Dollars and cents

12 x 12

Transformations

Planning for Sept/Oct in the New Grade 5 Math

Provincial Session 1
May 2023

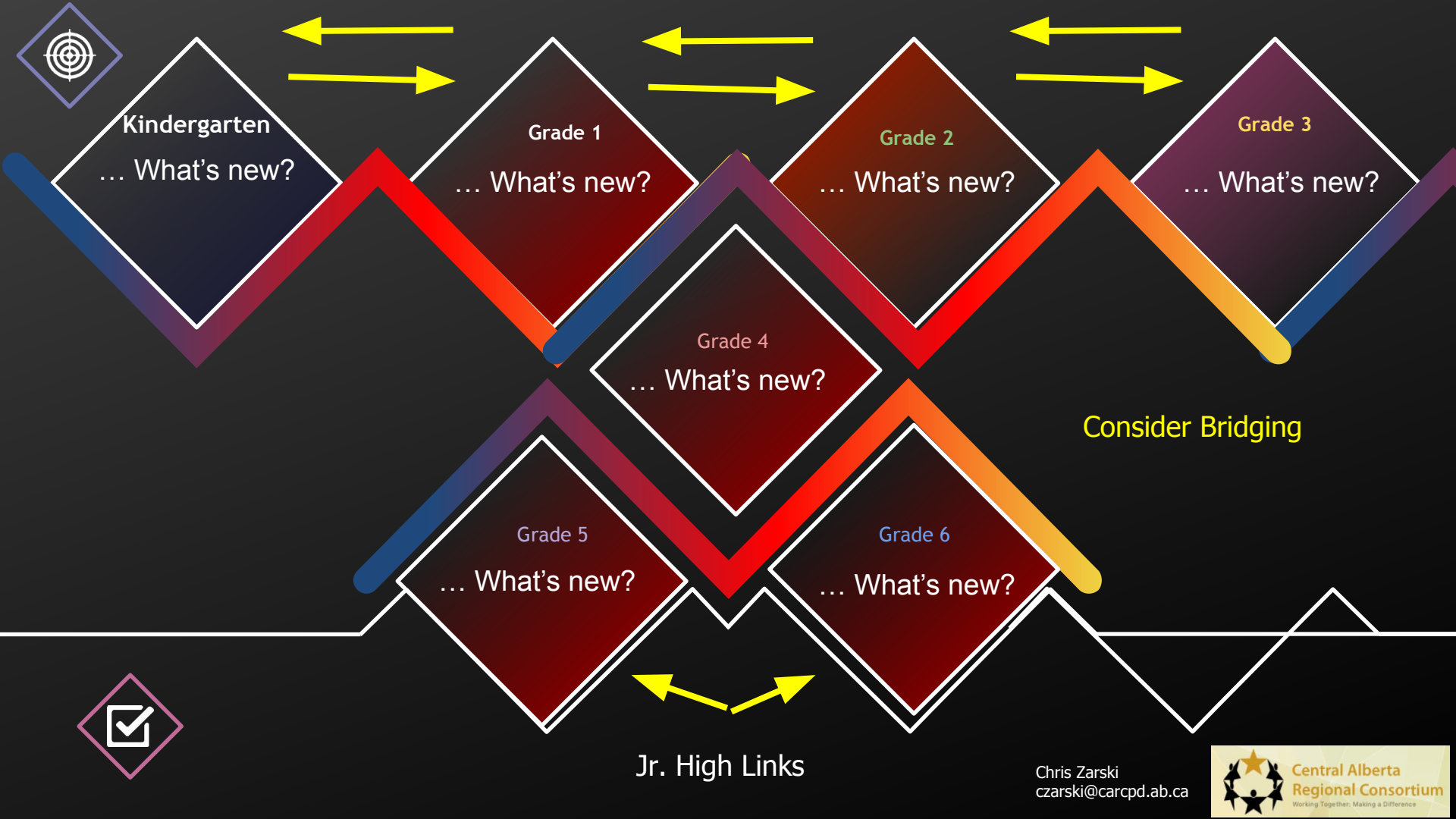
Thousandths

Plotting Points

Land Acknowledgment

We respectfully acknowledges that we are situated on Traditional lands across the province of Alberta home to many First Nations, including the Cree, Blackfoot, Métis, Nakota Sioux, Saulteaux, Inuit, and many others whose histories, languages, and cultures continue to influence our vibrant community.

Teaching Mathematics in Relationship with Indigenous Ways of Knowing



Chris Zarski
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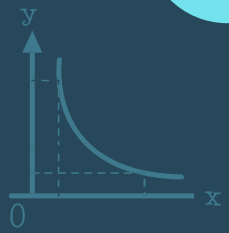
Central Alberta Regional Consortium
Working Together, Making a Difference

Organizing Ideas

Organizing Ideas	K	1	2	3	4	5	6
Number							
Algebra							
Geometry							
Coordinate Geometry							
Measurement							
Patterns							
Time							
Statistics							

Table of contents



Architecture and Design of Provincial K–12 Curriculum

Organizing Idea

Guiding Question

Learning Outcome

Knowledge, Understanding, Skills and Procedures

Literacy, Numeracy, and Competencies

Alberta

Document Overview

Numbered Outcomes
including Financial Literacy Outcomes

Language Conventions

Language Convention	Interpretation for Implementation	Example from Curriculum
including/include(s)	A list following "including" or "include(s)" contains **required** knowledge. Students must know all elements of the list in order to achieve the learning outcome.	Subtraction can be applied in various contexts, **including** • comparing two quantities • taking away one quantity from another • finding a part of a whole
such as	A list following "such as" provides a list of **illustrative examples** that support the learning outcome. Teachers may use any of these examples, or they may choose others.	Right angles can be identified using various referents, **such as** • the corner of a piece of paper • the angle between the hands on an analog clock at 3:00 • a capital letter L
content in parentheses	Words in parentheses are **subject-specific terms** for teachers and parents. These words follow the associated age-appropriate terms for students.	A shape can change orientation or position through slides **(translations)**, turns **(rotations)**, or flips **(reflections)**.

Verbs Are Defined by Context

Kindergarten: Number	Grade 1: Geometry	Grade 3: Number
LO: Children **interpret** compositions of quantities within 10.	**LO:** Students **interpret** shape in two and three dimensions.	**LO:** Students **interpret** fractions in relation to one whole.
Verbs from Associated Skills and Procedures	Verbs from Associated Skills and Procedures	Verbs from Associated Skills and Procedures
Identify **Compose** **Recognize**	**Identify** **Model** **Sort** **Compose** **Decompose** **Investigate**	**Model** **Visualize** **Identify** **Name** **Express** **Compare**

Document Overview

Curriculum Comparison Document

Year At A Glance

Sample Year at a Glance: Mathematics - Grade 5

September 2023 ---------- November 2023

September	October	November
Number: Quantity is measured with numbers that enable counting, labelling, comparing and operating. (use money as concept/manipulative and consider FL)		
5N1 Students analyze patterns in place value • Place value symmetry extends infinitely to the left and right of the ones place. (introduce with basic money skills/fractions initially - unit fractions of denominator 10 & 100, number lines) *** students will need time to learn and be fluent with money concepts first 5N2 Students add and subtract within 1 000 000, including decimal numbers to thousandths, using standard algorithms. • Addition and subtraction of numbers with many digits is facilitated by standard algorithms.(initially whole numbers to 100 - 1 000) 5N4 Students multiply and divide natural numbers within 100 000, including with standard algorithms. (limit to math facts of 12x12 review, 2 digit x 1 and 2 digit multiplication) • Standard algorithms are efficient procedures for multiplication and division. * Review of math facts with different strategies should be ongoing	5N1 Students analyze patterns in place value • Place value symmetry extends infinitely to the left and right of the one's place. (introduce to hundredths in context, number lines, finding numbers between, compare and order with emphasis on money, dollars and cents) *** students will need time to learn and be fluent with money concepts first 5N2 Students add and subtract within 1 000 000, including decimal numbers to thousandths, using standard algorithms. • Addition and subtraction of numbers with many digits is facilitated by standard algorithms.(money values ($1.00 - $1000.00) 5N4 Students multiply and divide natural numbers within 100 000, including with standard algorithms. (limit to math facts of 12 x12 review, 2 digit x 1 and 2 digit multiplication) • Standard algorithms are efficient procedures for multiplication and division. * Review of math facts with different strategies should be ongoing	5N1 Students analyze patterns in place value • Place value symmetry extends infinitely to the left and right of the one's place. (introduce to thousandths in context, number lines, finding numbers between, compare and order, rounding) 5N2 Students add and subtract within 1 000 000, including decimal numbers to thousandths, using standard algorithms. • Addition and subtraction of numbers with many digits is facilitated by standard algorithms.(estimation included) 5N3 Students determine divisibility of natural numbers • A number is divisible by another number if it can be divided with a remainder of 0. 5N4 Students multiply and divide natural numbers within 100 000, including with standard algorithms. • Standard algorithms are efficient procedures for multiplication and division 2 digit by 1 digit). * Review of math facts with different strategies should be ongoing

Sample Year at a Glance: Mathematics - Grade 5

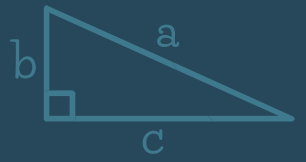
September 2023 ---------- November 2023

September	October	November
Geometry: Shapes are defined and related by geometric attributes.		
5G1.1 Students investigate symmetry as a geometric property (also tie into number line and place value, no rotational symmetry - see grade 2 folder for some ideas as well) • Symmetry is a property of shapes. • Symmetry can be created and can occur in nature.(ensure use of visuals for symmetry- see Grade 2 folder for some ideas as well)		5G1.1 Students investigate symmetry as a geometric property • Symmetry is a property of shapes. • Symmetry can be created and can occur in nature. 5G1.2 Students investigate symmetry as a geometric property. • Symmetry is related to other geometric properties.
Coordinate Geometry:Location and movement of objects in space can be communicated using a coordinate grid.		
	5CG1 Students relate location to position on a grid. • Location can describe the position of shapes in space. • Location can be described precisely using a coordinate grid.	
Algebra: Equations express relationships between quantities.		
	5A1.1 Students interpret numerical and algebraic expressions.(tie into math facts, review order of operations) • Numerical expressions represent a quantity of known value. • Parentheses change the order of operations in a numerical expression	5A1.1 Students interpret numerical and algebraic expressions (5N2 link) • Numerical expressions represent a quantity of known value. • Parentheses change the order of operations in a numerical expression

Taking Inventory

September	October
Number: Quantity is measured with numbers that enable counting, labelling, comparing and operating. (use money as concep	
5N1 Students analyze patterns in place value • Place value symmetry extends infinitely to the left and right of the ones place. (introduce with basic money skills/fractions initially - unit fractions of denominator 10 & 100, number lines) *** students will need time to learn and be fluent with money concepts first 5N2 Students add and subtract within 1 000 000, including decimal numbers to thousandths, using standard algorithms. • Addition and subtraction of numbers with many digits is facilitated by standard algorithms.(initially whole numbers to 100 - 1 000) 5N4 Students multiply and divide natural numbers within 100 000, including with standard algorithms. (limit to math facts of 12x12 review, 2 digit x 1 and 2 digit multiplication) • Standard algorithms are efficient procedures for multiplication and division. * Review of math facts with different strategies should be ongoing	5N1 Students analyze patterns in place value • Place value symmetry extends infinitely to the left and right of the one's place. (introduce to hundredths in context, number lines, finding numbers between, compare and order with emphasis on money, dollars and cents) *** students will need time to learn and be fluent with money concepts first 5N2 Students add and subtract within 1 000 000, including decimal numbers to thousandths, using standard algorithms. • Addition and subtraction of numbers with many digits is facilitated by standard algorithms.(money values ($1.00 - $1000.00) 5N4 Students multiply and divide natural numbers within 100 000, including with standard algorithms. (limit to math facts of 12 x12 review, 2 digit x 1 and 2 digit multiplication) • Standard algorithms are efficient procedures for multiplication and division. * Review of math facts with different strategies should be ongoing

So What are Concepts? What am I looking for exactly?



So What is a Concept?

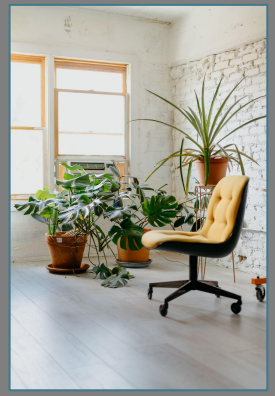
Concepts are...

- Timeless
- Universal
- Abstract
- Transferable

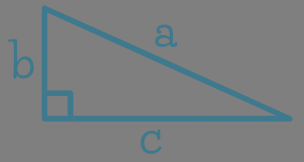
A concept is ...

- an organizing idea of 1 -2 words
- with distinct attributes
- that are shared across multiple examples





Chair is a Concept



	Grade 5		
Organizing Idea	Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.		
Guiding Question	How can the infinite nature of place value enhance insight into number?		
Learning Outcome	5N1 Students analyze patterns in place value.		
	Knowledge	Understanding	Skills & Procedures
	A number expressed with more decimal places is more precise. A zero in the rightmost place of a decimal number does not change the value of the number. There are infinitely many decimal numbers between any two decimal numbers.	Place value symmetry extends infinitely to the left and right of the one's place.	Relate the names of place values that are the same number of places to the left and right of the ones place. Express numbers within 10 000 000, including decimal numbers to thousandths, using words and numerals. Relate a decimal number to its position on the number line. Determine a decimal number between any two other decimal numbers. Compare and order numbers, including decimal numbers. Express the relationship between two numbers, including decimal numbers, using <, >, or =. Round numbers, including decimal numbers, to various places according to context.

5N1 Students analyze patterns in place value.		
Knowledge	Understanding	Skills & Procedures
A **number** expressed with more **decimal places** is more precise. A **zero** in the rightmost **place** of a **decimal number** does not change the **value** of the **number**. There are **infinitely** many **decimal numbers** between any two decimal **numbers**.	**Place value symmetry** extends infinitely to the left and right of the one's place.	Relate the **names** of **place values** that are the same **number** of **places** to the left and right of the ones **place**. Express **numbers** within 10 000 000, including **decimal numbers** to **thousandths**, using **words** and **numerals**. Relate a **decimal number** to its **position** on the **number line.** Determine a **decimal number** between any two other **decimal numbers.** Compare and order **numbers**, including **decimal numbers.** Express the **relationship** between two **numbers**, including **decimal numbers**, using <, >, or =. Round **numbers**, including **decimal numbers**, to various **places** according to **context**.

