PROFESSIONAL DEVELOPMENT FOR QUALITY EDUCATION

Mathematics
Teachers' Guide
Lesson Plans

Grade 2

Quaid-e-Azam Academy for Educational Development, Punjab
Wahdat Road, Lahore

PREFACE

The Quaid-e-Azam Academy for Education Development (QAED), Government of Punjab, was tasked with developing teacher guides on the Single National Curriculum (SNC) 2020. For this purpose, a team of education experts and teachers from government and non-government institutions was engaged. The subject specialists from Material Development Wing supervised this task. The teams not only critically reviewed the entire guide but also ensured the incorporation of its recommendations.

While developing this guide, the team recognized that instructional settings and availability of resources vary significantly in the province of Punjab. Therefore, considering the important aspects of SNC and active learning, a contextually relevant teaching process has been devised to ensure student learning outcomes.

On behalf of Quaid-e-Azam Academy for Education Development, Government of Punjab, I am deeply grateful to all involved in creating this guide. I hope that this book will be helpful for teachers to teach effectively and enable them to perform their duties properly.

Thank you,
The Director General
Quaid-e-Azam Academy for Educational Development,
Government of Punjab

List of Selected Students Learning Outcomes (SLOs)

Mathematics-II

Sr. No	Students' Learning Outcomes
	Unit 1: Whole Numbers
1.	• Write ordinal numbers from first to twentieth. • Write numbers 1-100 in words. • Read numbers up to 999. Write numbers up to 999 as numerals. • Recognize the place value of a 3 - digit number. Identify the place value of a specific digit in a 3 - digit numbers • Compare 3 - digit numbers with 3-digit numbers (hundreds, tens and ones). • Ordering of 3-digit numbers. • Count backward ten steps down from any given number. • Recognize that 1000 is one more than 999 and the first 4-digit number.
	Unit 2: Number Operations
2.	• Solve real life number stories, involving addition of 2-digit numbers with carrying • Add 3 - digit number and 3-digit number without carrying. • Solve real life number stories involving addition of 3 - digit numbers without carrying. • Add 3 - digit numbers with 3 - digit numbers with carrying of tens and hundreds. • Solve real life number stories involving addition of 3 - digit numbers with carrying of tens and hundreds. • Solve real life number stories of subtraction of 2 - digit numbers with borrowing. • Subtract 3 - digit numbers from 3 - digit numbers without borrowing. • Solve real life number stories of subtraction up to 3 - digit without borrowing. • Subtract 3 - digit number from 3 - digit number with borrowing. • Solve real life number stories of subtraction up to 3 - digit with borrowing • Analyze simple situations identifying correct operation of addition and subtraction with carrying/borrowing in mixed form. • Complete number sequences in steps of 2, 3, 4, 5 and 10 (e.g. in steps of 2 the sequence is expressed as 2, 4, 6…). • Write number sentence for multiplication from the picture such as 2 x ? = 6 • Solve number stories on multiplication up to 1 - digit numbers. • Divide numbers within the multiplication tables with remainder zero. • Solve number stories involving division up to 1 - digit numbers. • Solve real life situations (using Pakistani currency as well) involving addition, subtraction, multiplication, and division. Give reasons for choosing the correct operation.
	Unit 3: Fractions
3.	• Identify half, one third and quarter with the help of objects and figures (without writing 1/2, 1/3, 1/4). • Recognize and name unit fractions up to 1/10. • Recognize fractions like two thirds (2/3), three fourths (3/4), four fifths (4/5), up to nine tenths (9/10).

4.	**Unit 3: Measurements**

	• Compare the lengths of different objects.
	•
	  ○ Recognize the units of length (meter and centimeter).
	  ○ Use standard metric units of length (meter and centimeter) and their abbreviation
	  ○ to measure and record lengths of variety of objects.
	• Use addition within 100 to solve real life situation involving length in same units
	• Use subtraction within 100 to solve real life situation involving length in same units.
	• Compare the mass of different objects.
	• Recognize the units of mass i.e. kilogram, gram.
	• Use standard metric units of mass (kilogram and gram) and their abbreviation to measure and record mass of variety of objects.
	• Use addition and subtraction within 100 to solve real life situation involving mass in same units.
	• Use addition and subtraction within 100 to solve real life situation involving mass in same units.
	• Compare capacity of different objects using non-standard units (jug, glass, cup etc.)

	Unit 5: Time
	• Read and write time from a clock in hours and minutes (with five-minute intervals) e.g. read 8:15 as eight fifteen and 8:50 as eight fifty. • Recognize a.m. and p.m. • Draw hands of a clock to show time in hours and minutes (with five minutes interval).
	Unit 6: Geometry
	• Identify the figures like square, rectangle, triangle, circle, semicircle and quarter circle. • Identify vertices and sides of a triangle, rectangle and square. • Use ruler to draw a straight line of given length (exclude fractional length). • Make/complete geometrical pattern on square grid according to one or two of the following attributes: ○ Shape, size, orientation. • Recognize and name 3-D objects (cubes, cuboids, cylinder, cone and sphere).

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Teacher Guide
Grade-2

Lesson Plan
1

ORDINAL NUMBERS

Duration: 40 Minutes

Students Learning Outcome:

- Write ordinal numbers from first to twentieth.

Materials:

A chart paper where animal pictures having a race is shown (refer to annexure), flash cards of 1st, 2nd, and 3rd till 20th, Mathematics textbook Grade 2, worksheet

Information for Teacher:

- Ordinal numbers describe the position of an object in a sequence.

Teaching tips

- Let students relate this concept with the help of any competition.
- Organize a sprint race (running over a short distance with high speed) in the ground if possible.
- Otherwise use animals' race story for ordinal numbers.

Introduction:

- **Warm up**. Show them the story chart which shows animals' race in a jungle.
- Ask what is happening here. (Expected answer: race is going on)
- As students' interest level is increased, so continue with your story: "Once upon a time, there was a race in a jungle. They wanted to see who is the fastest.
- Encourage the students to tell the position of animals in a race e.g. Lion is at the first position.

Development:

Activity1:

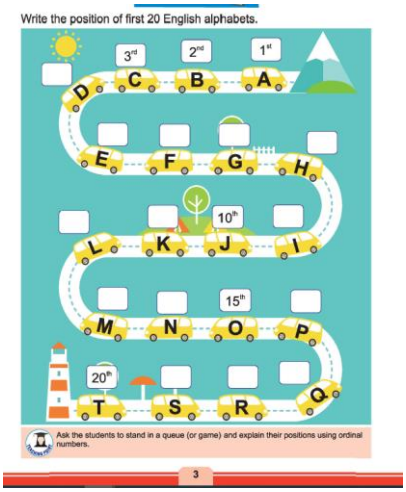
- Display story chart in front of the class and ask students who is at the 1st position?
- Keep asking the name of animal at every position.
- Keep writing the name with ordinal numbers.
- Let the students read ordinal numbers with their spellings.

Activity 2:

- If strength of the class is more than 20, ask 20 students to stand in a line and let the others sit on their seats. If students are less than 20 then, ask half of the class to stand in a line and keep different objects for example chair, table, bag, book etc. to complete a line of 20 members.
- Encourage them to see who is standing at 15th position? Or What is at 19th position?
- Give ordinal number's cards to the remaining students and ask them to give correct card to its respective student.
- Keep on asking who is at 12th position.
- Advise them to read the spelling if the position is called.

Conclusion / Sum up / Wrap up:

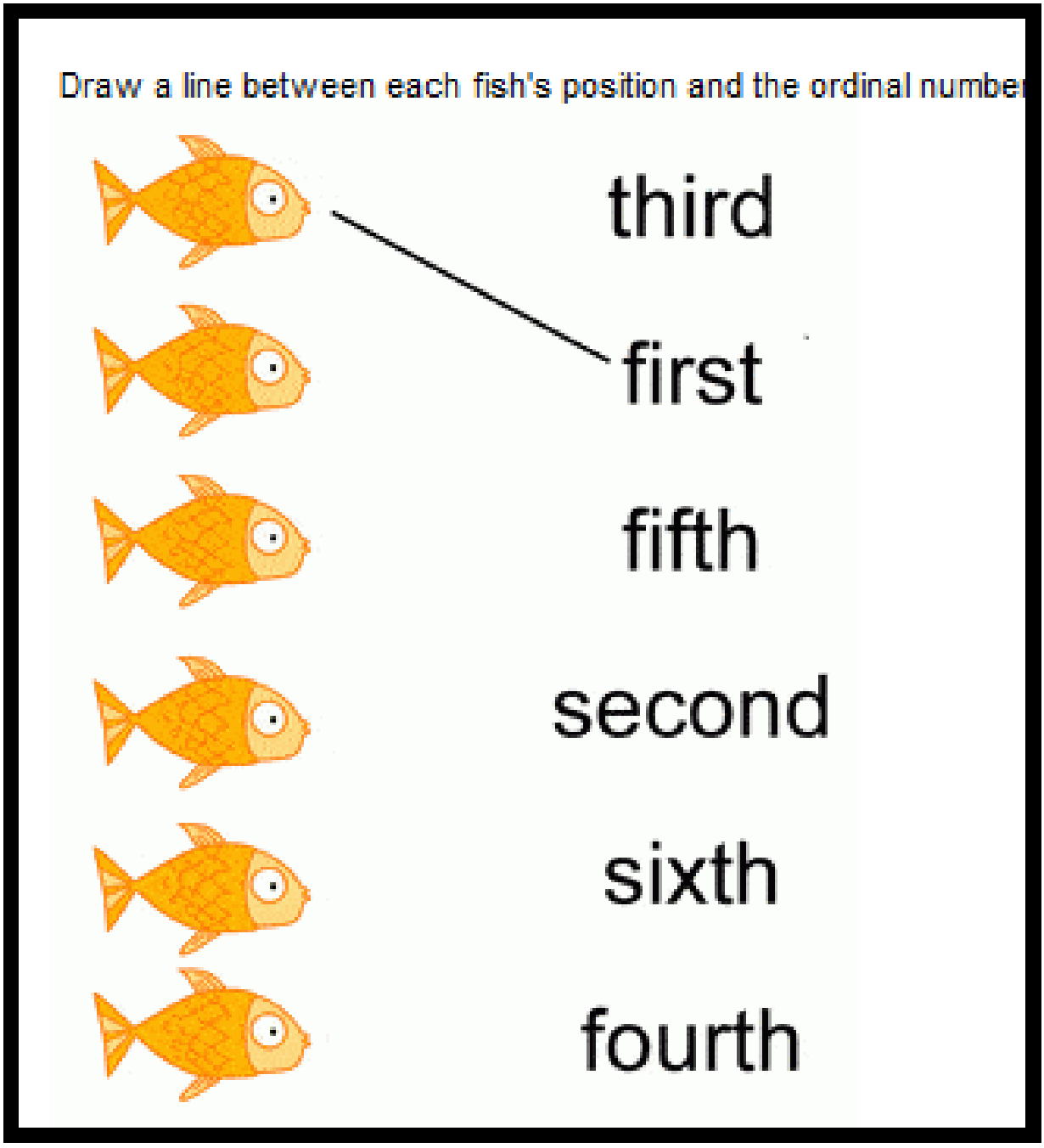
- Ask the students to solve page 3 of **Mathematics Textbook Grade 2.**



Assessment:

- Prepare the following worksheet and distribute to the students.
- Ask the students to solve the worksheet.
- Check their work and provide guidance if needed.

Worksheet



Follow up:

- Ask the students to learn the spellings of ordinal numbers from first to twentieth at home.


ZOO

NUMBERS IN WORDS

Duration: 40 Minutes

Students Learning Outcome:

- Write numbers 1-100 in words.

Materials:

Flash cards**,** worksheet of spelling of numbers jumbled up, mathematics textbook grade 2.

