Vision Empower & XRCVC

Teacher Instruction KIT

Subtraction

Syllabus: Karnataka State Board
Subject: Mathematics
Grade: Second
Textbook Name: Mathematics-Text cum Workbook(Revised)-Second Standard
Chapter Number & Name: 4. Subtraction

1. OVERVIEW

1.1 OBJECTIVE & PREREQUISITES

Objective

- To subtract two digit numbers with and without borrowing and solve the problems related to daily life.
- To add and Subtract the number with Zero.
- To estimate the sum and difference of numbers.
- To create situations/problems related to simple addition and subtraction.
- To orally add and subtract and also solve problems related to daily life.
- To identify problems related to addition and subtraction.

Prerequisite Concept

- Oral numbers
- Counting Skill
- Using a slate & stylus / Brailler (If a Braille learner)
- Reading & Writing of Braille/Large Font Alphabets
- Place value and Large Numbers (for subtraction using place value)
- Basic Subtraction

  Refer to **VE_TIK_Math_G1-12-Numbers 21-99**
  VE_TIK_Math_G1-11-Subtraction (difference not more than 20)
  VE_TIK_Math_G1-08-Units & Tens

Content Index

*Kindly Note: Activities marked with * are mandatory*

2. LEARN

2.1 KEY POINTS

Subtraction is an important tool we use to help us find out what is left when taking one number away from another.

2.2 LEARN MORE
None

3. ENGAGE

3.1 INTEREST GENERATION ACTIVITY

INTRODUCTION TO THE CONCEPT

Activity 1: Rhyme-Ten Green Bottles*
Materials Required: None
Prerequisites: None

Activity Flow
Singalong Rhyme-Ten green bottles
Teachers can encourage the students to singalong.

Ten green bottles hanging on the wall
Ten green bottles hanging on the wall
When one green bottle should accidentally fall
There'll be nine green bottles hanging on the wall.

Nine green bottles hanging on the wall
Nine green bottles hanging on the wall
When one green bottle should accidentally fall
There'll be eight green bottles hanging on the wall.

Eight green bottles hanging on the wall
Eight green bottles hanging on the wall
When one green bottle should accidentally fall
There'll be seven green bottles hanging on the wall.

Seven green bottles hanging on the wall
Seven green bottles hanging on the wall
When one green bottle should accidentally fall
There'll be six green bottles hanging on the wall.

Six green bottles hanging on the wall
Six green bottles hanging on the wall
When one green bottle should accidentally fall
There'll be five green bottles hanging on the wall.

Five green bottles hanging on the wall
Five green bottles hanging on the wall
When one green bottle should accidentally fall
There'll be four green bottles hanging on the wall.

Four green bottles hanging on the wall
Four green bottles hanging on the wall
When one green bottle should accidentally fall
There'll be three green bottles hanging on the wall.

Three green bottles hanging on the wall
Three green bottles hanging on the wall
When one green bottle should accidentally fall
There'll be two green bottles hanging on the wall.

Two green bottles hanging on the wall
Two green bottles hanging on the wall

When one green bottle should accidentally fall
There'll be one green bottle hanging on the wall.

One green bottle hanging on the wall
One green bottle hanging on the wall
When one green bottle should accidentally fall
There'll be no green bottles hanging on the wall.

Encourage children to count backwards every now and again, so that they are aware of how to work out the number before a given number.
Have a discussion about the rhyme in the class.
Ask the children what the rhyme was about?
Did the numbers start from 1to10 or 10 to 1?
Were the number of bottles increasing or decreasing as they fell from the wall?

3.2 CONCEPT INTRODUCTION ACTIVITIES

SUBTRACTION WITHOUT & WITH BORROWING

Activity 2: Subtraction without borrowing*

Materials Required: Ice-cream sticks, rubber bands, paper cups, braille stickers to mark the units and tens cup.
Prerequisites: Oral Numbers 0 to 99, Counting skill

Activity Flow
Bundle up 10 ice-cream sticks/toothpicks and place a rubber band around each bundle. We will require 4 bundles of 10 sticks and 6 sticks for this illustration. We have 2 cups here, one representing the units marked with braille letter 'U' and the other the tens marked with braille letter 'T'. Let us look at an example.

Kamala has 46 beads. She gave 25 beads to Savitha. How many beads are remaining with Kamala?

Kamala has 46 beads. Let's expand this into units and tens.
In 46 we have 4 tens and 6 units. Let's place the objects accordingly into the paper cups in the first row. So we place 6 objects in the unit's cup and 4 bundles of 10 objects to represent 40 in the tens cup.
Similarly, if we expand 25 we have 2 tens and 5 units. Let us place 2 tens and 5 units in the second row. Let's take away 25 from 46. Always remember, we need to start subtracting from the ones place. We need to subtract 6 minus 5. So pick up 5 sticks from row one and place the remaining stick.i.e. 1 in this case in the third row units' cup. Similarly, we need to move to the tens cup and subtract. We need to subtract 2 tens from 4 tens. So pick 2 bundles from row one and move the remaining 2 bundles of ten sticks to the third row Tens cup.