Notes: How do you leverage money?

2+2=4

- Work within 100, leave decimals out initially
- Learn money and values
- Put together 2 digit whole number dollar amounts
- Count out bills to end in a 2-digit whole dollar amount
- Make change to a dollar, $5.00, $10.00, change for $100.00
- Addition and subtraction by counting back change
- Compare money amounts
- Describe a 2 digit/3 digit dollar, amount in place value terms
- Practice reading and writing 3 digit numbers - relate to $100/$10/loonies
- <u>Regroup money - use mats *** must be comfortable and fluent in money</u>
- Dice rolling, write largest number and smallest number
- Multiply dice
- Subitizing cards

5N1 Students analyze patterns in place value

- Place value symmetry extends infinitely to the left and right of the ones place. (introduce with basic money skills/fractions initially - unit fractions of

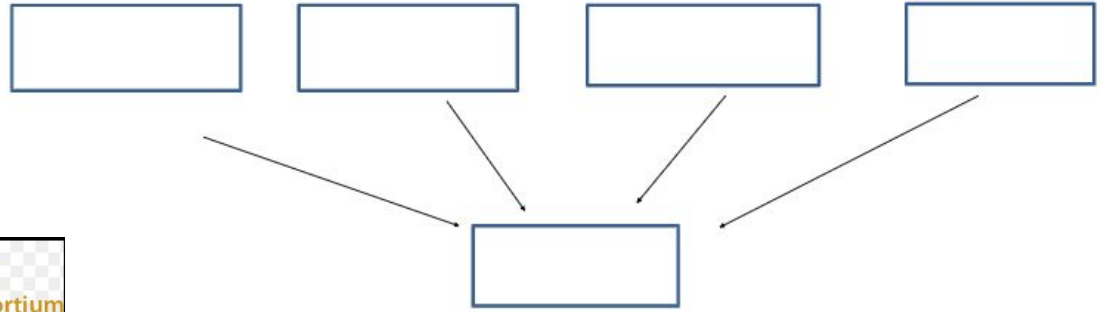
5N1 Students analyze patterns in place value

- Place value symmetry extends infinitely to the left and right of the one's place. (introduce to hundredths in context, number lines, finding numbers between,

Our Goal is Decimals but not immediately - what will this look like with money?

Place Value Chart Beginning with Money (Penny, Nickel, Dime, Quarters)

Quarter 	Dime 	Nickel 	Penny 



Place Value Chart Beginning with Money (Loonie, $5, $10, $50, $100)

+ + + +

Place Value Chart Beginning with Money (Loonie, $5, $10, $100, $1000)

THOUSAND ($1000.00)			

$1000.00 = 100 000¢

Your Base 10 Mat - precursor to Base 10 Blocks

Place Value Chart Beginning with Money (Penny, Dime, Loonie, $10, $100, $1000)

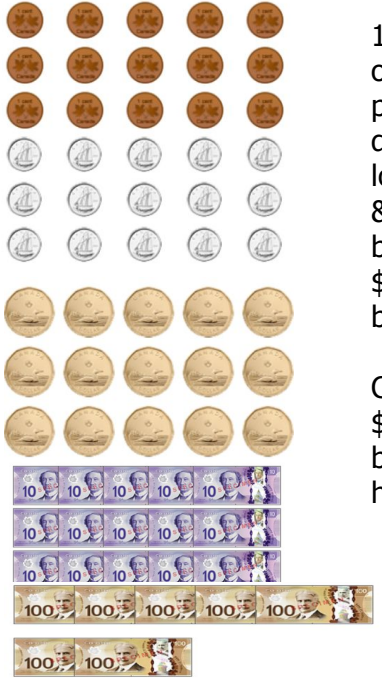
 (not legal tender)					

Money Grades 3-6 (Per Pair of students)

General Money Bag - Grades 3-6

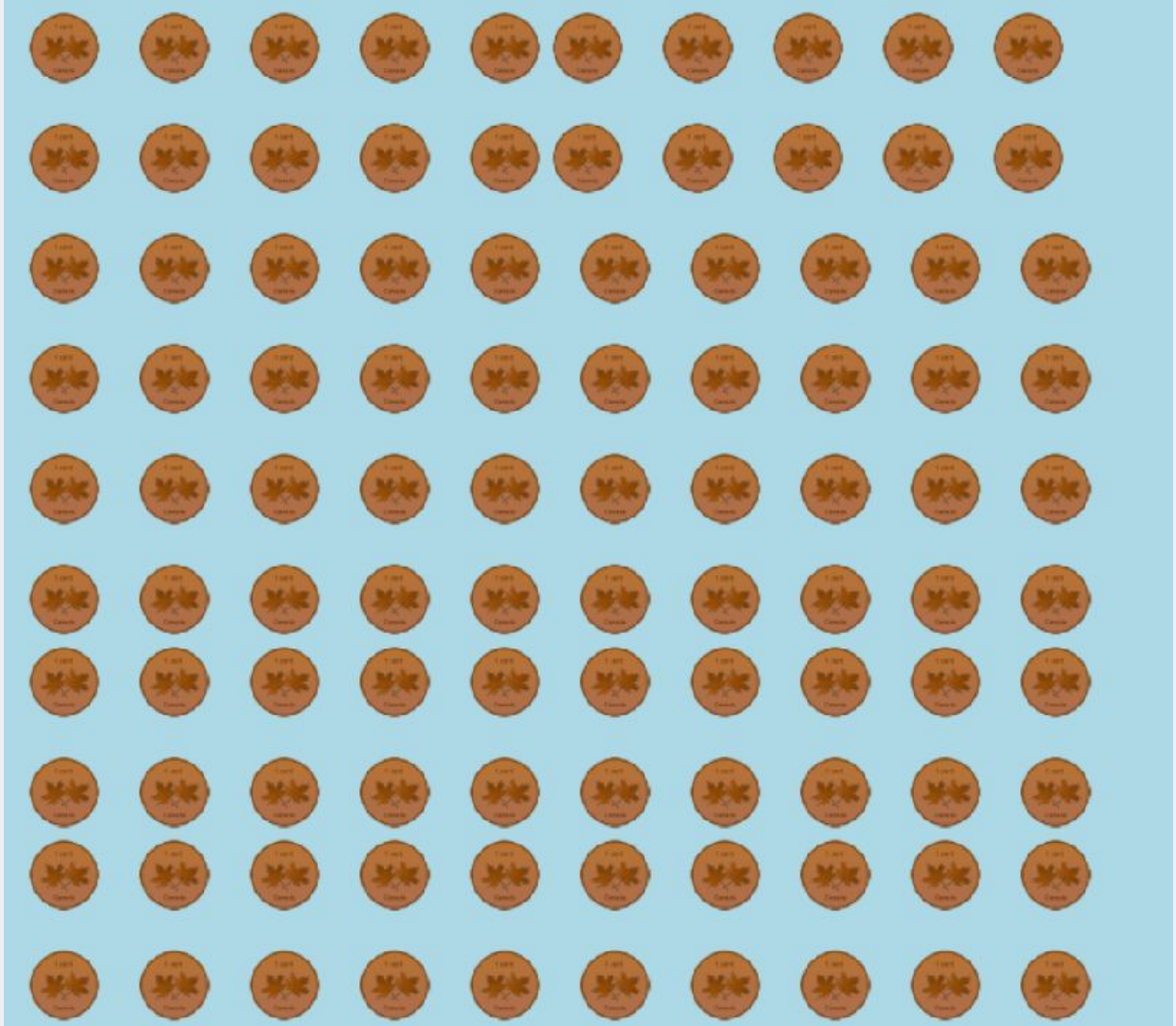
For addition/Subtraction,Converting and Trading Use the Base 10 Bags

Nase 10 Bag - Grades 3-6



15 of each of the penny, dime, loonie, &$10.00 bill + 7 - $100.00 bills

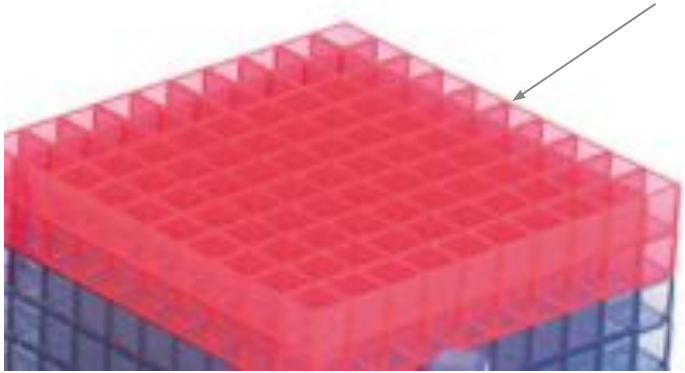
Copied $1000.00 bills if you have them



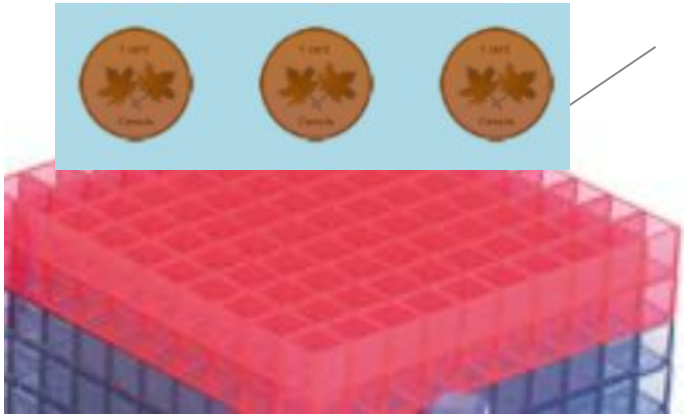
100 pennies =
$1.00

Starting Place Value

Show me 196 cents or $1.96

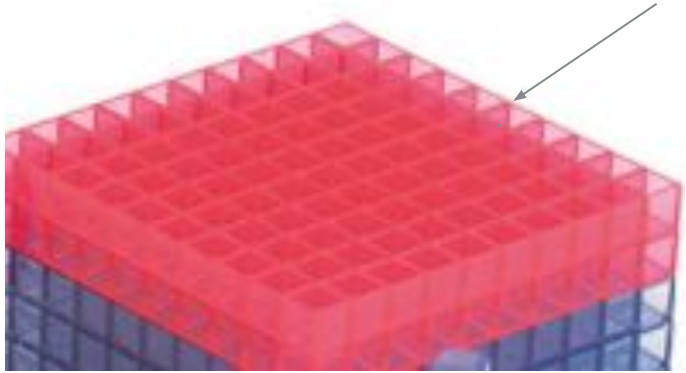


Starting Place Value
Show me 103 cents

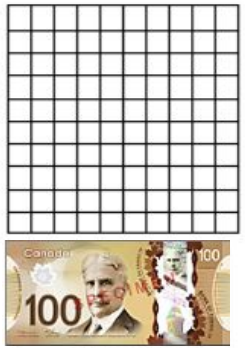
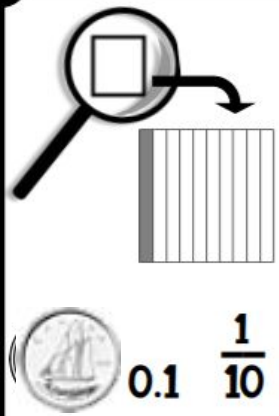
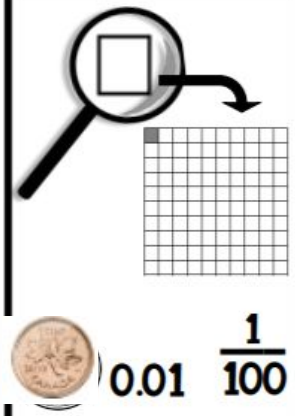


Starting Place Value

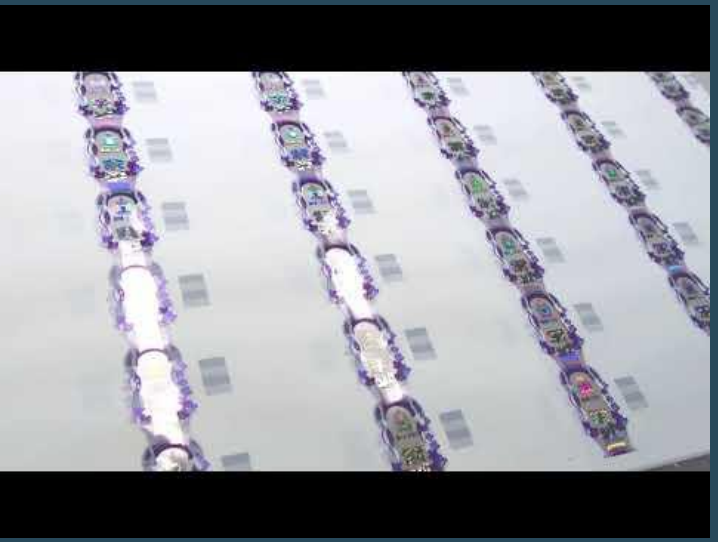
Show me $1.26



Regrouping Money (numbers) through addition

Hundreds	Tens	Units	Tenths	Hundredths
 100.00	 10.00	 1.00	 0.1 $\frac{1}{10}$	 0.01 $\frac{1}{100}$

The Making of a Bank Note



Canada's New Banknotes

The Secrets of the Canadian Dollar

Organizing Idea	Number: **Quantity** is measured with **numbers** that enable counting, labelling, comparing, and operating.		
Guiding Question	In what ways can the processes of **addition** and **subtraction** be articulated?		
Learning Outcome	5N2 Students add and subtract within 1 000 000, including **decimal numbers** to **thousandths**, using **standard algorithms**.		
	Knowledge	Understanding	Skills & Procedures
	Standard algorithms are efficient procedures for **addition** and **subtraction**.	**Addition** and **subtraction** of **numbers** with many **digits** is facilitated by **standard algorithms**.	Add and subtract **numbers**, including **decimal numbers**, using **standard algorithms**. Assess the **reasonableness** of a **sum** or **difference** using **estimation**. Solve problems using **addition** and **subtraction**, including **problems** involving **money**.

Notes:

- Could use dominos turned sideways; two dominos horizontally connected
- Read and write 3 digit numbers
- Compare numbers
- Review money knowledge
- Find out what addition and subtraction strategies they have first - smaller numbers.

Do we need text resources?

5N2 Students add and subtract within 1 000 000, including decimal numbers to thousandths, using standard algorithms.

