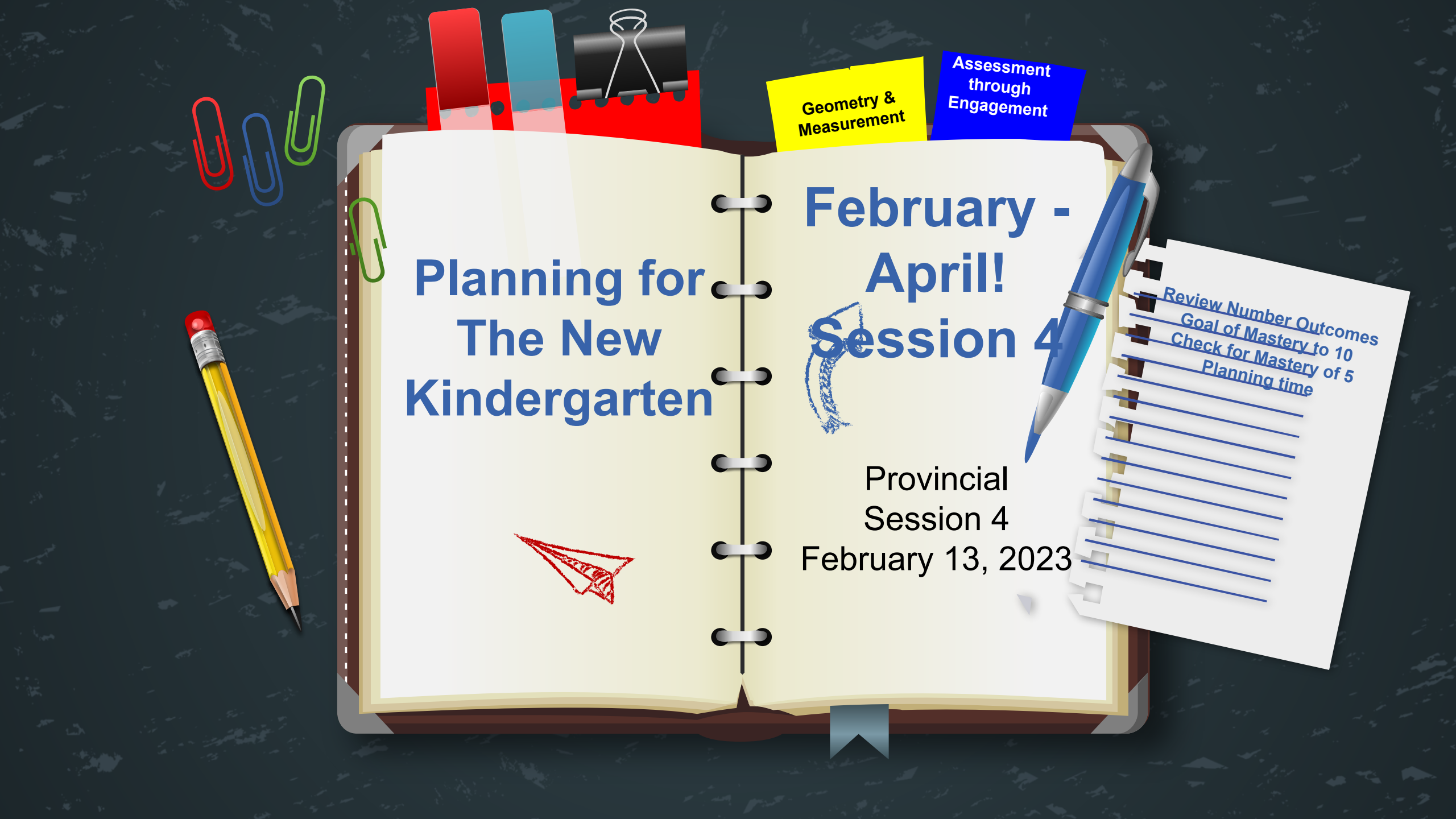

Geometry & Measurement
Assessment through Engagement
Planning for The New Kindergarten
February - April!
Session 4
Provincial
Session 4
February 13, 2023
Review Number Outcomes
Goal of Mastery to 10
Check for Mastery of 5
Planning time

TREATY 6 ACKNOWLEDGEMENT

We acknowledge that we are on Treaty 6 Territory, a traditional meeting grounds, gathering place, and travelling route to the Cree, Saulteaux, Blackfoot, Métis, Dene and Nakota Sioux. We acknowledge all the many first nations, Métis and Inuit whose footsteps have marked these lands for centuries.

Bev Facey HS

February	March	April
and operating.		**Number: Quantity is measured with numbers that enable c**
KN1.2 Children investigate quantities to 10. • A quantity is always counted using the same sequence of words (counting principle: stable order) • A quantity remains the same no matter the order in which the objects are counted (counting principle: order irrelevance). • A quantity can be determined by counting each object in a set once and only once (counting principle: one-to-one correspondence). • The last number used to count represents the quantity (counting principle: cardinality). • Any quantity of like or unlike objects can be counted as a set (counting principle: abstraction). KN1.3 Children investigate quantities to 10. • Quantity can be determined without counting.	KN1.1 Children investigate quantities to 10. • Quantity can be the number of objects in a set. KN1.2 b-e. Children investigate quantities to 10. • Any quantity of like or unlike objects can be counted as a set (counting principle: abstraction). KN1.3 Children investigate quantities to 10. • Quantity can be determined without counting.	KN1.3 Children acquire an understanding of quantity to 10 • Quantity can be determined without counting. KN1.1 Children acquire an understanding of quantity to 10. • Quantity can be the number of objects in a set. KN1.4 Children acquire an understanding of quantity to 10 • A quantity can be described relative to another quantity. • A quantity can be described in relation to a purpose or need.
		Patterns: Awareness of patterns supports problem solvin
		KP1. Children identify and create repeating patterns. • Pattern is characterized by how the elements change or remain the same.
		Measurement: Attributes such as length, area, volume and an
		KM1.2 Children explore size through direct comparison.. • Size may refer to only one measurable attribute at a time. • The size of two objects can be compared directly.

February	March	April
KN1.4 Children investigate quantity to 10. • A quantity can be described relative to another quantity. • A quantity can be described in relation to a purpose or need.	**Measurement**: Attributes such as length, area, volume and angle are quantified by measurement.	**Number: Quantity is measured with numbers that enable c**
	KM1.1 Children explore size through direct comparison. • Size describes the amount of one measurable attribute of an object or a space. KM1.2 Children explore size through direct comparison.. • Size may refer to only one measurable attribute at a time. • The size of two objects can be compared directly. • The size of an object can be described in relation to a purpose or need.	KN1.3 Children acquire an understanding of quantity to 10 • Quantity can be determined without counting. KN1.1 Children acquire an understanding of quantity to 10. • Quantity can be the number of objects in a set. KN1.4 Children acquire an understanding of quantity to 10 • A quantity can be described relative to another quantity. • A quantity can be described in relation to a purpose or need.
by geometric attributes.		**Patterns: Awareness of patterns supports problem solvin**
KG 1. Children investigate shape. • Shape is structured two-dimensional or three-dimensional space. (2D & 3D)		KP1. Children identify and create repeating patterns. • Pattern is characterized by how the elements change or remain the same.
		Measurement: Attributes such as length, area, volume and an
		KM1.2 Children explore size through direct comparison.. • Size may refer to only one measurable attribute at a time. • The size of two objects can be compared directly.
KT1.1 Children interpret time as a sequence of events. • Time can be perceived as a sequence. **Ongoing**	KT1.1 Children interpret time as a sequence of events. • Time can be perceived as a sequence. **Ongoing**	Same completion as in March

Kindergarten

Number: Quantity is measured with numbers that enable counting, labelli

How can quantity contribute meaning to daily life?

KN1.1 Children investigate quantities to 10.

Knowledge	Understanding	Skills & Procedures
Quantity can be represented using objects pictures words numerals	Quantity can be the number of objects in a set.	Recognize a number of familiar objects as a quantity. Represent a quantity in different ways. Relate a numeral to a specific quantity.

KN1.2 Children investigate quantities to 10.