Now let us count how many sticks we have in the third row. We have 2 tens in the tens cup and 1 unit in the unit's cup, that makes 21.
Therefore, Kamala has 21 beads remaining with her.

Teachers can illustrate a few more examples to the class.

Activity 3: Cup Subtraction with borrowing*

Materials Required: Ice-cream sticks, rubber bands, paper cups, braille stickers to mark the units and tens cup.
Prerequisites: Oral Numbers 0-99, Counting skill

Activity Flow
Bundle up 10 ice-cream sticks/toothpicks and place a rubber band around each bundle. We will require 4 bundles of 10 sticks and 6 sticks for this illustration. We have 2 cups here, one representing the units marked with braille letter 'U' and the other the tens marked with braille letter 'T'. Let us look at an example.

Ramya had 43 sticks. She gave away 19 of them to Sheela. How many sticks are remaining with Ramya?

Ramya has 43 sticks. Let's expand this into units and Tens.
In 43 we have 4 tens and 3 units. Let's place the objects accordingly into the paper cups. So we place 3 sticks in the unit's cup and 4 bundles of 10 sticks to represent 40 in the tens cup.
Similarly, if we expand 19 we have 1 ten and 9 units. Let's take away 19 from 43.

Use the paper cups to demonstrate subtraction to the students. Lay out the cups vertically on the table in three rows with two cups in each row. The cup on the right hand represents the unit cup and to the left represents the tens cup. Now, set out a problem in the cups.
For instance, in the first row we have two cups representing units and tens place. Let's place 4 bundles of ten sticks in the tens cup and three sticks in the ones place to represent the number 43.
In the second row, place 1 ten in the tens cup and 9 sticks in the ones cup to represent the number 19.
First tell them that we always start subtracting from the unit's place. In the first row, one's cup has 3 sticks and in the second row we have 9 sticks. Can 9 be taken away from 3? No. Because 3 is smaller than 9. So we need to move one bundle of ten sticks from the tens cup of the first row to the ones cup. Now, let us count the total number of sticks: 10+3=13 sticks. Now can we subtract 9 from 13? Yes.

Now, ask them to subtract the number in the second cup from the number in the first by unbundling the sticks. In this case, 13 minus 9. Show them how to do this. First, they should count and identify the number in the second cup. Then, they should pick up that many sticks in the first cup, and take away 9. They should then identify the left over number and put it into the third cup. Once we take away 9 sticks from 13 we are left with 4 sticks. So they place 4 sticks in the third row.
Now let's move to the tens place.
First row tens cup now we have three bundles of ten sticks and second roe tens cup we have 1 bundle of ten sticks. So here we subtract 3 minus 1. We need to pick the three bundles of ten sticks from the first row, and take away one bundle of ten sticks and keep the remaining 2 bundles of ten sticks in the third row.

Now let's see what we have got in the third row. 2 bundles of tens in the tens cup and 4 sticks in the ones cup. So 2 tens and 4 ones is 24.
Practice some problems in this way.

Activity 4: Subtraction of numbers using Taylor frame *
Materials Required: Taylor frame
Prerequisites: Oral Numbers 0 to 99, Counting skill, nemeth code

Activity Flow
When teaching subtraction using place value use a Taylor Frame to explain the spatial layout and format of writing. Explain the concept of subtraction with borrowing using a Taylor Frame. If you do not know the code for a Taylor frame, then describe the layout to the student and ask her/ him to put in the pegs and help her/ him place the pegs correctly. Encourage the students to work out problems and write the answers using nemeth code.

ADDING & SUBTRACTING WITH ZERO

Activity 5: Addition and subtraction with zero *
Materials Required: Rajma seeds/beads, egg tray
Prerequisites: Oral Numbers 0 to 99, Counting skill

Activity Flow
Start the class with an addition statement 0+3=? Encourage the child to count the rajma beans in the egg tray based on the statement given to them. So when I say 0+3 how many rajma will you drop in the first hole ?0, so 0 means nothing and in the next hole how many rajma beans will you drop.? 3 so 0+3=3. In the same way in the next row ask the child to drop 5 beans in one hole and 0 in another. Have a detailed discussion as to what will happen when I subtract zero from 5, will the answer change? No, the answer will be 5 as zero means nothing.