- Addition and subtraction of numbers with many digits is facilitated by standard algorithms.(initially whole numbers to 100 - 1 000)

5N2 Students add and subtract within 1 000 000, including decimal numbers to thousandths, using standard algorithms.

- Addition and subtraction of numbers with many digits is facilitated by standard algorithms.(money values ($1.00 - $1000.00)

5N4 Students multiply and divide natural numbers within

Organizing Idea	Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.		
Guiding Question	In what ways can the processes of multiplication and division be articulated?		
Learning Outcome	5N4 Students multiply and divide natural numbers within 100 000, including with standard algorithms.		
	Knowledge	Understanding	Skills & Procedures
	Multiplication and **division** of **numbers** with many **digits** is facilitated by **standard algorithms**.	**Standard algorithms** are efficient **procedures** for **multiplication** and **division**.	Explain the **standard algorithms** for **multiplication** and **division** of natural numbers. Multiply up to 3-digit by 2-digit **natural numbers** using **standard algorithms.** Divide 3-digit by 1-digit **natural numbers** using **standard algorithms.** Express a **quotient** with or without a **remainder** according to **context**. Assess the **reasonableness** of a **product** or **quotient** using **estimation.** Solve **problems** using **multiplication** and **division** of **natural numbers**.

Notes:

- Skip counting
- Work on number facts 12x12
- Money arrays
- Find out what multiplication and division strategies they have first
- Multiplication of 2 digit by 1, 3 digit x 1 to start with - no decimals
- 2 digit x 2 digit
- Area game - practice of multiplication(see next slide)

5N4 Students multiply and divide natural numbers within 100 000, including with standard algorithms. (limit to math facts of 12x12 review, 2 digit x 1 and 2 digit multiplication)

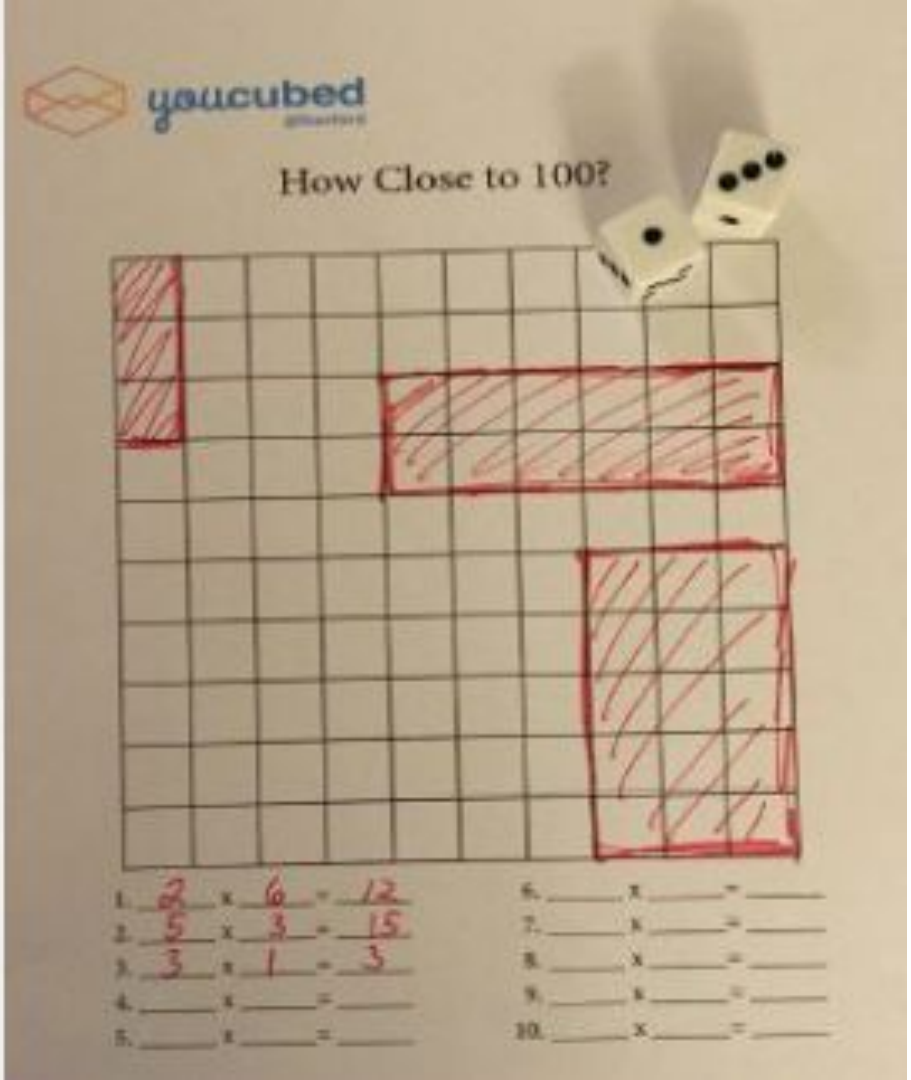
- Standard algorithms are efficient procedures for multiplication and division.

* Review of math facts with different strategies should be ongoing

100 000, including with standard algorithms. (limit to math facts of 12x12 review, 2 digit x 1 and 2 digit multiplication)

- Standard algorithms are efficient procedures for multiplication and division.

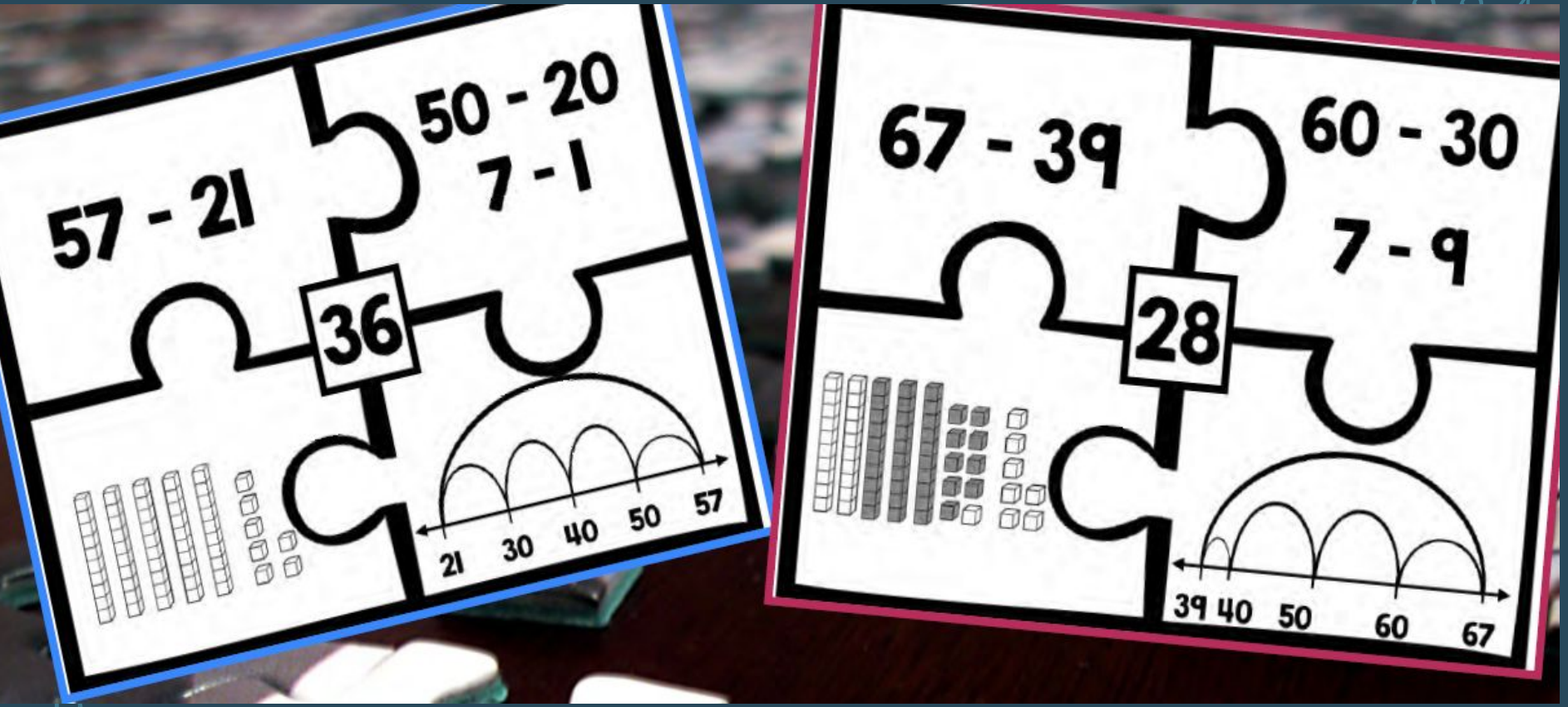
* Review of math facts with different strategies should be ongoing



Reviewing/Assessing Math Facts (Multiplication to start)

- Grid paper
- Two different coloured markers
- Two dice (differentiate for ability)
- Grid paper of 100 or more squares (11x17 paper works well)
- Alternate rolls
- Diagram the product as a square - do your students know any multiplication fact is an area?
- First person to roll 3 times and not be able to diagram a product ends the game.
- Count total number of squares covered (area) - highest count wins the game
- Could also be done with subitizing cards

Source:https://www.youcubed.org/tasks/how-close-to-100/



Base ten blocks could be used AFTER money - replace that model with money instead.

Notes:

- What resources do you need?
- Grid paper and pattern blocks
- Where in nature? Where in the school? Where in the school yard?

DRAFT **Sample Year at a Glance: Mathematics - Grade 5**

September 2022 ---------- 2022

September | **Oc**

Geometry: Shapes are defined and related by geometric attributes.

5G1.1 Students investigate symmetry as a geometric property (also tie into number line and place value, no rotational symmetry)

- Symmetry is a property of shapes. Symmetry can be created and can occur in nature.(ensure use of visuals for symmetry)

5G1.1 Students investigate symmetry as a geometric property.

Knowledge	Understanding	Skills & Procedures
A **2-D shape** has **reflection symmetry** if there is a **straight line** over which the **shape** reflects and the two **halves** exactly match. A **3-D shape** has **reflection symmetry** if there is a **plane** over which the **shape** reflects and the two **halves** exactly **match**. A **2-D shape** has **rotation symmetry** if it exactly **overlaps** itself one or more times within a **rotation** of less than 360° around its **centre point.** **Order** of **rotation symmetry** describes the **number** of times a **shape** coincides with itself within a **rotation** of 360° around its **centre point.** **Central symmetry** is the **rotational symmetry** by 180°. The **straight line** that connects a **point** with its **image** in the **central symmetry** passes through the **centre of rotation**. **Symmetry** can be found in First Nations, Métis, and Inuit **design,** such as • basket weaving • wampum belts • quilts • First Nations beadwork, Inuit beadwork, or Métis floral beadwork	**Symmetry** is a **property** of **shapes**. **Symmetry** can be created and can occur in **nature**.	Recognize **symmetry** in **nature**. Recognize **symmetry** in **First Nations, Métis, and Inuit designs.** Investigate **symmetry** in familiar **2-D and 3-D shapes** using hands-on **materials** or **digital applications.** Show the **line of symmetry** of a **2-D shape**. Describe the **order of rotation symmetry** of a **2-D shape**.

Coordinate Geometry: Location and movement of objects in space can be communicated using a coordinat

How can location enhance the ways in which space is defined?

5CG1 Students relate location to position on a grid.

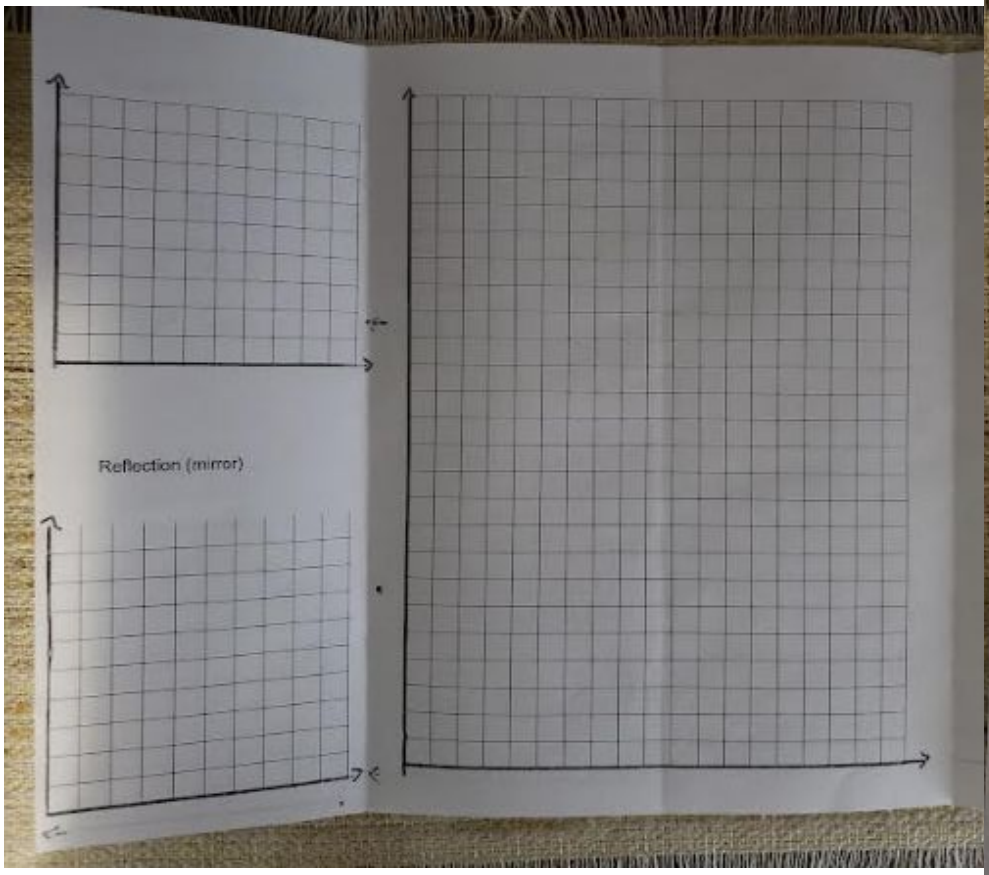
Knowledge	Understanding	Skills & Procedures
Coordinate grids use **coordinates** to indicate the **location** of the **point** where the **vertical** and **horizontal grid lines** intersect. **Coordinates** are **ordered pairs** of **numbers** in which the first **number** indicates the **distance** from the **vertical axis** and the **second number** indicates the **distance** from the **horizontal axis.** **Positional language** includes • **left** • **right** • **up** • **down**	**Location** can describe the **position** of **shapes** in **space.** Location can be described precisely using a **coordinate grid.**	Locate a **point** on a **coordinate grid** given the **coordinates** of the **point.** Describe the **location** of a **point** on a **coordinate grid** using **coordinates.** Describe the **location** of a **point** on a **coordinate grid** in relation to the **location** of another **point** using **positional language**. Model a **polygon** on a **coordinate grid** using **coordinates** to indicate the **vertices.** Describe the **location** of the **vertices** of a **polygon** on a **coordinate grid** using **coordinates.**

Coordinate Geometry:Location and movement of objects in space can be communicated using a coordinate grid.

