Key Learning for Grade 2

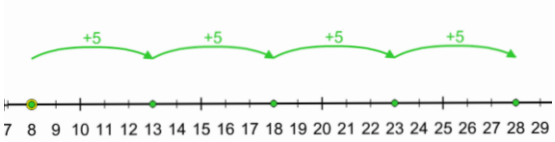
The Ontario Curriculum: Mathematics (2005)

Number Sense and Numeration

- **Read, represent, compare and order whole numbers to 100, and use concrete materials to investigate fractions and money amounts to 100¢;**
- **Demonstrate an understanding of magnitude by counting forward to 200 and backwards from 50 using various numbers as starting points;**
- **Solve problems involving the addition and subtraction of one- and two-digit whole numbers, using a variety of strategies, and investigate multiplication and division.**

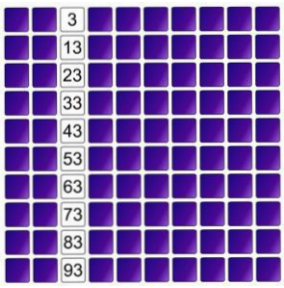
Counting

Count forward by 1's 2's, 5's, 10's, and 25's to 200, starting from multiples of 1, 2, 5, and 10, e.g., skip count by 5's from 8;



Count backwards

- by 1's from 50 and any number less than 50
- by 10's from 100 and any number less than 100 using number lines and hundreds charts, e.g., 93, 83, 73, 63, ...



Locate whole numbers to 100 on a number line and on a partial number line;
Sample activity:
Have your child locate 59 cm on a metre stick.

Money

Represent and compare money amounts to 100¢, using coins;
Sample activity: Which is more, 25¢ or 50¢?

- "I know that 50¢ is more because it is two quarters, but 25¢ is only one quarter."

Count and represent (using the ¢ symbol) a collection of coins to one dollar;
Sample activity: Show 51¢ in more than one way.

Fractions

Understand the relationship between the size of fractional parts and the whole, (i.e., if you divide a paper plate into fourths, the resulting pieces are smaller than if you divide it into thirds);

Regroup fractional parts into wholes, using concrete materials;
Sample activity: Show how nine fourths is equal to two wholes and one fourth.

- Students are not expected to write fractions using fractional notation, i.e., a/b.

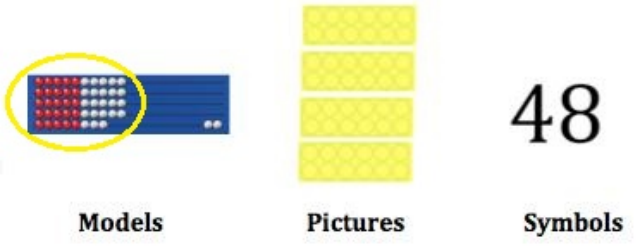
- One whole is equal to four fourths. So nine fourths is equal to two wholes plus one fourth."

Compare fractions using concrete materials;

- "I can use my fraction strips to show that three one-fourths are more than one one-half."

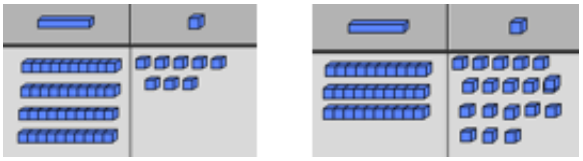
Whole Numbers

Represent numbers to 100, using a variety of tools;
Read and print number words to twenty;



Compose and decompose two-digit numbers using concrete materials,
e.g., 48 = 4 tens and 8 ones **OR** 3 tens and 18 ones;

- Help your child understand that 1 ten = 10 ones)

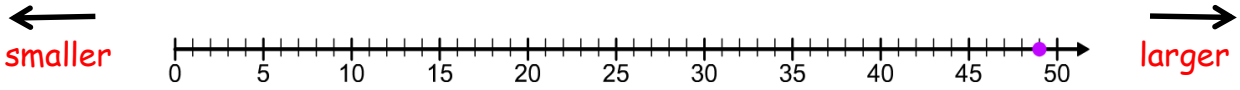


Compare and order numbers to 100;

- "48 has 4 tens and 58 has 5 tens, therefore 48 is smaller than 58 and must be to the left of 58 on the number line."

