Vision Empower & XRCVC

Teacher Instruction KIT

Numbers

Syllabus: Karnataka State Board
Subject: Mathematics
Grade: Second
Textbook Name: Mathematics-Text cum Workbook(Revised)-Second Standard
Chapter Number & Name: 2. Numbers

1. OVERVIEW

1.1 OBJECTIVE & PREREQUISITES

Objective

- To read and write numbers from 0 to 99.
- To write the numbers in tens and units place (0 to 99).
- To know the place value and face value of each numeral (digit) of a given number and compare.
- To expand the given number and write the short form of the expanded number.
- To count numbers in various ways.
- To understand the concepts of numbers-before, between, after, smallest and biggest.
- To arrange the numbers in ascending and descending order.
- To form the greatest and the smallest two-digit number from the given numerals.
- To identify and indicate the position of an object on a number line.

Prerequisite Concept

- Numbers
- Counting

  Refer to **VE_TIK_Math_G1-08- Units & Tens**
  VE_TIK_Math_G1-12-Numbers 21-99

Content Index

*Kindly Note: Activities marked with * are mandatory*

2. LEARN

2.1 KEY POINTS

Numbers play an important role in our lives. Almost all things we do involve numbers and Mathematics.

2.2 LEARN MORE

None

3. ENGAGE

3.1 INTEREST GENERATION ACTIVITY

INTRODUCTION TO THE CONCEPT

*Activity 1: Race to 100**

Materials Required: NA

Pre-requisites: Rote counting (0 to 99)

Activity Flow

Encourage students to rote count the numbers 0 to 99 by boxing their hands alternatively as they tell out the numbers. Teachers can ask children to count slowly, fast and then faster. Repeated oral counting helps children hear what the numbers sound like and also helps them learn the number sequence.

3.2 CONCEPT INTRODUCTION ACTIVITIES

Counting numbers

*Activity 2: Counting numbers from 0-99**

Materials Required: Braille number cards (0 to 99)

Prerequisites: Oral Numbers 0 to 99, Counting skill

Activity Flow

Teachers can begin the session by first asking the children to rote count numbers from 0-99. Teachers can then guide students to arrange the braille number cards 0-99 in order. Students can take turns to arrange the cards in order.

Teacher can ask questions like

1. What is the number next to 19?
2. What is the number next to 76?
3. Fill in the missing numbers 20, 21, ?, ?, 24, 25.

*Activity 3: Reading and writing numbers from 0 to 99**

Materials Required: Braille number cards (0 to 99), slate and stylus

Prerequisites: Oral Numbers 0-99, Counting skill, Nemeth code

Activity Flow

Reading & writing numbers can be imbibed by the student with a lot of oral and written reading and writing practice of numbers (whether in Braille or large font or on a computer) just like you would with sighted children.

Saying out loud when writing is one traditional and effective method. For example, “2 tens and 3 ones makes twenty-three” and so on.

Remember: *If the student is a Braille learner he/she can learn to read and write Nemeth Braille numbers at this stage. He needs to be told how Math numbers (lower numbers) are written differently from literary numbers.*

The braille number cards can be distributed randomly and the students can be asked to write the associated number names.

Practice reading and writing numbers both ways – Figures to words as well as words to figures
For example,
a. Write 22 in words.
b. Write thirty five in figures.

Group and count

*Activity 4: Grouping and counting the objects (0 to 99) **

Materials Required: Coins.
Prerequisites: Oral Numbers 0 to 99, Counting skill

Activity Flow
Let's listen to Gowramma, mother of Ramu and Radha, who owns a telephone booth. She opens her coin box to find many 1 Rupee coins collected in the box. She wants to find out how many coins she has?

She asks Ramu and Radha to count the coins. Ramu counts and says that they are 97 coins and Radha counts and gets a total of 98 coins. Ramu and Radha start arguing with each other. Gowramma stops them and tells them that there is an easy way to count the coins.

Both of you together count ten coins and make a pile. Again count 10 coins from the remaining and make another pile. Continue doing this until all coins are counted. After grouping 10 coins into piles they find that they have 9 piles and 6 coins left.

There are 9 piles containing 10 one rupee coins and 6 coins left. There are 96 one rupee coins in total. 9 Tens and 6 units is equal to 96.
Since Ramu and Radha did not count the coins by grouping both of them made mistakes. It is easy to count if we group in tens and units. The other name of 'units' is 'ones'.
Teachers can demonstrate the activity to students.

