Review Fractions

Symmetry Cycles

Planning for the New *Grade 1* Math

February - April!

Session 4

Provincial
February 14, 2023

Resources for Assessment & Engagement

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Central Alberta Regional Consortium
Working Together: Making a Difference

In the spirit of reconciliation, we want to acknowledge that this gathering is taking place on traditional lands across the province of Alberta, home to many diverse First Nations, Métis and Inuit peoples. We acknowledge that this land is a traditional meeting ground giving voice to its original peoples and the story of creation of this country in a way that history may have forgotten.

February

1N1.2 Students interpret and explain quantities to 100.(match to 100 days celebration)

- Each number counted includes all previous numbers (counting principle: hierarchical inclusion)
- A quantity can be determined by counting more than one object in a set at a time.

1N1.3 Students represent equal sharing and grouping of quantities within 20.

- Quantity can be partitioned by sharing or grouping..

1N1.1 Students interpret and explain quantities to 100.

- Quantity is expressed in words and numerals based on patterns.
- Quantity in the world is represented in multiple ways. including with money.

1N1.4 Students interpret and explain quantities to 100.

- A quantity can be perceived as the composition of smaller quantities.

1N1.5 Students interpret and explain quantities to 100.

- Two quantities are equal when there is the same number of objects in both sets.
- Equality is a balance between two quantities..

1N2. 1 Students examine addition and subtraction within 20.

- Addition and subtraction are processes that describe the composition and decomposition of quantity

February

1P1. Students examine patterns in cycles.

- A pattern that appears to repeat may not repeat in the same way forever.
- A cycle is a repeating pattern that repeats in the same way forever.

1T1. Students explain time in relation to cycles.

- Time is an experience of change.
- Time can be perceived as a cycle.

1G1. Students interpret shape in two and three dimensions.

- A shape can be modeled in various sizes and orientations
- A shape can be composed of two or more shapes.

Maintain existing terminology of 2D- **Shapes** & 3D **Objects**

Counting money, regrouping, skip counting, include various denominations but also varied forms - ie. dimes and $10 bills, nickels and $5 bills etc.

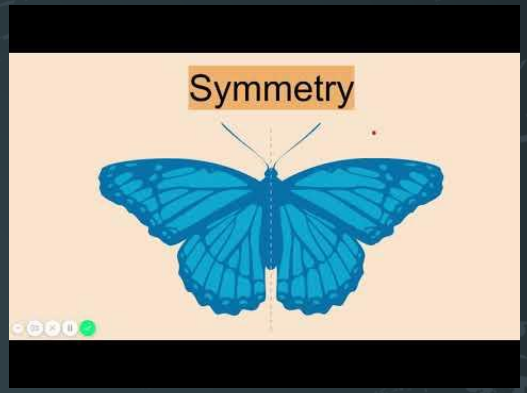
Grade 1 Math Kit

March	April
Number: Quantity is measured with numbers that enable counting, labelling, comparing	
1N1.2 Students interpret and explain quantities to 100. • Each number counted includes all previous numbers (counting principle: hierarchical inclusion) • A quantity can be determined by counting more than one object in a set at a time	1N1.2 Students interpret and explain quantities to 100. • Each number counted includes all previous numbers (counting principle: hierarchical inclusion) • A quantity can be determined by counting more than one object in a set at a time
1N1.3 Students represent equal sharing and grouping of quantities within 20. • Quantity can be partitioned by sharing or grouping.	1N1.3 Students represent equal sharing and grouping of quantities within 20. • Quantity can be partitioned by sharing or grouping.
1N1.5 Students interpret and explain quantities to 100. • Two quantities are equal when there is the same number of objects in both sets. • Equality is a balance between two quantities.	1N1.5 Students interpret and explain quantities to 100. • Two quantities are equal when there is the same number of objects in both sets. • Equality is a balance between two quantities.
1N2.1 Students examine addition and subtraction within 20. • Addition and subtraction are processes that describe the composition and decomposition of quantity	1N2.1 Students examine addition and subtraction within 20. • Addition and subtraction are processes that describe the composition and decomposition of quantity.
1N2.2 Students examine addition and subtraction within 20.	1N2. 2 Students acquire an understanding of addition and subtraction within 20.

March	April
• Addition and subtraction are opposite (inverse) mathematical operations 1N2. 3 Students examine addition and subtraction within 20. • Addition number facts have related subtraction number facts. 1N3. Students examine one-half as part-whole relationship. • In a quantity partitioned into two equal groups, each group represents one-half of the whole quantity. • In a shape or object partitioned into two identical pieces, each piece represents one-half of the whole.	• Addition and subtraction can show a change in quantity through joining, separating, or comparing. 1N2. 3 Students acquire an understanding of addition and subtraction within 20. • Addition number facts have related subtraction number facts. 1N3. Students examine one-half as part-whole relationship. • In a quantity partitioned into two equal groups, each group represents one-half of the whole quantity. • In a shape or object partitioned into two identical pieces, each piece represents one-half of the whole.
Patterns: Awareness of patterns supports problem solving in various situations.	
1P1. Students examine pattern in cycles. • A pattern that appears to repeat may not repeat in the same way forever. • A cycle is a repeating pattern that repeats in the same way forever.	

Same completion as in March

March	April
Time: Duration is described and quantified with time.	
1T1. Students explain time in relation to cycles. • Time is an experience of change. • Time can be perceived as a cycle	1T1. Students explain time in relation to cycles. • Time is an experience of change. • Time can be perceived as a cycle
Geometry: Shapes are defined by geometric attributes.	
	1G1. Students interpret shape in two and three dimensions. • A shape can be modeled in various sizes and orientations. • A shape is symmetrical if it can be decomposed into matching halves (fractions)
Statistics: The science of collecting, analyzing, visualizing and interpreting data can inf	
1ST1. Students investigate and represent data. • Data can be answers to questions. May wish to do Stats all year and integrate into Science.	1ST1. Students investigate and represent data. • Data can be answers to questions. 1ST1.2 Students investigate and represent data. • Data can be represented in a graph.



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2:35 min

How can quantity be communicated?

1N1.1 Students interpret and explain quantities to 100.

Knowledge	Understanding	Skills & Procedures
A numeral is a symbol or group of symbols used to represent a number. The absence of quantity is represented by 0.	Quantity is expressed in words and numerals based on patterns. Quantity in the world is represented in multiple ways.	Represent quantities using words, numerals, objects, or pictures. Identify a quantity of 0 in familiar situations.