Determine, using concrete materials, the ten that is nearest to any given two-digit number and justify the answer;

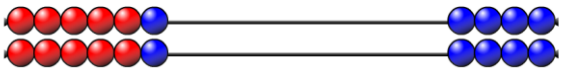
- "I know that 48 is two away from 50, but 8 away from 40, so 48 is closer to 50 than 40."



Operational Sense

Solve a variety of problems involving addition and subtraction of:

- whole numbers to 18 using a variety of mental strategies;
- money amounts to 100¢ using a variety of tools and strategies, e.g., coins or drawings;



- "I can see on the left side of the rekenrek that 6 + 6 has 2 groups of 5 which is 10 plus 2 more which is 12, or 10 + 2 = 12."

Describe the relationship between two quantities using addition and subtraction;
Sample activity: If I have 3 crayons and you have 9 crayons. How many fewer crayons do I have?

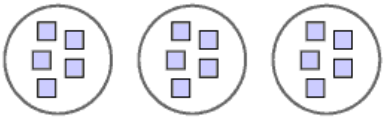
Solve problems involving two-digit addition and subtraction, using concrete materials and algorithms;

- "To add 37 + 52, I can add 30 + 50 to get 80 and then add 7 + 2 to get 9, which together is 89."

Represent multiplication as repeated addition using concrete materials or drawings;

- When thinking about multiplication as repeated addition, the multiplication sign can be read as "groups of".

3 × 5
3 groups of 5



5 + 5 + 5 = 15
3 × 5 = 15

Represent division, using concrete materials, as sharing equally.

- "If I share 15 carrot sticks with 3 friends, we all get 5 carrot sticks."

Measurement

- **Estimate, measure, and record length, perimeter, area, mass, capacity, time, and temperature, using non-standard units and standard units;**
- **Compare, describe, and order objects, using attributes measured in non-standard units and standard units.**

Time

Tell and write time to the quarter-hour on analogue and digital clocks;

Construct tools for measuring time using non-standard units, e.g., a water bottle will take five seconds to empty;

Temperature

Describe how changes in temperature affect everyday experiences;

- "It is raining outside so I will need my umbrella."

Use a standard thermometer to determine if the temperature is rising or falling;

- "The red liquid is going higher, which means that the temperature is rising."

Understanding Measurement Relationships

Investigate the relationship between the size of a unit of area and the number of units needed to cover a surface;

Sample activity: Will it take more placemats or napkins to cover the table?

Compare and order a collection of objects by mass and/or capacity;

Sample activity: When putting the groceries away, ask your child to put the biggest cans at the back of the cupboard and the smaller ones at the front.

Determine the relationship between days and weeks and months and years;

Sample activity: Count down special days (e.g., birthdays) by days, weeks, months, and years.

Understanding Measurement Attributes and Units

Have a benchmark (personal referent) for centimetre (cm), e.g., width of thumb for cm and distance from floor to hip for m;

Estimate and measure lengths, heights, and distances using standard units (cm and m) and non-standard units (e.g., toothpick, shoe, paper clip, stick of gum);

- Non-standard units are objects such as paper clips, which have the same size, but are not typically used to find length.

Record and represent measurements of length, height, and distance in a variety of ways;

Select and justify the choice of a standard unit (cm or m) or non-standard unit;

- "I used my thumb to measure the width of my shoe in cm because I know my thumb is about 1 cm."

Estimate, measure, and record the distance around objects, using non-standard units;

- "I decided to use paper clips to measure the distance around my shoe and found that it took 15."

Estimate, measure and record area, using a variety of non-standard units (e.g., blocks, tiles);

- "I think that it will take 14 pieces of paper towel to cover the top of the table."

Estimate, measure and record the capacity and/or mass of an object using a variety of non-standard units.

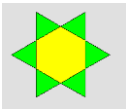
- "I thought that juice jug had a larger capacity than the bowl, but when I measured with this can, I found that the bowl could hold more."

Geometry and Spatial Sense

- **Identify two-dimensional shapes and three-dimensional figures and sort and classify them by their geometric properties;**
- **Compose and decompose common two-dimensional shapes and three-dimensional figures;**
- **Describe and represent the relative locations of objects and represent objects on a map.**

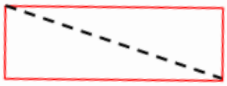
Geometric Relationships

Compose and describe pictures, designs and patterns by combining 2D shapes;



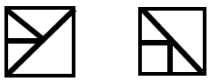
- "I made a picture of a flower from one yellow hexagon and six green equilateral triangles."