Information for Teacher:

- Use flashcards of numbers in words to help students learn the spellings.
  Teaching tips:
- Prepare flash cards of numbers in words and place/ paste them round the blackboard.
- Students can watch it daily and can memorize the spellings.

Introduction:

- **Warm up**. Call 10 students to come in front and jump one at a time and the rest of the class to count their number of jumps in one minute.
- Ask them to note down who wins the most number of jumps.

Development:

Activity 1:

- Show them the flashcard of 1 and ask them to read the spelling.
- Repeat the same activity with other numbers.
- Encourage them to learn the spellings.

Activity 2:

- Distribute the flashcards to students (annexure 1).
- Ask the first student to read the number written on his flashcard and let the student sitting next to it to spell it.
- Repeat the same activity for the remaining students of the class.

Conclusion / Sum up / Wrap up:

- Write the jumbled words on the board with the number.
- Randomly call students to write the correct spellings (as shown in annexure 2).
- Ask the students to solve page 4 of **Mathematics Textbook Grade 2.**

Let us read and write counting up to 100.

1 One	8 Eight	15 Fifteen	22 Twenty-two
2 Two	9 Nine	16 Sixteen	23 Twenty-three
3 Three	10 Ten	17 Seventeen	24 Twenty-four
4 Four	☐ Eleven	18 Eighteen	25 Twenty-five
5 Five	12 Twelve	☐ Nineteen	☐ Twenty-six
6 Six	☐ Thirteen	20 Twenty	27 Twenty-seven
7 Seven	14 Fourteen	21 Twenty-one	28 Twenty-eight

Assessment:

- Use “Questioning” as the formative assessment tool.
- Ask spelling of numbers like 41, 63, 88, 92 etc.

Follow up:

Ask the students to complete the spelling chart given on page 5 of **Mathematics Textbook Grade 2** at home.

Annexure 1: Flash Cards

1. One	2. Two
3. Four	4. Three
6. Five	5. Six
8. Seven	7. Eight
9. Nine	10. Ten

20. Twenty

30. Thirty

40. Forty

50. Fifty

60. Sixty

70. Seventy

80. Eighty

90. Ninety

100. Hundred

Annexure 2: Jumble words

Number	jumbled Spelling	Correct spelling
2	Tow	
4	Frou	
7	Snvee	
8	Gheti	
40	Tfyro	
90	Tniyen	
60	Stxiy	
100	Udnrehd	
30	Ytirh	

READ AND WRITE NUMBERS UP TO 999

Duration: 35-40 Minutes

Students Learning Outcomes:

- Read numbers up to 999.
- Write numbers up to 999 as numerals.

Materials:

5 sets of flash card of numbers (0-9)

Information for Teachers:

- Place value is the value of each digit in a number.
- 3-digit number is a number that is made up of 3 digits.
- Teaching tips. Take help of fake currency notes of 10 and 100.

Introduction:

- **Warm up**. Begin with Eid story.
  - Ali was very happy in Ramazan as in this Eid, he will get money as Eidi. His mother gave him 5 notes of 10, his uncle gave him 6 notes of 10 rupees. Do you know how much money Ali has now?
- Take students' feedback to check their understanding about money calculation.
  - Ahmed received 4 notes of 100 rupees and Asif got 5 notes of 100 rupees.
- Now ask the following questions;
  - How much money does each of them have?
  - Who has more money?
  - How much money do Asif and Ahmed have altogether?
- Take students' feedback to bring them close to the 3rd place value which is "thousand"
- Draw the place value chart on the board and write 3-digit under them.

Thousands	Hundreds	Tens	Ones
	9	0	0
	3	9	8
1	0	0	0

- Read the first number, let them read number after you.
- Now instruct them to read the next number.
- Emphasize on the place value while they are reading.

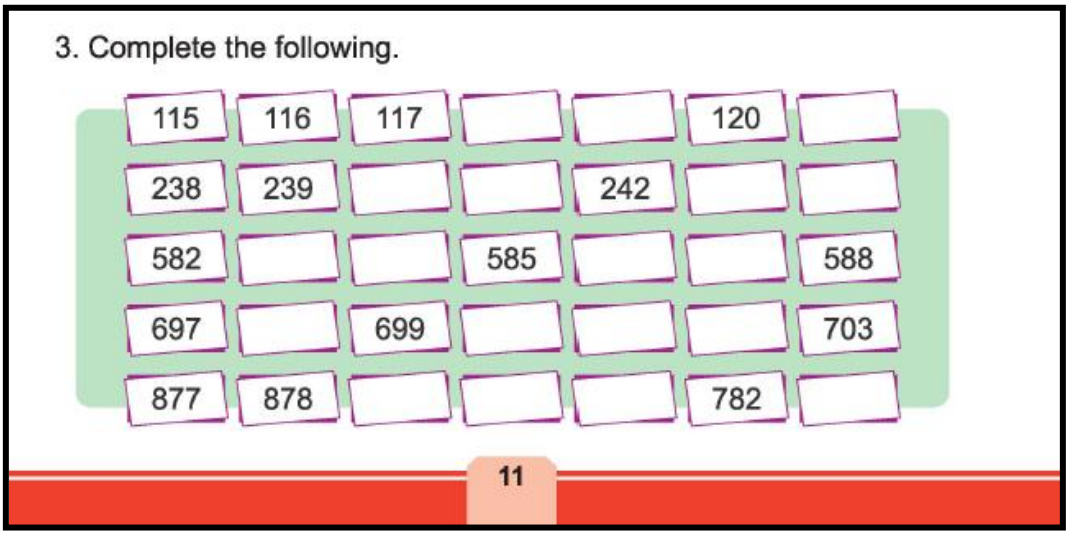
Development:

Activity 1:

- Divide the class into group consisting of 4 students.
- distribute flash cards of numbers
- Ask them to place 3 digits to make a number.
- Ask each group to read the number to the class.

Activity 2:

- Ask students to do Q 3 of page 11 of **Mathematics Textbook Grade -2**.

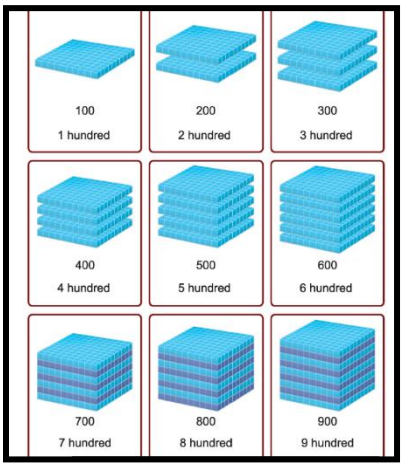

3. Complete the following.

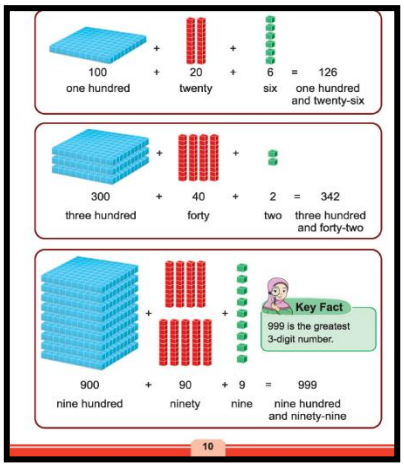
115	116	117			120	
238	239			242		
582			585			588
697		699				703
877	878				782	

11

Conclusion / Sum up / Wrap up:

- Ask them to open page 9 and 10 of **Mathematics Textbook Grade -2** to check ones, tens and hundreds.





- Make a 3-digit number with the help of flash cards and read it with proper place value.

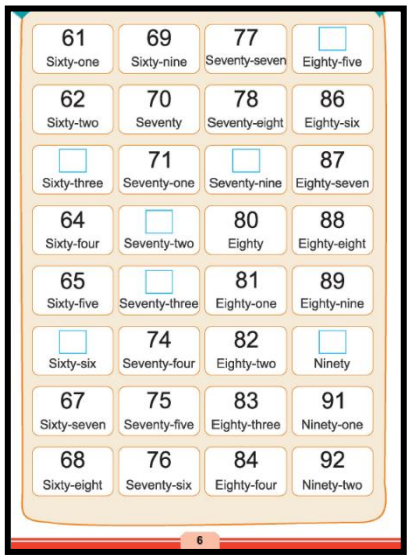
Assessment:

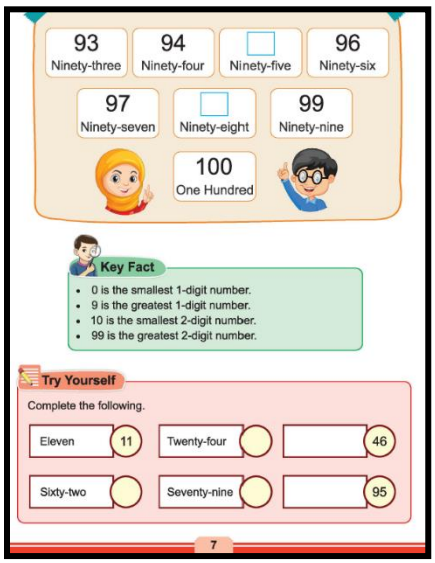
- Write the following question on the board and ask students to write its answer in CW notebook by ticking the correct option as yes or no.

I know how many ones are there in the number 321	Yes	No
I know how many tens are there in the number 321	Yes	No
I know how many hundred are there in the number 321	Yes	No

Follow up:

Complete the spelling chart of page 6 and 7 of **Mathematics 2** at home.





1	2	3	4	5

6	7	8	9	0

1	2	3	4	5

6	7	8	9	0

Fill in the missing numbers.

271		273		275
265	266			269
324		326		328
	715	716		718
893		895		897
	516		518	
	112		114	
217		218		220
	540		542	
	440		442	

Teacher Guide
Grade-2

Lesson Plan
4

PLACE VALUE OF 3-DIGIT NUMBERS

Duration: 40 Minutes

Students Learning Outcomes:

- Recognize the place value of a 3 - digit number.
- Identify the place value of a specific digit in a 3 - digit numbers

Materials:

5 sets of flash card of numbers (0-9) and place value, (unit, ten, hundred, and thousand), Coins of 1 rupee. Original three 10 rupees notes and 3 hundred rupees notes, mathematics Textbook Grade 2

Information for Teacher:

- Numbers cannot be taught without the Place value. Place value will begin from right hand (Unit). Number will be taught and practice.
- Teaching tips. Make/ arrange fake currency notes of 10 and 100.

Introduction:

- Put coins and notes on the table in front of the class.
- Call one student and hand him/her over 9 one rupee coins.
- Ask him/her to count and tell the whole class.
- Call another student to come and count how many tens are here.
- Call 3rd student to count how many hundreds are here.
- Call a student to calculate the total money and write the money as number on the board. (339)
- Call any other student to mention place value on the number.
- Draw the place value chart on the board and write 3 digits under them.