*Activity 5: Counting on Rod Abacus **

Materials Required: Rod abacus, beads, braille letters 'U' and 'T'.
Prerequisites: Oral Numbers 0 to 99, Counting skill

Activity Flow
Here are some beads. Let's group them into tens and units. In a row lets place 10 beads and each row is 1 Tens. We have five rows of Tens and 4 units. Let's represent this on an abacus.

Here is a wooden base with two rods fixed on it. The rod towards your right is the unit's rod and is labelled as 'U' and the rod towards your left is the tens rod and is labelled as 'T'. Let's place the above grouped numbers in their places. We have 5 Tens so we place 5 beads on the Tens rod and for 4 units we place 4 beads on the unit's rod. So 5 Tens and 4 units is equal to 54 (Fifty four).

Let's take a look at a few more examples. Number 47= 4 Tens and 7 units. So we place 4 beads on the tens rod and for 7 units we place 7 beads on the unit's rod.

Place and Face value

*Activity 6: Place Value and Face Value (0 to 99) **

Materials Required: braille number cards (2-sets)-0 to 9, chart with two pockets to fit in the braille numbers and braille stickers 'T' and 'U',rod abacus, beads.
Prerequisites: Oral Numbers 0-99, Counting skill

Activity Flow
Prepare two sets of braille number cards from 0 to 9 and a chart with two pockets labelled with braille stickers 'T' representing tens place and 'U' representing units place to place the cards.

1. Take a braille number card say 4 and place it in the units place pocket on the chart. Now 4 is in the units place. It represents four ones. The place value here for the number 4 is four.
2. Take another braille number card say 4 again and place it in the tens place pocket on the chart. Now 4 is in the tens place and it represents four tens. The place value of 4 in this case is four tens or forty. The card 4 used in two places is the same. This value on the card is called face value. When the card is placed in units place, its place value is 4 and the same card when placed in the tens place, takes the value of tens. Hence its place value is 4 tens or forty.

Place value: A place value of a digit in any number depends on the place where it exists.
Face value: The face value of the digit in a number is the digit itself.

Number: Forty four
Expanded form = 4 tens and 4 units
Place value – 4 tens or 40 and 4 units or 4.
Face value -4.

We can also show tens and units on an abacus. Abacus has two sticks, one for tens and other for units.

For number thirteen
Expanded form- 1 ten and 3 units
So we place 1 bead in tens place that is one ten and

3 beads in units place that is three units.
1 ten and 3 units is written as 13 and read as thirteen.

Teachers can demonstrate a few more examples of number representation on the abacus.

Before, after and in between numbers

*Activity 7: Before and after and in between numbers **

Materials Required: NA

Prerequisites: Oral Numbers 0-99, Counting skill, addition, subtraction

Activity Flow

After number:

I am number 15, which is the number after me? To get the after number, add one to the given number. The number after 15 is 15+1=16.

I am number 31. To write numbers after me in order, we need to go on adding 1 in order.

The numbers after 31+1=32+1=33+1=34+1=35+1=36+1+37+1=38+1=39+1=40.

31, 32, 33, 34, 35, 36, 37, 38, 39, 40.

Before number:

I am number 15, which is the number before me? To get the before number, subtract or take away 1 from the number. The number before 15 is 15-1=14.

I am number 38. To write numbers before me in order, we need to go on subtracting 1 in order. The numbers before 38-1=37-1=36-1=35-1=34-1=33-1=32-1=31.

38, 37, 36, 35, 34, 33, 32, 31.

In between number:

Let's find a missing number in between two numbers.

What comes in between 31 and 33? The missing number is after 31 or before 33. So we can find the number by adding 1 to 31 or subtracting 1 from 33.

The number is

31+1=32 or

33-1=32.

This way we can find the missing number which falls in between two numbers.

Bigger and smaller numbers

*Activity 8: Big and small numbers **

Materials Required: bowls, beads/pebbles/coins, bat and ball, Rod Abacus and beads.

Pre-requisites: Oral Numbers 0-99, Counting skill, addition, subtraction

Activity Flow

Teachers can ask children which object is bigger among the bat and ball? Answer: Bat. Teachers should let children touch and feel the bat and ball as it is important for children to differentiate between big and small objects. Similarly let's learn how to identify the bigger and the smaller numbers.
Question: Among the numbers 10 and 6 which number is bigger or larger? Answer: 10.