Compose and decompose 2D shapes;



- "A rectangle can be split into two triangles."

Cover outline puzzles with 2D shapes in more than one way, e.g., make a square with tangram pieces;



Build a 3D structure using 2D shapes and describe it;

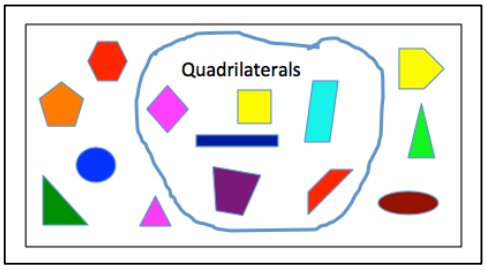
- "I made a square-based pyramid with one square for the base and four triangles for the sides."

Geometric Properties

Distinguish between geometric properties (e.g., number of sides or faces) and attributes (characteristic such as colour, size, texture);

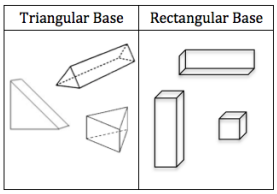
Identify and describe various polygons (plane shape with straight sides, i.e., triangles (3 sides), quadrilaterals (4 sides), pentagons (5 sides), hexagons (6 sides), heptagons (7 sides), octagons (8 sides);

Sort and classify polygons by their geometric properties (number of sides or vertices;

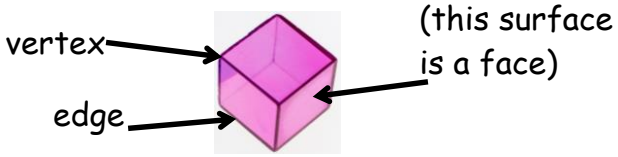


Identify and describe various 3D figures (cubes, prisms, pyramids) and sort and classify them by their geometric properties (number and shape of faces);

Prism Sort

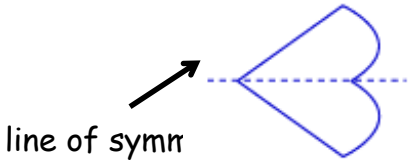


Create models and skeletons of prisms and prisms and describe their geometric properties;



- "My cube has 6 square faces, 8 vertices and 12 edges."

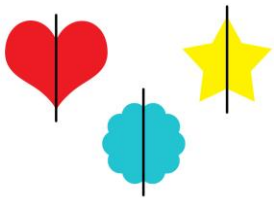
Locate the line of symmetry in a 2D shape;



Location and Movement

Describe the relative location (e.g., beside, two steps to the right of) and the movement of objects on a map;

Draw simple maps of familiar settings, and describe the relative location of objects on the map;
Sample activity: Have your child draw a map of his or her bedroom, showing the location of the furniture in it.



Create and describe symmetrical designs using a variety of tools.

- Symmetry occurs when one half of a shape is the mirror image of the other.

Expressions and Equality

Demonstrate an understanding of the concept of equality by partitioning whole numbers to 18 in a variety of ways;

"I can show that 9 + 6 = 10 + 5."

Represent that two number expressions are equal using the equal sign, e.g., 9 + 6 = 10 + 5;

Use the commutative property of addition, i.e., it doesn't matter in which orders the numbers are added;

"I know that 9 + 8 + 1 is the same as 9 + 1 + 8. It's easier to add when I can make a ten.

Represent that two number expressions are equal using the equal sign, e.g., 9 + 6 = 10 + 5;

Use the commutative property of addition, i.e., it doesn't matter in which order the numbers are added;

Understand the property of zero in addition and subtraction, i.e., when you add or subtract zero to a number, the number does not change;

Determine the missing number in equations involving addition and subtraction to 18 using a variety of tools and strategies, e.g, counters;

9 + 6 = ☐ + 5

"I used the rekenrek to show 9 + 6. I noticed that there were 5 beads on the right. I moved one of the bottom beads to the right to make it + 5. To keep the total the same, I had to move one of the top beads to the left. Both 9 + 6 and 10 + 5 are 5 less than 20, or 15."

