

Key Learning for Grade 1

The Ontario Curriculum: Mathematics (2005)



Number Sense and Numeration

- Read, represent, compare and order whole numbers to 50, and use concrete materials to investigate fractions and money amounts;
- Demonstrate an understanding of magnitude by counting forward to 100 and backwards from 20;
- Solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of strategies.

Whole Numbers

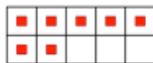


Represent numbers to 50, using a variety of tools;

Read and print number words to ten;

Use ordinal numbers to 31st, e.g., "1st, 2nd, 3rd..." or "first, second, third, etc....";

Models



Pictures



Symbols

7

Words

seven

Relate numbers to the anchors of 5 and 10;



“I know that 7 is...
2 more than 5 and
3 less than 10.”

Compose and decompose numbers up to 20 in a variety of ways, using concrete materials such as linking cubes or digital tools such as *Whole Number Rods* (mathies.ca)

“I have four
ways to make 7.”

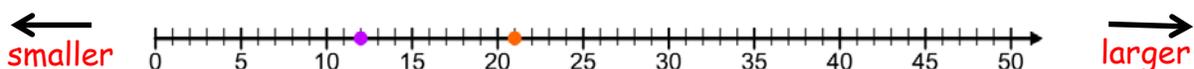


Place Value: In our number system, each place has a value ten times greater than the place immediately to the right, e.g., in 276, the digit 2 represents 2 **hundreds**, the digit 7 represents 7 **tens**, and the digit 6 represents 6 **ones**.

Compare and order numbers to 50;

Sample activity: Which is greater, 12 or 21? How do you know?

“I can use the benchmark of 20. I know that 21 is greater than 20 because on a number line, it is to the right of 20 and numbers get greater as you go to the right. I know 12 is less than 20 because 12 is to the left of 20. Therefore, 21 must be greater than 12.”



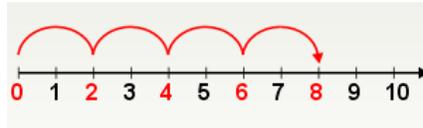
Estimate the number of objects in a set;

Sample activity: Take a look to guess the number of shoes in a closet. Verify by counting.

Counting

Count forward by 1's, 2's, 5's, and 10's to 100;

Count backwards by 1's, 2's, and 5's from 20 and by 1's from any number less than 20;



- Children may need lots of practise to master the “teen” numbers, e.g., seventeen.
- When skip counting forward, children may need support in naming numbers when the value of the tens digit changes, such as going from 20 to 30.

Sample activity: Count by fives to determine the value of 10 nickels (50¢).

Demonstrate, using concrete materials, the concepts of **one to one correspondence** (each object gets one count) and **conservation of number** (the number of objects does not change regardless of how they are arranged or re-arranged);

- It can take time for children to master these skills. Provide plenty of opportunities for counting, e.g., books, cans, socks, forks, etc.
 - When counting by 1's, there are increments of one, and each object is counted once: “one, two, three, etc.”
 - When counting by 2's, there are increments of two, and each **pair** of objects is counted once: “two, four, six, etc.”
 - Children should recognize that the number of objects does not change if the count starts with a different object, or proceeds in a different order.

Sample activity: After your child has counted a set of objects, ask how many there are. Your child should be able to tell the total number without counting again. Spread out the objects and ask how many there are now. Your child should be able to tell the number, or that it has not changed.

Money

mathies



Identify, describe, and state the value of a penny, nickel, dime, quarter, \$1 coin, and \$2 coin;

“I know that a dime has the Bluenose on it and it is worth ten cents.”

Represent money amounts to 20¢, using coins;
Sample activity: Show 11¢, in more than one way.



Fractions

Divide whole objects into equal-sized parts (halves, fourths);

Sample activity: Ask your child to divide an object such as a granola bar into two equal-sized pieces or halves.



Operational Sense

Solve a variety of problems involving the addition and subtraction of:

- whole numbers to 20;
- money amounts to 10¢;

using concrete materials and drawings and a variety of mental strategies.

“To find $9 + 8$, I used the doubles of $8 + 8 = 16$, and then added one more to get 17.”

Measurement

- Estimate, measure, and describe length, area, mass, capacity, time, and temperature, using non-standard units of the same size;
- Compare, describe, and order objects, using attributes measured in non-standard units.

Time

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



Describe the passage of time using non-standard units;

☞ “There are three sleeps until my birthday.”

Name the months of the year in order and read the date on a calendar;

Relate temperature to experiences of the seasons;

☞ “We can make an outdoor ice rink in the winter because it is cold outside.”

Understanding Measurement Attributes

Estimate and measure lengths, heights, and distances using non-standard units;

Sample activity: Estimate and then measure the length of a table using straws, placed end to end.

Construct tools for measuring lengths, heights, and distances, e.g., footprints using cash register tape;

Estimate and measure area using non-standard units:

- Area is the size of a surface.

Sample activity: Estimate and then measure the area of the tabletop using placemats.