Knowledge	Understanding	Skills & Procedures
Quantity can be determined by counting.	a. A quantity is always counted using the same sequence of words (counting principle: stable order). b. A quantity remains the same no matter the order in which the objects are counted (counting principle: order irrelevance). c. A quantity can be determined by counting each object in a set once and only once (counting principle: one-to-one correspondence). d. The last number used to count represents the quantity (counting principle: cardinality). e. Any quantity of like or unlike objects can be counted as a set (counting	Count within 10, forward and backward, starting at any number, according to the counting principles.

KN1.3 Children investigate quantity to 10

Knowledge	Understanding	Skills & Procedures
A small quantity can be recognized at a glance (subitized).	Quantity can be determined without counting.	Subitize quantities to 5.

KN1.4 Children investigate quantity to 10

Knowledge	Understanding	Skills & Procedures
Comparisons of quantity can be described by using words such as • more • less • same • enough • not enough	A quantity can be described relative to another quantity. A quantity can be described in relation to a purpose or need.	Compare the size of two sets using one-to- one correspondence. Describe quantities relative to each other using comparative language. Describe a quantity in relation to a purpose or need using comparative language. Solve problems in familiar situations by counting.

Number: Quantity is measured with numbers that enable counting, labelli

In what ways can quantity be composed?

KN2. Children interpret compositions of quantities within 10.

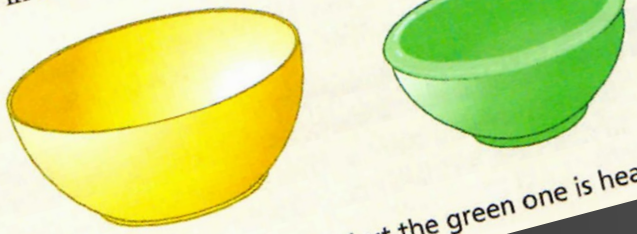
Knowledge	Understanding	Skills & Procedures
Quantity can be arranged in various ways.	A quantity remains the same no matter how the objects are grouped or arranged (counting principle: conservation).	Identify a quantity in various groups or arrangements. Compose quantities within 10. Recognize various ways to make 5 and 10.

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.

Looking at Some of the Measurement Principles

MEASUREMENT PRINCIPLE 1

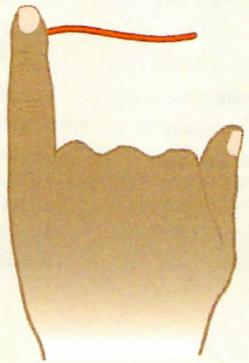
Different measurement attributes of the same object are not always related, so it is possible for an object that is large in one way to be small in another.



"The yellow bowl is bigger, but the green one is heavier."

MEASUREMENT PRINCIPLE 4

Familiarity with certain measurement referents helps you estimate.



"My finger is 1 cm wide, so this string must be 1, 2, 3, 4, 5 cm long."

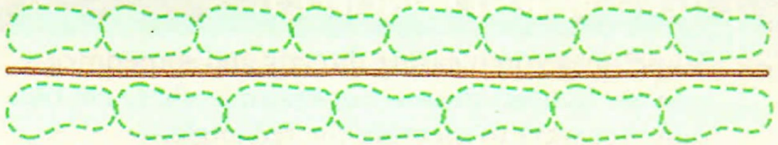
MEASUREMENT PRINCIPLE 6

In order to measure, a series of uniform units must be used, or a single unit must be used repeatedly.

"When you measure, you have to use the same tool again and again."

MEASUREMENT PRINCIPLE 7

The unit chosen for a measurement affects the value of the measurement; a bigger unit results in a smaller number of units. (This makes a measurement without a unit meaningless.)



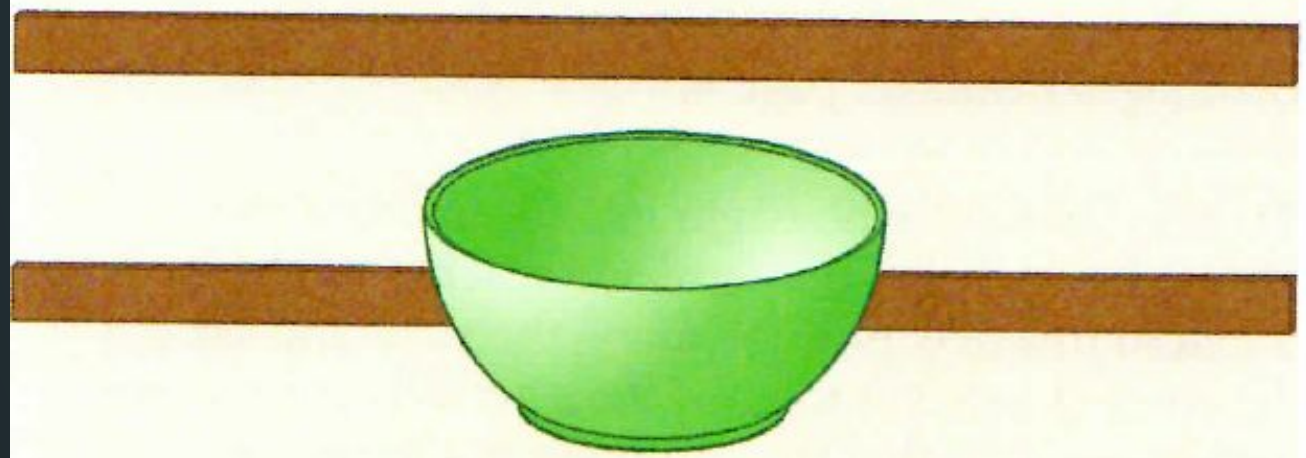
"Our rope is the length of eight of John's shoes, but only seven of Ani's shoes because Ani's shoes are bigger."

Small, M.(2017). *Making math meaningful*. Nelson Education Ltd. p.467-468

Common Errors and Misconceptions

Not Allowing for Hidden Parts

Some students at the definition/comparison stage may think that when one length is partly hidden and another is not, the item they can see more of must be longer. For example, some students may think the first stick shown here is longer because they can see all of it. In fact, both lengths are the same.



Small, M.(2017). *Making math meaningful*. Nelson Education Ltd. p.483

Comparing Lengths That Do Not Align

Some students at the definition / comparison stage may try to compare lengths without aligning the objects first. These students will often think that length is determined by where an object ends, rather than by the distance from start to end. For example, a student may believe that the lower stick shown here is longer because it sticks out farther.

Small, M.(2017). *Making math meaningful*. Nelson Education Ltd. p.483

Measuring Curved and Zigzag Lengths

Some students at the definition / comparison stage may not take curves or zigzags into account when deciding which of two lengths is longer. For example, a student may believe the green piece of yarn is longer because it extends farther from left to right.

"The green yarn must be longer. It sticks out more."

Small, M.(2017). *Making math meaningful*. Nelson Education Ltd. p.483

Problems with Iteration

When students first begin to measure lengths by moving a single nonstandard unit along the distance, they may find it difficult to keep track of where one iteration of a unit ends and the next one begins. This results in gaps or overlap between units and, therefore, incorrect measurement.