1N1.2 Students interpret and explain quantities to 100.

Knowledge	Understanding	Skills & Procedures
Counting can begin at any number. Counting more than one object at a time is called skip counting.	Each number counted includes all previous numbers (counting principle: hierarchical inclusion). A quantity can be determined by counting more than one object in a set at a time.	Count within 100, forward by 1s, starting at any number, according to the counting principles. Count backward from 20 to 0 by 1s. Skip count to 100, forward by 5s and 10s, starting at 0. Skip count to 20, forward by 2s, starting at 0.

Subitizing Cards

Number Line Game

5's on a number line 5's in fish Borders
10's build a flower animal line feet

Number lines Sparklebox
Number Paths with Subitizing
Counting by Fives
0-20 Number Line

1N1.3 Students interpret and explain quantity to 100.		
Knowledge	Understanding	Skills & Procedures
Sharing involves partitioning a quantity into a certain number of groups. Grouping involves partitioning a quantity into groups of a certain size.	Quantity can be partitioned by sharing or grouping.	Partition a set of objects by sharing and grouping. Demonstrate conservation of number when sharing or grouping.

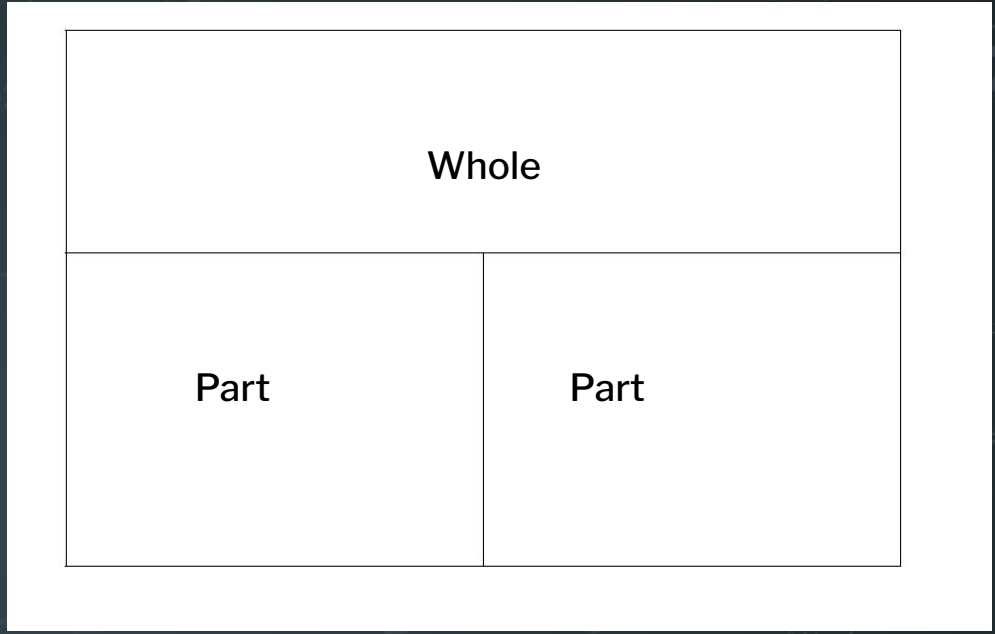
1N1.4 Students interpret and explain quantity to 100.		
Knowledge	Understanding	Skills & Procedures
Familiar arrangements of small quantities facilitate subitizing.	A quantity can be perceived as the composition of smaller quantities.	Recognize quantities to 10.

Money
Counters
Cuisenaire Rods and Deci Tracks

1N1.5 Students interpret and explain quantity to 100.

Knowledge	Understanding	Skills & Procedures
Comparisons of quantity can be described by using words such as • equal • not equal • less • more Equality can be modeled using a balance. The equal sign, =, is used to show equality between two quantities. The unequal sign, ≠, is used to show that two quantities are not equal.	Two quantities are equal when there is the same number of objects in both sets. Equality is a balance between two quantities.	Investigate equal and unequal quantities, including using a balance model. Identify numbers that are one more, two more, one less, and two less than a given number. Represent a quantity relative to another, including symbolically.

How can addition and subtraction provide perspectives of number?		
1N2.1 Students examine addition and subtraction within 20.		
Knowledge	Understanding	Skills & Procedures
Quantities can be composed or decomposed to model a change in quantity. Addition can be applied in various contexts, including ▫ combining parts ▫ to find the whole increasing an existing quantity Subtraction can be applied in various contexts, including ▫ comparing two quantities taking away ▫ one quantity from another finding a part of a whole Addition and subtraction can be modelled using a balance.	Addition and subtraction are processes that describe the composition and decomposition of quantity.	Visualize quantities between 10 and 20 as compositions of 10 and another quantity. Model addition and subtraction within 20 in various ways, including with a balance. Relate addition and subtraction to various contexts involving composition or decomposition of quantity.



Cuisenaire Rods

$a + b = \square$

$a + \square = c$

$\square + b = c$

$e - f = \square$

$e - \square = g$

$\square - f = g$

1N2.2 Students examine addition and subtraction within 20.

Knowledge	Understanding	Skills & Procedures
Strategies are meaningful steps taken to solve problems. Addition and subtraction strategies include • counting on • counting back • decomposition • compensation • making tens Sums and differences can be expressed symbolically using the addition sign, +, the subtraction sign, −, and the equal sign, =. The order in which two quantities are added does not affect the sum (commutative property). The order in which two quantities are subtracted affects the difference. Addition of 0 to any number, or subtraction of 0 from any number, results in the same number (zero property). A missing quantity in a sum or difference can be represented in different ways, including	Addition and subtraction are opposite (inverse) mathematical operations. $a + b = \square$ $a + \square = c$ $\square + b = c$ $e - f = \square$ $e - \square = g$ $\square - f = g$	Investigate addition and subtraction strategies. Add and subtract within 20. Check differences and sums using inverse operations. Determine a missing quantity in a sum or difference, within 20, in a variety of ways. Express addition and subtraction symbolically. Solve problems using addition and subtraction.

1N2.3 Students examine addition and subtraction within 20.