Question:

Add 13+0=?. 13-0 =?
Add 5 - 0=?. 11+0=?
Add 7 +0=?.
Ask the children to form an addition and subtraction sentence that can be formed using the magic of 0.

Activity 6: Estimated sum and estimated difference *

Materials Required: Braille number cards 1 to 99, rope and clothespins.
Prerequisites: Oral Numbers 0 to 99, Counting skill

Activity Flow
Tie the ends of the rope to two chairs. Now place the number card say, 30 to 40 on the cloth line using clips. Let's estimate the number 32 to tens place.
We observe 32 is nearer 30,
32 is far away from 40. Hence we estimate 32 to 30. Encourage students to touch and feel the card placement and the position of number 32 from 30 and 40.

Let's estimate 77 to tens place.
Place the number cards 70 to 80 on the cloth line.
77 is far away from 70
77 is nearer to 80.
Hence 77 is estimated to 80.

Let's estimate 45 to tens place.
Place the number cards 40 to 50 on the cloth line.
45 is in between 40 and 50.
Hence 45 is estimated to 50.
So the thumb rule is:
If the unit of a two digit is 5 or more than 5, estimate the ten's digit to the next tens place.
For example: 35 to 40, 86 to 90, 58 to 60
If the unit of a two digit is less than 5, then the number is estimated to the nearest previous ten's place.
For example: 44 to 40, 83 to 80, 31 to 30.
Estimated Sum:

Let's understand how to estimate a sum of the following numbers 29 and 11.
The estimated value of 29 to tens place is 30
The estimated value of 11 to tens place is 10
Therefore, the estimated sum of 29 and 11 is (30+10) = 40

Estimated Difference:

Find the estimated difference of 38-14.

The estimated value of 38 to tens place=40
The estimated value of 14 to tens place =10
Estimated difference is 40 minus 10=30

The estimated sum and difference can also be demonstrated to the children using the number line/cloth line and number cards. Please refer to the explanation above.

FACTS FOR ORAL ADDITION AND SUBTRACTION

Activity 7: Facts for oral Addition and Subtraction*
Materials Required: NA
Prerequisites: Oral Numbers 0 to 99, Counting skill

Activity Flow
The "9-trick".
To add 9 to any number, first add 10, and then subtract 1. For example, to add 9+7, we add 10+7 which is 17 and then subtract 1, so the answer is 16. It's easier to add 10 to any number.
Add and subtract by grouping into ten
To add two digits' numbers, say 12 and 13. Keep the biggest number among the two. In this case it is 13. The other number is 12. Let's group this into tens and ones.
12= 10+2.
So the sum now is 13+10+2.
13 +10=23+2=25.

Let's try doing subtraction mentally.
Subtract 12 from 25.
Let's take 25 as is and we can split 12 as 10 and 2. So we need to first subtract 10 from 25.i.e., 25-10=15 and then subtract 2 from 15.i.e. 15-2=13. Grouping the number into tens helps in easy calculation.
Encourage children to listen to the problems verbally and try to solve the simple addition and subtraction problem mentally. They can be encouraged to use either one of the strategies like using the finger, abacus method, rounding off the number to solve the problem.

Questions

22+12=?
78-18=?
6+8=?
10-3=?

3.3 LET'S DISCUSS: RELATE TO DAILY LIFE

- Daily transaction
- Counting and quantifying

Give the students some examples of problems from everyday life and then ask them to give suggestions for situations where they will use subtraction. Encourage the students to count and subtract as much and as often as they can. It is the easiest way to build a good number sense and strengthen their basic arithmetic.

4. EXERCISES & REINFORCEMENT

4.1 REINFORCEMENT

Activity 8: Form two-digit number and subtract*

Materials Required: Braille number cards (0 to 9), Taylor frame

Prerequisites: Counting, number recognition, subtraction, familiarity with braille numbers, usage of Taylor frame or Abacus.

Activity Flow

Distribute four one-digit number cards to students and tell the children to form two, two-digit numbers with the cards and ask them to subtract using the numbers they form. They can work the problem with the help of a Taylor frame or Abacus.

The teacher can then cross check if the students are able to work the problems correctly.

Activity 9: Equation Game with subtraction *

Materials Required: Card deck

Prerequisites: Counting and number recognition

Activity Flow

The objective of the game is to make an equation using subtraction. The game starts with the players all being dealt 3 cards each. Players then take turns to discard the card he does not require and draw a card from the draw pile in the center to make an equation using subtraction. Encourage children to form a subtraction equation.

For example,

8-2=6

4-3=1

5-3=2

Refer to the play plan-Equation Game. Link to the Play plan-Equation Game

Teaching Tips:

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

References

https://www.sensorysun.org/activity/teaching-place-value-blind-students-using-tactile-graphical-organizer/

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.

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