Small, M.(2017). *Making math meaningful*. Nelson Education Ltd. p.484

Ruler Placement

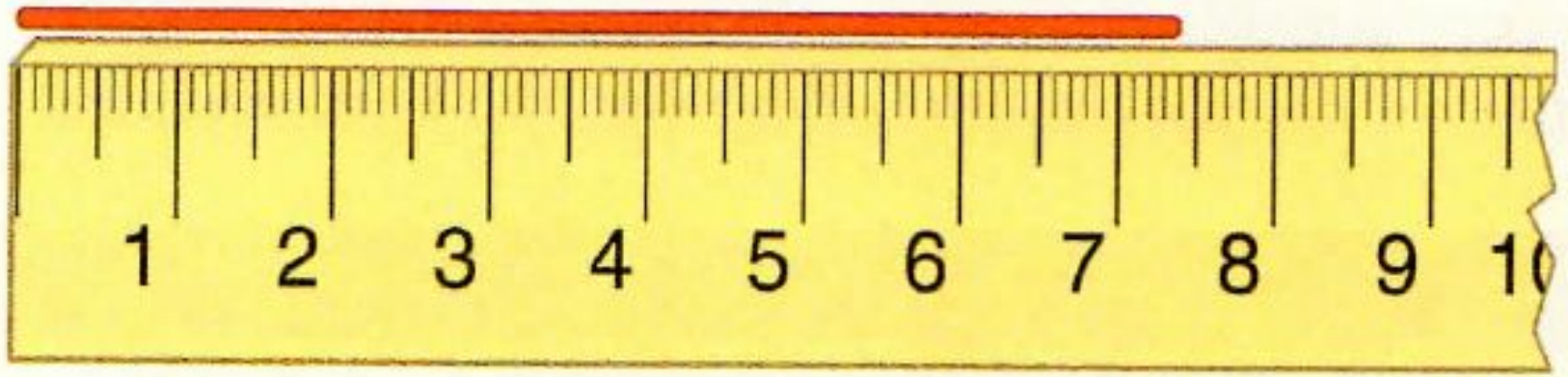
When students first learn to use a centimetre ruler, some will mistakenly begin measuring from points other than the 0-cm mark without subtracting the initial value. Beginning partway along the ruler can indicate that the student has not yet learned that the measurement represents the whole length of the object, from where it begins to where it ends, rather than just the endpoint. Beginning from the 1-cm mark may indicate that the student does not realize that the scale on the ruler actually begins at 0 cm, or simply that the student assumes you always start at 1. This problem often occurs if the 0-cm end is not labelled. As well, students sometimes begin from the opposite end of the ruler, rather than from 0.

"The pen is 16 cm long."

Small, M.(2017). *Making math meaningful*. Nelson Education Ltd. p.484

Describing Any Part of a Unit as a Half

Some students have trouble reporting measurements that fall between two units on a ruler. For example, they might report both measurements below as "7 and a half centimetres" because they use the term "half" in an informal way to include anything that is not whole.



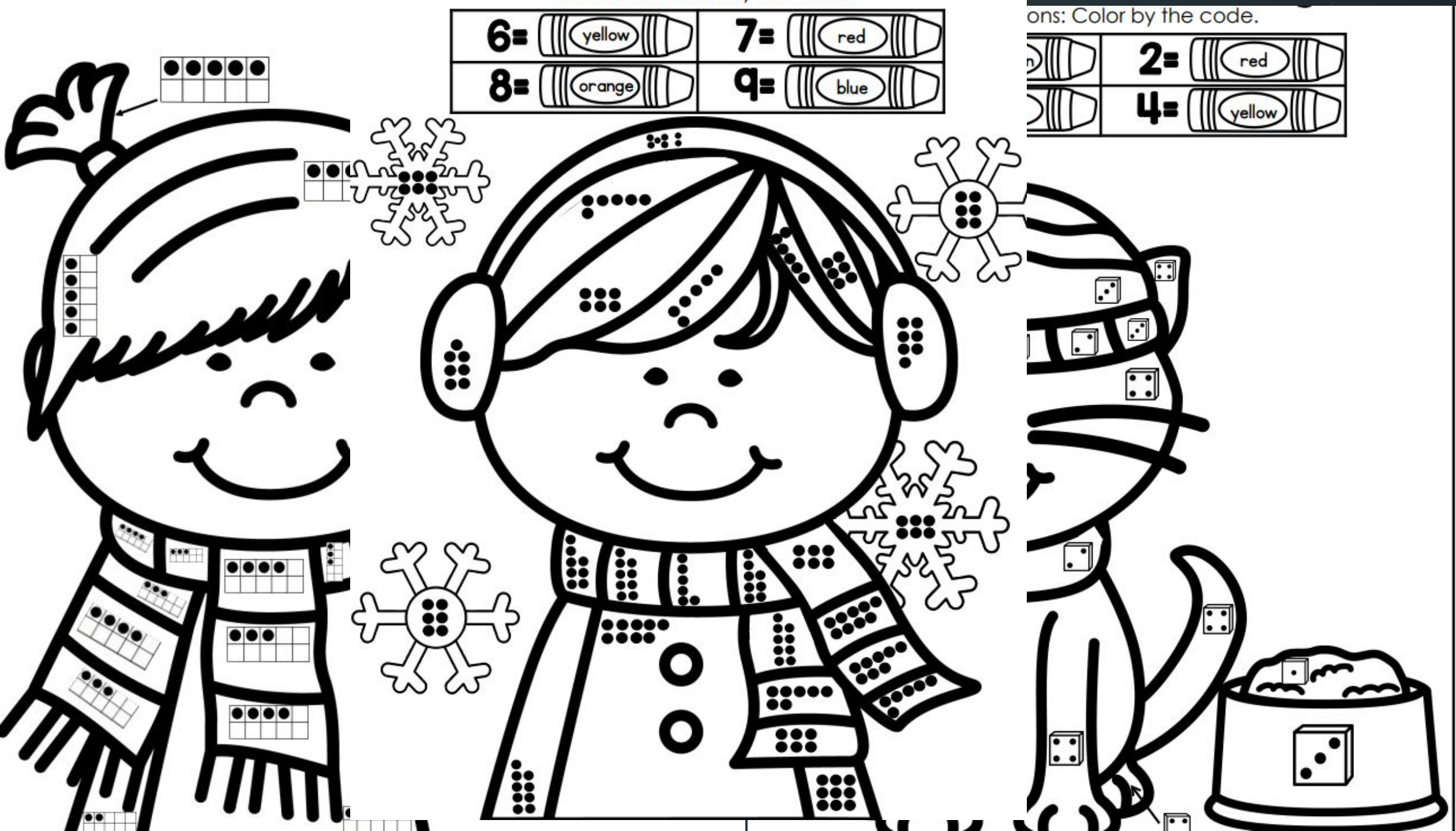
Small, M.(2017). *Making math meaningful*. Nelson Education Ltd. p.484