Knowledge	Understanding	Skills & Procedures
Addition and subtraction number facts represent part- part-whole relationships. Fact families are groups of related addition and subtraction number facts.	Addition number facts have related subtraction number facts.	Identify patterns in addition and subtraction, including patterns in addition tables. Recognize families of related addition and subtraction number facts. Recall addition number facts, with addends to 10, and related subtraction number facts.

In what ways can parts and wholes be related?		
1N3 Students examine one-half as a part-whole relationship.		
Knowledge	Understanding	Skills & Procedures
One-half can be one of two equal groups or one of two equal pieces.	In a quantity partitioned into two equal groups, each group represents one- half of the whole quantity. In a shape or object partitioned into two identical pieces, each piece represents one- half of the whole.	Identify one-half in familiar situations. Partition an even set of objects into two equal groups, limited to sets of 10 or less. Partition a shape or object into two equal pieces. Describe one of two equal groups or pieces as one-half. Verify that the two halves of one whole group, shape, or object are the same size.

Half ... Halves

Clipartix.com

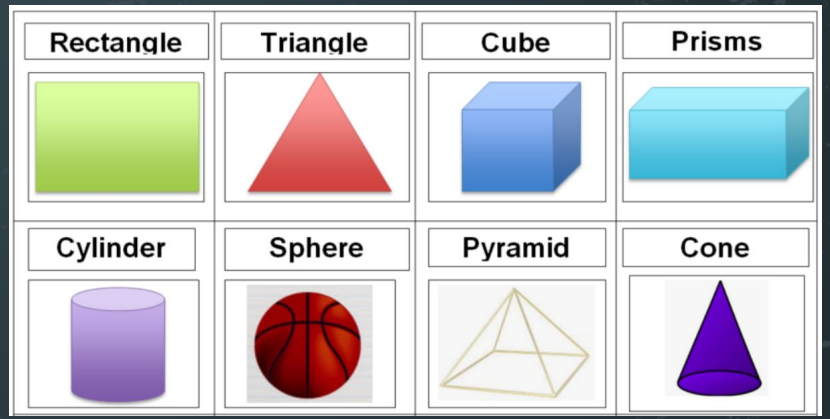
Dreamstime.com Photo: Tatyana Abramovich

Introduction to Fractions

In what ways can shape be characterized?

1G1 Students interpret shape in two and three dimensions.

Knowledge	Understanding	Skills & Procedures
Familiar two-dimensional shapes include ○ squares circles ○ rectangles ○ triangles Familiar three-dimensional shapes include ○ ○ cubes ○ prisms ○ cylinders ○ spheres ○ pyramids cones A composite shape is composed of two or more shapes. A line of symmetry indicates the division between the matching halves of a symmetrical shape.	A shape can be modelled in various sizes and orientations. A shape is symmetrical if it can be decomposed into matching halves.	Identify familiar shapes in various sizes and orientations. Model two-dimensional shapes. Sort shapes according to one attribute and describe the sorting rule. Compose and decompose two- or three-dimensional composite shapes. Identify familiar shapes within two- or three- dimensional composite shapes. Investigate symmetry of two-dimensional shapes by folding and matching.



Wooden Blocks
Lego
Building blocks

Grade 1 Math Kit www.movingforwardcurriculum.ca

Model of Symmetry Symmetry Sparklebox

What can patterns communicate?

1P1 Students examine patterns in cycles.

Knowledge	Understanding	Skills & Procedures
A cycle can express repetition of events or experiences. Cycles include o seasons day/night o life cycles o calendars o The same pattern can be represented with different elements. A pattern core is a sequence of one or more elements that repeats as a unit.	A pattern that appears to repeat may not repeat in the same way forever. A cycle is a repeating pattern that repeats in the same way forever.	Recognize cycles encountered in daily routines and nature. Investigate cycles found in nature that inform First Nations, Métis, or Inuit practices. Identify the pattern core, up to four elements, in a cycle. Identify a missing element in a repeating pattern or cycle. Describe change and constancy in repeating patterns and cycles. Create different representations of the same repeating pattern or cycle, limited to a pattern core of up to four elements. Extend a sequence of elements in various ways to create repeating patterns.

How can time characterize change?

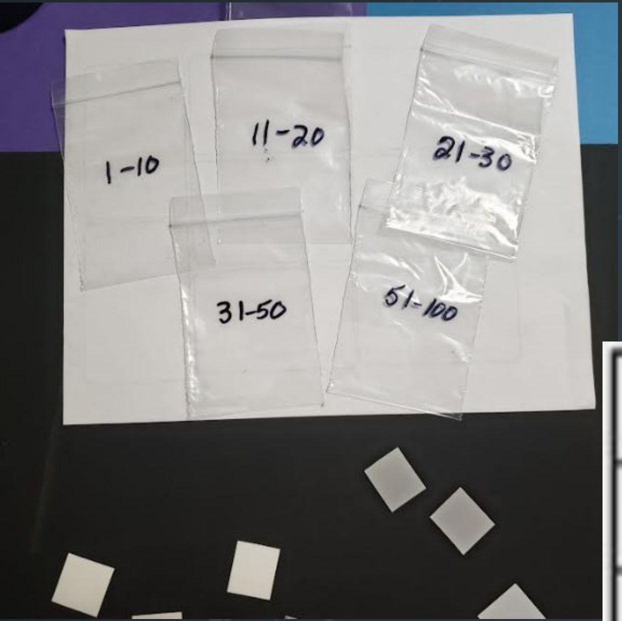
1T1 Students explain time in relation to cycles.

Knowledge	Understanding	Skills & Procedures
Time can be perceived through observable change. First Nations, Métis, and Inuit experience time through sequences and cycles in nature, including cycles of seasons. Cycles from a calendar include days of the week and months of the year.	Time is an experience of change. Time can be perceived as a cycle.	Describe cycles of time encountered in daily routines and nature. Describe observable changes that indicate a cycle of time. Relate cycles of seasons to First Nations, Métis, or Inuit practices. Identify cycles from a calendar.

Measurement is the process of assigning a qualitative or quantitative description of size to an object based on a particular attribute. It is always a comparison of the size of one object with another, so the same object can be described using different measurements. Therefore, knowledge of the size of certain benchmarks assists in measuring.