	5CG1 Students relate location to position on a grid. • Location can describe the position of shapes in space. • Location can be described precisely using a coordinate grid.

Notes:

- Initially - Race to 100 or 144, grid colouring, review of math facts, area covered.
- Plotting points in Quadrant 1
- Reflections
- Translations
- Rotations
- Foldable for Grade 5 Coordinate Geometry



Transformations

X – Axis

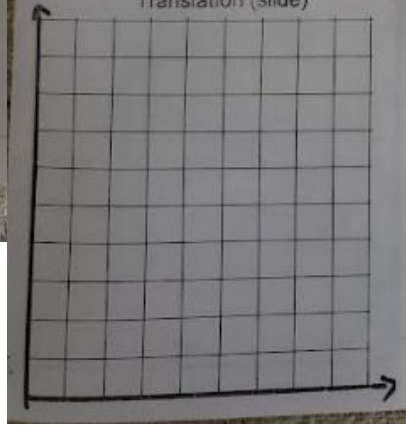
Y – Axis

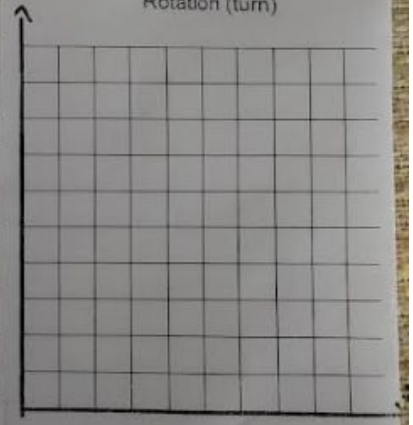
Origin

Coordinates

Orientation

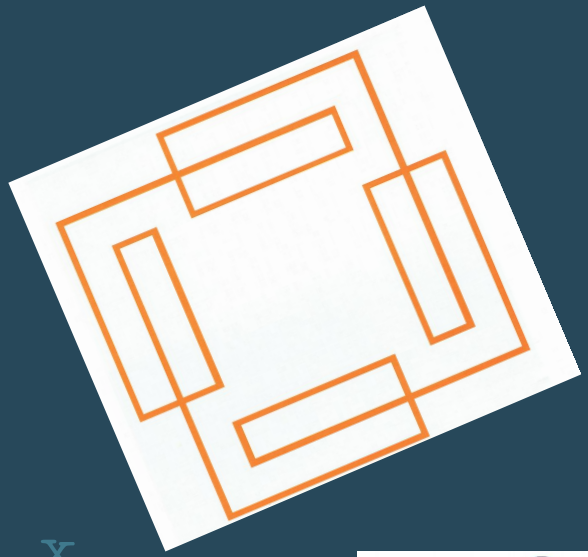
Transformation





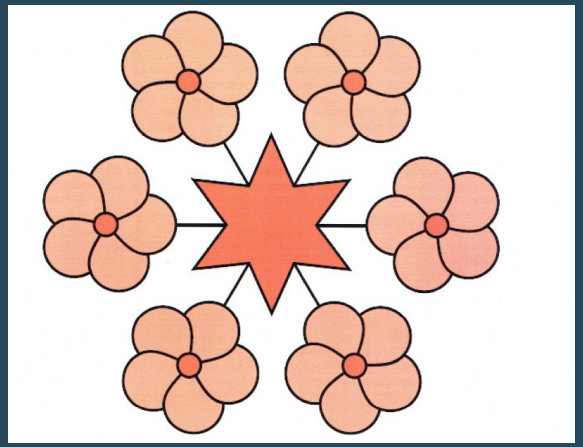
2+2=4

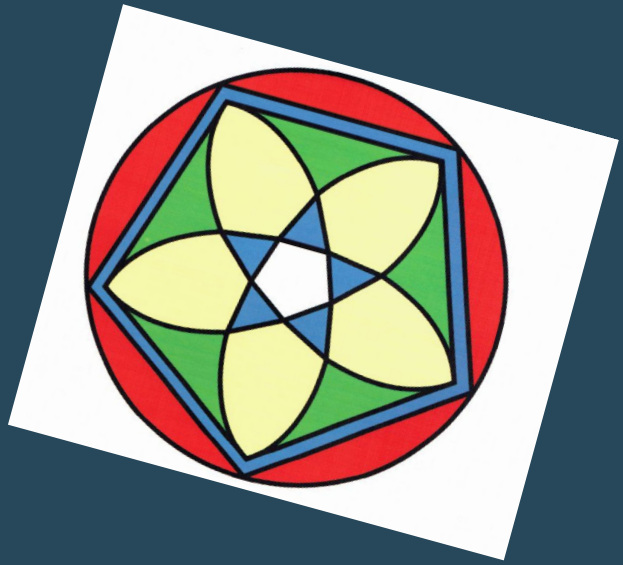
Order of Rotation

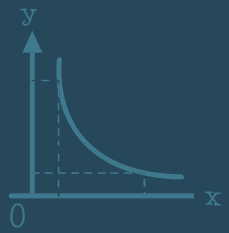


x

y







Finished kit - container from Dollarama

Container fits in a student desk or cubby.

Algebra: Equations express relationships between quantities.

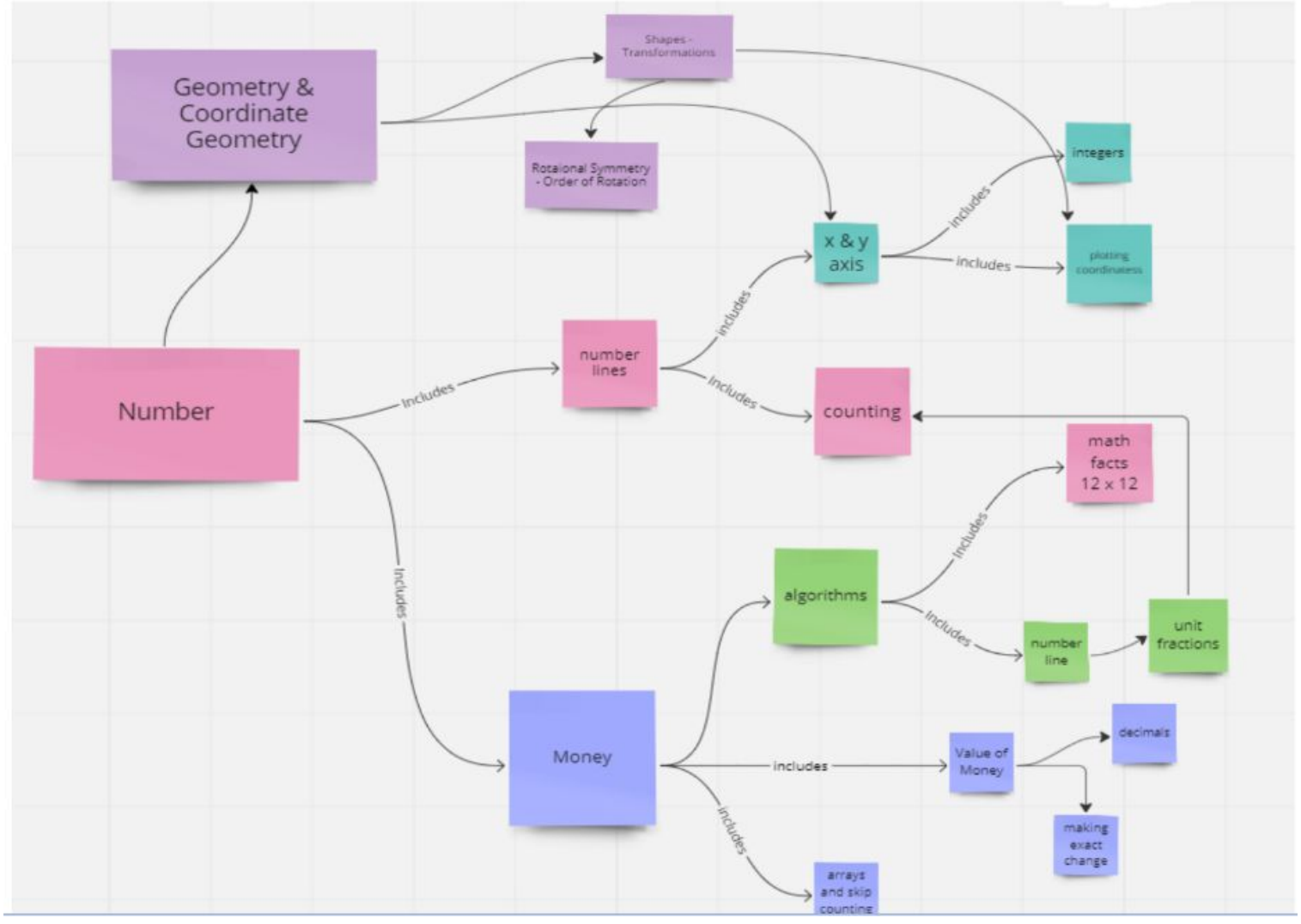
How can expressions enhance communication of number?

5A1.1 Students interpret numerical and algebraic expressions.

Knowledge	Understanding	Skills & Procedures
Numerical expressions with multiple **operations** may include **parentheses** to group **numbers** and **operations.** The conventional **order** of **operations** includes performing **operations** in **parentheses** before other **operations**.	**Numerical expressions** represent a **quantity** of known **value.** **Parentheses** change the **order of operations** in a **numerical expression.**	Evaluate **numerical expressions** involving **addition** or **subtraction** in **parentheses** according to the **order of operations**.

Algebra: Equations express relationships between quantities.

	5A1.1 Students interpret numerical and algebraic expressions.(tie into math facts, review order of operations) • Numerical expressions represent a quantity of known value. • Parentheses change the order of operations in a numerical expression


Geometry & Coordinate Geometry
Shapes - Transformations
Rotational Symmetry - Order of Rotation
integers
x & y axis
includes
includes
plotting coordinates
Number
includes
number lines
includes
includes
counting
math facts 12 x 12
includes
algorithms
includes
number line
unit fractions
Money
includes
Value of Money
decimals
making exact change
includes
arrays and skip counting

Build Money Skills and Leverage for other Outcomes

OPEN Ended Questions only

What did we see when we emptied our bowl on the table?

- Understanding “Money” and its role in many other concepts.
- Understanding how it connects between grades and end goals.
- “Money is a Leader”
- The 4 C’s - Concept, Content, Clarifier & Context
- A Physical “tool” - should be related to other “tools”
- Culturally Common - Common Context regardless of language
- Note: Canadian Money has colour as part of its identification - try to use stay away from black/white unless there are no other options and then ensure the coins are *realistic!*

Money

What is a COIN?

Do you have any coins?

The Story of Our Coins

Hi! I'm the Penny

Pennies can help you learn to count!

Queen Elizabeth II on the back of the Penny.

Did you know they do not make me anymore!

Maple leafs: On the front of the Penny

I am worth 1 ¢

Suggest purchasing this money resource

- Understanding “Money” and its role in many other concepts.
- Understanding how it connects between grades and end goals.
- “Money is a Leader”
- The 4 C’s - Concept, Content, Clarifier & Context
- A Physical “tool” - should be related to other “tools”
- Culturally Common - Common Context regardless of language
- Note: Canadian Money has colour as part of its identification - try to use stay away from black/white unless there are no other options and then ensure the coins are *realistic!*