Thousands	Hundreds	Tens	Ones
	5	4	2

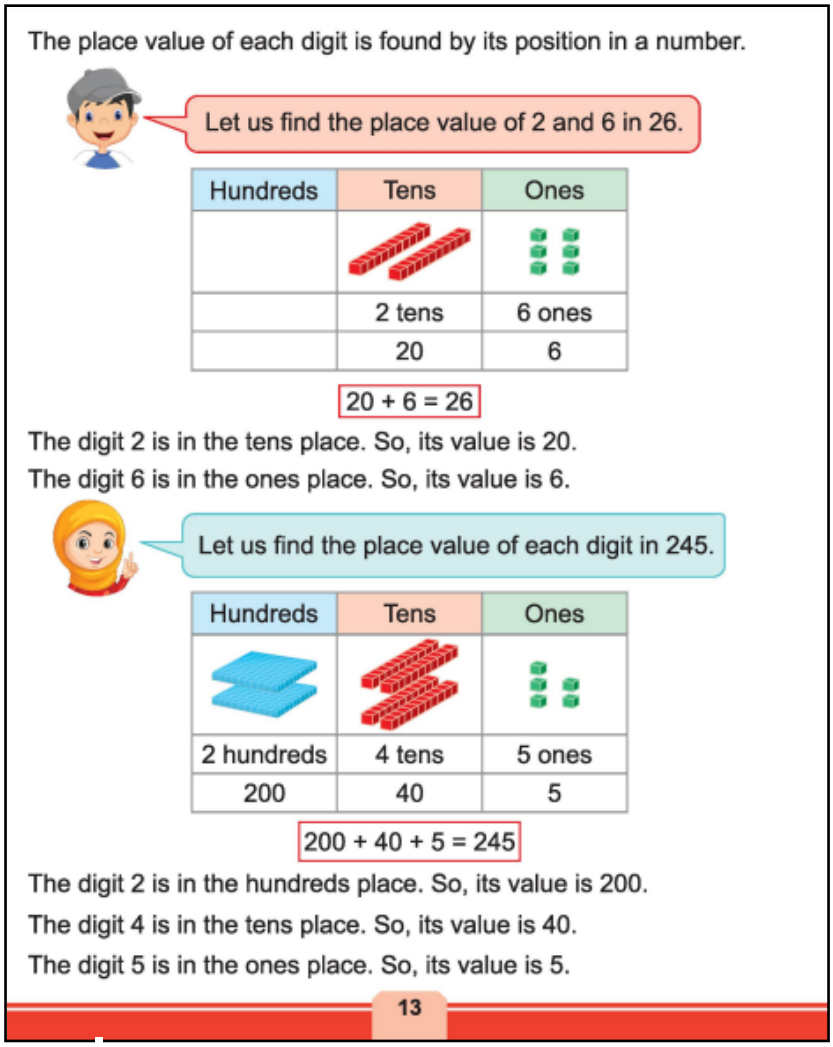
	8	5	7
1	0	0	0

- Read the first number, let them read number after you.
- Now instruct them to read the next number
- Emphasize on the place value while they are reading.

Development:

Activity 1:

- Ask students to go through page 13 **of the mathematics textbook for grade-2** in pairs



The place value of each digit is found by its position in a number.

Let us find the place value of 2 and 6 in 26.

Hundreds	Tens	Ones
	2 tens	6 ones
	20	6

20 + 6 = 26

The digit 2 is in the tens place. So, its value is 20.

The digit 6 is in the ones place. So, its value is 6.

Let us find the place value of each digit in 245.

Hundreds	Tens	Ones
2 hundreds	4 tens	5 ones
200	40	5

200 + 40 + 5 = 245

The digit 2 is in the hundreds place. So, its value is 200.

The digit 4 is in the tens place. So, its value is 40.

The digit 5 is in the ones place. So, its value is 5.

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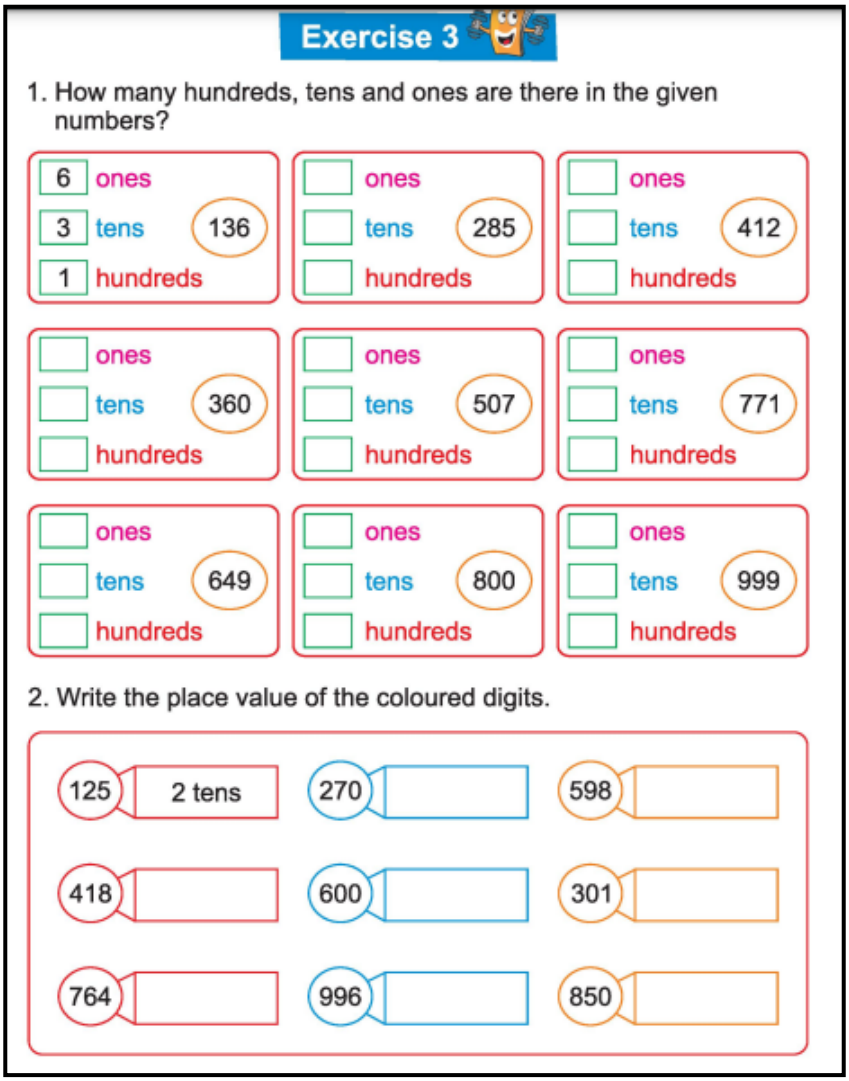
- Now ask them to do page number 15 of **Mathematics 2.**



Exercise 3

1. How many hundreds, tens and ones are there in the given numbers?

6 ones, 3 tens, 1 hundreds — 136	ones, tens, hundreds — 285	ones, tens, hundreds — 412
ones, tens, hundreds — 360	ones, tens, hundreds — 507	ones, tens, hundreds — 771
ones, tens, hundreds — 649	ones, tens, hundreds — 800	ones, tens, hundreds — 999

2. Write the place value of the coloured digits.

125 — 2 tens	270 —	598 —
418 —	600 —	301 —
764 —	996 —	850 —

Activity 2:

- Let them sit in pairs.
- Provide them with digits and place value.
- Ask them to create a 3-digit number and read it.
- Let every pair create and read number
- Make sure that they are reading the correct place value.

Conclusion / Sum up / Wrap up:

- Pair Work: Ask them to do page 16 of **Mathematics 2** to check ones, tens and hundreds with the student sitting next to him/her.

3. Write the number with the help of place value.

100 + 30 + 2 =	132	200 + 10 + 5 =	
500 + 50 + 0 =		400 + 0 + 2 =	
700 + 10 + 9 =		800 + 80 + 8 =	
600 + 00 + 0 =		900 + 90 + 6 =	

4. Write the number for the given place value.

Place Values of the Numbers	Numbers
1 ones, 2 hundreds, 5 tens	251
3 tens, 5 hundreds, 4 ones	
6 tens, 0 ones, 6 hundreds	
5 hundreds, 7 ones, 0 tens	
8 ones, 9 tens, 1 hundred	
0 ones, 3 hundreds, 0 tens	

- Monitor and facilitate.

Assessment:

- Show them 1 note of 100 rupee and 2 coins of 1 rupee. Ask how much money is this? (Expected answer one hundred and 2 rupee)
  - What is the place value of hundred rupees (100)
  - What is the place value of 2 rupees? (ones)
  - How should we write this amount in number?
- Let any student come and write on the board. (Student might make a mistake by not writing zero and only write 12.
- Encourage students to identify the mistake by taking the help of place value chart.
- Tell them the importance of zero in 102.

Follow up:

Ask them to complete the spelling chart of page 12-13 of **Mathematics 2** at home.
Tell them to bring them to the next session.

COMPARISON OF 3-DIGIT NUMBERS

Duration: 40 Minutes

Students Learning Outcome:

- Compare 3 - digit numbers with 3-digit numbers (hundreds, tens and ones).

Materials:

5 sets of flash card of numbers (0-9) and place value, (unit, ten, hundred, and thousand), Coins of 1 rupee. Original three 10 rupees notes and 3 hundred rupees notes, mathematics Textbook Grade 2

Information for Teacher:

- Use place value chart to compare 3-digit numbers.
- If the hundreds place of both 3-digit numbers are different, then the numbers with greater digit at hundreds place is greater.
- If the hundreds place of both 3-digit numbers are same, then the numbers with greater digit at tens place is greater.
- If the hundreds and tens place of both 3-digit numbers are same, then the number with greater digit at the ones place is greater.

Teaching tips:

- Make fake currency notes of Rs 10 and Rs 100.
- Use cut-outs of crocodile mouth for greater, less and equal sign.

Introduction:

- Call 6 students and make 3 pairs
- Give them fake currency to count.
- Ask each pair who has more money and who has less money?
- Discuss Page 17 and 18 of **Mathematics Textbook Grade- 2** with the whole class.
- Compare numbers on the basis of place value.

Development:

- Tell them the rules of comparison of 3-digit numbers.
- If the hundreds place of both 3-digit numbers are different, then the numbers with greater digit at hundreds place is greater.

- If the hundreds place of both 3-digit numbers are same, then the numbers with greater digit at tens place is greater.
- If the hundreds and tens place of both 3-digit numbers are same, then the number with greater digit at the ones place is greater.

Activity 1:

- Display flash cards of 3-digit numbers in front of the class.
- Ask students randomly to tell the smallest / greatest number.
- Repeat the activity by involving all students of the class.

Activity 2:

- Write two 3-digit numbers on the board and ask the students to tell the smallest / greatest number.
- Introduce signs of greater than, less than and equal to by showing cut-outs of crocodile mouth.
- Place the crocodile mouth between the two numbers.
- Demonstrate that the crocodile mouth eats the bigger number only.
- Call students one at a time to place the crocodile mouth correctly between the numbers.
- Repeat the activity by writing different 3-digit numbers on the board.

Conclusion / Sum up / Wrap up:

- Conclude the lesson by recalling the following rules of comparison of 3-digit numbers.

Rules of comparison of 3-digit numbers

- If the hundreds place of both 3-digit numbers are different, then the numbers with greater digit at hundreds place is greater.
- If the hundreds place of both 3-digit numbers are same, then the numbers with greater digit at tens place is greater.
- If the hundreds and tens place of both 3-digit numbers are same, then the number with greater digit at the ones place is greater.

Assessment:

Fist of Five – A quick, immediate assessment: ask your students a question and have them respond by showing you their level of understanding with the help of five fingers.

- You know how to compare two numbers.
- You know how to use the symbols of <, > and =.
- You compare a 3-digit number with the help of place value.

Look at the students. A glance around the classroom provides you with information about student learning and allows you to adapt your instruction accordingly.

Follow up:

Complete Q1 and 2 of page 21 of **Mathematics 2** at home.