Let’s look at some Number line Activities

Use with numbers for addition, before and after, comparative language ; money, groups of objects



1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50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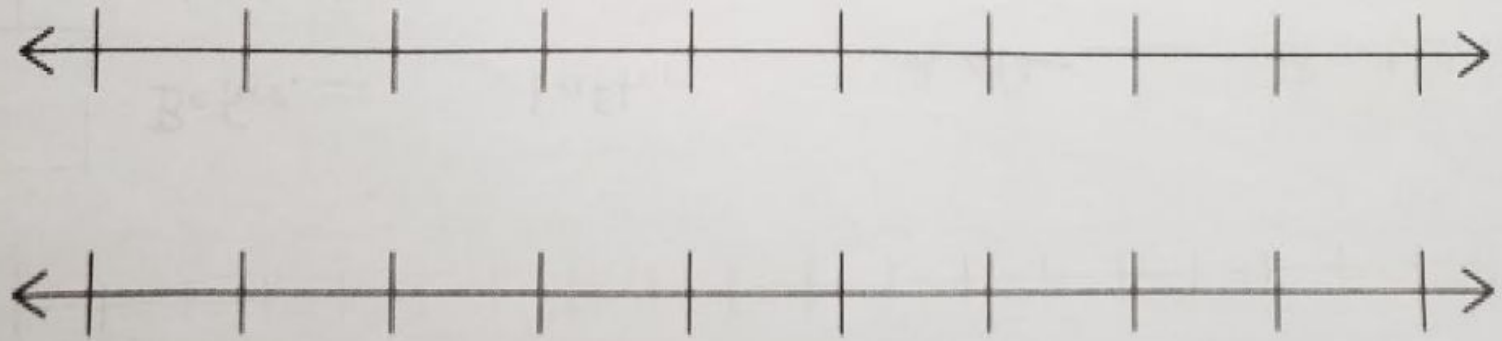

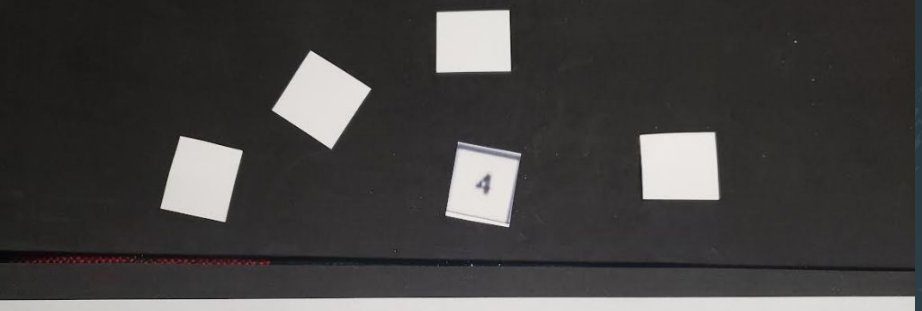
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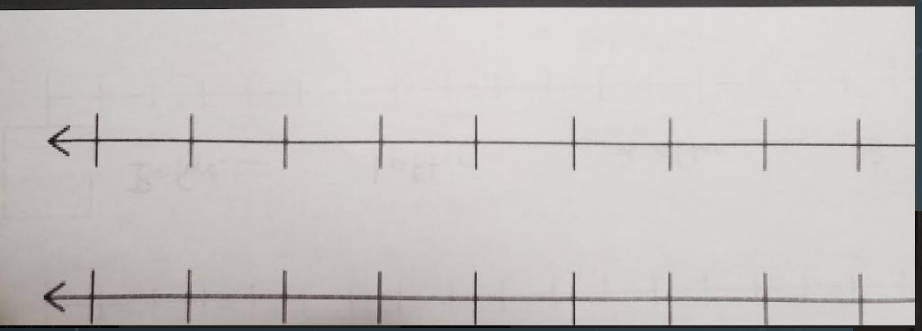