Estimate and measure the capacity/mass of an object using non-standard units;

- Capacity is the greatest amount that a container can hold and is usually measured in litres or millilitres.

Sample activity: Estimate and then determine the number of juice cans that a carton holds.

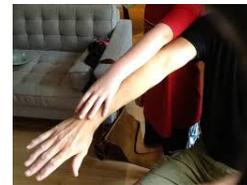
- Mass is the amount of matter in an object and is usually measured in grams or kilograms.

Understanding Measurement Relationships

Compare and order objects using measurable attributes and non-standard units (e.g., shoe, toothpick, 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. They are used to explore the concept of measuring.

Sample activity: Which is longer, my arm or your arm?



☞ “Your arm is longer because when we line up our elbows, my hand only goes to your wrist.”

Use the metre as a benchmark for measuring length, e.g., is an object shorter/taller than a metre?;

- A metre is about the distance from the floor to a doorknob.

Understand that when you measure something, the smaller the unit, the greater the number of units needed.

☞ “If we measure the length of the table using arms, it would take more of mine than yours because my arm is shorter.”

Geometric Properties

Identify and describe common 2D shapes (squares, rectangles, circles, etc.) and sort them using a rule, e.g., number of sides, colour, size;



Triangles
3 sides

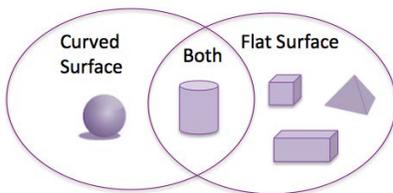


Squares
4 sides (same length)



Rectangles
4 sides

Identify and describe common 3D figures (spheres, cones, cubes, etc.) and sort them using a rule, e.g., shapes with curved or flat surfaces;



Trace and identify the 2D faces of 3D figures, using concrete models;

Describe symmetry (one half is a reflection of the other) in shapes in the environment;

Sample activity: Where do you see symmetry in this picture of the Parliament Buildings?



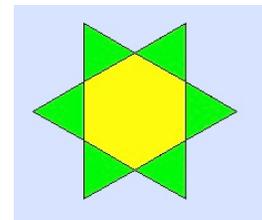
Geometry and Spatial Sense

- Identify common two-dimensional shapes and three-dimensional figures and sort and classify them by their attributes;
- Compose and decompose common two-dimensional shapes and three-dimensional figures;
- Describe the relative locations of objects using positional language.

Geometric Relationships

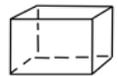
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Compose patterns, pictures and designs using 2D shapes and describe them using geometric properties;



- “My flower is made with six triangles and one hexagon. It is symmetrical because if I fold it in half, the two sides will meet/overlap exactly.”

Build 3D structures using concrete materials, and describe the 2D shapes the structure contains



- “My rectangular prism has four rectangular and two square faces.”

Cover outline puzzles, using 2D shapes (such as tangrams);



Location and Movement

Describe the location of people and objects using positional language (e.g., over, under, above, below) or concrete maps, e.g., “The Centennial flame is in front of the Parliament Buildings.”

Patterning and Algebra

- Identify, describe, extend, and create repeating patterns;
- Demonstrate an understanding of the concept of equality, using concrete materials and addition and subtraction to 10.

Patterns and Relationships

mathies

Identify, describe, copy, create, and continue repeating numeric patterns e.g., 1, 2, 3, 1, 2, 3, 1, 2, 3,...

Identify, describe, copy, create, and continue repeating geometric patterns with one attribute (e.g., shape, colour, size, thickness);

Represent repeating patterns using objects, sounds, actions, numbers, and a pattern rule;

Sample activity: Represent this pattern in another way:

★ ★ ■★ ★ ■★ ★ ■...

- ☞ “The pattern is star, star, square, star, star, square, star, star, square. This is an AAB, AAB, AAB,... pattern.”
- ☞ “Another pattern that works the same way is stomp, stomp, clap, stomp, stomp, clap, stomp, stomp, clap”

Expressions and Equality

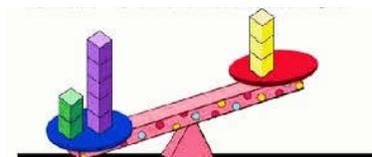
Create a set in which the number of objects is greater than, less than, or equal to the number of objects in a given set;

Sample activity: Make a set that has a greater number of objects than this set.



Understand that the equal sign means both sides of an equation have the same value;

Sample activity: What needs to be added or subtracted to achieve balance?



- ☞ “Both sides need a value of 7 for the scale to balance.”

$$2 + 5 = 3 + \square$$

Determine the number of identical shapes that must be added or subtracted to establish balance (equality).

- ☞ “I need to add 4 blocks to the right side of the scale to make both sides equal 7.”

Data Management and Probability

- Collect and organize categorical primary data and display the data using concrete graphs and pictographs, without regard to the order of labels on the horizontal axis;
- Read and describe primary data presented in concrete graphs and pictographs;
- Describe the likelihood that everyday events will happen.