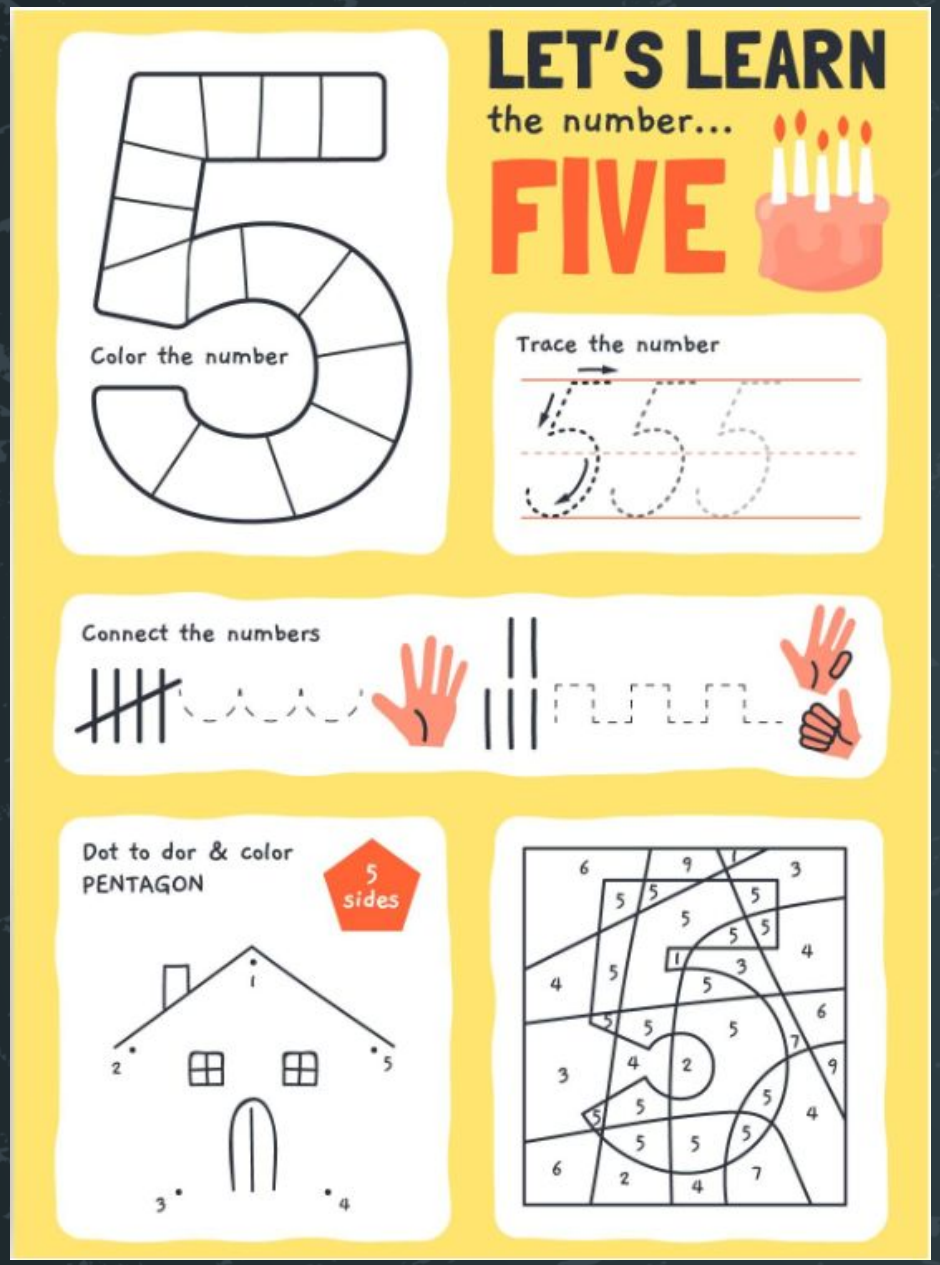
Let’s Look at Some Activities

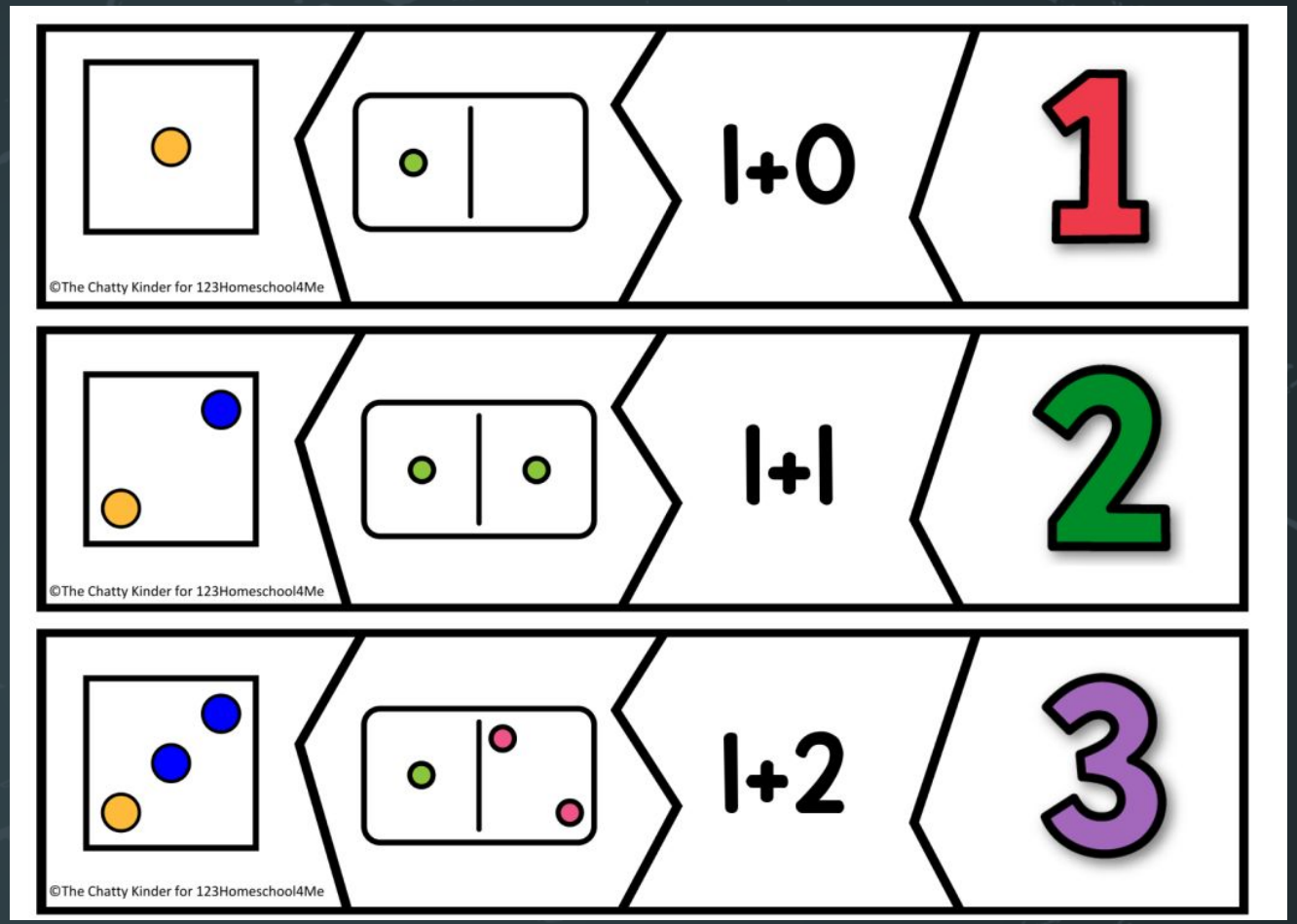
6= yellow	7= red
8= orange	9= blue

ons: Color by the code.

	2= red
	4= yellow







These go to 10 and are very appropriate for Centres or Formative Assessment - consider having them match the dice and domino to the pattern

123Homeschool 4ME Subscribe

Royalty Free Image by FreePik Additional Numbers found below image on their website.

Counting Popcorn, Ten Frames, Subitizing Numbers 0-10, Movie Theatre, Virtual School Online Math FUN

MY MathPath Provocation Cards - Kindergarten (Nelson Publishers)

Separating to Determine Differences of Objects 1–5

SUBTRACTION CARD 2

SUBTRACTION | Meaning of Subtraction | 3/4: Separating to Determine Differences of Objects 1–3 | 3/4: Separating to Determine Differences of Objects 1–5 | 4/5: Separating to Determine Differences of Objects 1–10 | 4/5: Comparing to Determine Differences of Objects 1–10

WHAT TO DO?

- Place 5 lizards in the sand. **How many lizards are there? How do you know?**
- Invite children to roll a number cube with numbers up to 4 on it. Have them move that number of lizards into the cave. **How many lizards are left in the sand? Are there more lizards in the sand than before? Are there fewer lizards in the sand than before? How do you know?**
- Repeat the activity to roll different numbers.
- Repeat with different numbers of lizards from 1 to 5.

LEARNING SPACES

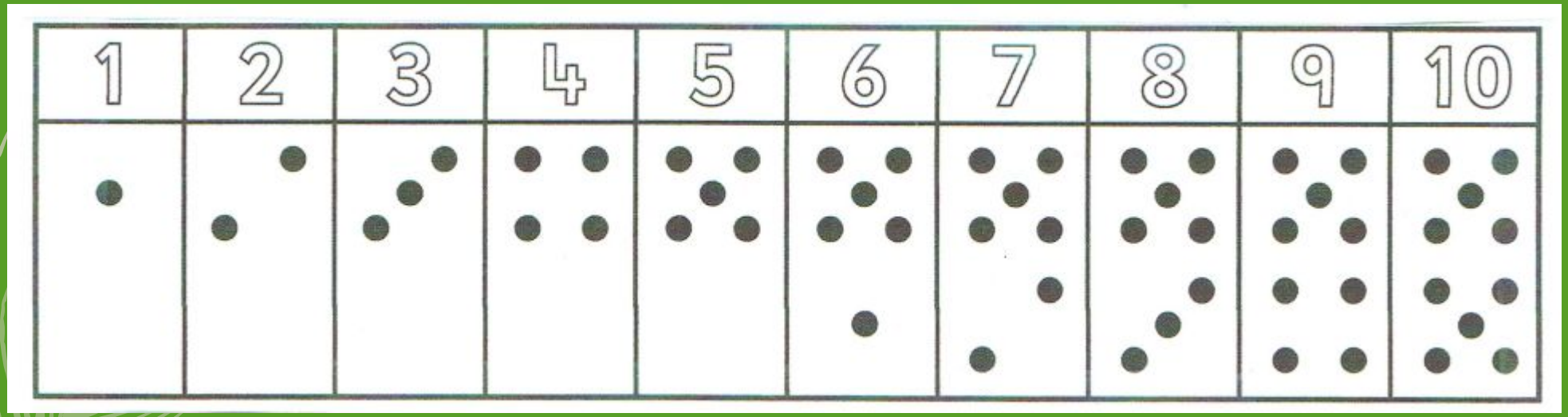
- **Sensory** (e.g., toy lizards, rocks or other objects to make a cave, sand, number cube with numbers up to 4 made by placing tape over 5 and 6)
- Building (e.g., car mat, toy cars, number cube with numbers up to 4)