Money

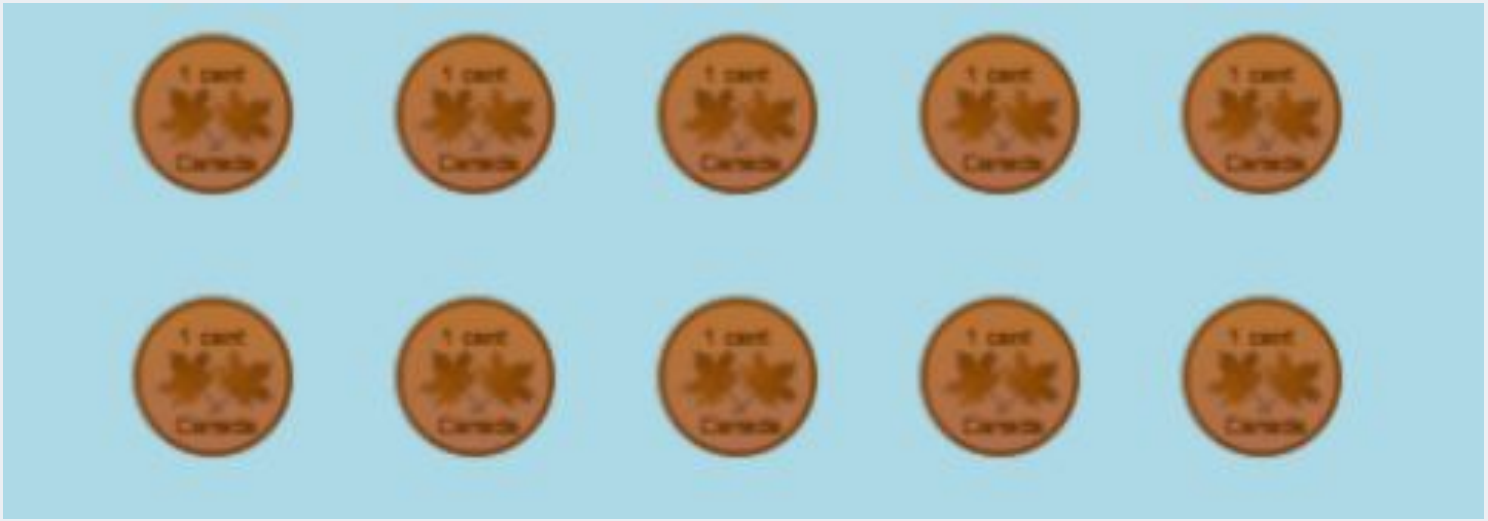
Making Money Many Ways

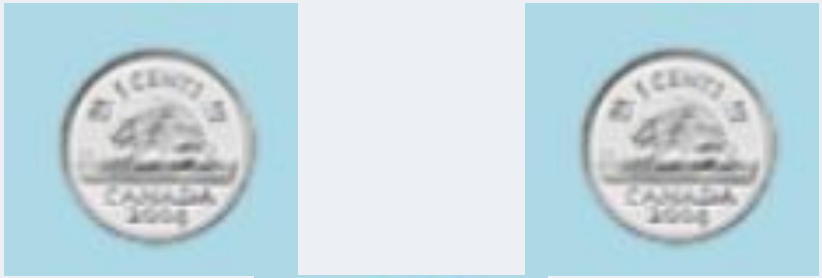
$250.00

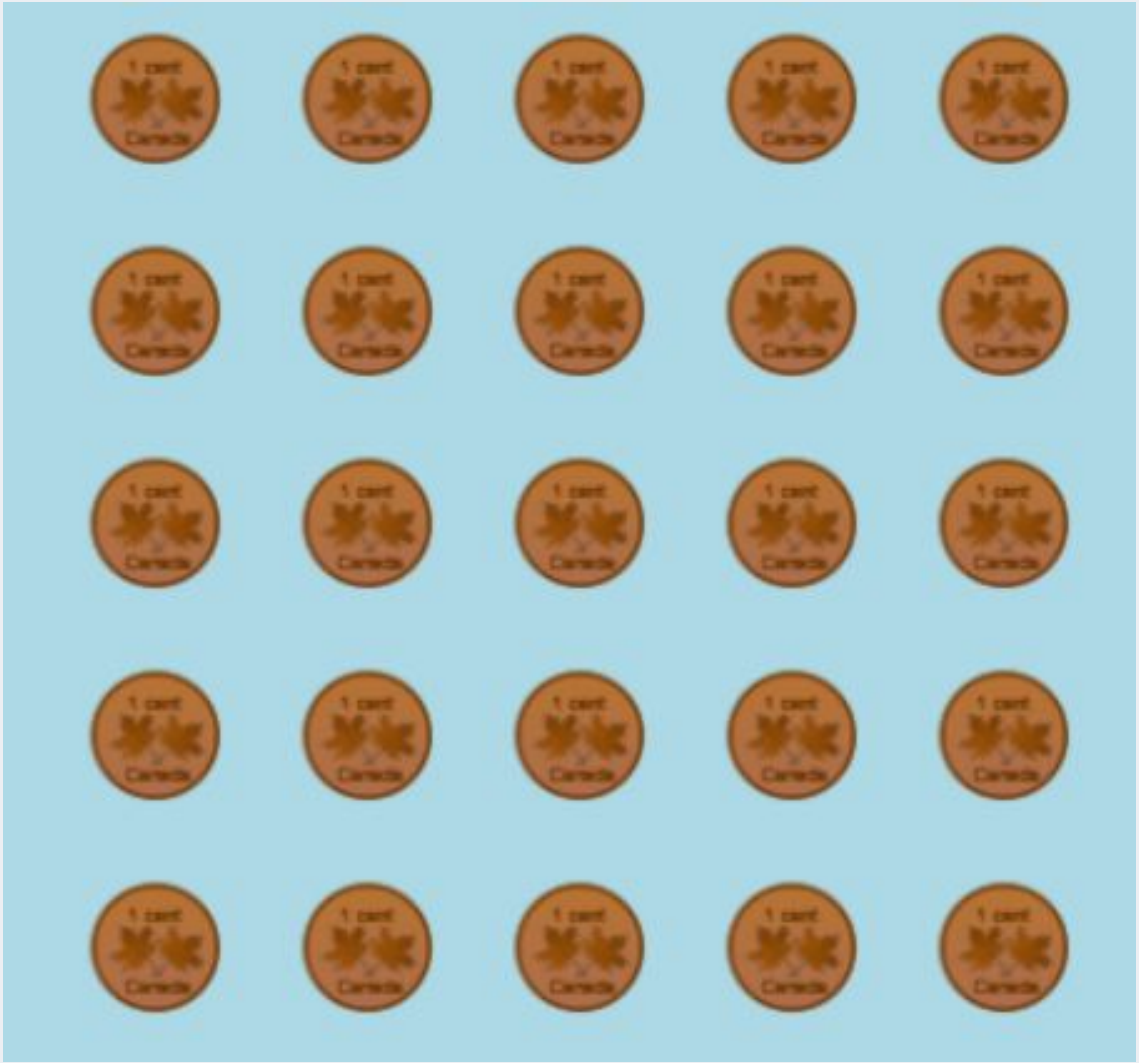
Link

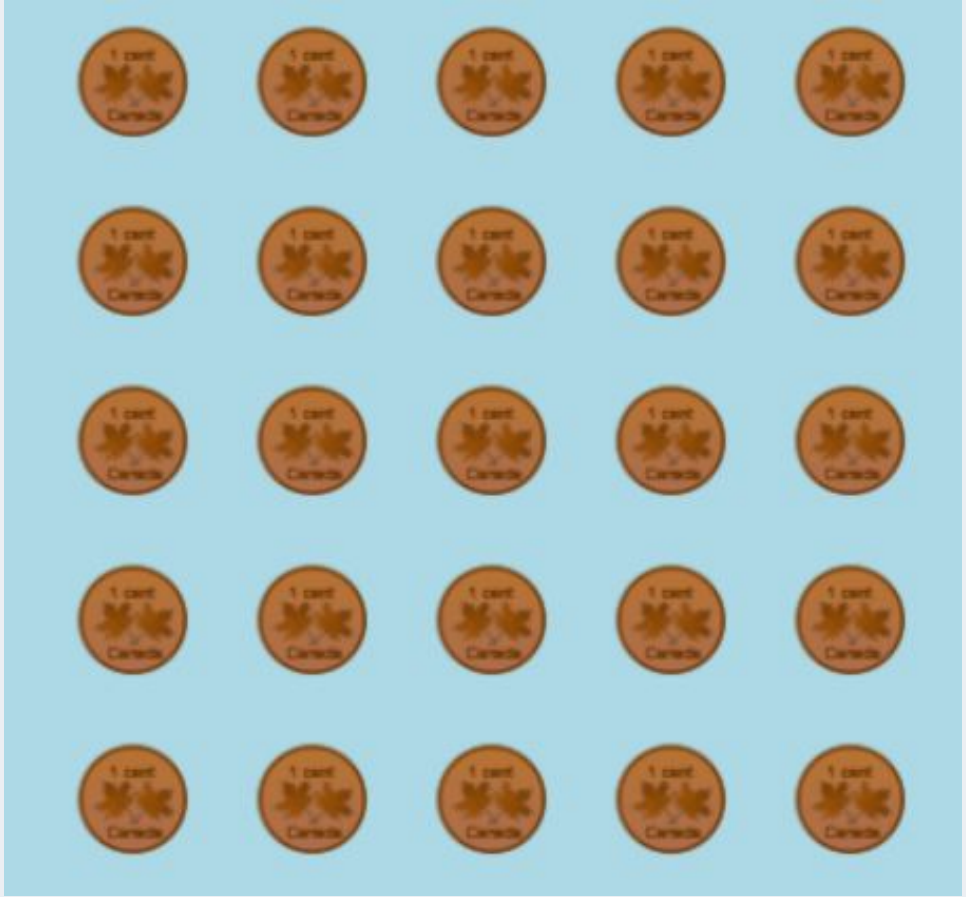
Group

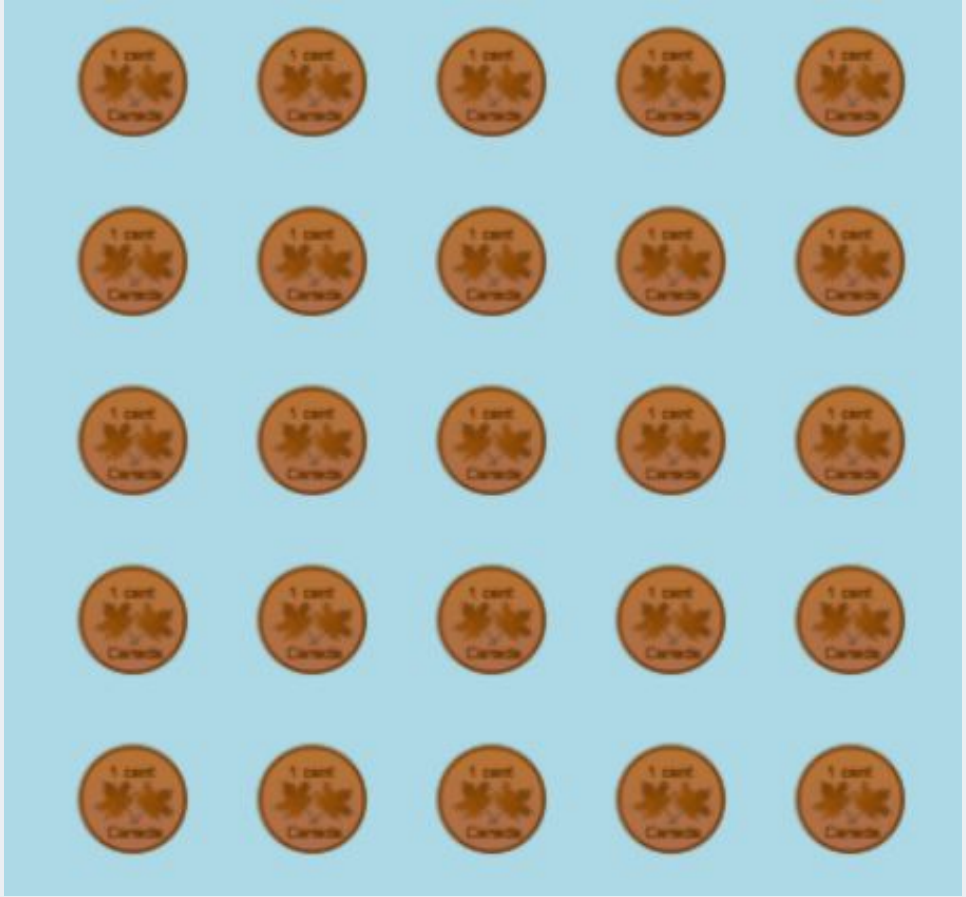
Adapted by Wanda from Theresa Wills / Shared by Wanda Dechant CRC