Patterns and Algebra

- **Identify, describe, extend and create repeating patterns, growing patterns, and shrinking patterns;**
- **Demonstrate an understanding of the concept of equality between pairs of expressions, using concrete materials, symbols, and addition and subtraction to**

Patterns and Relationships

Identify and describe growing and shrinking patterns generated by repeated addition or subtraction of 1's, 2's, 5's, 10's, and 25's on a number line and a hundreds chart;

- "If I count down by 10's from 93 on a hundreds chart, I will move in a column from 93 to 83 to 73 to 63, etc. all the way to 3."

Identify, describe, and create growing and shrinking patterns involving addition and subtraction, with and without the use of a calculator, e.g., 8 + 5 = 13, 13 + 5 = 18, 18 + 5 = 23, 23 + 5 = 28, 28 + 5 = 33, 33 + 5 = 38;

- "My pattern is 8, 13, 18, 23, 28, 33, 38 … To make my pattern, I started at 8 and added 5 each time."

Identify repeating, growing, and shrinking patterns found in real-life contexts, e.g., a rhythm pattern in music;

- A repeating pattern has a core that repeats over and over, e.g., pencil, paper, pen, pencil, paper, pen, or red, red, blue, red, red, blue.
- A growing pattern has the same amount added each time. You can have a growing pattern with pictures, objects, shapes, gestures (like clapping), and numbers, e.g., 1, 3, 5, 7 … or A, AA, AAA, … or counting dimes 10¢, 20¢, 30¢, … by skip counting by tens.
- A shrinking pattern has the same amount subtracted each time. You can have a shrinking pattern with pictures, objects, shapes, gestures (like clapping), and numbers, e.g., going down by 1 each time:

Represent a given growing or shrinking pattern in a variety of ways;

- "I can show A, AA, AAA, AAAA by clap, double-clap, triple clap, quadruple clap."
- "I can show ABBB, ABB, AB, A with snap-stomp-stomp-stomp, snap-stomp-stomp, snap-

Create **growing or shrinking** patterns;

8, 13, 18, 23, 28, 33, 38…

- "My pattern started at 8 and added 5 each time. I notice that the ones digit always has either an 8 or a 3."

- "The pattern is going down by 1 each time."

Create a **repeating** pattern by combining two attributes, e.g., colour and size;

- "My pattern is an AB pattern and the core is a little red star followed by a big blue star. It goes red, blue, red, blue, etc. and little, big, little, big…"

Demonstrate an understanding of patterns that result from repeating an operation, e.g., adding 2, or by changing an attribute (e.g., colour, orientation);

3, 6, 9, 12…

- "I made my pattern by adding 3 (+3) each time."

Data Management and Probability

- **Collect and organize categorical or discrete primary data and display the data, using tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, with labels ordered appropriately along horizontal axes, as needed;**
- **Read and describe primary data presented in tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers;**
- **Describe probability in everyday situations and simple games.**

Collecting and Organizing Data

Organize objects into categories using two attributes simultaneously;

- An attribute is a characteristic, e.g., shape, size, or colour.

  Sample activity: Ask your child to sort a collection of buttons by colour and number of holes e.g., red buttons with two holes, blue buttons with three holes, etc.

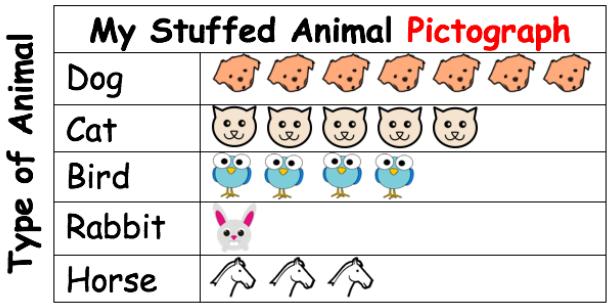
Gather data to answer a question using a simple survey;

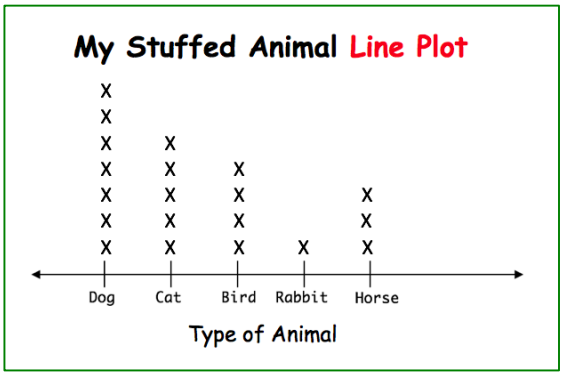
Sample activity: Have your child conduct a survey about which movie the family would like to watch on the weekend.