1. Encircle the greater number.

18	121	248	98	198	218
600	599	749	497	899	999

2. Encircle the smaller number.

89	100	212	169	309	289
550	505	700	699	998	989

3. Encircle the greatest number.

115	85	135	214	275	250
390	388	389	689	700	599
809	799	690	998	899	999

4. Encircle the smallest number.

105	98	101	318	381	183
510	500	482	142	241	412
689	650	691	989	998	889

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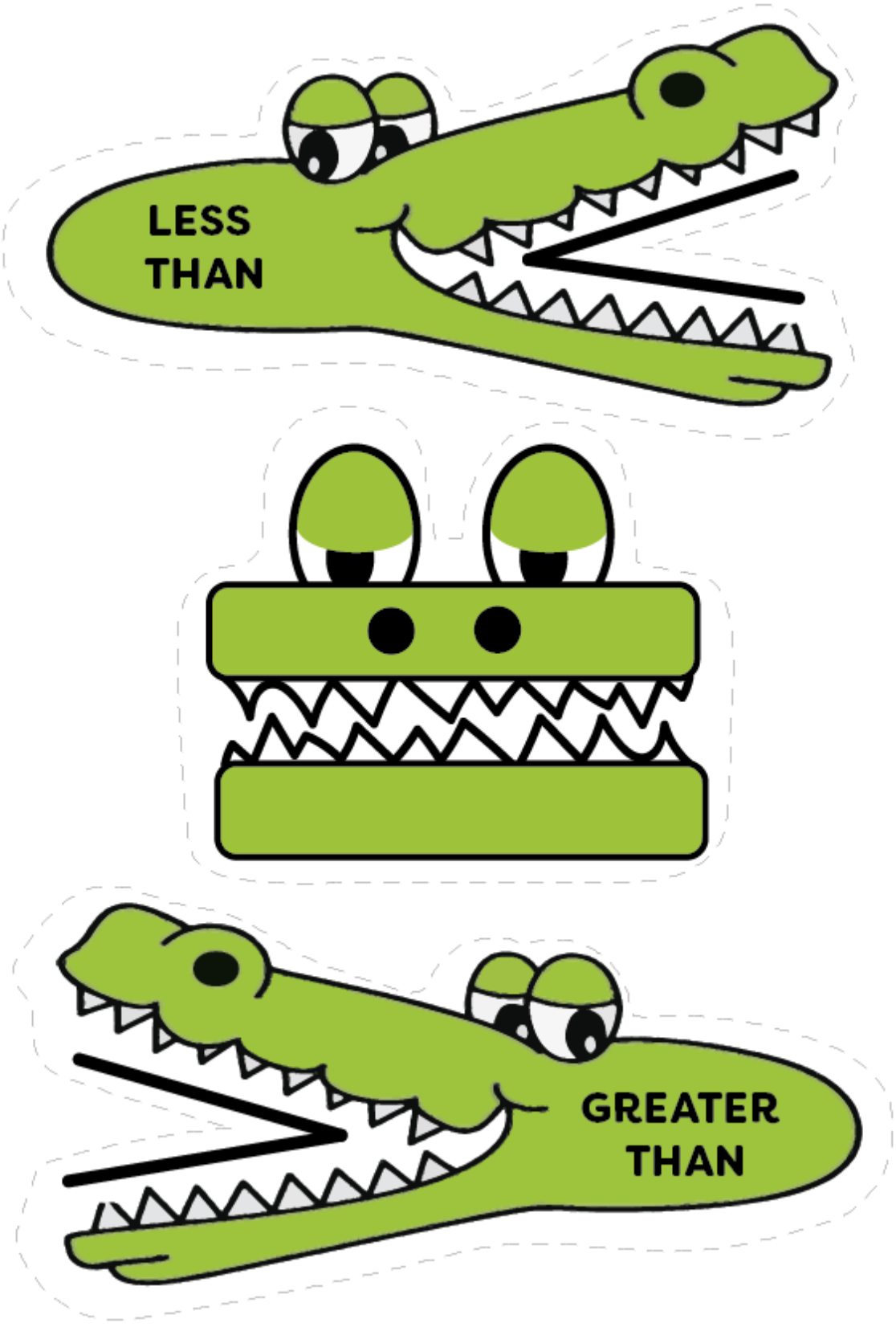

LESS
THAN
GREATER
THAN

ORDERING OF 3-DIGIT NUMBERS

Duration: 40 Minutes

Students Learning Outcome:

- Ordering of 3-Digit Numbers

Materials:

Students' stationery, chits to write cost, 5 envelops with money (fake currency), mathematics Textbook Grade 2

Information for Teacher:

- The numbers arranged from smallest to the greatest is called increasing order.
- The numbers arranged from greatest to the smallest is called decreasing order.
- Teaching tips. Currency is always helpful in comparing numbers in order. Let some students be the shopkeeper and some as buyers.

Introduction:

Warm up.: (Who has more money?)

- Divide the class in to groups of 4-5 students per group.
- Give each group a name like (Roses, Sunflower, Jasmine, Tulip, Lily)
- Let them decide a group leader who will come and collect the envelop.
- Instruct them to count the amount with group name and write it on the board.
- Ask the whole class to arrange the name of the group according to its amount.
- Explain how to compare different numbers with the help of place value.
- Let them read the number in increasing and decreasing order.

Development:

Activity 1:

- Divide the class into group of 5 students.
- Distribute chits to write the cost.
- Ask each group to set the table with 4-5 stationery items and label the cost properly (cost should be a 3-digit number)
- Instruct them to move to each table (one table at a time) when you clap and check the cost.

- Let them pick 3 to 4 items and at each table and arrange them in order on the same table. Starting from the greatest number.
- Move around and see whether they are able to compare it correctly.

Activity 2:

- Ask them to open page 22 of Mathematics Grade 2 and arrange the number in order.

Conclusion / Sum up / Wrap up:

Ask the class the steps to write 3-digit numbers in order.

- Check the highest place value (hundreds), if they are different then the number with the largest digit will be the bigger number.
- If the highest place value is same then compare the 2nd place value (tens)

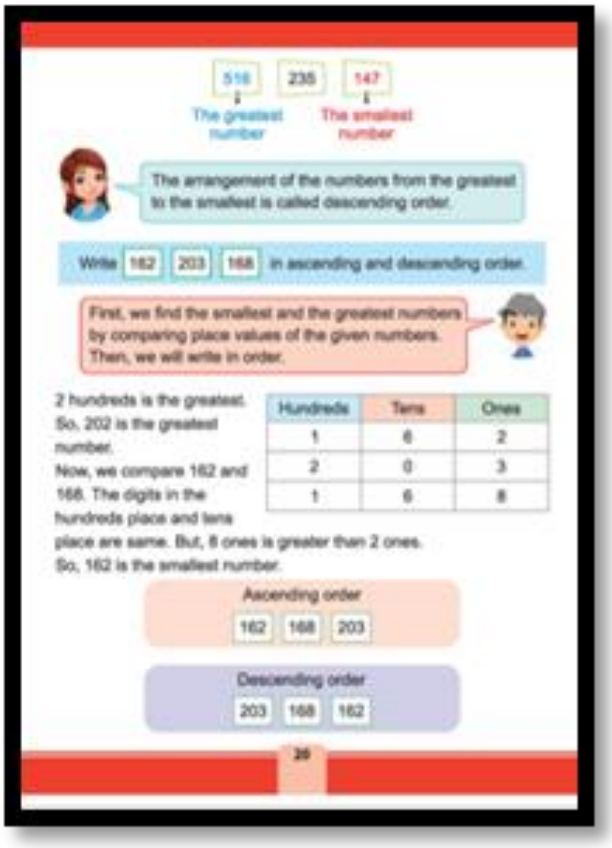
Assessment: One-Minute Paper

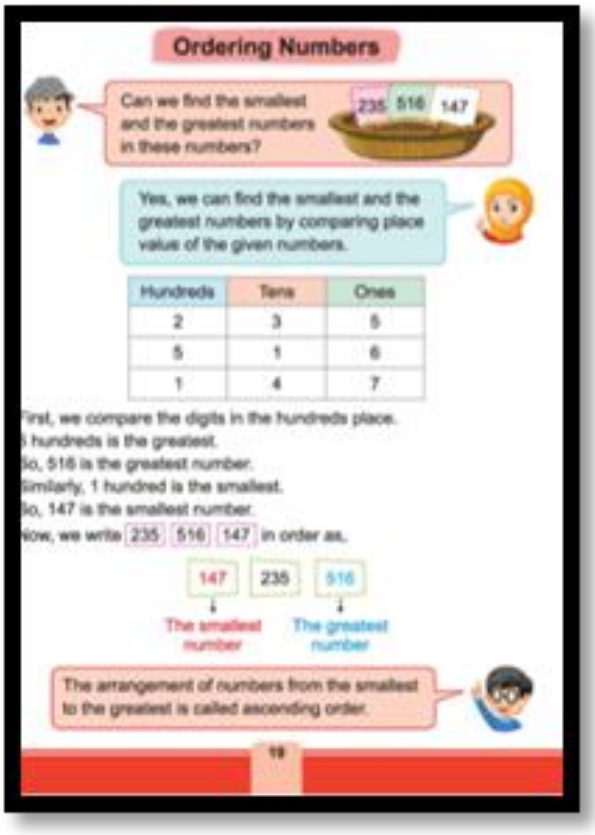
Ask your students, individually, to respond in writing to a single prompt.

- Most important learning from the day and why
- Most surprising concept and why
- Most confusing topic and why

Follow up:

Review page 19-20 of Mathematics Grade 2 for better understanding of concepts.


516
235
147
The greatest number
The smallest number
The arrangement of the numbers from the greatest to the smallest is called descending order.
Write 162 203 168 in ascending and descending order.
First, we find the smallest and the greatest numbers by comparing place values of the given numbers. Then, we will write in order.
2 hundreds is the greatest.
So, 202 is the greatest number.
Now, we compare 162 and 168. The digits in the hundreds place and tens place are same. But, 8 ones is greater than 2 ones.
So, 162 is the smallest number.
Hundreds Tens Ones
1 6 2
2 0 3
1 6 8
Ascending order
162 168 203
Descending order
203 168 162
20


Ordering Numbers
Can we find the smallest and the greatest numbers in these numbers?
235 516 147
Yes, we can find the smallest and the greatest numbers by comparing place value of the given numbers.
Hundreds Tens Ones
2 3 5
5 1 6
1 4 7
First, we compare the digits in the hundreds place.
hundreds is the greatest.
So, 516 is the greatest number.
Similarly, 1 hundred is the smallest.
So, 147 is the smallest number.
Now, we write 235 516 147 in order as,
147 235 516
The smallest number
The greatest number
The arrangement of numbers from the smallest to the greatest is called ascending order.
19

BACKWARD COUNTING

Duration: 40 Minutes

Students Learning Outcome:

- Count backward ten steps down from any given number.

Materials:
Flash cards with numbers written on them, mathematic textbook grade 2.

Information for Teacher:

- Use the term ‘before’ and ‘after’ to understand the concept of backward counting.
- Teaching tips. Oral practice, skipping exercise

Introduction:

- Ask students, can you count backwards from the number 10?
- After getting their response, write backward counting from 10 to 0 on the board.