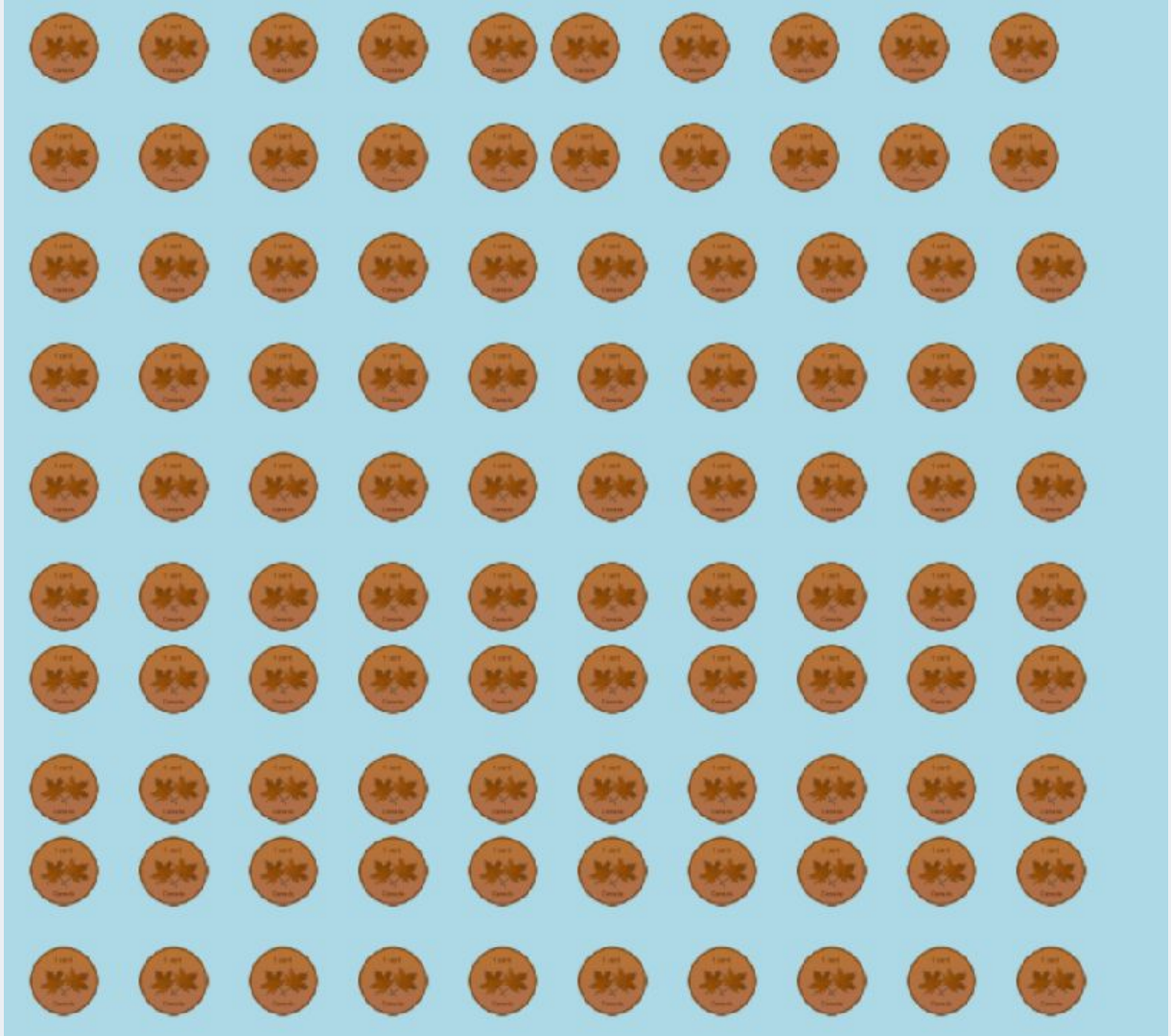

1 cent
Canada

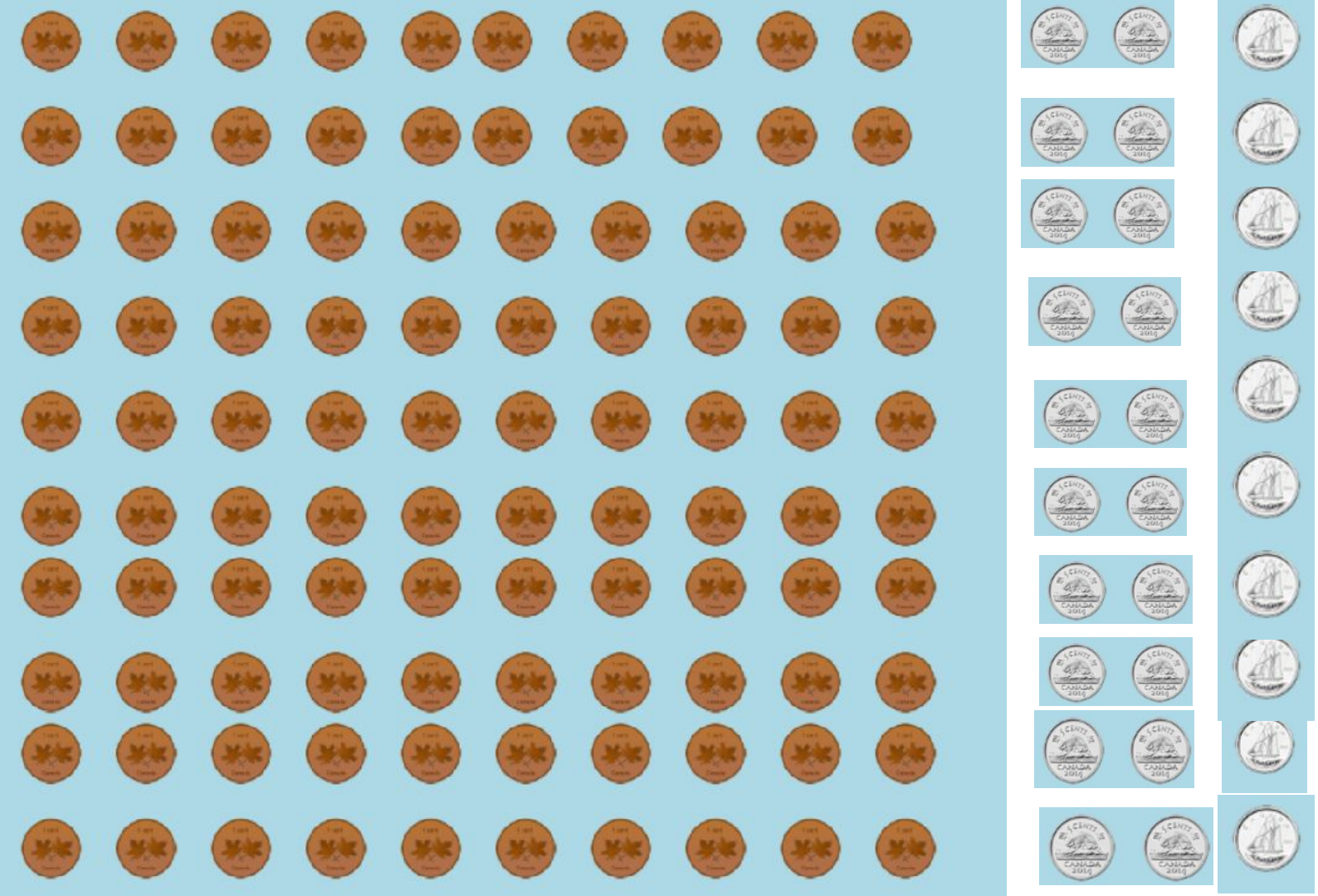

1 CENT
CANADA
2004


1 cent
Canada









Unit Fractions get built from this understanding and activity.

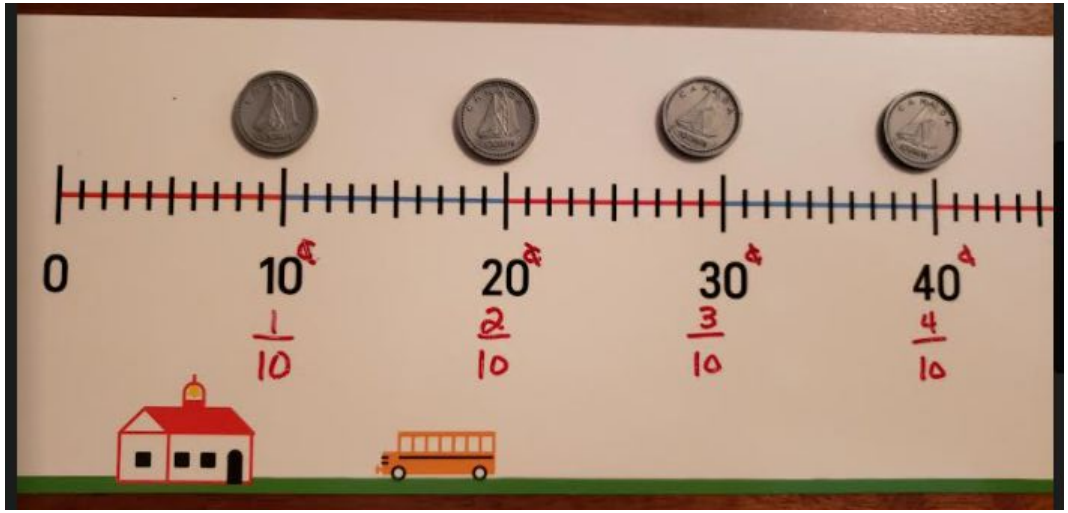
Assessment

1. Count up the money amounts. Write the total.

Coins	Total
	
	
	

Create the Unit Fractions Visually - no fraction terminology

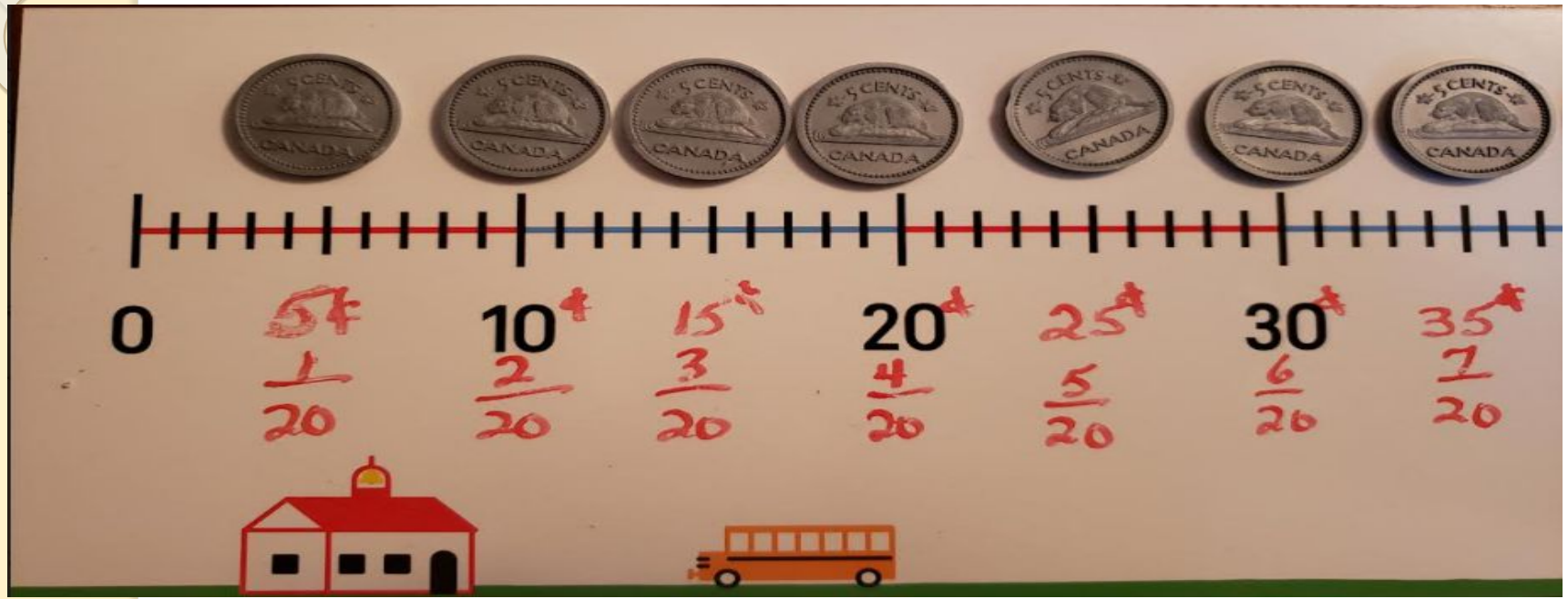

0
10¢
1/10
20¢
2/10
30¢
3/10
40¢
4/10
50¢
5/10
60¢
6/10
70¢
7/10
80¢
8/10
90¢
9/10
100¢
10/10