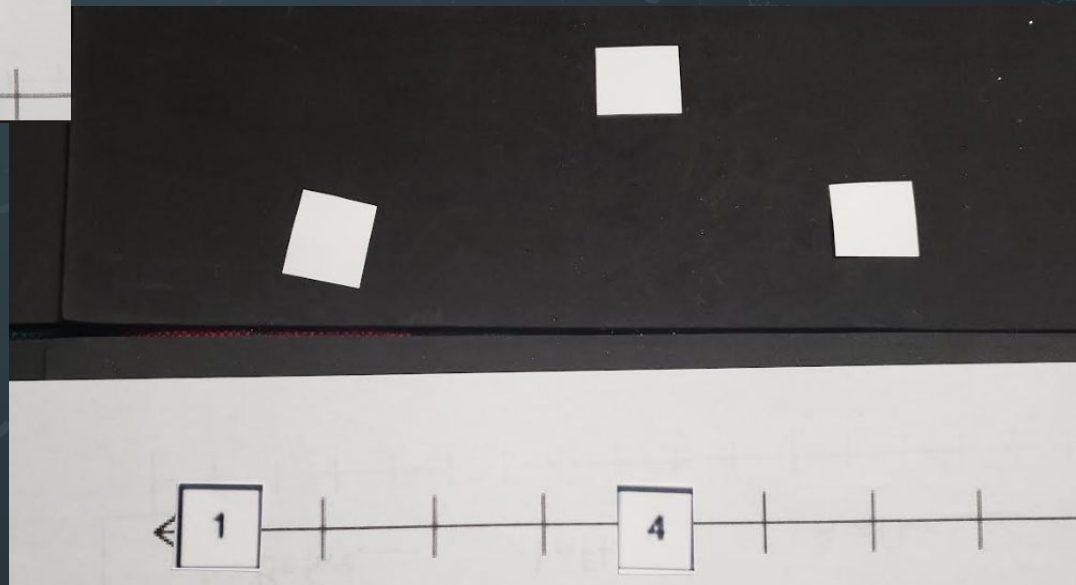
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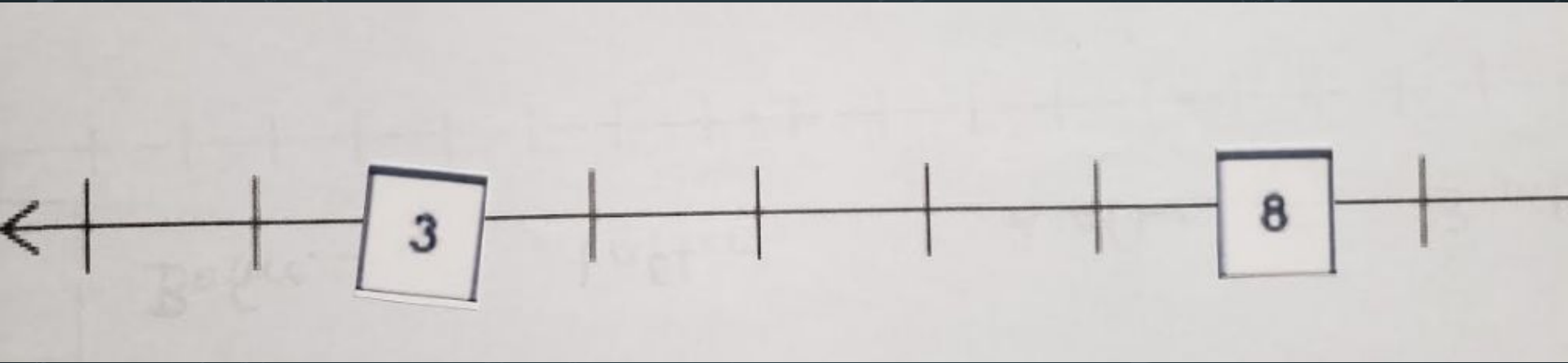
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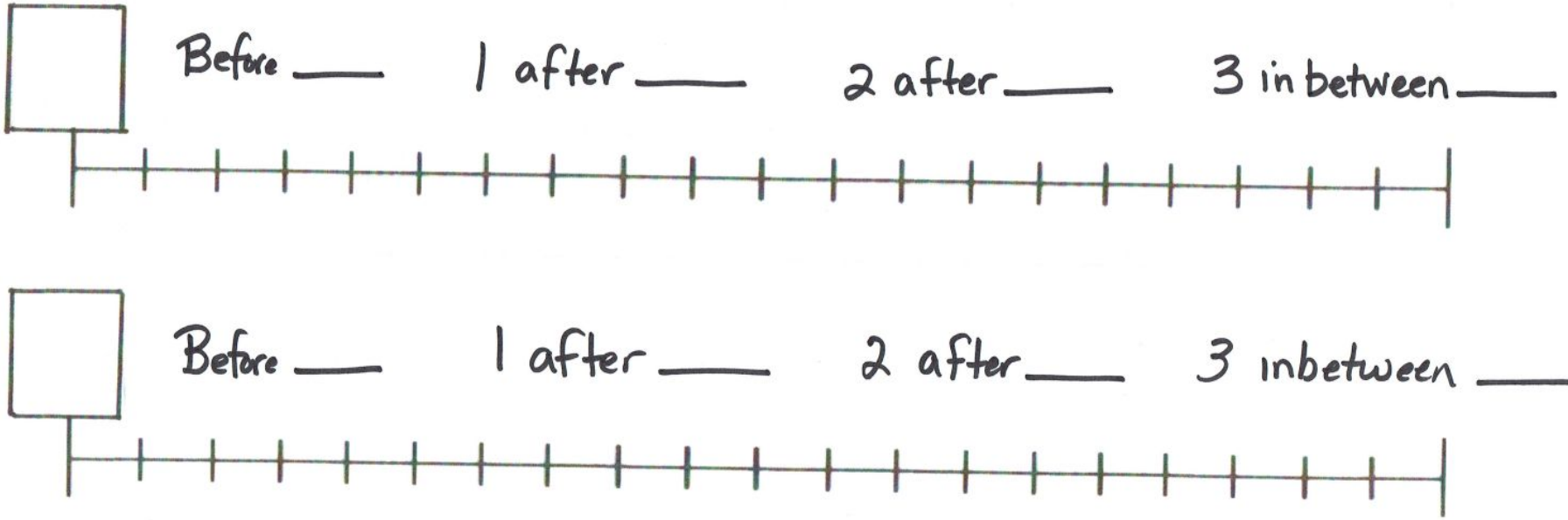
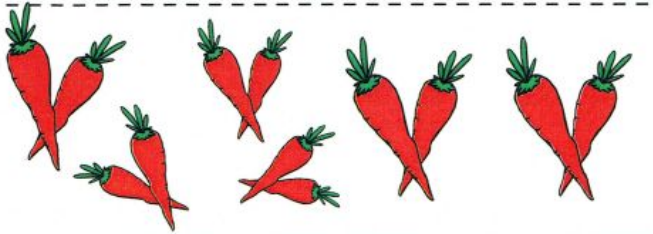


Differentiate:
Draw two numbers; which is the smallest; place it in the box; place your next number on the number line; fill in the blanks

Name _____

How many?



How many carrots?

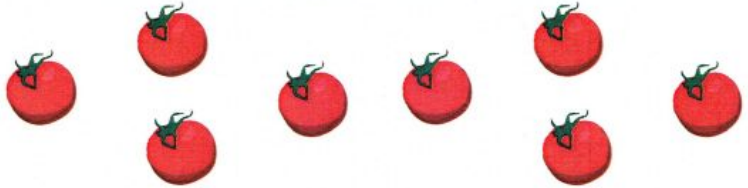
_____

How many potatoes?

_____

How many onions?

_____



How many tomatoes

_____

Checking for Understanding

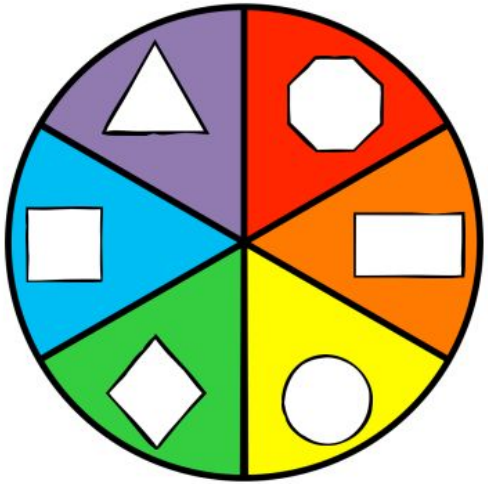
spin and cover

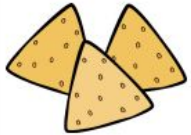
2D shapes

HOW TO PLAY

Grab some counters. Use a paper clip and a pencil to create a spinner then take it in turns to spin. Cover a matching shape.