Development:

Activity 1:

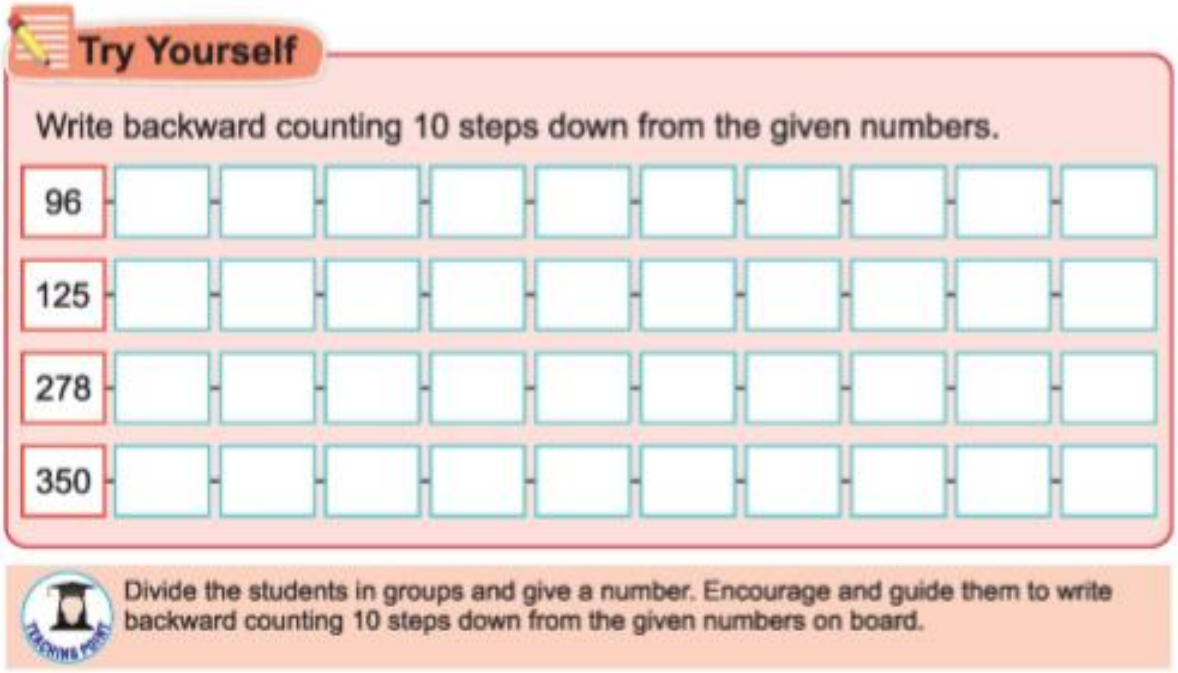
- Recall the terms ‘before’ and ‘after’ to the students.
- Ask question to reinforce the concepts. For example, what comes before 25?

What comes after 320?

- Show flashcards of different 3-digit numbers and ask the students randomly to count 10 steps backward from that number.

Activity 2:

- Ask them to open page 23 of **Mathematics Textbook Grade-2** and write backward counting 10 steps down



Conclusion / Sum up / Wrap up:

- Keep asking numbers in backward counting in. Try to cover maximum students to sum up the concept.

Assessment:

- Ask students the question.
  Do you know backward counting in 10s?
  Can you read and write backward counting in 10s?
- Give appropriate think time, and ask them to show thumbs up for clear understanding, thumbs sideways for "so-so" understanding, or thumbs down if they are confused or uncertain.
- Decide next lesson based on students' responses.

Follow up:

Ask students to do page 23 of Mathematics Textbook Grade-2.

Try Yourself

1. Complete the following by counting in 10s.

40		60				100
110			140		160	
360				400		

2. Write the next 6 numbers by counting in 10s.

90						
220						
580						
690						

Encourage the students to read and write the next numbers from the given numbers by counting in 10s.

ONE THOUSAND (1000)

Duration: 40 Minutes

Students Learning Outcome:

- Recognize that 1000 is one more than 999 and the first 4-digit number.

Materials:
5 sets of fake currency. (10 notes of Rs.10, 10 notes of Rs.100 and 10 coins of Rs.1), mathematics textbook grade 2.

Information for Teacher:

- 1000 is the first and the smallest 4-digit number.
- It occupies the fourth-place value i.e., thousand in the place value chart.
- Teaching tips. Take help of fake currency notes of 10 and 100 and coins of Rs.1.

Introduction:

- Draw the place value chart on the board and write 3 digits under them.

Thousands	Hundreds	Tens	Ones
	9	0	0
	3	9	8
	7	0	0
	5	0	6
	7	4	3
	7	8	9

- Ask the whole class to read the numbers written on the board.
- Now instruct them to read the next number
- Emphasize on the place value while they are reading.

Development:

Activity 1:

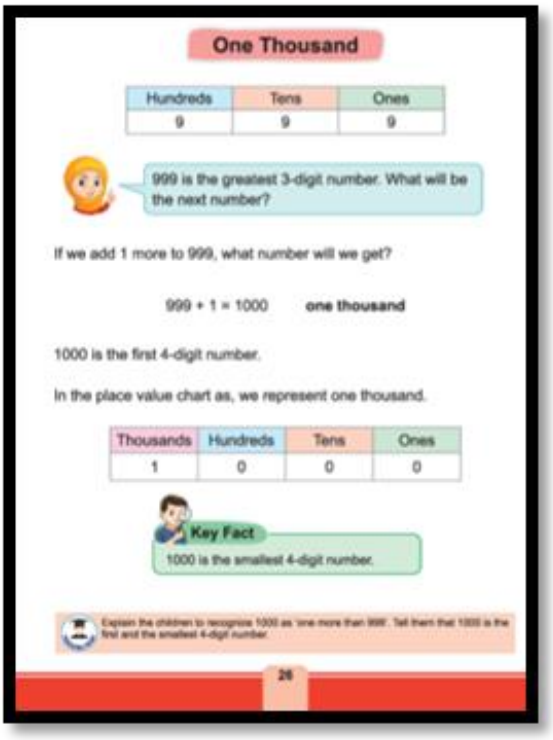
- Let students sit in group of 4 or 5 depending on class size.
- Make 5 groups.
- Distribute fake currency in groups.
- Ask first group to count coins and tell how many coins of Rs 1 make 1 note of Rs 10. (10 coins)
- Ask 2nd group to count Rs.10 and tell how many notes of Rs 10 make 1 note of Rs 100.(10 tens)
- Ask the 3rd group to count Rs.100 and find how many Rs.10 make 1 note of Rs.1000.(ten hundreds)
- Ask 4th group to take 9 notes of Rs.10 and 9 coins of Rs.1 and tell how much money is this? (Rs.99)
- Ask 5th group to count 9 notes of Rs.100 and tell how much money is this? (Rs.900)
- Now ask the whole class what will be the sum of Rs. 99 and Rs.900.(999)
- Ask the class how to make Rs.999 a 1000? (add one coin of Rs.1)
- Add one more column to the place value chart on the board and write 1000 in their relevant place values with the help of students.
- Initiate discussion and bring them to a point that 1000 is the first 4 digit number.

Activity 2:

- Demonstrate the pictorial explanation of one thousand (1000) on the board using the information given in the textbook.

Conclusion / Sum up / Wrap up:

- Ask them to study page 26 of **Mathematics Textbook Grade -2** to check how to make 1000.


One Thousand

Hundreds	Tens	Ones
9	9	9

999 is the greatest 3-digit number. What will be the next number?

If we add 1 more to 999, what number will we get?

999 + 1 = 1000 **one thousand**

1000 is the first 4-digit number.

In the place value chart as, we represent one thousand.

Thousands	Hundreds	Tens	Ones
1	0	0	0

Key Fact

1000 is the smallest 4-digit number.

Assessment:

Ask the following questions and see the level of students' understanding.

- What is the smallest 4-digit number? (1000)
- What is the largest 3-digit number? (999)
- How can we make 999, a 4-digit number? (Add 1)

A glance around the classroom provides you with information about student learning and allows you to adapt your instruction accordingly.

Follow up:

- Ask students to draw abacus on the note books.
- Represent the number 1000 on abacus by drawing beads.

Teacher Guide
Grade-2

Lesson Plan
9

ADDITION OF 2-DIGIT NUMBERS WITH CARRYING

Duration: 40 Minutes

Students Learning Outcome:

- Solve real life number stories, involving addition of 2-digit numbers with carrying.

Materials:
Students' colour pencils, Mathematics Textbook Grade 2.

Information for Teacher:

- To add 2-digit numbers, add ones (O) into ones and tens (T) into tens.
- When we add zero (0) to any number, the number remains te same.
- Teaching tips. Take real life examples for addition. Begin from classroom like how many girls or boys are there in two sections of grade 2 etc.

Introduction:

- **Warm up**.
- Choose student at random and ask "how many people live in your house?
- Ask another student the same question,
- Ask the whole class to find the total number of people in the two families.

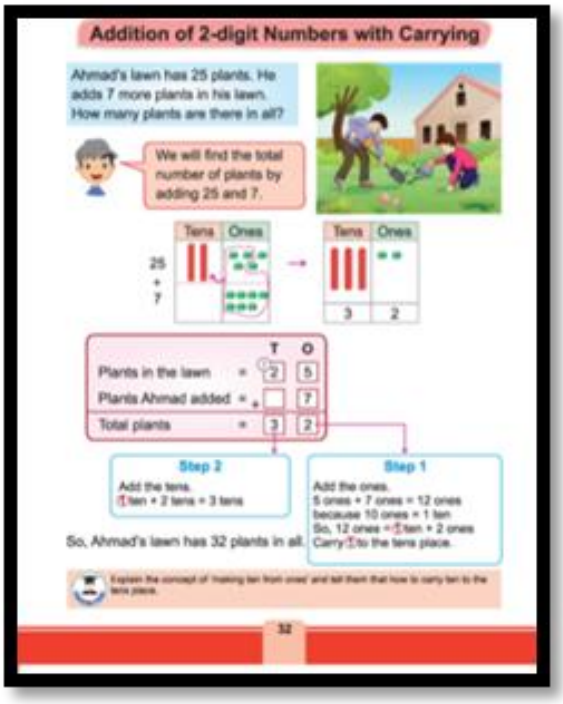
Development:

Activity 1:

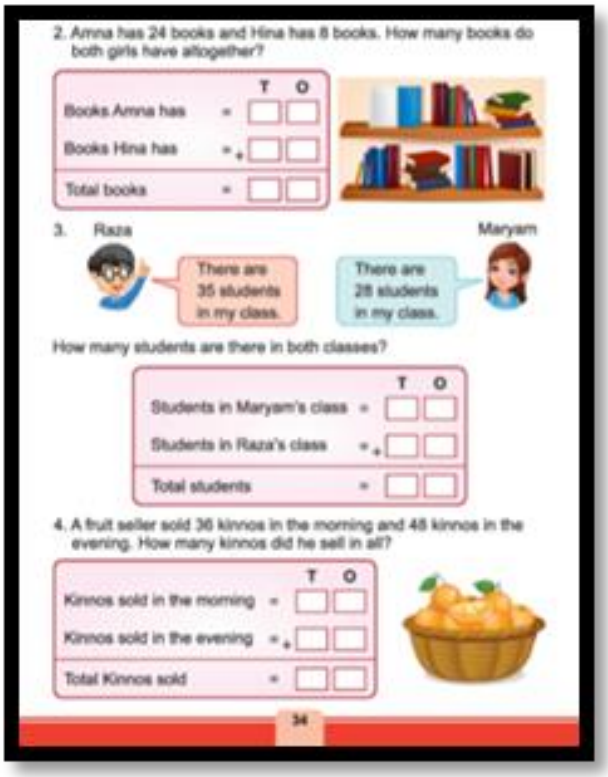
- Let students sit in groups of 4 or 5 depending on class size.
- Make 5 groups.
- Ask every group to take out their colour pencils.
- Instruct them to count the total number of pencils within a group.
- Ask group representative of group 1 and 2 to come out and write their number of pencils on the board (For example 11 pencils and 8 pencils)
- Ask representative of 3rd group to add the two numbers.
- Repeat the same activity with group 4 and 5 and let group 3 to add the values generated by number of pencils.

Activity 2:

- Take help from page 32 of **Mathematics Textbook Grade 2** and explain addition of 2-digit number with carrying on the board.



- Ask students to solve question number 2-4 of exercise 1 given on page 34 of Mathematics Textbook Grade 2.



Conclusion / Sum up / Wrap up:

- Tell them the answer of the questions and ask them to cross check their answers.
- Discuss if anything is not clear in understanding te concept of addition wit carrying.