When we rote count the number which comes first/earlier is the smaller number and the number that comes later is the larger number and also the two-digit number is always bigger than any single-digit number.

Finding the bigger and smaller number with Abacus:
Take two abacuses and let's take numbers 73 and 37.
73- 7 tens and 3 units. So we place 7 beads in the tens rod and 3 beads on the units rod.
37- 3 tens and 7 units. So we place 3 beads in the tens rod and 7 beads on the units rod.
In the given two numbers, to find out the bigger number first compare the numbers in tens place. Big number in the tens place is the bigger number among two numbers. If the number in the tens place are equal, then compare the numbers in the unit place. Let's compare the tens place first. In the case of number 73 we have 7 beads in the tens place and in the case of number 37 we have 3 beads in the tens place. So 7 is bigger than 3 and so number 73 is bigger than 37.

Teachers can demonstrate more examples to the class.

Learning ascending and descending order

*Activity 9: Ascending and Descending order **

Materials Required: braille number cards (0-99)
Prerequisites: Numbers, bigger and smaller number, number sequence (0-99), backward counting.

Activity Flow
Ascending order:
Arrangement of numbers from small to big, from left to right or from bottom to top is called an ascending order. Going up is known as ascending order.
Game could be climbing steps and counting. A child stands on the first step and says 1, the second child stands on the second step and says 2. They can see that 2 is more than one. then another child on the third and the one on the fourth and so on. Gives them a concrete example of ascending and descending.

Arrange the braille number cards in ascending order:
Example: Arrange 2, 42, 12, 22 in ascending order.

Identify the smallest number and place the card on the left hand corner. The number 2 is the smallest.

Identify the smallest number in the remaining numbers and place the card in the second position (among the remaining numbers 42, 12, 22 which is the smallest? Answer:12)

In the remaining two numbers identify the smallest number and place the card in the third position. (The remaining two numbers are 42 and 22, which is the smaller number? 22)

Place the only remaining number at the end. This will be the largest of the given numbers. (42) Ascending Order = 2, 12, 22, 42

Descending order:

Arrangement of numbers from big to small, from left to right or from top to bottom is called descending order. This can be demonstrated to children by climbing down the stairs and counting numbers 10 to 1. Going down is called descending order.

Let's arrange the braille number cards in descending order.

Example: Arrange 51, 48, 36, 40 in descending order

Identify the biggest number in the given numbers and place the braille number card on the left hand corner. In this case it will be 51

Identify the biggest number among the remaining numbers and place the number card next to 51. 51, 48

Out of the remaining two numbers, write the biggest number and place the number card next to 48. 51, 48, 40

Place the last number card next to 40. This will be the smallest of the given numbers. 51, 48, 40, 36.

Descending order = 51, 48, 40, 36

*Activity 10: To form numbers from given digits **

Materials Required: braille number cards (0-9), place value chart, Abacus

Pre-requisites: Numbers, bigger and smaller number, number sequence (0-99).

Activity Flow

Here are two flash cards of numbers 4 and 7 and a place value chart with a tens and units pockets. Let us see which are the two digit numbers formed by placing these number flash cards in the place value chart?

Question: What are the two digit numbers formed by numbers 4 and 7? Answer: 47 and 74.Can we form any more numbers. No. Let's find out which among 47 and 74 is bigger. Let us place the number cards in the place value chart.

47- 4 tens and 7 units. So we place the number 4 in tens place and the number 7 in the units place

74- 7 tens and 4 units. We place the number 7 in the tens place and number 4 in the units place.
Number 74 is bigger among the numbers 47 and 74.
Number 47 is smaller among the numbers 47 and 74.
While forming 2 digit numbers, if '0' is written in tens place then the resulting number (07) will be a single digit number. So we can form only one two-digit number using 0 and 7 and that is 70.
While forming 2 digit numbers using 0, 0 cannot be written in tens place.
Teachers can demonstrate the activity using an abacus too.

Using the number line.

*Activity 11: Number line **

Materials Required: clothesline, pegs, braille number cards (0-10).
Prerequisites: Numbers, bigger and smaller number, number sequence (0-99), backward counting.

Activity Flow
What is a number line?