OBSERVING AND SUPPORTING

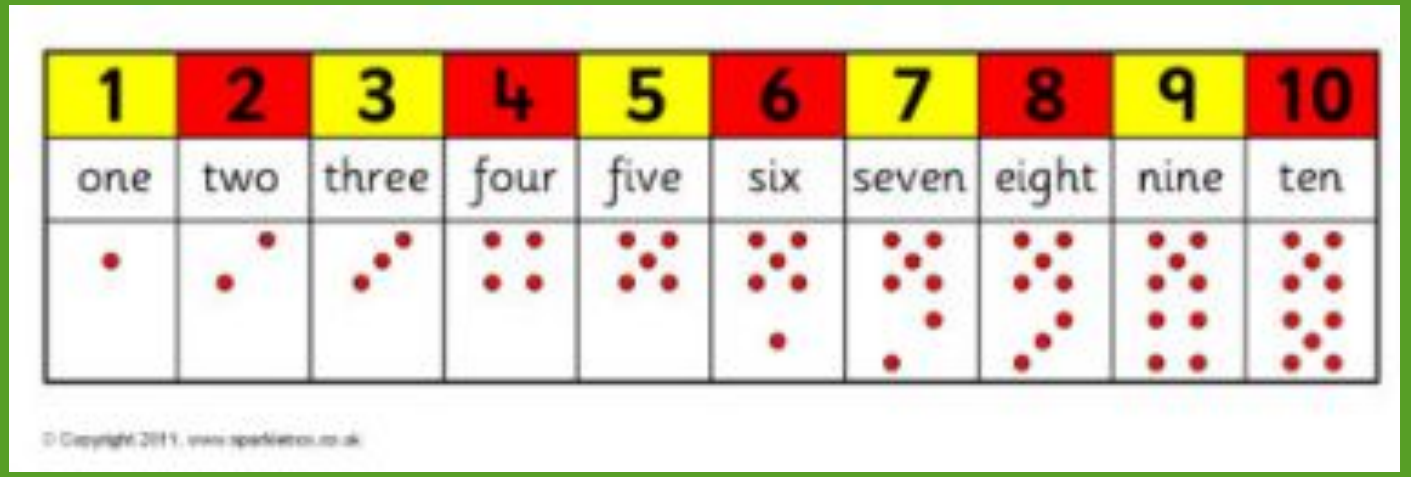
The child subtracts by separating objects from the group and counts to determine how many are left. The child identifies that there are fewer objects in the group.

If you see/hear this ...	Say/do this ...
The child separates the objects but does not identify how many are left.	• Encourage children to count how many lizards are still in the sand. • Model subtracting using counters on 5-frames. • Use 4 bear counters and a cup as a cave. Model a subtraction story. **There are 4 bears outside.** Invite children to count the bears. Hide 2 bears under the cup. **Two bears go into the cave. There are 2 bears left outside.** Invite children to count the bears in each place. Repeat with other numbers of bears up to 5. Refer to *Subtraction Card 1: Separating to Determine Differences of Objects 1–3.*
The child separates the objects but does not say that there are fewer objects.	• Have children count the lizards in the sand and the lizards in the cave. If they cannot clearly see the lizards in the cave, bring them back out. **Are there more lizards than before? Or are there fewer lizards than before? How do you know?** Children may use *less* rather than *fewer*. • Place 5 children in a group. **How many are in this group?** Ask a child to leave the group. **Now how many are in the group?** • Practise using activities with more and fewer. Refer to *Place Value and Representing Numbers Card 14: Comparing Quantities.*
The child separates objects from a group to subtract and identifies how many are left. The child identifies that there are fewer objects left in the group.	• Place 5 lizards in the sand and move all 5 lizards to the cave. **How many lizards are left in the sand?** Encourage children to talk about 0 as the absence of something and not as nothing, for example, **there are no lizards left in the sand.** • Invite children to use the lizards to make their own subtraction stories. • Go to *Subtraction Card 3: Separating to Determine Differences of Objects 1–10.*

Suggested le

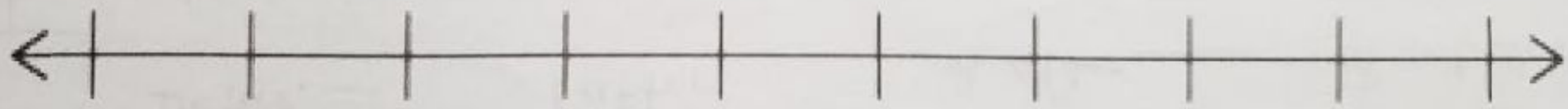


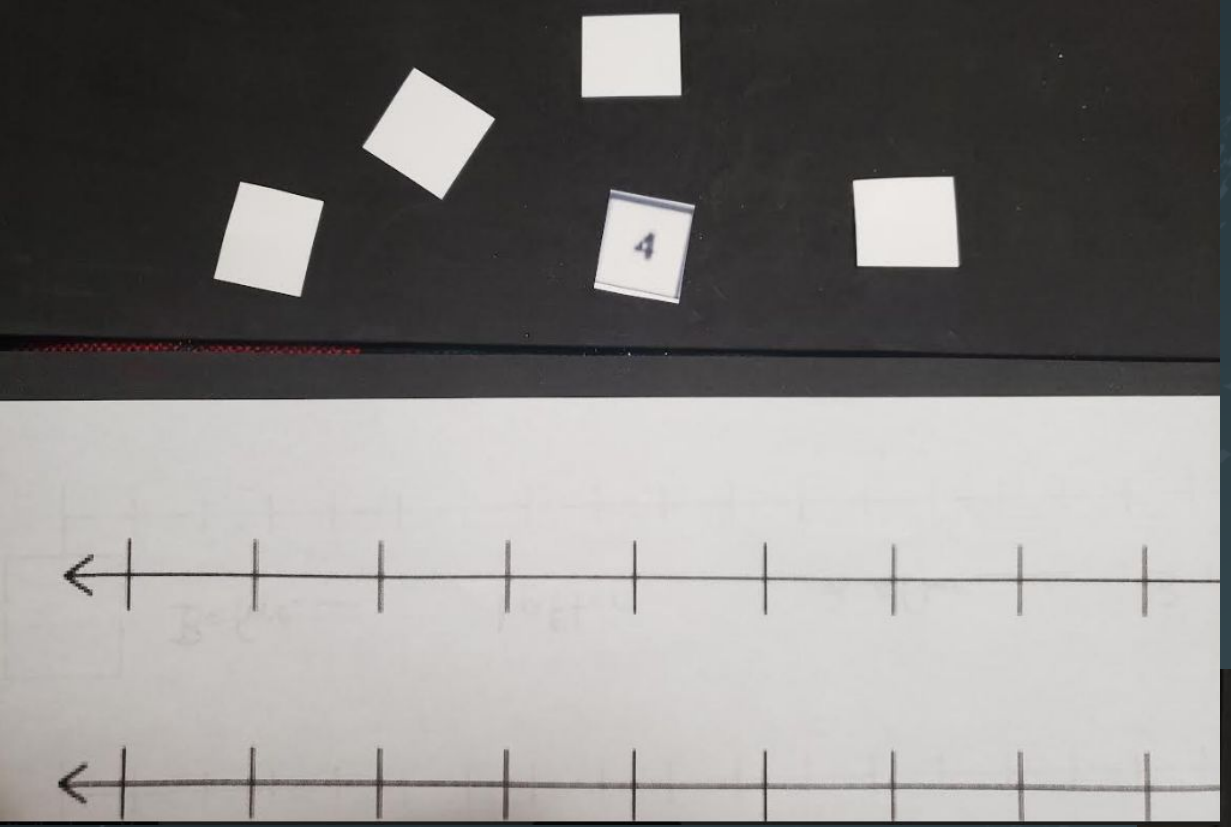
More Number Paths can be found at
[Sparklebox]