Collecting and Organizing Data

Organize objects into categories using one attribute (characteristic such as colour, size, etc.);
Sample activity: Ask your child to help sort the laundry into loads for whites, darks, colours, delicates, etc.

Collect, record (e.g., using counters or tally marks) and organize data using categories, e.g., the types of books that the family borrowed from the library this week;

Smith Family Book Choices
Fiction IIII
Non-fiction H# II

Display data on prepared templates of graphs or pictographs (a graph that uses pictures or symbols to compare frequencies) using one-to-one correspondence (each picture in the graph represents one book that the Smith family borrowed);



Probability

Describe the likelihood that everyday events will occur using mathematical language, i.e., impossible, unlikely, less likely, more likely, certain.

- “It is unlikely that it will snow in July because it is so hot outside.”

Understanding Data

Read data presented in concrete graphs and pictographs using concrete language;

- “We borrowed more non-fiction books than fiction books from the library.”

Ask and answer questions about collected data;

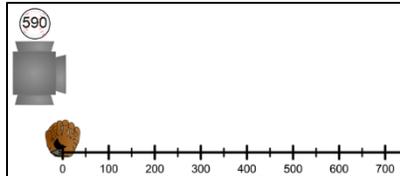
Sample activity: Ask, “How many more/less fiction than non-fiction books did the Smith Family borrow?”

Learning Activities for Grade 1 with mathies.ca

Quantity: Whole Numbers to 50

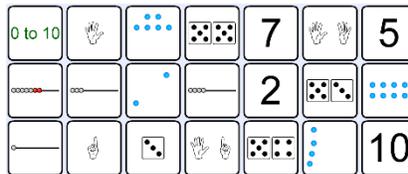
Game: Catch a Bouncing Ball

- Work with numbers to 50



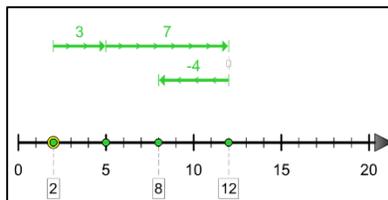
Game: Representation Match (Whole Numbers)

- Work with numbers up to 20



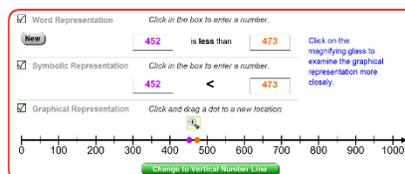
Learning Tool: Comparison Tool (Whole Numbers)

- Work with numbers to 50



Learning Tool: Number Line

- Work with numbers to 50

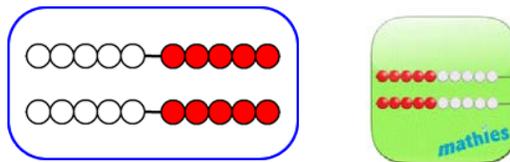


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Quantity: Whole Numbers to 50

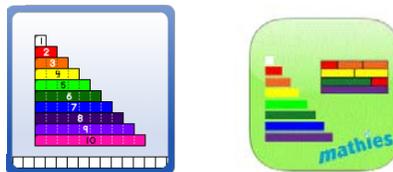
Learning Tool: Rekenrek

- Explore how numbers up to 50 relate to anchors of 5 and 10, e.g., 23 is 3 more than 20 and 2 less than 25
- This tool is available as an app at the Apple Store and Google Play



Learning Tool: Relational Rods

- Select the Whole Number Rod option
- Compose and decompose numbers to 20
- 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 to 100
- Count backwards by 1's, 2's, and 5's from 20 and by 1's from any number less than 20

	1	2	3	4	5	6	7	8	9	10	11	12
1												
2				8								
3												36
4							28					
5												
6								48		60		

Learning Activities for Grade 1 with mathies.ca

Money

Learning Tool: Money

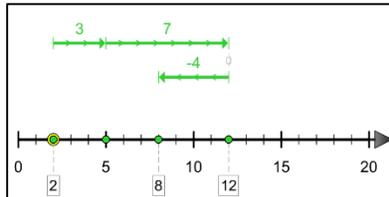
- Identify and state the value of a penny, nickel, dime, quarter, \$1 coin, and \$2 coin
 - Although there is no longer a physical penny, it is important that children learn the value of a penny in our monetary system
- Represent money amounts to 20¢
- This tool is available as an app at the Apple Store and Google Play



Operations

Learning Tool: Number Line

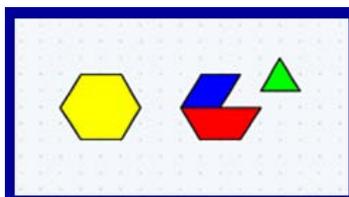
- Adding and subtracting whole numbers to 20



Geometry

Learning Tool: Pattern Blocks

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



Learning Activities for Grade 1 with mathies.ca

Patterning

Learning Tool: Pattern Blocks

- Create repeating patterns involving one attribute (e.g., colour, shape)
- Represent patterns in more than one way (e.g., red, green, red... is like square, trapezoid, square)