The first person to cover all their shapes wins!



			
	WILD can be any shape		
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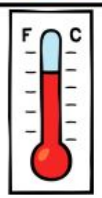
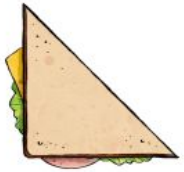
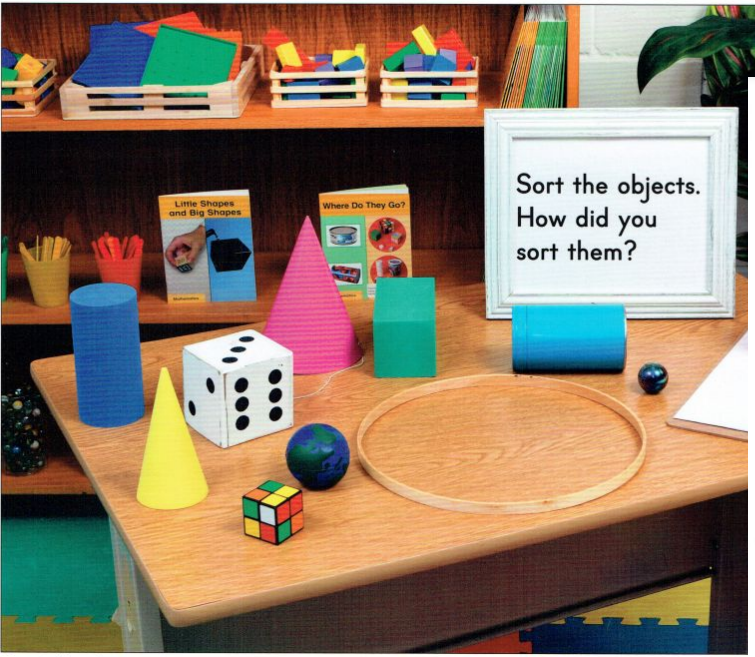
			
WILD can be any shape			

Purchase at

https://www.teacherspayteachers.com/Product/2D-Shape-Spin-Cover-Mats-4553346?st=e082306c2b371a96d7e2870c5fa67313

Sorting 3-D Objects by Their Attributes and Properties



Suggested learning space setup

WHAT TO DO?

- Introduce children to sorting 3-D objects by referring to ***Which Object Does Not Belong?*** on p. 37 of Math Talks and supporting material on p. MT37 of the Teacher's Resource.
- Display a variety of 3-D objects, and provide a sorting hoop. Have children sort the objects.
- Ask children to share their sort and explain how they sorted the objects. **How did you sort the objects? Why did you put the [cylinder] in the hoop?** (e.g., *It rolls.* OR *It has a round side.*)
- Children may wish to record their sort by taking a photo or making a drawing.

LEARNING SPACES

- **Math/Literacy** (e.g., 3-D objects such as a party hat, a die, a ball, a marble, a Rubik's cube, a can, a cylinder, a cone, a prism; sorting hoop; camera or drawing materials)
- Building (e.g., 3-D objects such as blocks, boxes, tubes; sorting hoop; camera or drawing materials)

OBSERVING AND SUPPORTING

The child sorts 3-D objects. The child compares the attributes or properties of 3-D objects and determines a sorting rule.

If you see/hear this ...	Say/do this ...
The child does not identify attributes or properties of 3-D objects.	• Pick up a 3-D object, such as a rectangular prism. **What does this look like? Does it have corners?** Point to the edges of the object. **How does it feel? How can it move?** Model the language to describe the 3-D objects. (e.g., *It has corners.* OR *It can stack.*) Refer to *Identifying and Describing 3-D Objects and 2-D Shapes Card 3: Recognizing Attributes and Properties of 3-D Objects.* • Play a game of *Guess My Object* with 2 identical sets of 3-D objects. Display a set. Choose an object from the second set and hide it. Describe the attributes or properties of the object you are hiding. Ask the child to point to the object they think it is. Show the object you are hiding. **Is it the same? How do you know?**
The child does not sort 3-D objects by a common attribute or property.	• Have children identify common attributes or properties. Explain that objects can be sorted by how they look. Pick up a 3-D object, such as a cylinder. **What can you tell me about this object?** (e.g., *It rolls.* OR *It can stack.*) **Put the cylinder in the sorting hoop.** Pick up another cylinder, and ask them to describe it. **Did you use the same words to describe this object? Does it belong with this object in the hoop? Can you find another object that looks like these 2? Why do you think these 2 objects belong together?** (e.g., *They both stack.*) Repeat with other 3-D objects.
The child sorts 3-D objects by a common attribute or property but does not determine a sorting rule.	• Ask children to describe how they sorted their objects. **What is the same about all the objects in the hoop?** (e.g., *They are all balls.*) Pick up an object from the hoop. **How did you know this belongs in the hoop?** (e.g., *It is round like a ball.*) Repeat for another object. Point to an object not in the hoop. **Why didn't you put this object in the hoop?** (e.g., *It doesn't look like a ball.* OR *It has corners.*) **Describe the objects in the hoop. How did you sort them?** (e.g., *The objects must look like balls.*)
The child sorts 3-D objects by a common attribute or property and determines a sorting rule.	• Have children sort the objects a different way. Have them explain how they sorted the objects. • Go to *Comparing and Sorting 3-D Objects and 2-D Shapes Card 4: Identifying the Sorting Rule for 3-D Objects.*

Resources

K-5 Learning

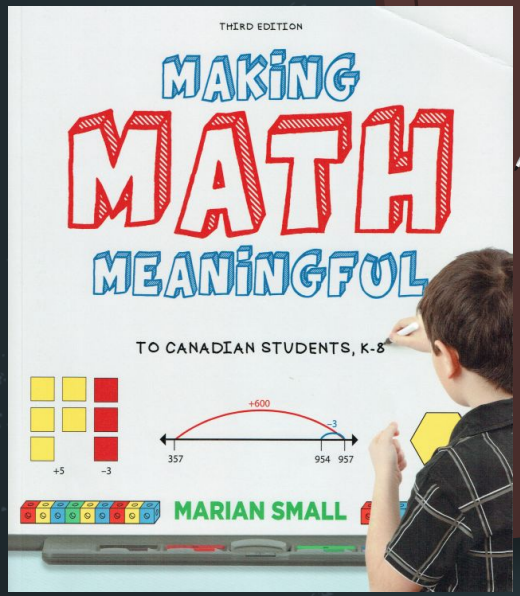
Contains Math, Literacy, SCience etc but resources sheets are concise.