0
10¢
1/10
20¢
2/10
30¢
3/10
40¢
4/10

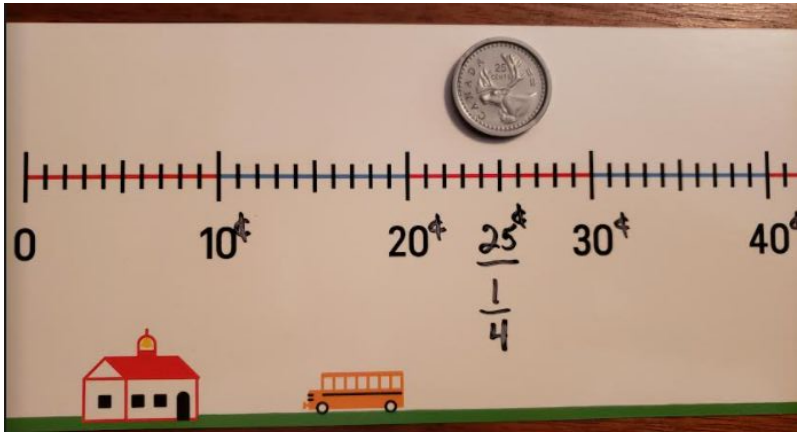

0 10 20 30 40 50 60 70 80 90 100

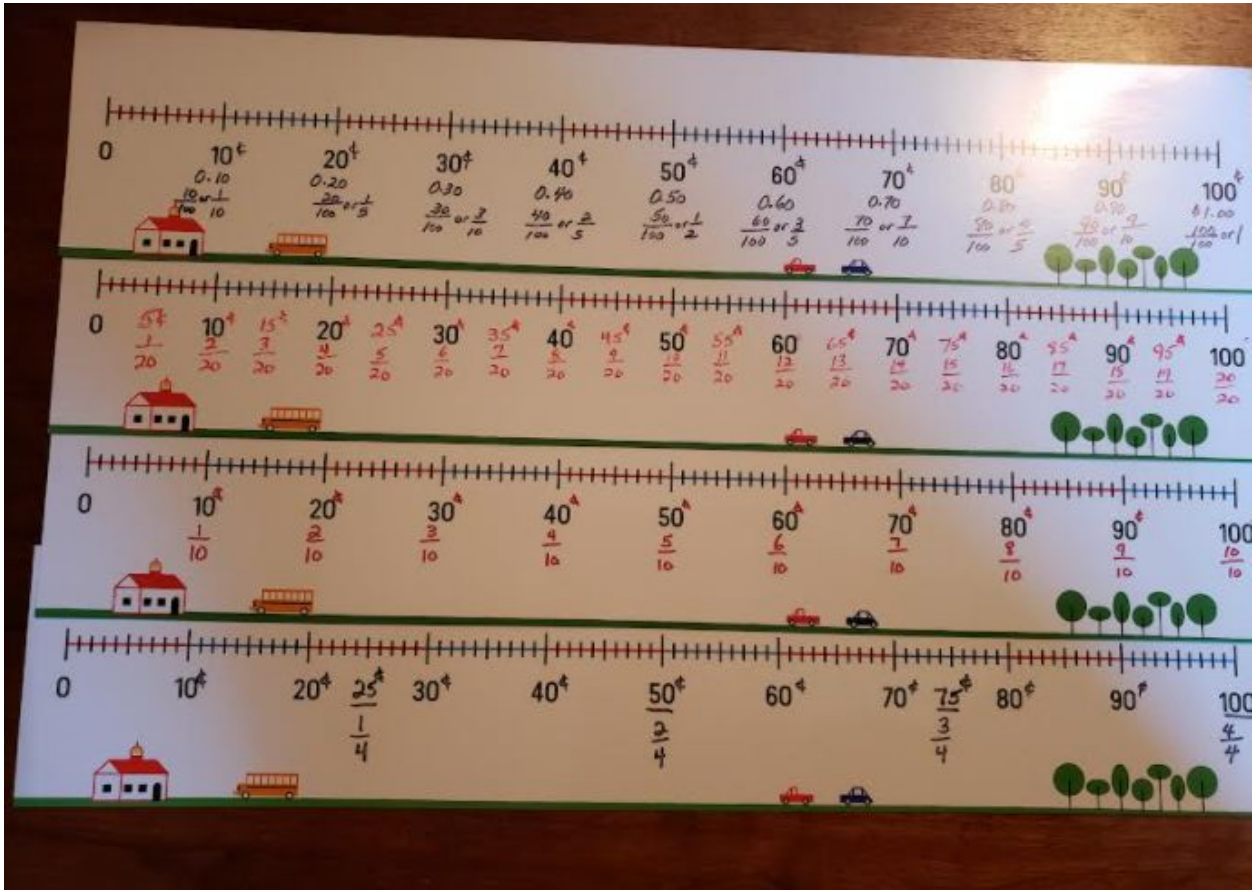

0 10 20 30 40 50 60 70 80 90 100

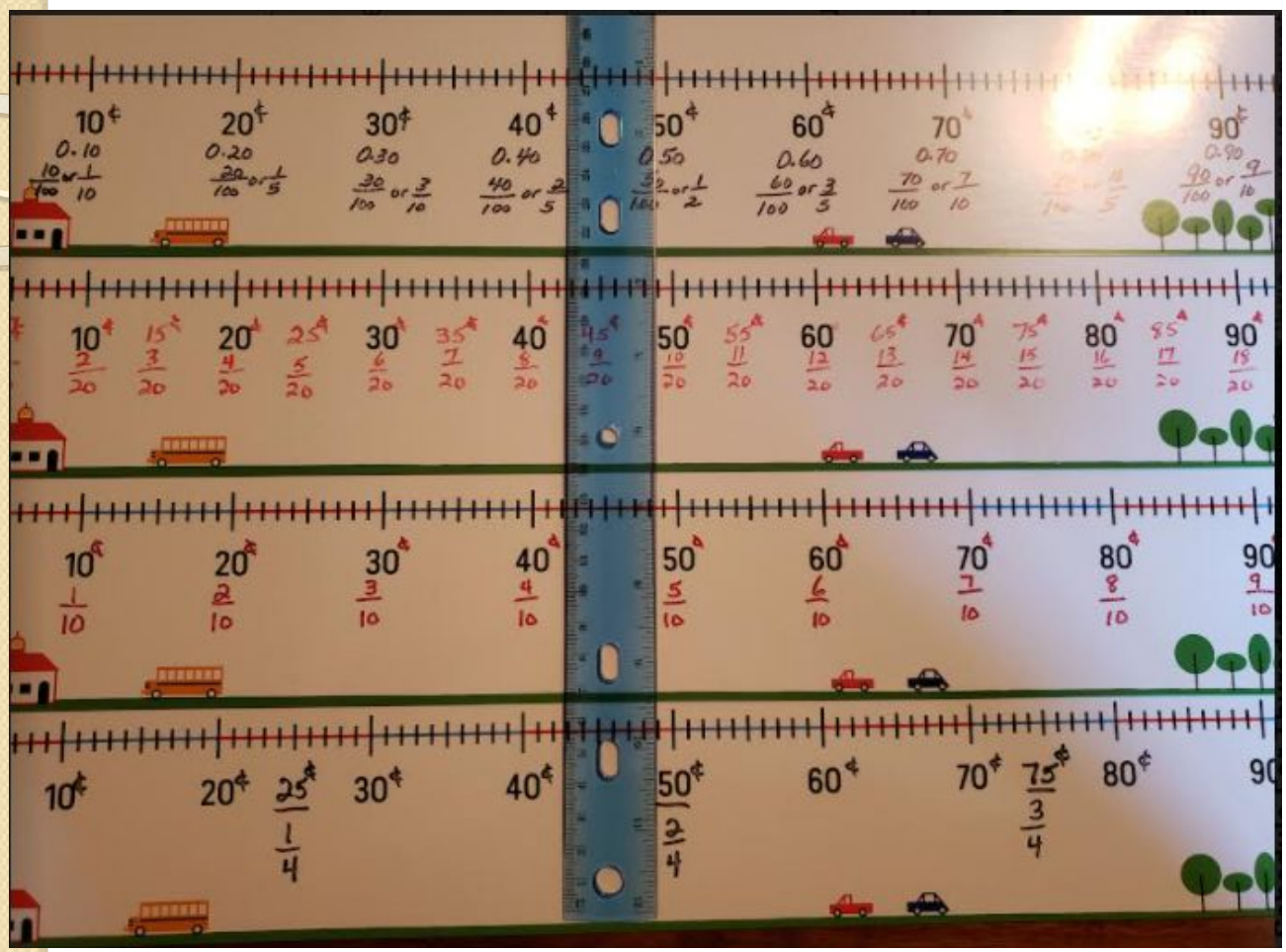

0 10 20 30 40 50 60 70 80 90 100

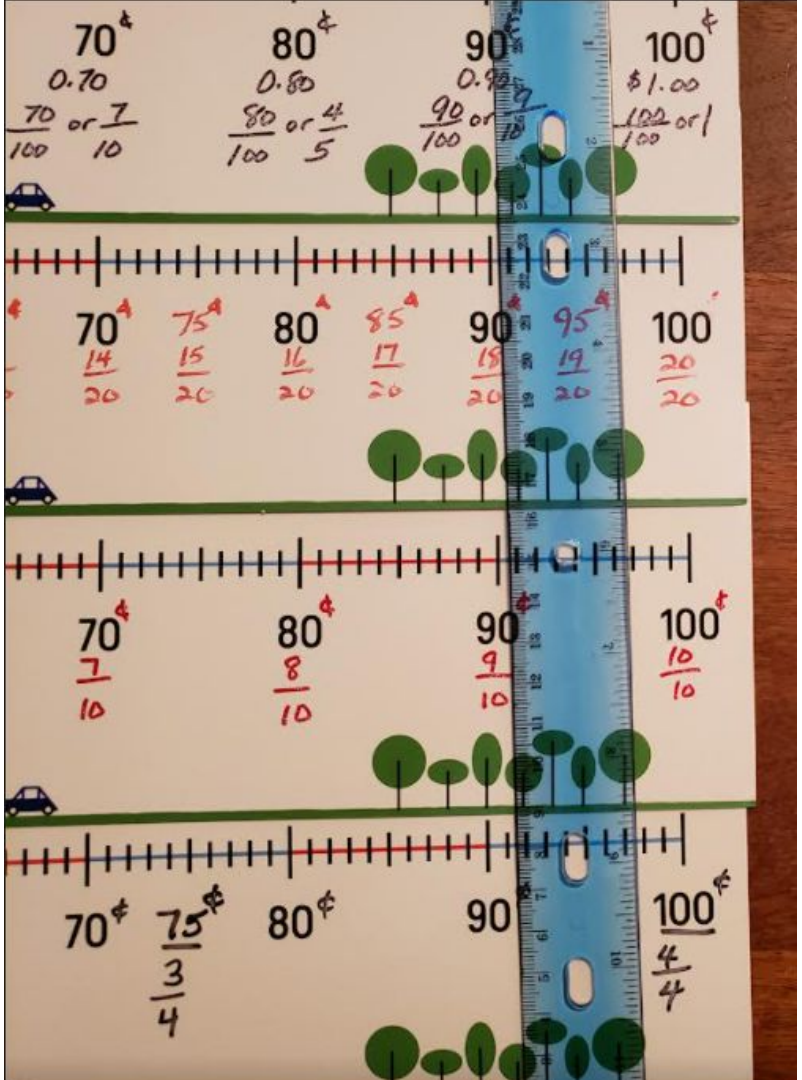

0
5¢
1/20
10¢
2/20
15¢
3/20
20¢
4/20
25¢
5/20
30¢
6/20
35¢
7/20

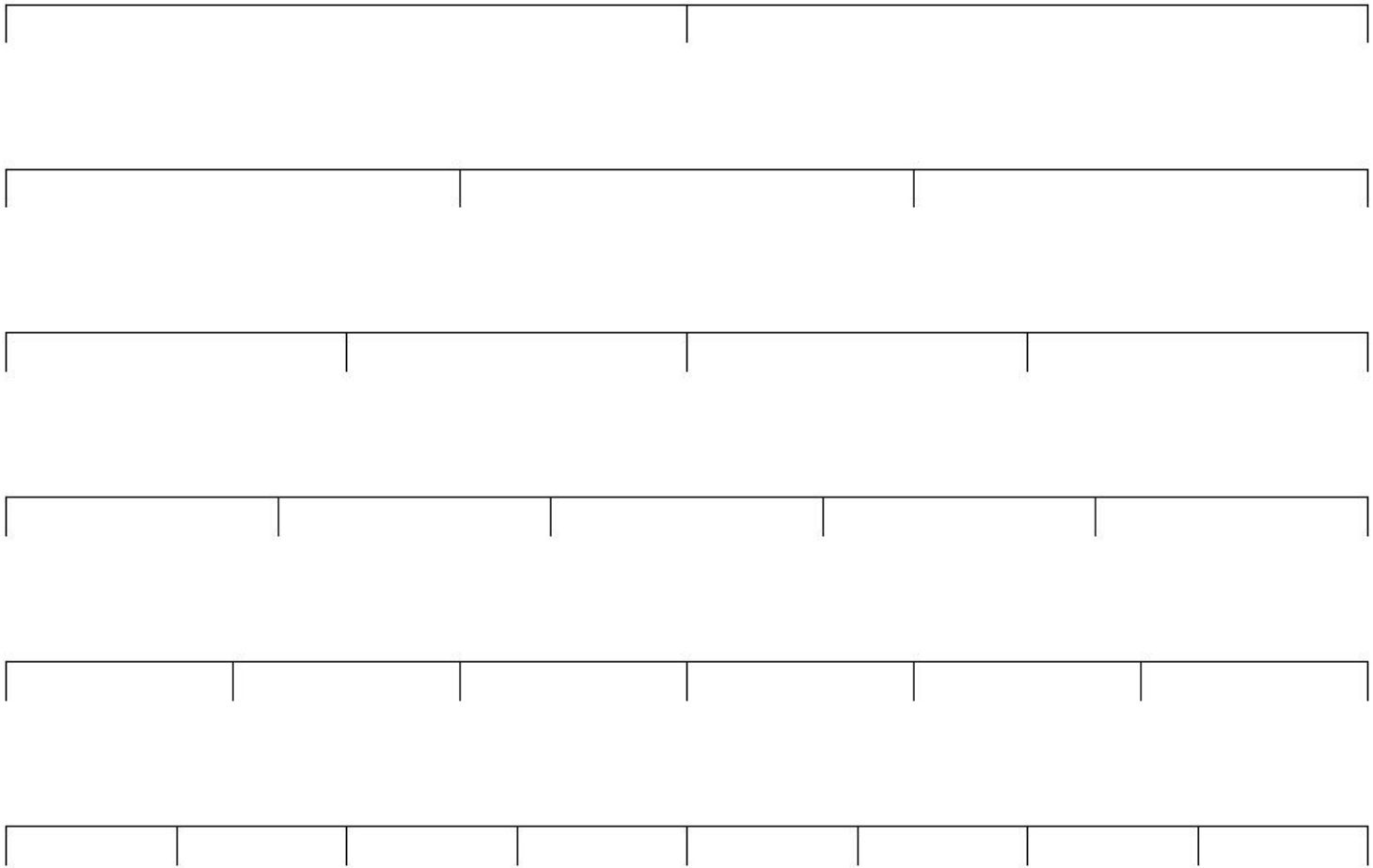

0
10¢
20¢
25¢
1/4
30¢
40¢
50¢
2/4
60¢
70¢
75¢
3/4
80¢
90¢
100¢
4/4


0
10¢
20¢
25¢
1/4
30¢
40¢

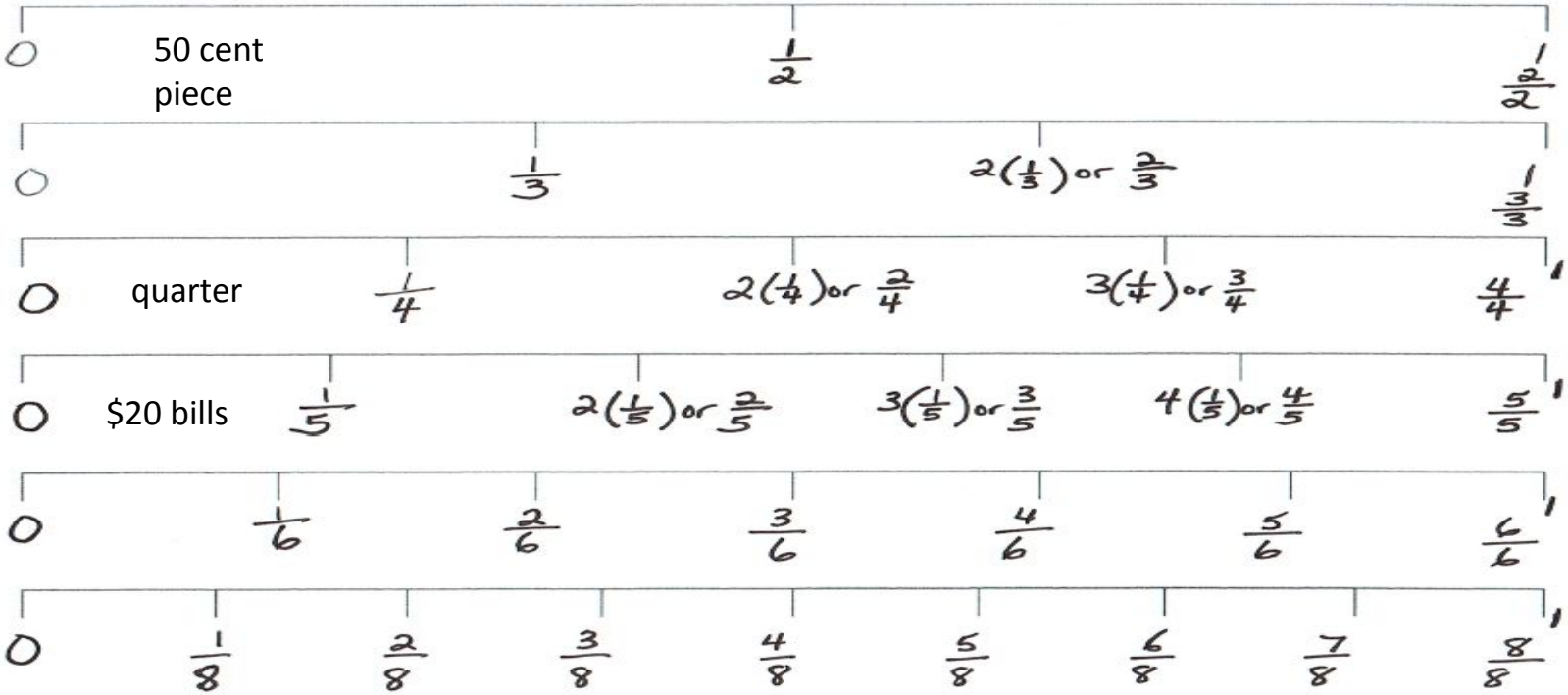

0
10¢
20¢
30¢
40¢
50¢
60¢
70¢
80¢
90¢
100¢
0
10¢
20¢
30¢
40¢
50¢
60¢
70¢
80¢
90¢
100¢
0
10¢
20¢
30¢
40¢
50¢
60¢
70¢
80¢
90¢
100¢
0
10¢
20¢
25¢
30¢
40¢
50¢
60¢
70¢
75¢
80¢
90¢
100¢


10¢ 20¢ 30¢ 40¢ 50¢ 60¢ 70¢ 90¢
0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.90
10¢ 15¢ 20¢ 25¢ 30¢ 35¢ 40¢ 45¢ 50¢ 55¢ 60¢ 65¢ 70¢ 75¢ 80¢ 85¢ 90¢
10¢ 20¢ 30¢ 40¢ 50¢ 60¢ 70¢ 80¢ 90
10¢ 20¢ 25¢ 30¢ 40¢ 50¢ 60¢ 70¢ 75¢ 80¢ 90