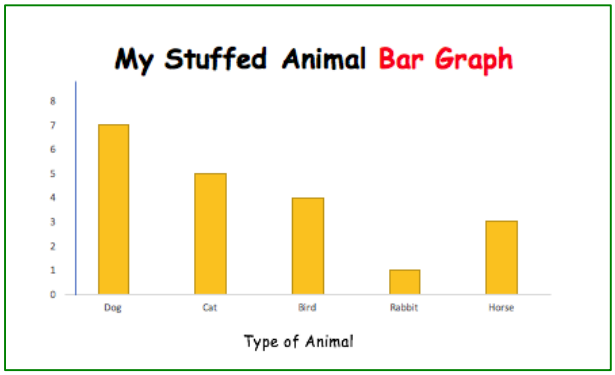
Collect and organize collected data into categories or counts and display it using one-to one correspondence on pictographs, line plots, simple bar graphs, or tallies with appropriate titles and labels;

When data is represented on a pictograph using one-to-one correspondence, there will be a one-to-one relationship between the count and its' representation on the graph, i.e., each tally in the count is represented by one picture on a pictograph, or one "x" on a line plot.

My Stuffed Animal Tally	
Dog	𝍸 ||
Cat	𝍸
Bird	||||
Rabbit	|
Horse	||







Data Relationships

Read data presented in concrete graphs, pictographs, line plots, simple bar graphs and graphic organizers (e.g., tally charts, diagrams) and describe it using mathematical language;

- "What animal do you have the most of? Which animal do you have the least of?"

Pose and answer questions about collected data;

- "I wonder how many stuffed animals you have in total?"

Distinguish between numbers that represent data values (e.g., "I have 4 people in my family") and numbers that represent the frequency of an event (e.g., "There are 10 children in my class who have 4 people in their family.");

Demonstrate an understanding of data displayed in a graph by comparing different parts of the data and making statements about the data as a whole;

- "I looked at the pictograph showing how many stuffed animals I have. I can see that I have more dogs than cats, but more cats than horses."

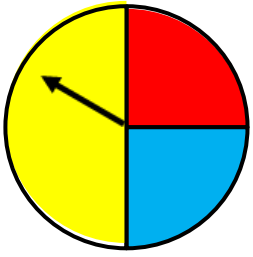
Probability

Describe probability as a measure of the likelihood that an event will occur using mathematical language, i.e., impossible, unlikely, less likely, more likely, certain;

- "It is more likely that the arrow will land on yellow than on red or blue, but equally likely that it will land on red as blue."

Describe the probability that an event will occur through investigations with simple games and probability experiments.

Sample activity: Have your child develop a spinner that has one half shaded yellow, one-fourth shaded red, and one-fourth shaded blue. Predict what will happen if each family member spins the spinner eight times. Have everyone spin the spinner eight times and compare the results to what was predicted.

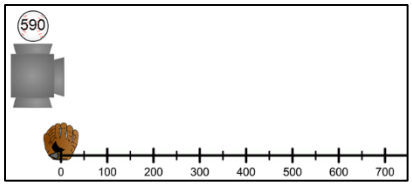


Learning Activities for Grade 2 with mathies.ca

Quantity: Whole Numbers to 100

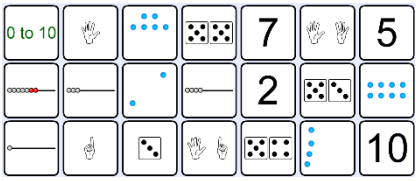
Game: Catch a Bouncing Ball

- Work with numbers to 100



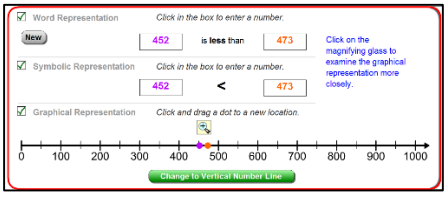
Game: Representation Match (Whole Numbers)