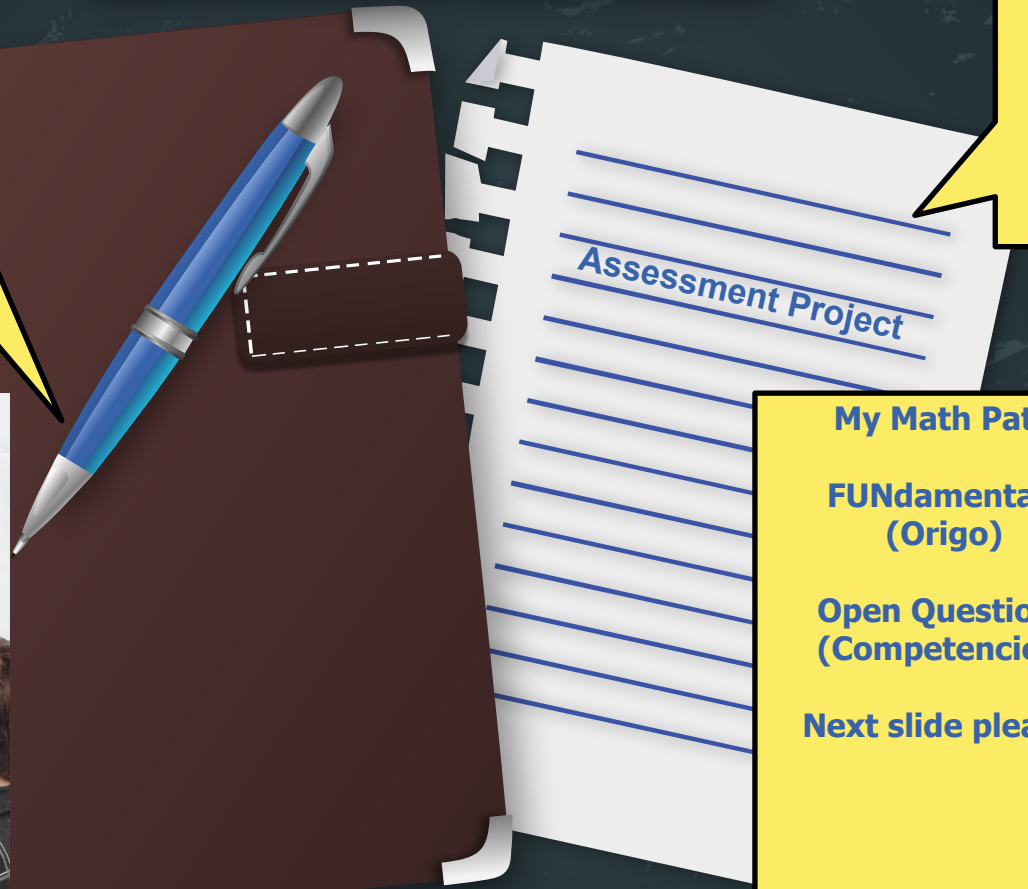
https://www.k5learning.com/free-math-worksheets

Make Math Moments

(John Ore and Kyle Pearce)

https://makemathmoments.com/counting-with-your-eyes/





Cube for Teachers

My Math Path

FUNdamentals (Origo)

Open Questions (Competencies)

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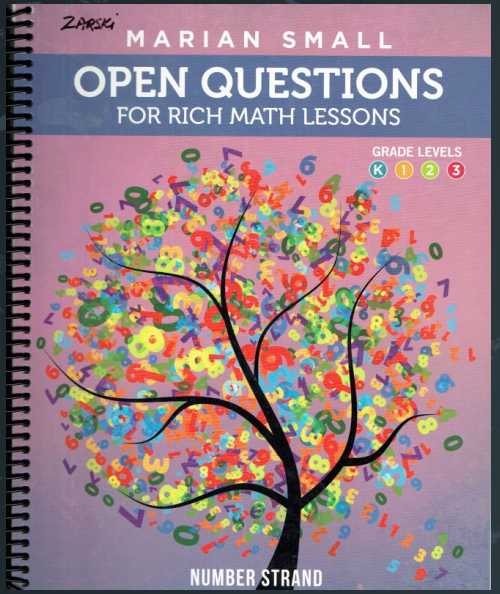
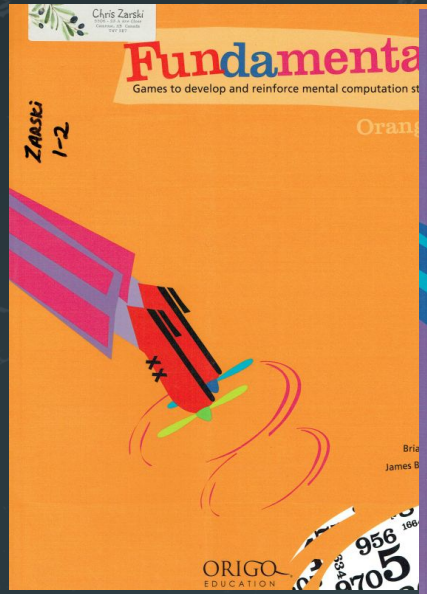
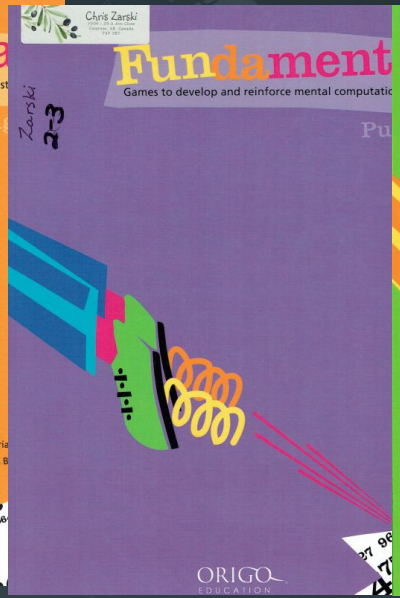
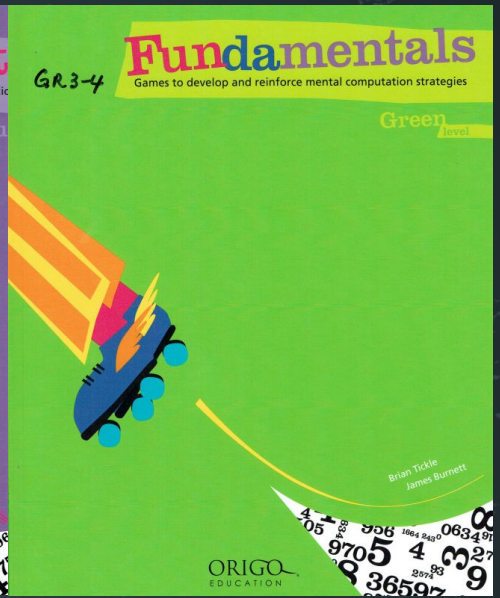


