Vision Empower & XRCVC

Teacher Instruction KIT

Subtraction

Syllabus: Karnataka State Board
Subject: Math
Grade: 4
Textbook Name: Karnataka state board
Chapter Number & Name: 4, Subtraction

1. OVERVIEW

1.1 OBJECTIVE & PREREQUISITES

Objective

Students will be able to

- Subtract 4 digit numbers with borrowing.
- Subtract 4 digit numbers without borrowing.
- Solve verbal problems in daily life situations.
- Subtract mentally and quickly by knowing the process of subtraction.

Prerequisite Concept

- Subtraction with borrow and without borrow.

TIK_MATH_GRADE3_CH4_Subtraction

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*Kindly Note: Activities marked with * are mandatory*

2. LEARN

2.1 KEY POINTS

- Subtraction is an arithmetic operation that represents the operation of removing objects from a collection. The result of subtraction is called a difference. Subtraction is signified by the minus sign (−).

2.2 LEARN MORE

3. ENGAGE

3.1 INTEREST GENERATION ACTIVITY

Activity 1: Discussion.
Materials Required: None
Prerequisites: None

Activity Flow

- *Ask the following question.*
  - *What is 9 minus 2?*
  - *There are 17 storybooks in the library. If someone borrowed eight storybooks, how many would be left?*
  - *Mang Raul bought 12 cavans of rice. He gave 5 cavans to his sister, 4 to his brother and 3 to his neighbour. How many cavans of rice were left?*
  - *How many digits does the number 12345 have?*
  - *What are the digits of 678?*

3.2 CONCEPT INTRODUCTION ACTIVITIES

SUBTRACTION

Activity 1: Introduction to subtraction of 4 digit numbers.

Materials Required: Tactile diagram of Clock or working model of the clock.
Prerequisites: Subtraction

Activity Flow

Note: Using the tactile diagram of the clock we can ask questions regarding time through which will explain subtraction.

- *Ask questions related to time using tactile clocks.*
  - *If the time is 12:45 then what was the time before 45 minutes?*
  - *If the time is 4:25 and after 30 minutes it will be 4:55, then what was the time before 60 minutes? And can continue the session with similar questions.*
- *Ask the following questions to the students:*
  - $1232 - 345 = ?$ *Answer is 887*
  - $789 - 123 = ?$ *Answer is 666.*
  - $23 - ? = 19$. *Answer is 4.*
  - $1874 - ? = 30$. *Answer is 1904.*

Activity 2: Subtraction without borrowing.

Materials Required: Marbles or Ice-cream sticks
Prerequisites: Subtraction and place value.

Activity Flow

Note: Marbles or Ice-cream sticks represent numbers.

- *Give two 4 digit numbers to the students.*
  For example: subtract 3521 from 7645.
- *Ask the children to first tell the place values of each number and their expanded form to know whether students have grasped the concept.*
- *Give bundles of ice-cream sticks to each child and then whatever number is there in each place value they have to count those many sticks and keep them separately, arranging them in two rows for two different 4 digit numbers and as per their place value.*
- *For example, five sticks in the one's place and next to this, 4 sticks in the ten's place, then 6 sticks in the hundred place and 7 sticks in the thousands place. And for another number 3521, put one stick in one place, 2 sticks in the tens place, 5 sticks in the hundred place and 3 sticks in the thousands place just below the same numbers.*

- *Ask them to subtract in an order- first ones, then tens, then hundreds and thousands.*
- *So now they have to first subtract 1 from 5 which are in the one's place. For this, they have to remove one stick from 5 and then keep the remaining 4 sticks separately. So to subtract they have to remove the same number of sticks from the above number which are there on the number below and the remaining sticks would be the answer.*
- *Ask them to write the final answer on Taylor frame.*

Activity 3: Subtraction with borrowing.
Materials Required: Paper cups, Ice cream sticks / Toothpicks
Prerequisites: Place value.

Activity Flow

Note: Paper cups represent the place value of number and Ice-cream sticks represent numbers.

