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ONLINE TEACHING RESOURCE

Grade 2 Lesson Summary

Overall Objectives
This lesson will help students to:
- Locate numbers on a number line;
- Decompose a two-digit number into tens and ones;
- Count forward and backward by 10's and 1's;
- Show addition and subtraction on a number line;
- Develop and apply strategies for calculating sums and differences mentally.

Learning Expectations
Students will:
- Compare and order whole numbers using concrete materials, drawings, numerals, and number words to develop an understanding of place value; 2m2
- Understand and explain basic operations (addition, subtraction, multiplication, and division) of whole numbers by modelling and discussing a variety of problem situations (e.g., show that division is sharing, show addition and subtraction with money amounts); 2m4
- Develop proficiency in adding and subtracting one- and two-digit whole numbers; 2m5
- Use a calculator to skip count, explore number patterns, and solve problems beyond the required pencil-and-paper skills; 2m8
- Locate whole numbers to 50 on a number line and partial number line (e.g., from 34 to 41); 2m12
- Show counting by 2's, 5's, and 10's to 50 on a number line; 2m13
- Compare, order, and represent whole numbers to 100 using concrete materials and drawings; 2m14
- Explain a variety of strategies to find sums and differences of 2 two-digit numbers; 2m26

The code that follows each learning expectation comes from the Ontario Curriculum Unit Planner. See www.ocup.org for further details.

Materials
- Number lines drawn on a chalkboard, white board, or large sheets of paper
- Cards with 60, 52, 68, and 64 printed on them
- 3 transparent containers holding 36, 27, and 79 cubes
- Paper and pencil for each student
- Home Connections – "Calculator Puzzles" Activity Sheet (one sheet per student)

Ontario

Approach

Get Started
In a guided learning session:
- Show students a number line on which 50 and 70 have been recorded at opposite ends. Ask the students to compare the number line to others they have seen.
- Show cards with 60, 52, 64, and 68 printed on them. Have the students locate the position of each number on the number line, and ask them to explain why they chose that position on the number line.
- Ask the students to identify other numbers that would be on the number line. Discuss numbers that would not be on the number line.
- Show a number line with only 47 printed on a position to the left. Ask the students to find the end number after you draw three long jumps of 10. Count by 10's from 47 to 77.
- Next, make a few short jumps of 1 from 47. Count by 1's to find the end number.
- Provide practice in finding the end number by changing the beginning number, and drawing a few jumps of 10 followed by a few jumps of 1.
- Write 73 on the right end of the number line. Make a few long jumps of 10 and a few short jumps of 1 to the left of 73. Ask students to count backward by 10's and 1's to find the end number. Practise counting backward by 10's and 1's from different starting numbers.

Work on It – Add on a Number Line
In a guided learning session:
- Show the students two containers holding 36 and 27 cubes. Explain that you wish to find the total number of cubes, and ask students to give the number sentence that needs to be answered. Record 36 + 27 on the board.
- Write 36 on the left end of the number line. Demonstrate how to add 27 to 36 by making 2 long jumps of 10 followed by 7 short jumps of 1.
- Ask the students to count by 10's and 1's to find the total of 36 and 27.
- Practise the number-line method of addition with other numbers. Have students explain how they answered the questions.

Work on It – Subtract on a Number Line
In a guided learning session:
- Pose the following problem: In this container we have 79 cubes. If we take out 24 cubes, how many cubes do we have left in the container?
- Ask students to tell the number question that needs to be answered. Write 79 – 24 on the board.
- Explain to the students that they will solve the problem with a partner using a number line. It may be necessary to suggest to the students that they write 79 on the right end of the number line.
- Encourage students to discuss a plan before they begin to work on paper.

Work on It – Observe the Students

In a shared learning session:

- Observe how well students are able to use a number line to answer a subtraction question.
- Probe students' thinking by asking questions such as:
  - What did you record on your paper to get started?
  - Why did you write 79 on this end of the number line?
  - How are you using jumps to find the answer?
  - Why are you moving in this direction on the number line?
  - How is solving this problem different from the problems we did earlier?

Reflect and Connect

In a guided learning session:

- Ask some students to show their work and to explain how they answered the subtraction question using the number line.
- Help students reflect on the activity and their learning by asking questions such as:
  - How is an addition problem on a number line different from a subtraction problem on a number line? How are they the same?
  - Why is it important to think about tens and ones when you add and subtract on a number line?

Assessment

Assessment
Observe students to assess how well they:
- Locate numbers on a number line;
- Decompose a number into tens and ones;
- Count forward and backward by 10's and 1's;
- Show and explain addition and subtraction on a number line;
- Develop and apply strategies for calculating sums and differences mentally.

Adaptation/Extensions
For students who are not ready to add and subtract 2 two-digit numbers, provide questions such as 23 + 4, 48 + 5, and 41 – 5 (jumps of 1 only). You might also provide questions that involve adding or subtracting multiples of 10 such as 34 + 20, 43 + 40, and 56 – 30 (jumps of 10 only).

For students who grasp addition and subtraction on the number line easily, challenge them to show the operations on a number line if the ones are added or subtracted before the tens. As well, ask students to invent and demonstrate other methods for adding or subtracting 2 two-digit numbers.

Home Connections
The Home Connection page provides three activities for adding and subtracting by 1's and 10's. The activities demonstrate how a calculator can be used to develop students' understanding of number relationships and operations.