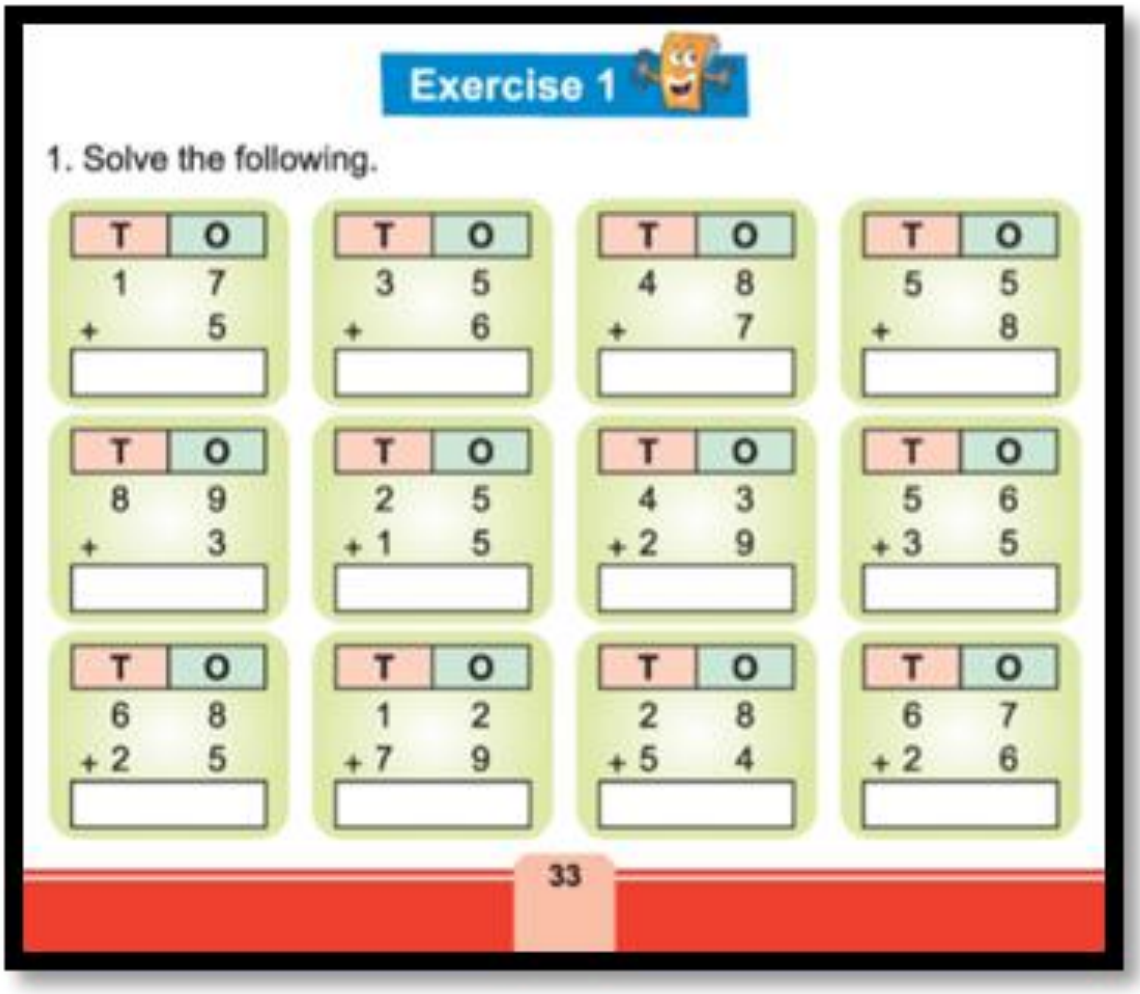
Assessment:

Ask the following questions to the students:

- Do you know how to add numbers?
- Can you add 2-digit numbers with carrying?

Follow up:

Ask students to solve Q.1 of page 33 of **Mathematics Textbook Grade 2**.



ADDITION OF 3-DIGIT NUMBERS WITHOUT CARRYING

Duration: 40 Minutes

Students Learning Outcome:

- Add 3 - digit number and 3-digit number without carrying.

Materials:
Fake currency, small basket, small chits for writing sums, Mathematics Textbook Grade 2.

Information for Teacher:

- To add 3-digit numbers, add ones (O) into ones, tens (T) into tens and hundreds (H) into hundreds.
- When we add zero (0) to any number, the number remains the same.

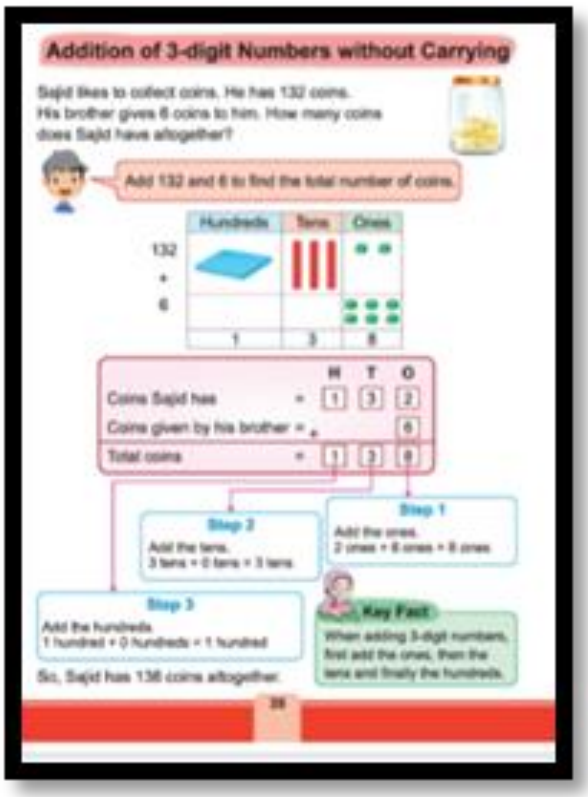
Introduction:

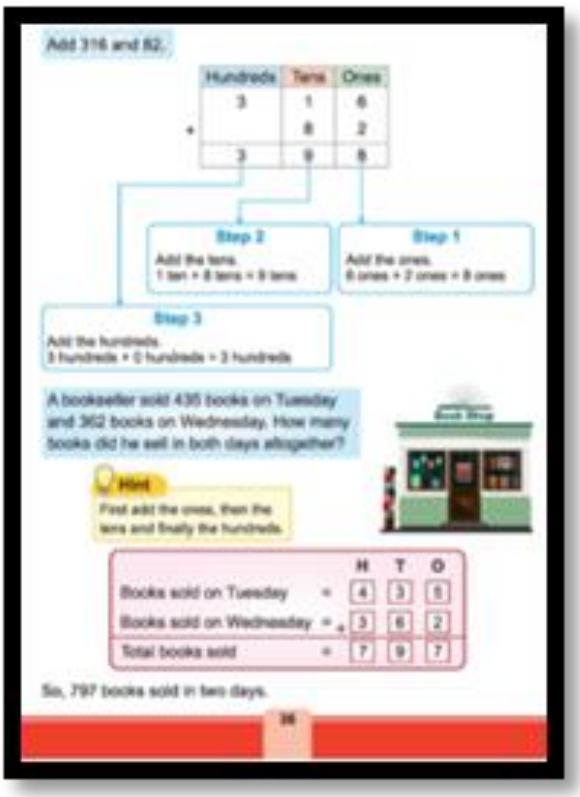
- Call 6 students.
- Distribute fake currency to three students (few notes of Rs 100 and some notes of Rs.10 and few coins of Rs.1)
- Distribute few notes of Rs.10 and few coins of Rs.1 to the remaining three students.
- Ask them to add the amount they have.
- Take one student from each trio and make three pairs.
- Instruct them to add the amount on the board (For example: 230+42, 585 +12 etc.)
- Let the other students check their addition.
- Make sure they write number under correct place value.

Development:

Activity 1:

- Ask the class to open page 35 and 36 of **Mathematics Textbook Grade 2.**
- Explain addition of 3 digit with 2-digit number to the whole class.





Activity 2:

- Ask students to solve question number 1-12 of exercise 2 of page 37 of **Mathematics Textbook Grade 2.**

Conclusion / Sum up / Wrap up:

- Tell them the answer of the questions and ask them to cross check their answers.

Assessment:

- Cut small pieces of paper and distribute to each student.
- Ask them to write a sum of addition of 3-digit with 2-digit and 1-digit number.
- Let them fold the paper and ask them to place in the basket.
- Now call a random student to pick a chit and read the question aloud, then answer the question. (For example, 320+5, 410+8, 300+20 etc.)

Follow up:

- Ask students to solve the following questions in classwork notebooks.
- Instruct them to bring the solved sums the next day.

2 3 5	6 7 3	7 6 2
+ 3 2	+2 5	+ 3 1

Teacher Guide
Grade-2

Lesson Plan
11

ADDITION OF 3-DIGIT NUMBERS WITHOUT CARRYING

Duration: 40 Minutes

Students Learning Outcome:

- Solve real life number stories involving addition of 3 - digit numbers without carrying.

Materials:
Flash cards with 3-digit numbers written on them, small basket with chits which have sums (used in previous lesson), Mathematics Grade 2.

Information for Teacher:

- To add 3-digit numbers, add ones (O) into ones, tens (T) into tens and hundreds (H) into hundreds.
- When we add zero (0) to any number, the number remains the same.
- Teaching tips. This lesson is about application of knowledge. Bring such problems from real life situations where students can apply their knowledge to solve problems

Introduction:

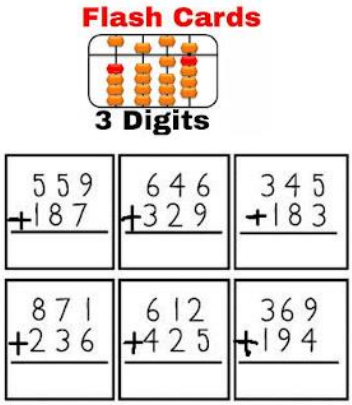
Warm up. **Story time**.

Ali while going to masjid, started counting his steps. He walkd 210 steps to reach the Masjid. After namaz, he further walked 50 more steps to reach his friend's house. How many steps did Ali walk altogether? (210 +50=260)

Development:

Activity 1:

- Make students sit in group of 4-5 students per group depending on class strength.
- Show the groups flashcards containing 3-digit numbers (digit should be less than 5) as such; 234, 123,321, 444 etc.
- Ask each group to pick two cards at random and find the sum of both cards.
- Ask the students to share how they have solved the question with the class.
- Provide one quarter chart paper in groups to the students.



- Write on the board a word problem related to addition of 3-digits and 2 or 3 digits number, e.g. Salma went to a bird shop. She learnt that a talking parrot is being sold for Rs. 425 and a pigeon for Rs. 70. She wants to buy the both birds. How much money she needed for the purpose?

- Ask the students to discuss and list down all information on chart paper.
- Also discuss how to add numbers given in the problem.
- Ask the students to write their answers on chart paper.
- Call 2 or 3 students to share their work on the board.

Activity 2:

Write the word problems (given at the end of the lesson plan) on the board.
Ask students to copy down the problems and solve in their classwork notebooks.

Conclusion / Sum up / Wrap up:

- Tell them the answer of the questions and ask them to cross check their answer.
- Discuss the problems faced by them during solving.

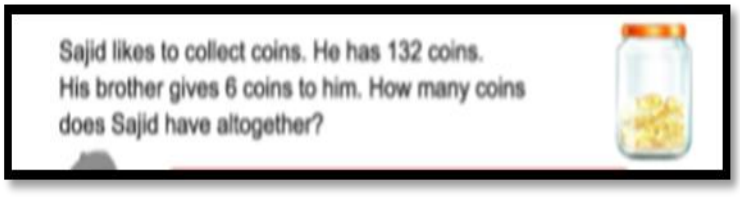
Assessment:

Ask the following questions to the students

- What are the keywords used for addition word problems?
- How to add 3-digit and 2-digit numbers?

Follow up:

Ask students to do the following question in their HW notebooks.



Real life problems

1. Ahmed bought a chocolate for Rs.240 and an eraser for Rs.8. How much did he spend altogether?
2. Mary reads 112 pages from a story book on Monday and 12 pages on Tuesday. How many pages does she read altogether?
3. Ali bought biscuit for Rs.12 and juice pack for Rs.125. How much did he spend altogether?