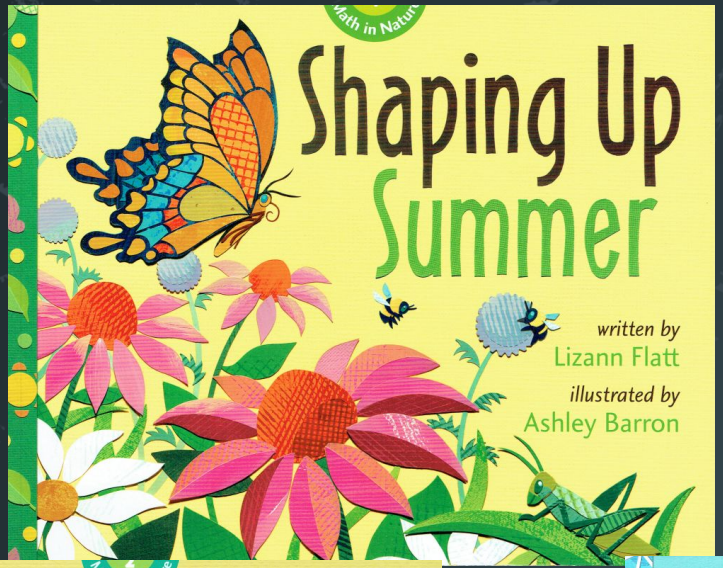


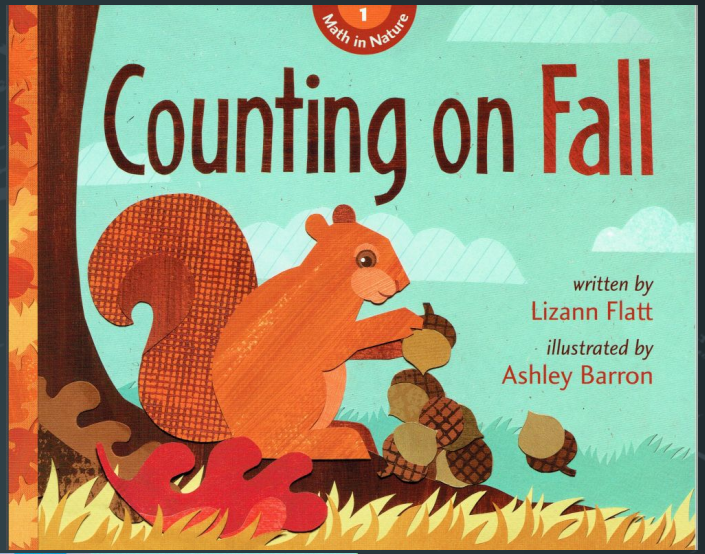


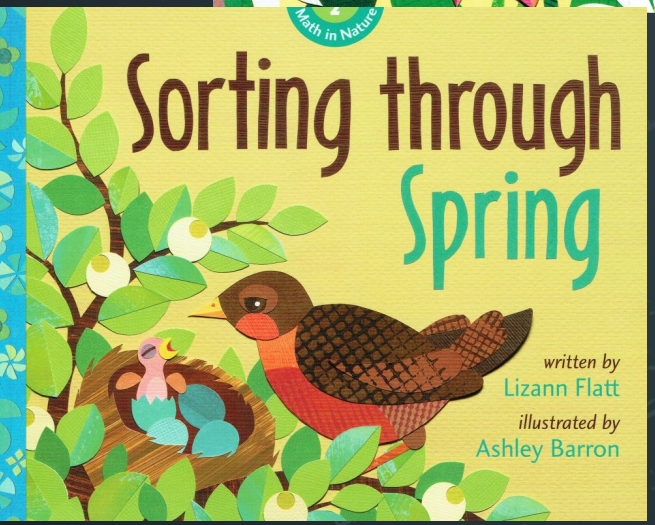


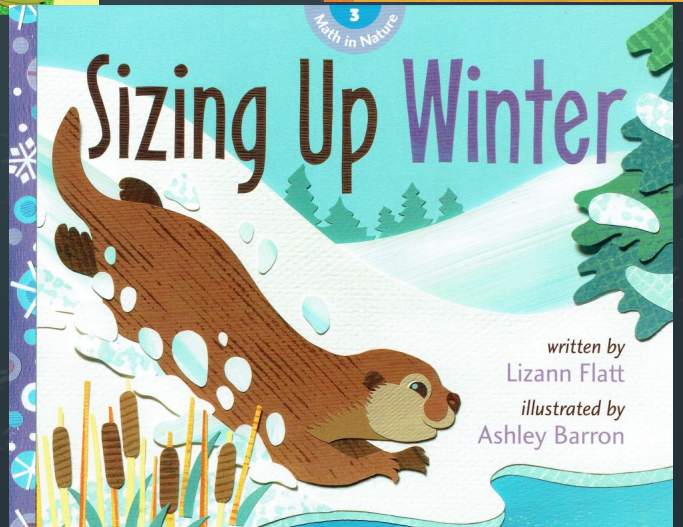
Rubicon

Origo


Shaping Up
Summer
written by
Lizann Flatt
illustrated by
Ashley Barron


1
Math in Nature
Counting on Fall
written by
Lizann Flatt
illustrated by
Ashley Barron


2
Math in Nature
Sorting through
Spring
written by
Lizann Flatt
illustrated by
Ashley Barron


3
Math in Nature
Sizing Up Winter
written by
Lizann Flatt
illustrated by
Ashley Barron

Any questions?