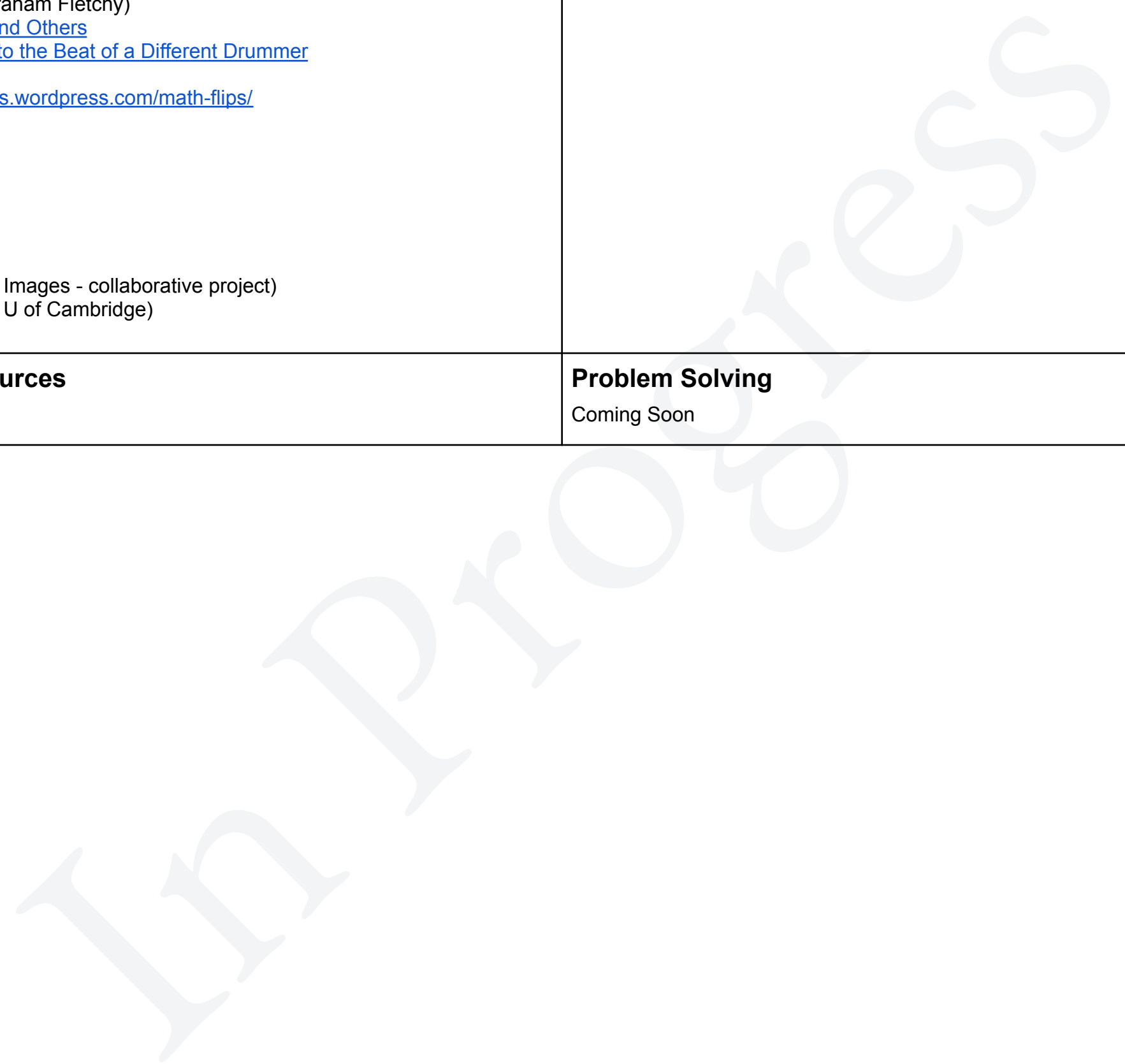
[Cargo Captain \(Multi-digit Subtraction\)](#)

[Whole Numbers with Base-10 Blocks](#)

[Target Sum Card Game \(Multi-digit Addition\)](#)

[Adding Whole Numbers and Decimals \(Base-10 Blocks\)](#)

<p> Steve Wyborney's Blog (Esti-Mysteries, Estimation Clipboard, SPLAT!, Subitizing slides) Web Resources - Problem of the Week - University of Waterloo Addition and Subtraction KS2 (rich addition and subtraction tasks - U of Cambridge) 3-Act Tasks Questioning My Metacognition (Graham Fletchy) 3 Act Math Tasks By Kyle Pearce, Dan Meyer and Others Writing Numberless Word Problems Teaching to the Beat of a Different Drummer </p> <p> Math Flips Google Drive from https://mathvisuals.wordpress.com/math-flips/ </p> <p> Addition Strategies <ul style="list-style-type: none"> ★ Ten Frames with 2 digit addition video ★ Place Value video ★ Hundreds Chart Addition video ★ Adding to 10, 50, 100 benchmarks ★ Partitioning Bilingual Number Talks for Arrays (Number Talk Images - collaborative project) Rich Multiplication and Division Tasks (NRICH - U of Cambridge) </p>	<p> Subtracting Whole Numbers and Decimals (Base-10 Blocks) </p> <p> For access to additional resources, request a Gizmos account alberta@explorellearning.com </p>
<p> Indigenous Lesson Plans and Resources Coming Soon </p>	<p> Problem Solving Coming Soon </p>



Click to jump!



KUSP 3N2

[Literature Connections](#)

Literature Connections

Title	Author	Format (Picture Book, Novel, Non-fiction, other)	Publisher	ISBN	Notes
Anno's Magic Seeds	Mitsumasa Anno	Picture Book	Puffin Books (June 21 1999)	0698116186	Addition, patterning, variables, expressions, equalities, inequalities
Count to a Million	Jerry Pallotta	Picture Book	Scholastic Inc. (January 1, 2003)	0439389151, 978-0439389150	Place value
Place For Zero	Angeline Sparagna LoPresti	Picture Book	Charlesbridge; Illustrated edition (July 1 2003)	1570911967, 978-1570911965	Place Value
Zero	Kathryn Otoshi	Picture Book	KO Kids Books (Sept. 25 2010)	097239463X, 978-0972394635	Place Value
Greater Estimations	Bruce Goldstone	Picture Book	Square Fish; Reprint edition (March 29 2016)	1250079616, 978-1250079619	Estimation
365 Penguins (Reissue)	Jean-Luc Fromental	Picture Book	Harry N. Abrams; Reissue ed. edition (Oct. 17 2017)	9781419729171, 978-1419729171	Addition of two digit numbers