1. A number line is a straight line that is divided into parts.
2. The starting point is marked as '0'.
3. Then marks are made at equal distances on the line.
4. Each marking is given a number in order from the starting point.

Tie the ends of the clothesline and start placing the number cards with the help of the pegs starting from zero on the left hand corner going up till 10 at equidistant from each other. Let each child walk to the clothesline and start feeling the numbers placed starting from the number '0' on the left side up till they reach number '10' on the right.

Teachers can randomly remove a few number cards from the number line and ask children to place the missing numbers back on the number line.

3.3 LET'S DISCUSS: RELATE TO DAILY LIFE*

Numbers are everywhere connected to everything we do. We use them to measure years, months, weeks, days, hours and seconds. We count them in Rupees and paise. We measure in feet, meters. We age by ever mounting time. Numbers have a definite effect on us.

4. EXERCISES & REINFORCEMENT

4.1 Exercises & Reinforcement

*Activity 12: Snakes and Ladder-Game**

Materials Required: Tactile snake and ladder game board, die, braille number and number name cards (0-99)

Prerequisites: Counting, number recognition, simple addition, familiarity with braille numbers

Activity Flow

The objective of the game is to be the first to reach 100.

1. Each player places their counter at the 'start' position. Take turns to roll the dice.
2. One will start moving forward only when the dice shows the number 6. The player would roll the dice again and move the counter forward to the number of spaces shown on the dice.
3. If the counter lands at the bottom of a ladder, the player can move up to the top of the ladder.
4. If the counter lands on the head of a snake, the player must slide down to the bottom of the snake.
5. The first player to get to the number 100 is the winner.

Teachers can pose questions to students in between the game. For example: The ladder starts from which number and goes up to which number?
Which is the largest snake and it moves between which numbers.

Before starting the game, revise all the rules of the game. Ensure that children are learning and identifying the braille numbers on the board. Continue to help them learn if they are not familiar with any numbers.
The first player rolls the dice and checks if the number shows 6. If no, then hand over the dice to the player sitting on the right.
If yes, then roll the dice again and start moving forward by counting the spaces as shown on the dice. Ask children to count aloud as they move forward.
Ask them to feel for any ladder on the space they reach. If yes, tell them that they have an option to climb up the ladder to the space where it ends.
On the other hand, if they feel the head of the snake, then they would slide down to the space where the tail of the snake ends.
Ask children to notice which number is before and which is after the number in the space
they are in.
Continue until all the players reach 100. The winner is the one who reaches first.

*Activity 13: Grouping into tens and ones and placing number cards into place value chart **

Materials Required: Braille number cards (0-9), place value chart labelled with 'T' for tens place and 'U' for units place.

Pre-requisites: Counting and number recognition

Activity Flow
Teachers can randomly distribute two number cards to students and ask them to form a two-digit number. Teachers can call one student at a time and ask them what is the number they formed and then ask them to place the number cards accordingly into the place value chart pockets. Teachers can ask the other students to check if their classmate has placed the cards correctly in the place value chart. The game can also be played as in, whoever forms the greater number wins.

The same activity can be used to reinforce the concept of bigger, smaller numbers, face value, place value, before after and in between numbers.

*Activity 14: Identifying big and small numbers and arranging the cards in ascending and descending order**
Materials Required: Braille number cards (0-99)
Prerequisites: Counting and number recognition

Activity Flow
Three number cards (for example: 50, 35, 42) can be randomly distributed to each child and then the teacher can ask students to arrange them in ascending and descending order. Teachers can also ask students which is the smallest and biggest number card they have?

Teaching Tips
If there are any additional teaching tips then utilize this section to mention them.

References
None

4.2 IMPORTANT GUIDELINES

Exercise Reading
It is very important that the children practice their learnings as well as their reading. Hence have the children read out the newly learned concepts from their textbooks or other available resources.

Perform Textbook Activity
It is good practice to have the children perform the textbook activities. Your textbook activities might not be accessible hence go through this resource to learn how to make textbook content accessible.

Provide Homework

To evaluate their understanding and to help the student revise and implement the new learnt concept ensure to provide them with homework. Students should perform one or two of the questions mentioned above or from the textbook exercises with the teacher in Class and the remaining may be given for homework. Also, ensure that the student knows their special skills linked to independently using their accessible books as it will be critical to doing homework independently

End of Document