Alia is decorating the wall for her birthday party. She takes 245 cm of red ribbon and 32 cm of blue ribbon. How much ribbon does she used altogether

Teacher Guide
Grade-2

Lesson Plan
12

ADDITION OF 3-DIGIT NUMBERS WITH BORROWING

Duration: 40 Minutes

Students Learning Outcome:

- Add 3 - digit numbers with 3 - digit numbers with carrying of tens and hundreds.

Materials:
Flash cards with 3-digit numbers written on them, Mathematics Textbook Grade 2.

Information for Teacher:

- To add 3-digit numbers, add ones (O) into ones, tens (T) into tens and hundreds (H) into hundreds.
- When we add zero (0) to any number, the number remains the same.
- Teaching tips. This lesson is about addition with carrying. Repeated instruction of use of place value will help them solve sums with carrying.

Introduction:

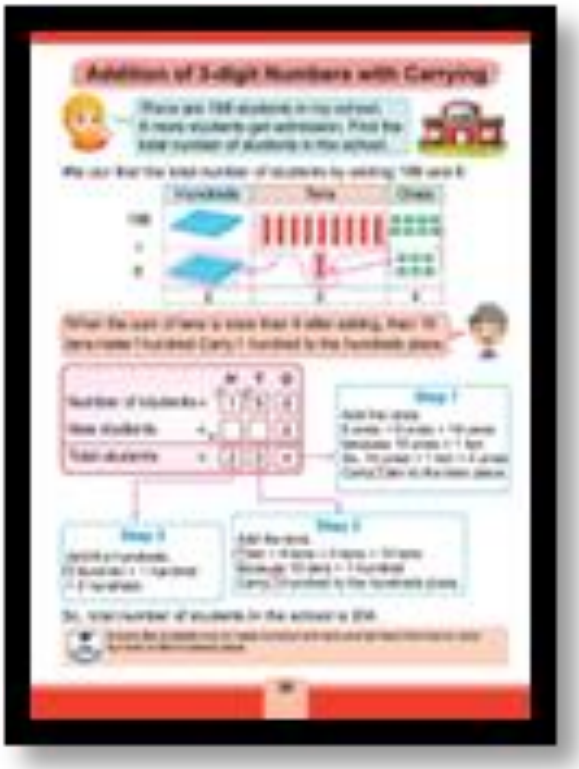
Warm up. **Who is the quick mathematician?**

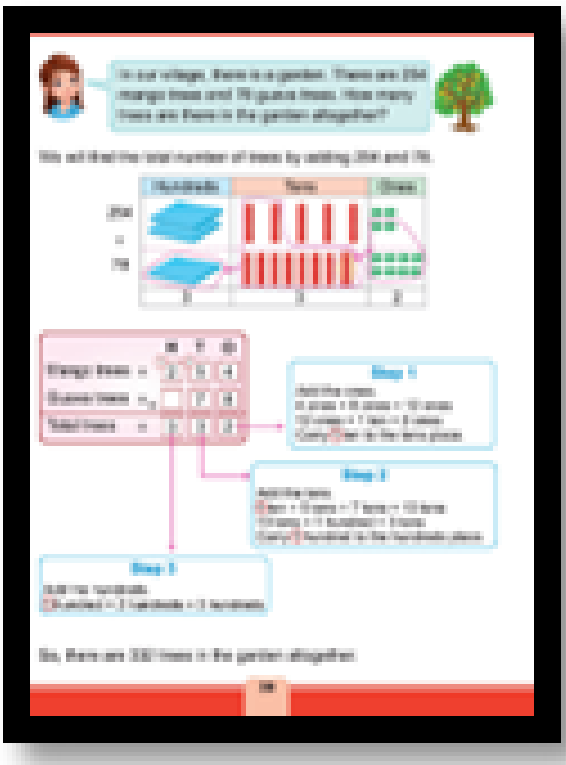
- Make students sit in groups of 4-5 students depending on class strength.
- Distribute plain papers and flash cards where sums of 3-digit with 3-digit number is written. The sum of each digit should be less than 10(without carrying). For example: 321+124, 523+175, 288+711,563+432, 706+293
- Ask them to solve these sums on the plain papers provided (they can use their notebooks instead).
- Find which group solve it first. That group is the Quick Mathematicians.
- Collect those papers and pin them on the soft board.

Development:

Activity 1:

- Instruct students to open page number 38 of **Mathematics Grade 2.**
- Explain addition with carrying with the help of pages 38-39.





- Emphasize on the steps for addition mentioned on page 39(Add units then tens then hundred).
- Solve 2-3 sums on the board with the help of students.
- Make sure they understand the concept of addition with carrying.

Activity 2:

- Ask students to solve sums of page 41 of **Mathematics Grade 2.**
- Monitor and facilitate wherever it is needed.

Conclusion / Sum Up / Wrap Up:

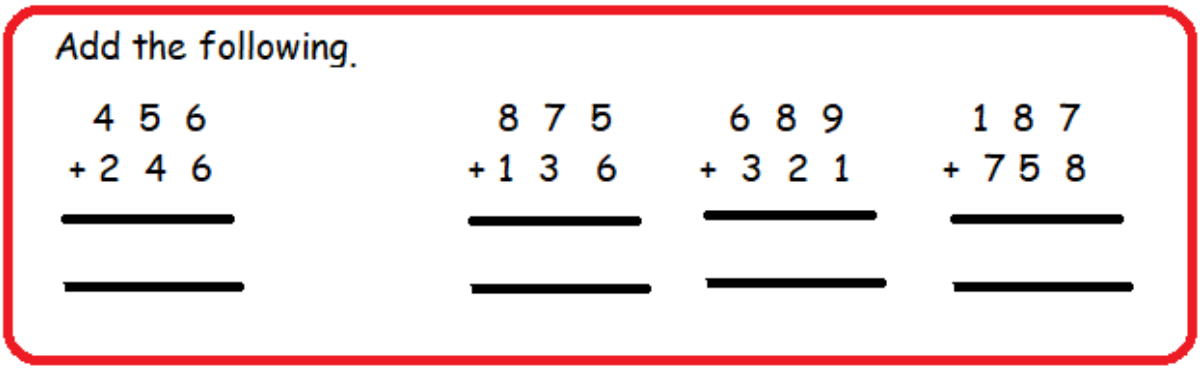
- Tell them the answer of the questions and ask them to cross check their answer.
- Discuss the problems faced by them during solving.

Assessment:

- Provide chits of paper to each student.
- Write the following question on the board and ask the students to solve the question on chit.
- Pick the smallest and the greatest 3-digit number from the given numbers then find their sum.
  706,187,756,190

Follow up:

Ask students to do the following question in their HW notebooks.



Teacher Guide
Grade-2

Lesson Plan
13

ADDITION OF 3-DIGIT NUMBERS WITH BORROWING

Duration: 40 Minutes

Students Learning Outcome:

- Solve real life number stories involving addition of 3 - digit numbers with carrying of tens and hundreds.

Materials:
Mathematics Book Grade 2

Information for Teachers:

- To add 3-digit numbers, add ones (O) into ones, tens (T) into tens and hundreds (H) into hundreds.
- When we add zero (0) to any number, the number remains the same.
- Teaching tips. This lesson is about application of addition with carrying in real life scenarios. Repeated instruction of use of place value will help them solve sums with carrying.

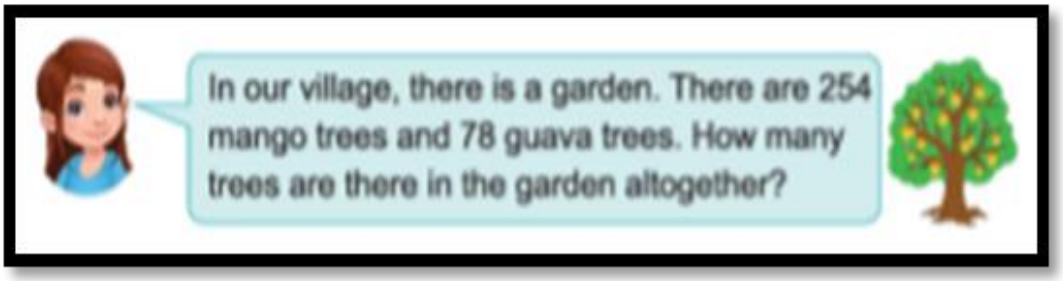
Introduction:

- Instruct them to open their HW notebooks to check their answers.
- Write a sum of addition on the board 379 + 235
- Ask students to tell the steps to solve it.
- Make sure they remember what they have learnt the previous day.

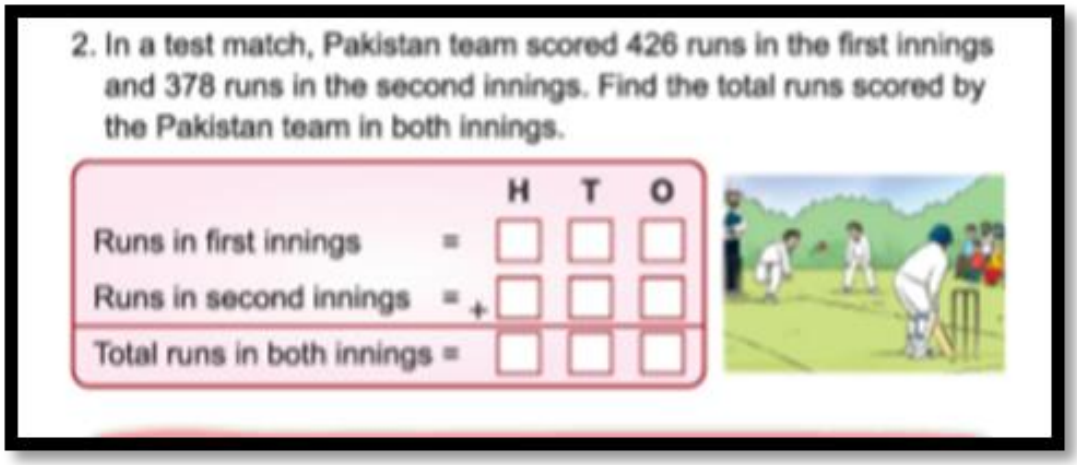
Development:

Activity 1:

- Instruct students to open page number 40 of **Mathematics Grade 2.**
- Explain to solve the word problems of addition with carrying with the help of pages 40.
- Emphasize on the steps for addition mentioned on page 40(understand the sum then solve according to its place value)



- Write book example of page 39 on the board.
- Underline the key words (sum, altogether, total etc.)
- Solve it with the help of students.
- Make sure they understand how to solve a word problem.
- Write the Question number 2 of page 40 on the board.
- Ask them to solve in CW notebook .
- Monitor to evaluate their understanding of the concept.
- Discuss the key words of addition and the answer.



Activity 2:

- Ask students to solve word problems of page 48 of **Mathematics Grade 2.**
- Monitor and facilitate wherever it is needed.

Conclusion / Sum up / Wrap up:

- Tell them the answer of the questions and ask them to cross check their answer.
- Discuss the problems faced by them during solving.

Assessment:

- Ask students the following questions.
  - Do you know addition of 3-digit with 3-digit numbers?
  - Do you know how to solve a word problem of addition with carrying?

(Students hold up one finger if they are still unsure of a topic and need to be provided with more information. If they are on their way to fully understanding, they might hold up three or four fingers. Students who have mastered the unit and can demonstrate their knowledge and understanding by holding up five fingers.)

- Take a glance around the classroom to get the information about student learning.

Follow up:

Ask students to do sums of page 41 of **Mathematics Grade 2** at home.

SUBTRACTION OF 2-DIGIT NUMBERS WITH BORROWING

Duration: 40 Minutes

Students Learning Outcome:

- Solve real life number stories of subtraction of 2 - digit numbers with borrowing.