70¢
0.70
70/100 or 7/10
80¢
0.80
80/100 or 4/5
90
0.9
90/100 or
100¢
$1.00
100/100 or 1
70¢
14/20
75¢
15/20
80¢
16/20
85¢
17/20
90
95¢
19/20
100
20/20
70¢
7/10
80¢
8/10
90
9/10
100¢
10/10
70¢
75¢
3/4
80¢
90
100¢
4/4

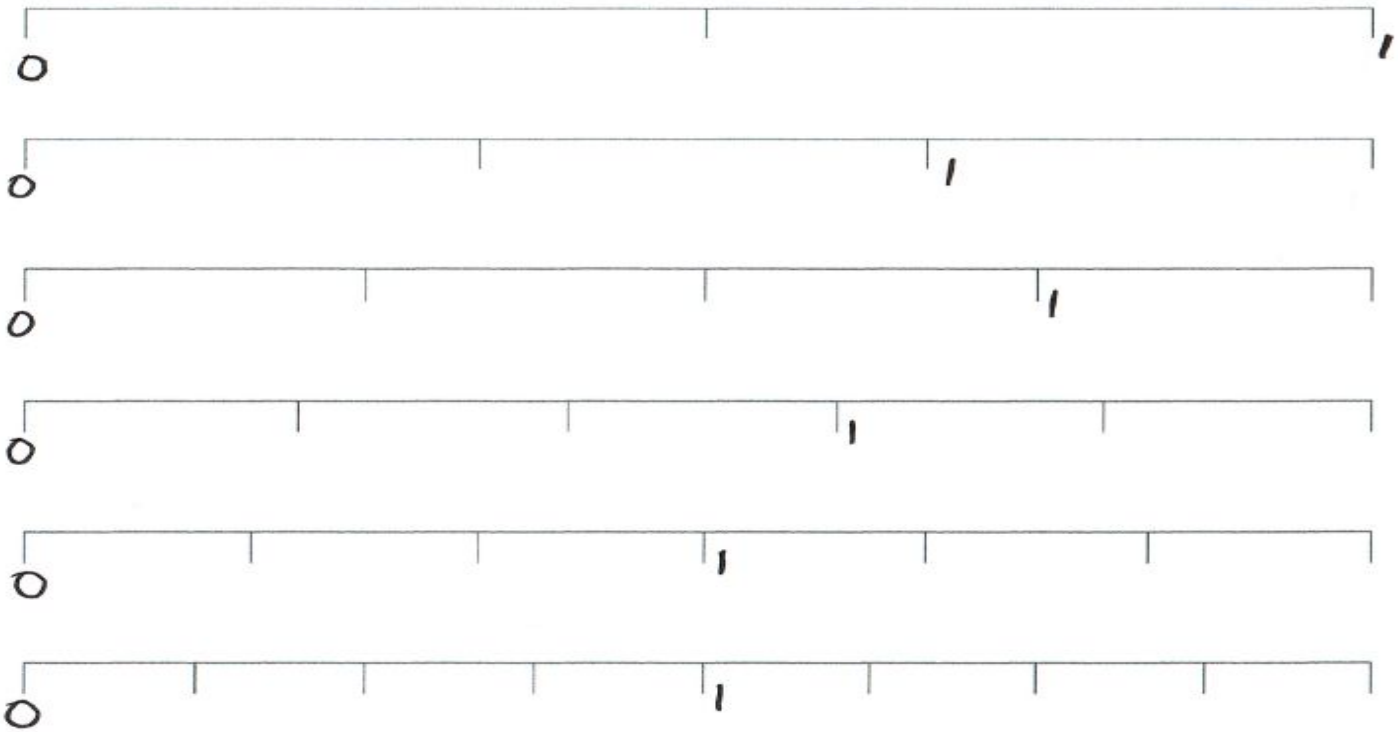


Link

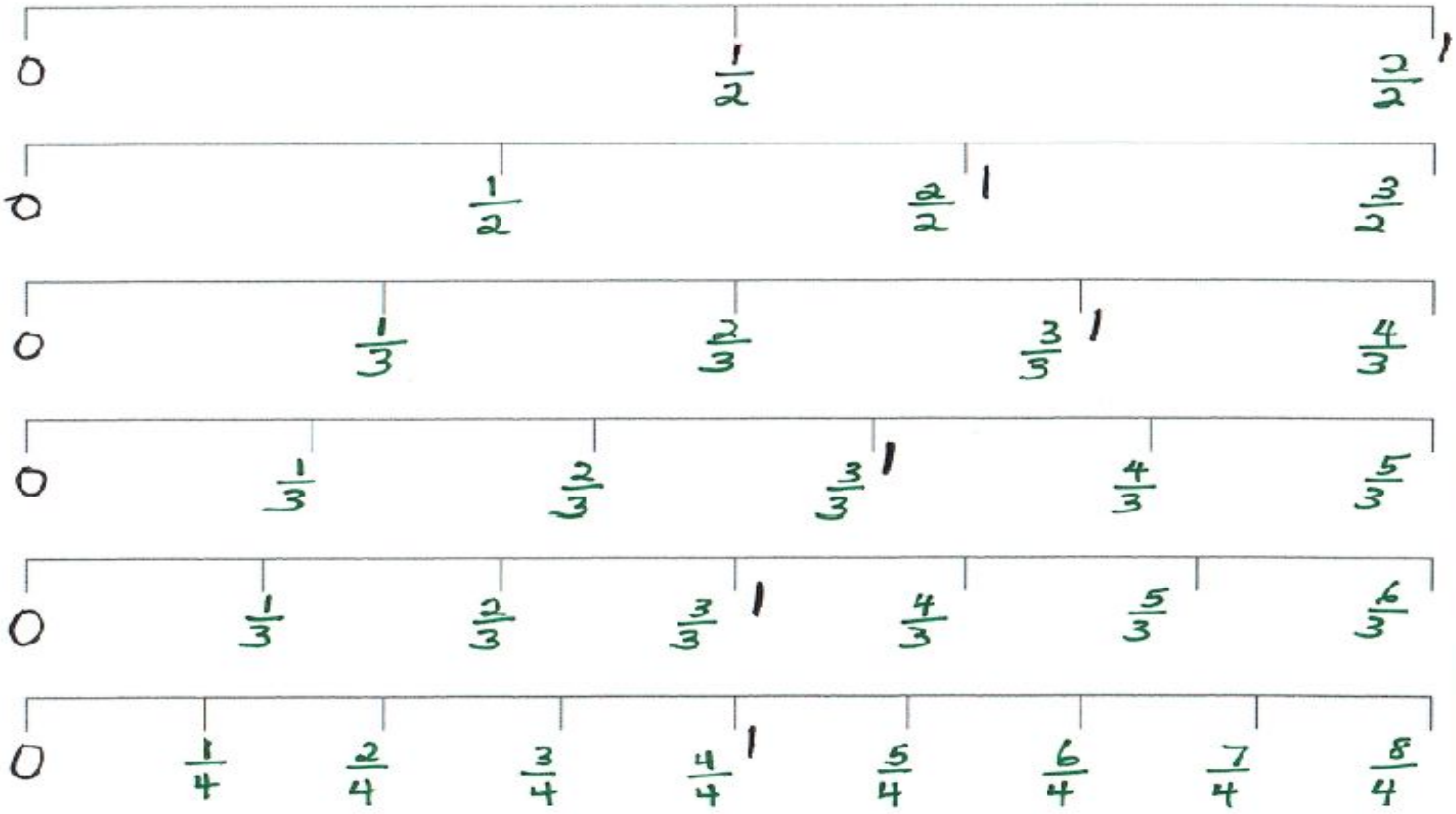


Compare

How can you recognize half?



Surface
Deep
Transfer



How much is $\frac{3}{2}$?

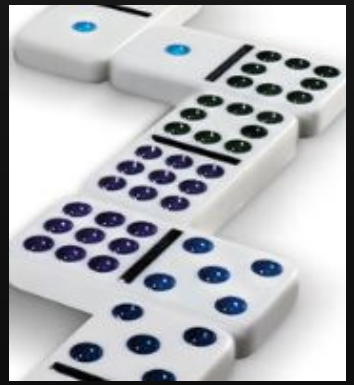
2+2=4

Shutterstock #1448021681

0

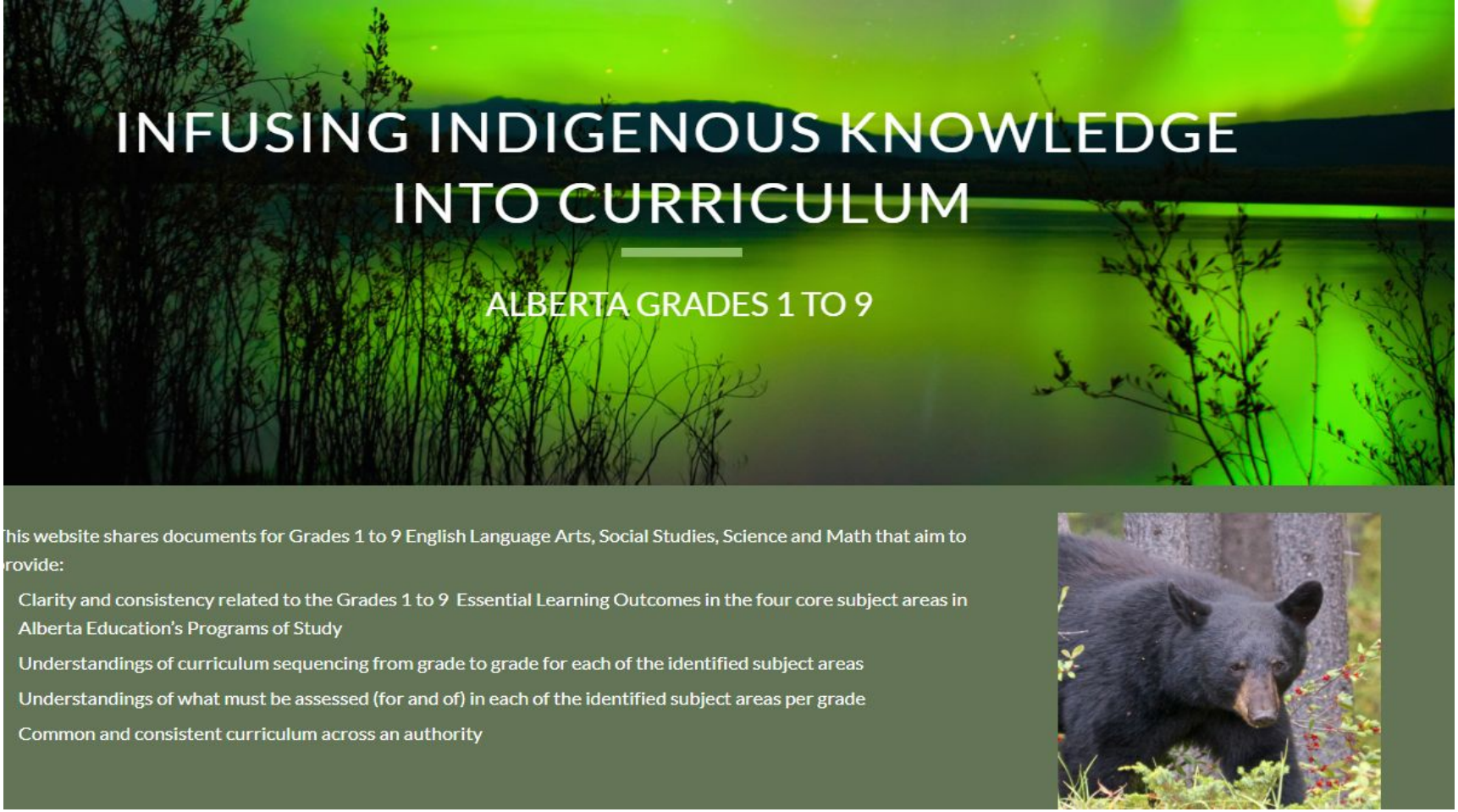
x

Dreamstime.com #16221199

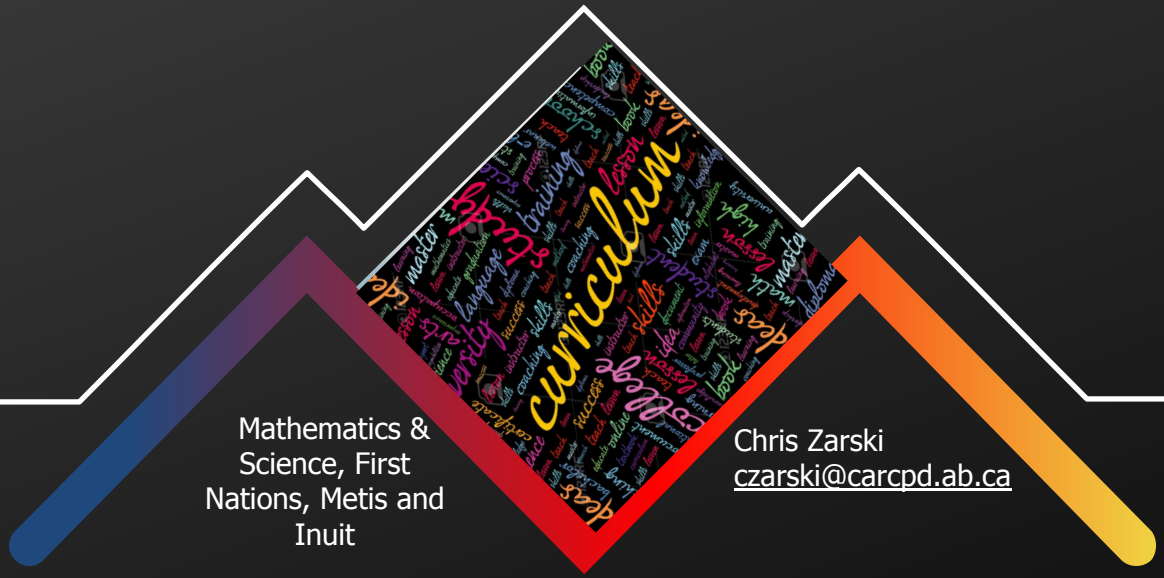


ToysRus

Shutterstock #1776053324



Kee Tas Kee Now Tribal Council Educational Authority, identified ELOs by viewing curriculum through the lens of **land based learning (LBL)**, **Cree ways of knowing and being (Nehiyaw Ways of Knowing)**, and the learning needs of students in their communities.
https://sites.google.com/arpdc.ab.ca/infusingindigenousknowledge



Mathematics & Science, First Nations, Metis and Inuit

Chris Zarski
czarski@carcpd.ab.ca

Thank You!

Please don't hesitate to connect.