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


5
3
2
1
4
8
7
9
10
9

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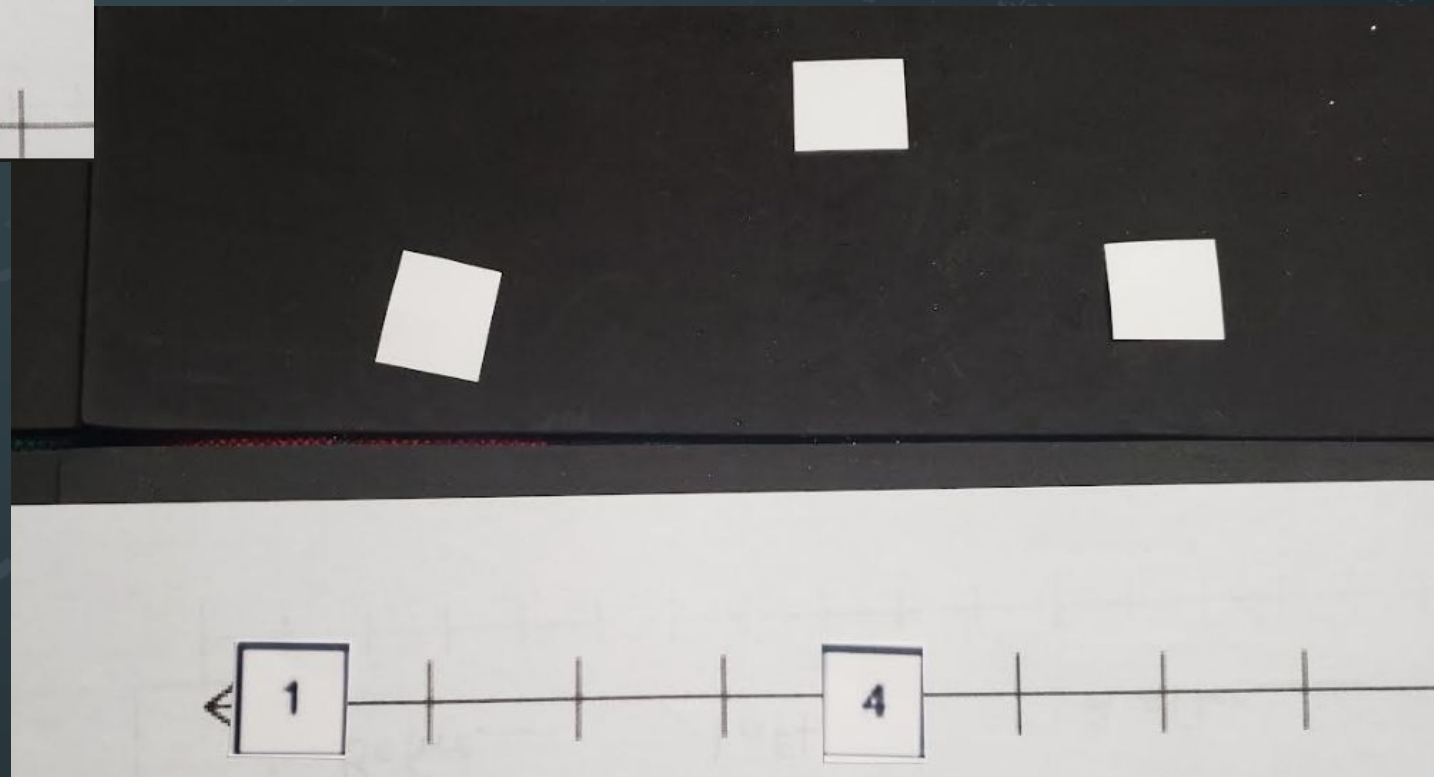
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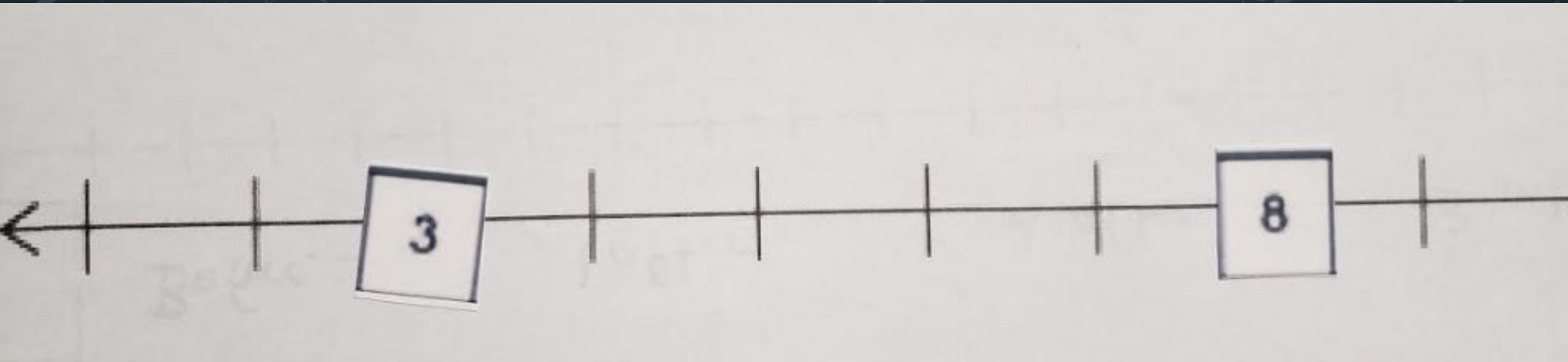
4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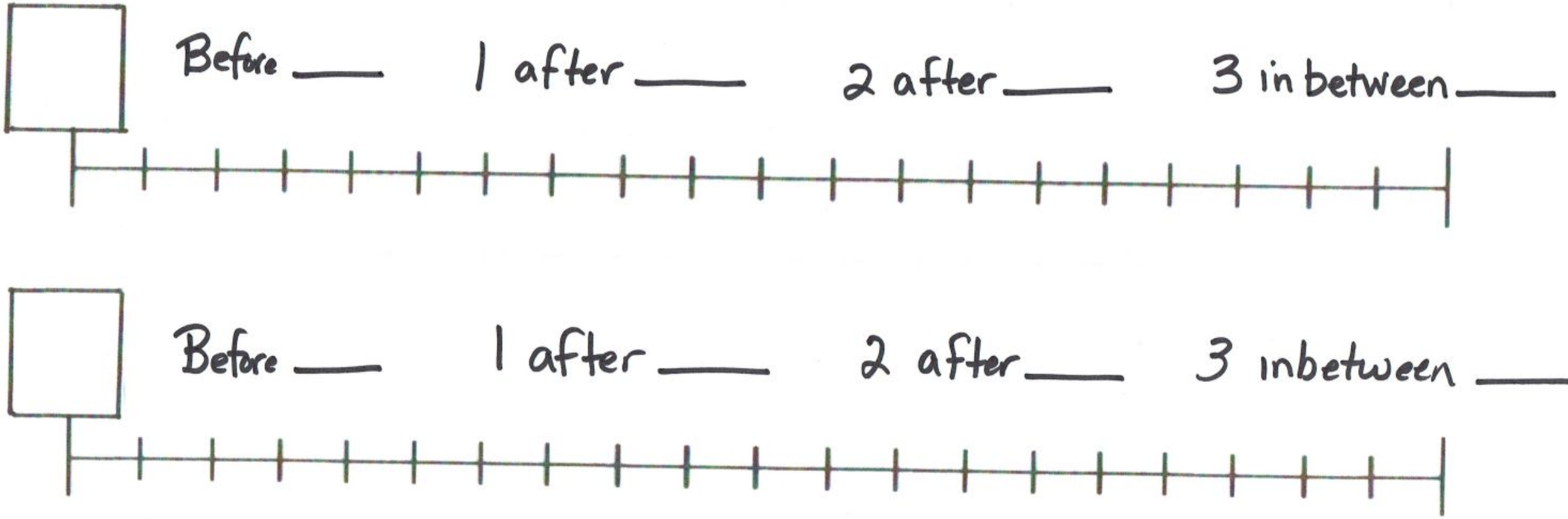
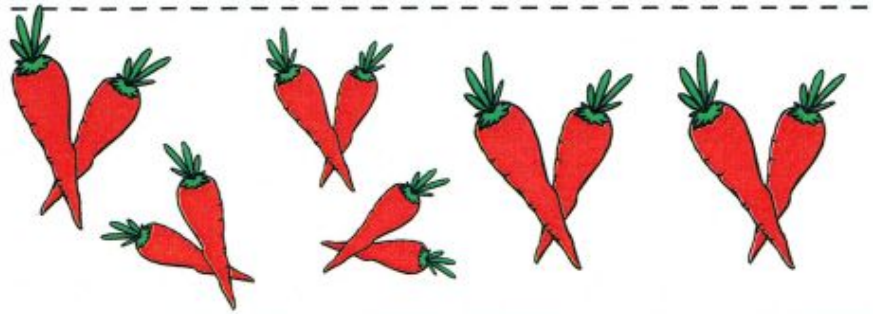
8



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?