- Work with numbers up to 100



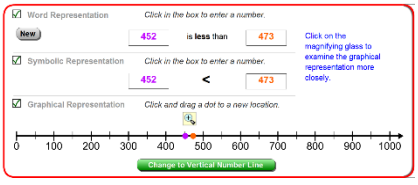
Learning Tool: Comparison Tool (Whole Numbers)

- Work with numbers to 100



Learning Tool: Number Line

- Work with numbers to 100

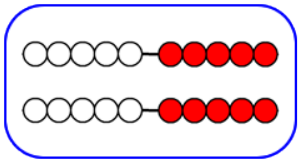


Learning Activities for Grade 2 with mathies.ca

Quantity: Whole Numbers to 100

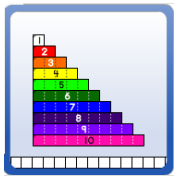
Learning Tool: Rekenrek

- Work with numbers to 100, e.g., “What can you tell me about the number 55 when you look at it on the rekenrek? Sample answer: “It is eleven 5’s; It is 45 less than 100”
- This tool is available as an app at the Apple Store and Google Play



Learning Tool: Relational Rods

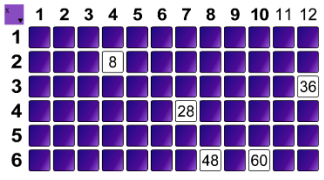
- Select the Whole Number Rod option
- Work with two-digit numbers, e.g., “Show me 25 in more than one way.”
- This tool is available as an app at the Apple Store and Google Play



Counting

Learning Tool: Number Chart

- Select the 100 chart option in the purple drop down menu
- Count by 1’s, 2’s, 5’s, and 10’s and 25’s to 100, starting from multiples of 1, 2, 5, and 10, e.g., 2, 7, 12, 17, 22, 27, …
- Count backwards by 1’s from 50 and any number less than 20
- Count backwards by 10’s from 100 and any number less than 100, e.g., 66, 56, 46, 36, 26, 16, 6



Learning Activities for Grade 2 with mathies.ca

Money

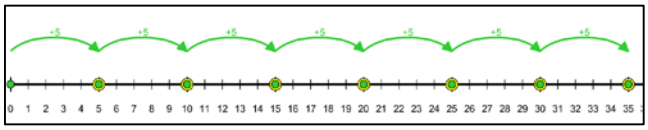
Learning Tool: Money

- Identify and state the value of a penny, nickel, dime, quarter, $1 coin, and $2 coin
    - Although there is no longer a physical penny, it is important that children learn the value of a penny in our monetary system
- Represent money amounts to 100¢
- Count collections of coins to one dollar
- This tool is available as an app at the Apple Store and Google Play

Operations

Learning Tool: Number Line

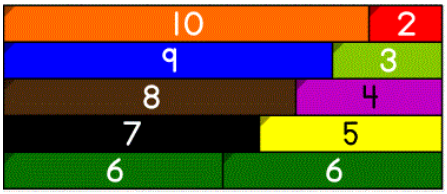
- Solve problems involving two-digit addition and subtraction
- Represent multiplication as repeated addition, e.g., +5



Equality

Learning Tool: Whole Number Rods

- Devise different composition of numbers up to 18
- Represent multiplication as repeated addition, e.g., +5

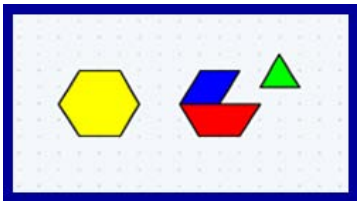


Learning Activities for Grade 2 with mathies.ca

Geometry

Learning Tool: Pattern Blocks

- Compose and decompose patterns, pictures, and designs
- Create symmetrical designs and pictures
- Cover outline puzzles



Patterning

Learning Tool: Pattern Blocks

- Create a repeating patterns by combining two attributes (e.g., colour, shape)
- Demonstrate an understanding that patterns result by making a repeated change to an attribute (e.g., colour, orientation)