- *In preparation, make a few bundles of 10 sticks and 100 sticks each, to represent the 10's and 100's cups. Single sticks will represent the unit's cup.*
- *Take 9 paper cups, 3 in each row and column. Each cup represents a place value of a digit. For example, in the top-most row, from right to left, you will have 3 cups, 1 for the units place, 1 for the tens place, and 1 for the hundreds place. The number is indicated by putting ice cream sticks into each cup.*
  For example, in order to make the number 897, you would first put 8 bundles of 100's in the hundreds cup, 9 bundles of 10 in the tens cup and 7 sticks in the units cup.
- *Similarly, show another three-digit 671 in the second row. Then the obtained answer after the subtraction should be placed in the third row.*
  - *For example,* $897 - 671$*.*
- *Let the children use the sticks to subtract.*
  - *For example,* $565 - 387$*.*
  - *Starting from the units place according to the previous example, the children will first have to subtract 7 from 5, which is of course, physically not possible.*
- *Use this opportunity to introduce the borrowing concept to the child. Since 7 sticks cannot be subtracted from 5 sticks, they need to borrow from the tens cup. From the tens cup, put aside 1 bundle of 10 sticks, and instead, add 10 sticks to the units cup. Explain that whenever they borrow, they have to borrow as units and not as 10's, and therefore, they will put in individual sticks instead of the whole bundle. Now, the top-most unit cup has 15 sticks overall (5 which were already there and 10 that are borrowed). Therefore, the child can easily subtract 7 from 15 and put 8 sticks in the bottom right unit's cup.*

- *Similarly, move on to the tens place. Now there are 6 bundles in the top middle cup and 8 bundles in the middle tens cup. Since* $6-8$ *is also not possible, borrowing is required again. Therefore, they borrow from the hundred's cup. While borrowing put the hundreds away and add to the tens place 10 bundles instead of number 10. Now, they have to subtract* $16-8$ *and put 8 tens bundles in the bottom middle cup.*
- *Finally, subtract the numbers in the hundreds place. There are 5 bundles in the topmost column and 3 in the cup below it. The child will do* $5-3$ *and put in 2 bundles in the bottom left cup.*
- *After getting the answer, students can write the steps and final answer in Nemeth for future studying purposes.*
- *Similarly, give them more sums to practice.*

Subtraction Song

More on top
no need to stop,
More on the floor
go to the next door
and get 10 more,
Numbers the same
zero is your game.

MENTAL PROBLEMS

Activity 5: Oral or Mental sums on subtraction.

Materials Required: Tactile Diagram (pg.no-68).
Prerequisites: Subtraction.

Activity Flow
Note: Tactile diagram represents two methods of subtracting numbers with borrowing. But in method 2 instead of arrow representation, follow the same pattern used to subtract numbers in method 1.

- *Explain both method 1 and 2*
- *In example 1, let them study the other two and also ask them to do the same problems mentally and verify the answers.*
- *In the following exercises, ask students to follow a method which they would like to follow to find an answer. When it comes to word problems, read out the problem and let them do it mentally and get the answer, meanwhile verify the answers.*
- *Ask the students to solve the following problems mentally.*
  A) $328-125$

B) $693-258$
C) $3690-1264$
D) $8000-3578$

Activity 6: Verifying an answer.
Materials Required: Tactile diagram represents the verification in the process of subtraction.
Prerequisites: Subtraction.

Activity Flow

- *Ask students how they will decide whether the answer given from them is correct or not.*
  For example, Mahesh has 24 toys, if his friend comes and takes away 9 toys, how many will be left with him? They say it's 15. Ask them how sure they are about their answer and how they will verify if it is correct.
  Answer: In order to verify the answer, they need to add the number of toys which have been subtracted from the total to toys which are remaining. They will get the total number of toys. I.e. $15+9=24$.
- *Discuss with some more simple examples and later give them the following numbers to verify in the process of subtraction.*
  A) $1234-456$
  B) $6783-2345$
  C) $9087-345$

3.3 LET'S DISCUSS: RELATE TO DAILY LIFE*

- Ask the following questions.
  1. If you bought seven apples and gave three to your friends, how many apples left?
  2. If you have 12 eggs and you cooked five of them, how many uncooked eggs do you have?

Like addition, subtraction is also very important in our daily life.
For example: If you are buying vegetables or chocolates, you need to know how much to pay and how much to get back. Addition and subtraction help to calculate these things.

4. EXERCISES & REINFORCEMENT

Activity 7: Practice and Recall
Materials Required: None
Prerequisites: Subtraction

Activity Flow

1. *Solve these sums*
    a. 3865 – 2430
    b. 8369 – 5043
    c. 9576 – 3245
    d. 5372 – 3859
    e. 6907 – 3245
    f. 8700 – 3297
    g. 9000 – 5382
    h. 8030 – 3867
    i. 6004 – 2345
    j. 3928 – 2593
    k. 8004 – 3108
2. *Solve the following problems*
    a. *A farmer grows 3290 kg of jowar. He kept 1376 kg of it for his household use and sold the remaining. What is the quantity of jowar sold?*
    b. *In a month a person's earning is 9500 rupees. He spent 3268 rupees on household expenses. How much money did he save?*
    c. *8250 rupees was collected from donors for the school children's learning programme. After deducting all the expenses 894 rupees was left. How much money was spent for the programme?*

4.1 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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