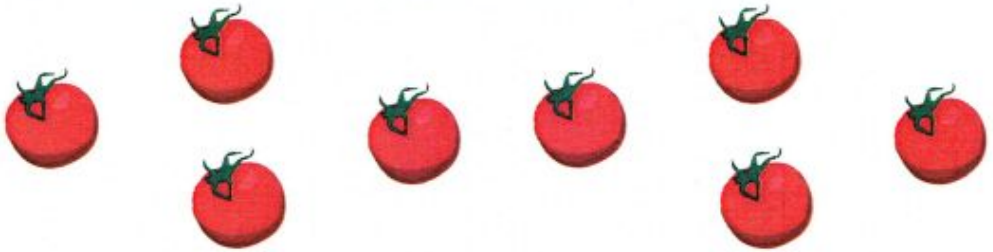
_____

How many potatoes?

_____

How many onions?

_____



How many tomatoes

_____

Checking for Understanding

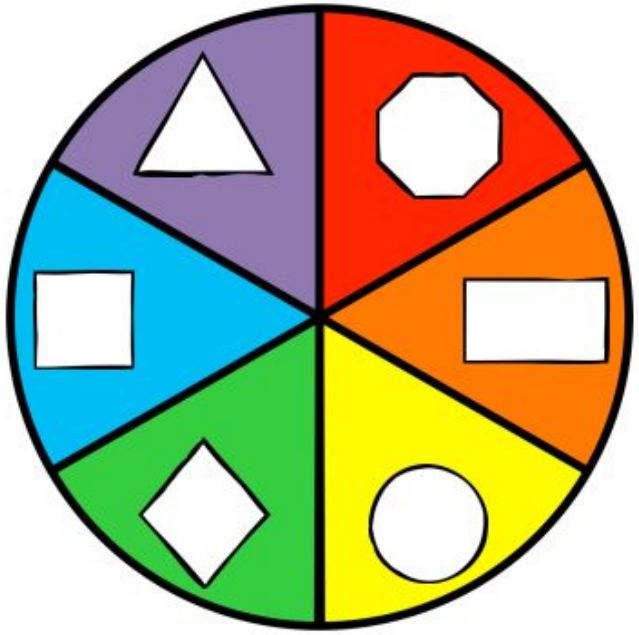
spin and cover

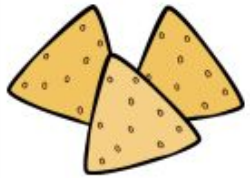
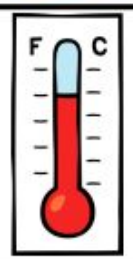
2D shapes

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		
			WILD can be any shape
			
WILD can be any shape			

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

Resources

K-5 Learning

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

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

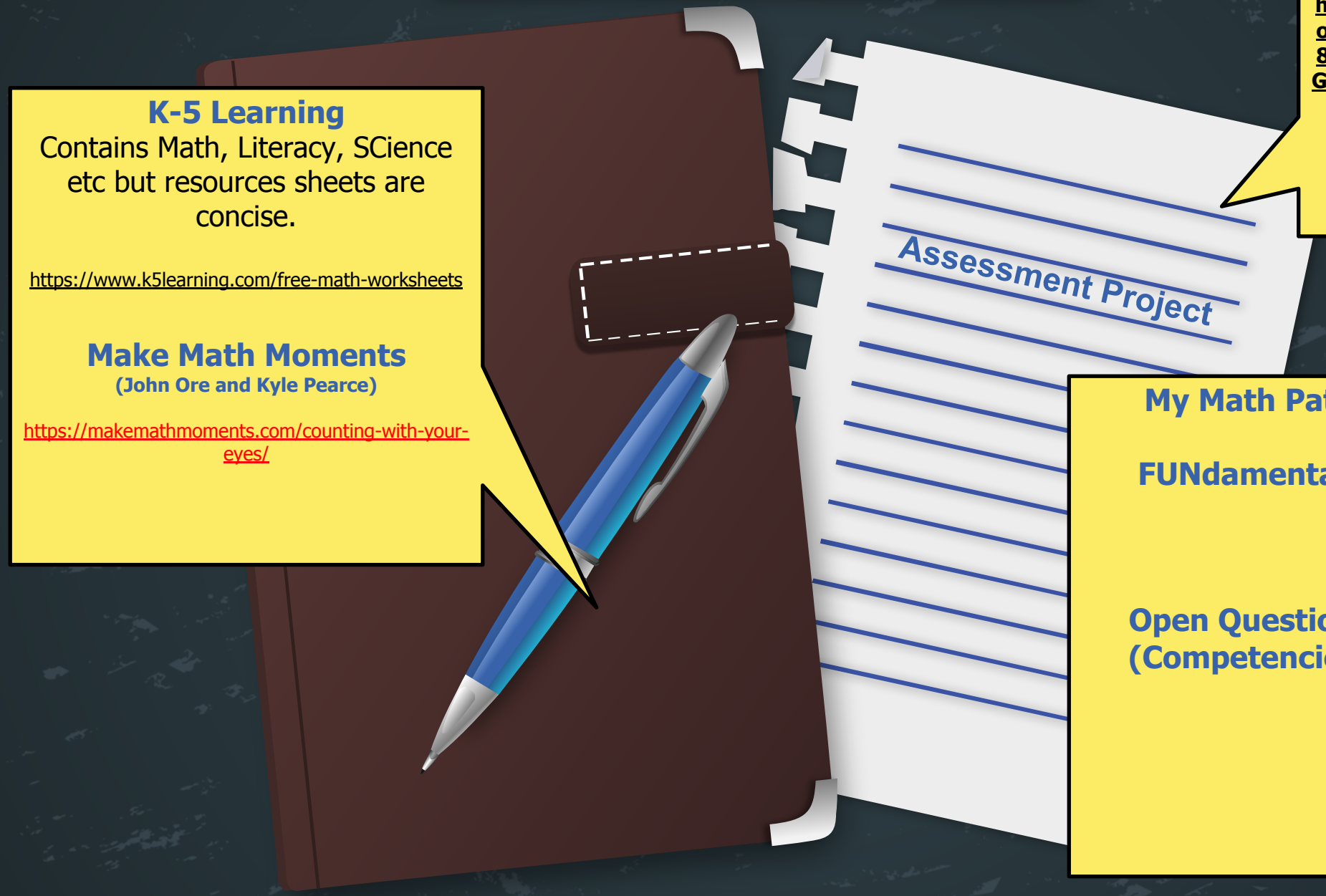
Make Math Moments

(John Ore and Kyle Pearce)

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

Cube for Teachers

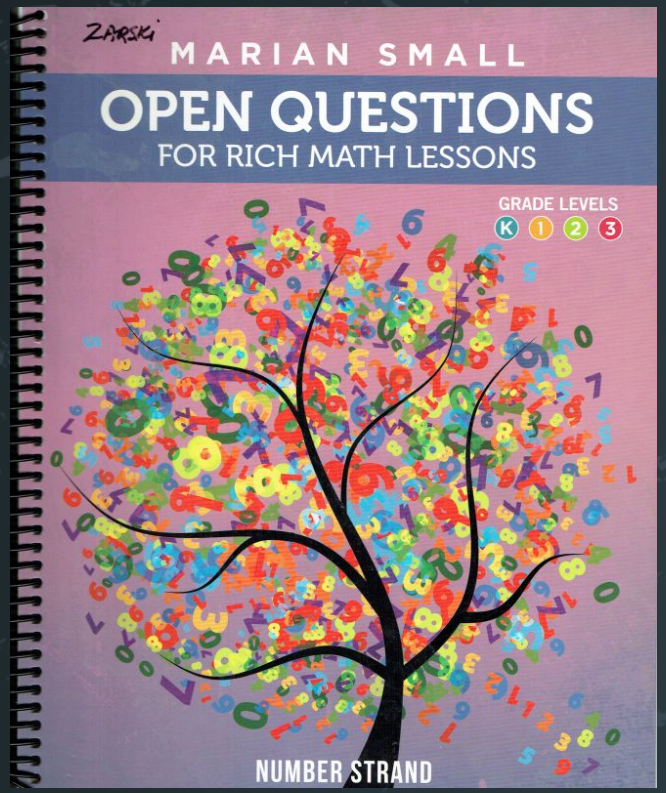
https://cubeforteachers.com/folders/3bJqkwyKXANApxl6s6y8lf3lOYFd2M5slcPu9YB2KBiwZGFjdKAUA5kOphY5NwHM?q=1.B2.2&idx=posts&p=0

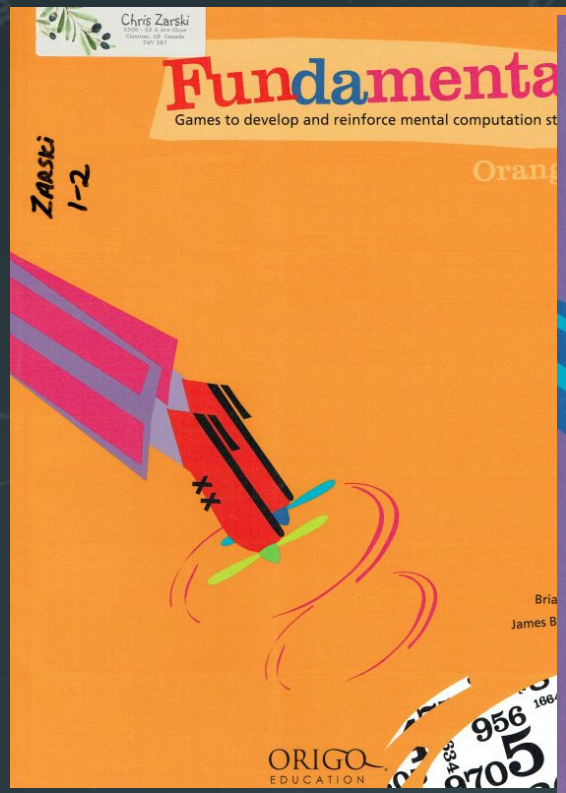


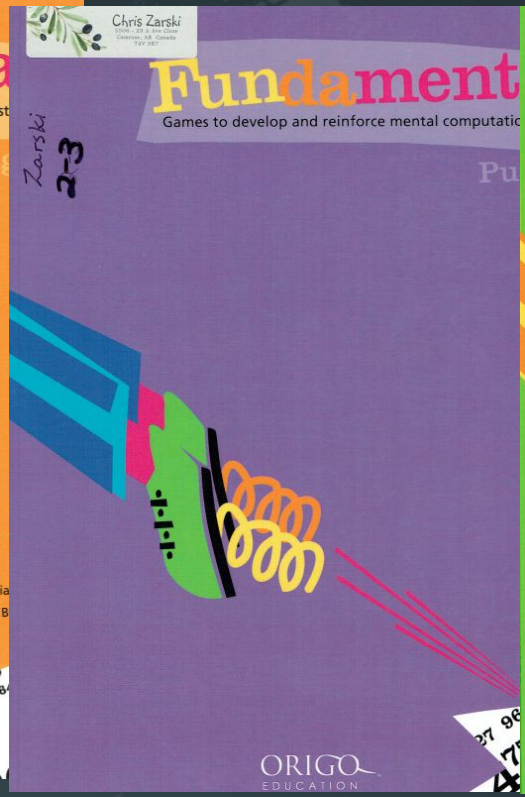
My Math Path

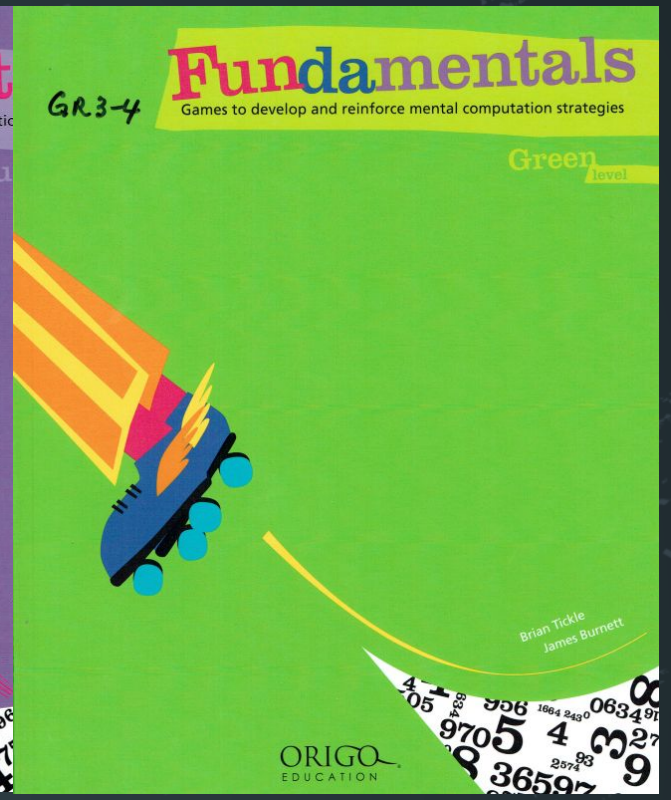
FUNdamentals

Open Questions (Competencies)





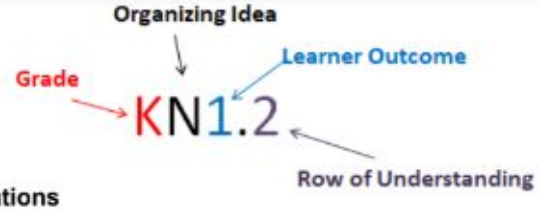




Rubicon

Origo

Scope and Sequence



Numbered Curriculum Document - Please read first to understand the numbering in this document.
Please access the numbered curriculum document video instructions by clicking the hyperlinked title.

Alberta Mathematics K-6 Scope and Sequence - Number and Operations
**** changes are highlighted in yellow**

Grade	K	1	2	3	4	5	6	
Learning Outcome	**KN1 Children investigate quantity to 10.**	**1N1 Students interpret and explain quantities to 100.**	**2N1 Students analyze quantities to 1000.**	**3N1 Students interpret place value within 100 000.**	**4N1 Students apply place value to decimal numbers.**	**5N1 Students analyze patterns in place value.**	**6N1 Students Investigate magnitude with positive and negative numbers.**	
Number Concepts	**KN1.1** Composition and decomposition of quantities to 10 **K1.4** Comparing quantities using more, less, same, enough, not enough	**1N1.1** Quantity to 100 using words, numerals, objects, pictures **1N1.3** Grouping and Partitioning numbers **1N1.5** Equality and unequal to 100 =and ≠	**2N1.1** Quantity to 1000 using place value understanding (natural numbers) **2N1.3** Odd and Even numbers (remainders) **2N1.5** Inequality comparing natural numbers using less than <, greater than >,not equal	**3N1.1** Quantity to 100 000 using place value understanding (base-10 system & natural numbers) less than <, greater than > $ sign in French and English Count money	**4N1.1** Decimal numbers including tenths and hundredths using place value understanding	**5N1.1** Numbers within 10 000 000 Decimal numbers to thousandths using place value understanding	**6N1.1** Integers additive inverses **6N1.2** Adding integers **6N1.3** Subtracting integers	

Any questions?

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Don’t hesitate to reach out