Materials:
Flash Cards with subtraction sums written on them (without borrowing). For example, 69-23, 47-21, 85-45, 74-62, 88-64, Mathematics Textbook Grade 2.

Information for Teachers:

- 2-digit number is a number made up of 2 digits.
- To subtract 2-digit number, subtract ones (O) from ones and tens (T) from tens.
- Teaching tips. This lesson is about application of subtraction with borrowing in real life scenarios. Repeated instruction of use of place value will help them solve sums with borrowing.

Introduction:

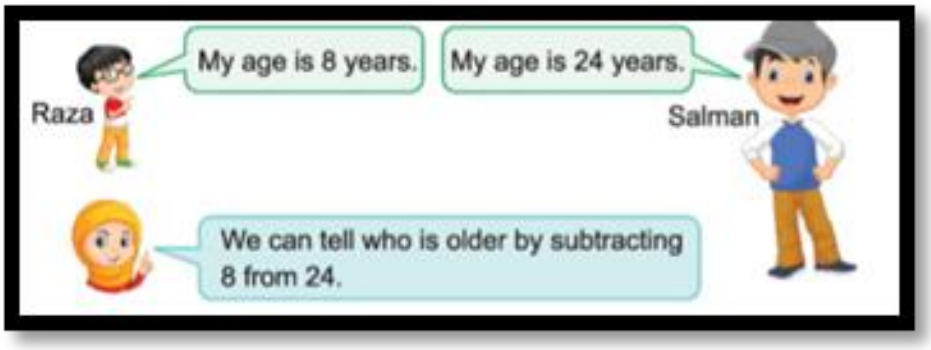
Warm up (who is the f**astest Mathematician)**

- Make students sit in group of 4-5 students per group,
- Distribute flash cards in groups.
- Ask students to solve the given questions written on flash cards
- The fastest group with correct answer will win.

Development:

Activity 1:

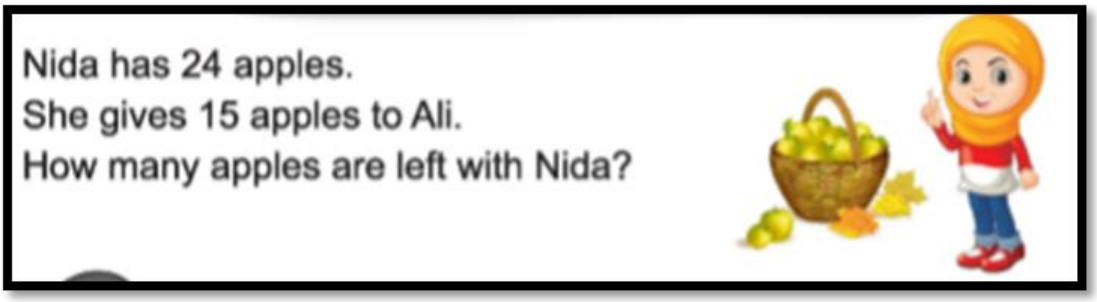
- Instruct students to open page number 48 and 49 of **Mathematics Grade 2.**
- Explain to solve the word problems of subtraction with carrying with the help of page number 48-49.
- Emphasize on the steps for subtraction mentioned on page 48-49(understand the question then solve according to its place value)
- Write book example of page 48 on the board.



Clue Words for Subtraction

- left
- how many more
- how many less/fewer
- remain
- difference

- Underline the key words (left, difference, how many more, how many less etc.)
- Solve it with the help of students.
- Make sure they understand how to borrow from the next digit for solving a word problem.
- Write the example of page 49 on the board.



- Ask them to solve in CW notebook .
- Monitor to evaluate their understanding of the concept.
- Discuss the key words of subtraction and the answer.

Activity 2:

- Write the word problems given at the end of this lesson plan.
- Ask students to copy down and solve.
- Monitor and facilitate wherever it is needed.

Conclusion / Sum up / Wrap up:

- Discuss the steps to solve a word problems of subtraction
- Ask the key words for an addition or subtraction.
- Discuss the problems faced by them during solving.

Assessment:

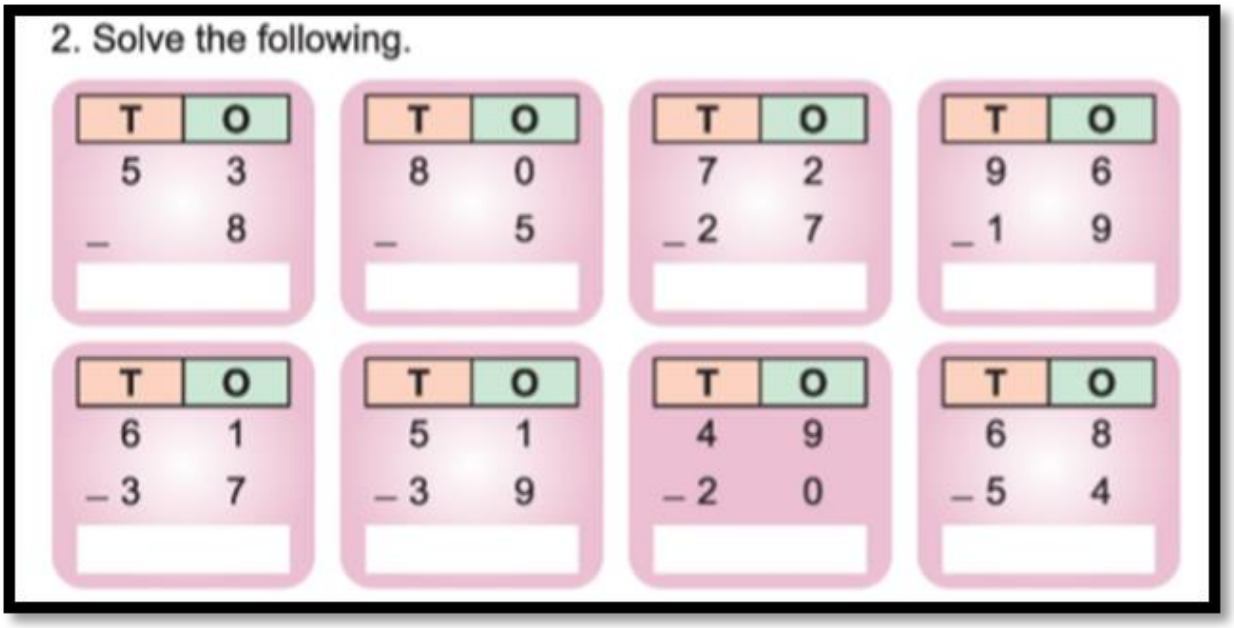
- Ask students the following questions.
  - Do you know subtraction of 3-digit with 3-digit numbers?
  - Do you know how to solve a word problem of subtraction with borrowing?

(Students hold up one finger if they are still unsure of a topic and need to be provided with more information. If they are on their way to fully understanding, they might hold up three or four fingers. Students who have mastered the unit and can demonstrate their knowledge and understanding by holding up five fingers.)

- Take a glance around the classroom to get the information about student learning.

Follow up:

Ask students to do Q2 of page 61 of **Mathematics Grade 2** at home.



Solve the following word problems

A factory produced 95 bicyles in a week. 56 bicycles are sold. What is the total number of remaining bicycles?

Bicycles produced	=	
Bicycles sold	=	
Remaining bicycles	=	

Umer has 42 toys.He distributed 18 toys in his friends. How many toys are left with Umer?

Toys Umer has	=	
Toys distributed in friends	=	
Toys left	=	

Sana got Rs.98 for buying pencils.She gave Rs.59 to her younger brother. What amount was left with Sana?

Sana got	=	
Money given to her brother	=	
Amount left with Sana	=	

Teacher Guide
Grade-2

Lesson Plan
15

SUBTRACTION OF 3-DIGIT NUMBERS WITHOUT BORROWING

Duration: 40 Minutes

Students Learning Outcome:

- Subtract 3 - digit numbers from 3 - digit numbers without borrowing.

Materials:
Blank flash cards or small pieces of papers, basket, Mathematics Textbook Grade 2.

Information for Teachers:

- 3-digit number is a number made up of 3 digits.
- To subtract 3-digit number, subtract ones (O) from ones, tens (T) from tens and hundreds (H) from hundreds.
- Teaching tips. This lesson is about of subtraction of a 3-digit number without borrowing. Repeated instruction of use of place value will help them solve sums without borrowing.

Introduction:

Warm up (Recap)

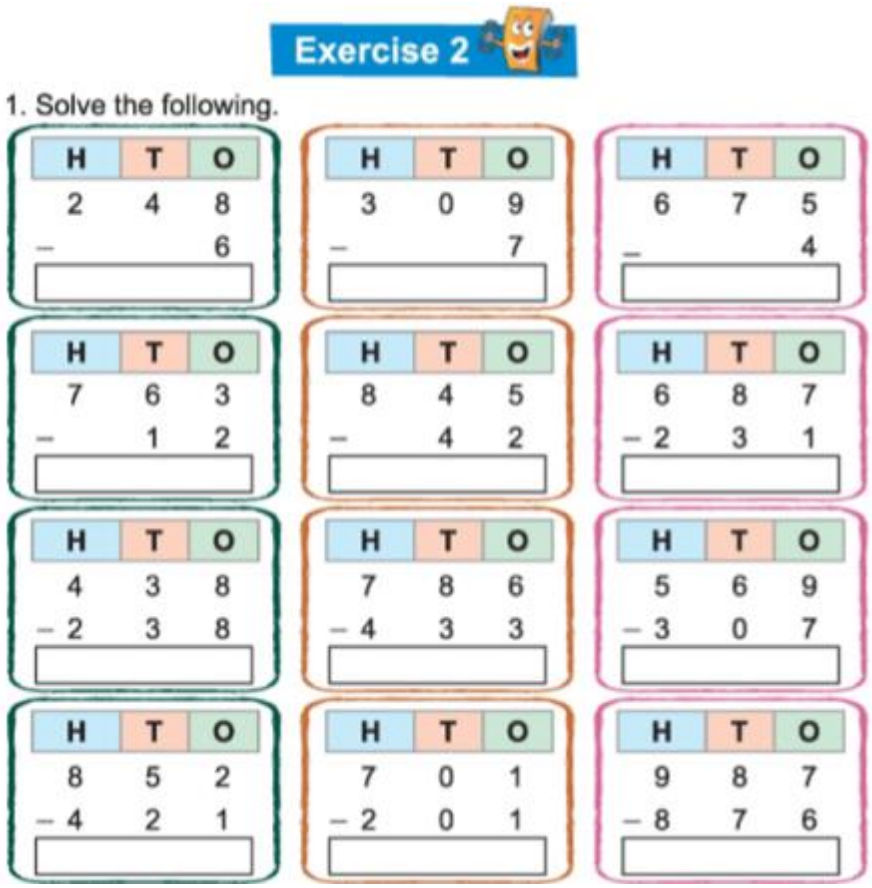
- Ask students to open page 61 of **Mathematics Grade 2** (previous lesson HW).
- Let one student tell the answer while others will check.
- Discuss subtraction rules if any student has incorrect answer.

Development:

Activity 1:

- Distribute blank cards to students.
- Ask them make a sum of subtraction without borrowing. For example, 546-321, 768-431, 895-783. Explain them to write questions only, do not solve them.
- Make students sit in group of 4-5 students per group depending on class strength.
- Place all cards in a basket.
- Call one student from each group to pick a card and solve the question written on it with the help of group members.

- Ask for answers
- Let the whole class decide whether the answer is correct or wrong.



Activity 2:

- Ask students to open page 61 of **Mathematics Grade 2 Exercise 2.**
- Let them solve subtraction questions by themselves
- Monitor and facilitate wherever it is needed.

Conclusion / Sum up / Wrap up:

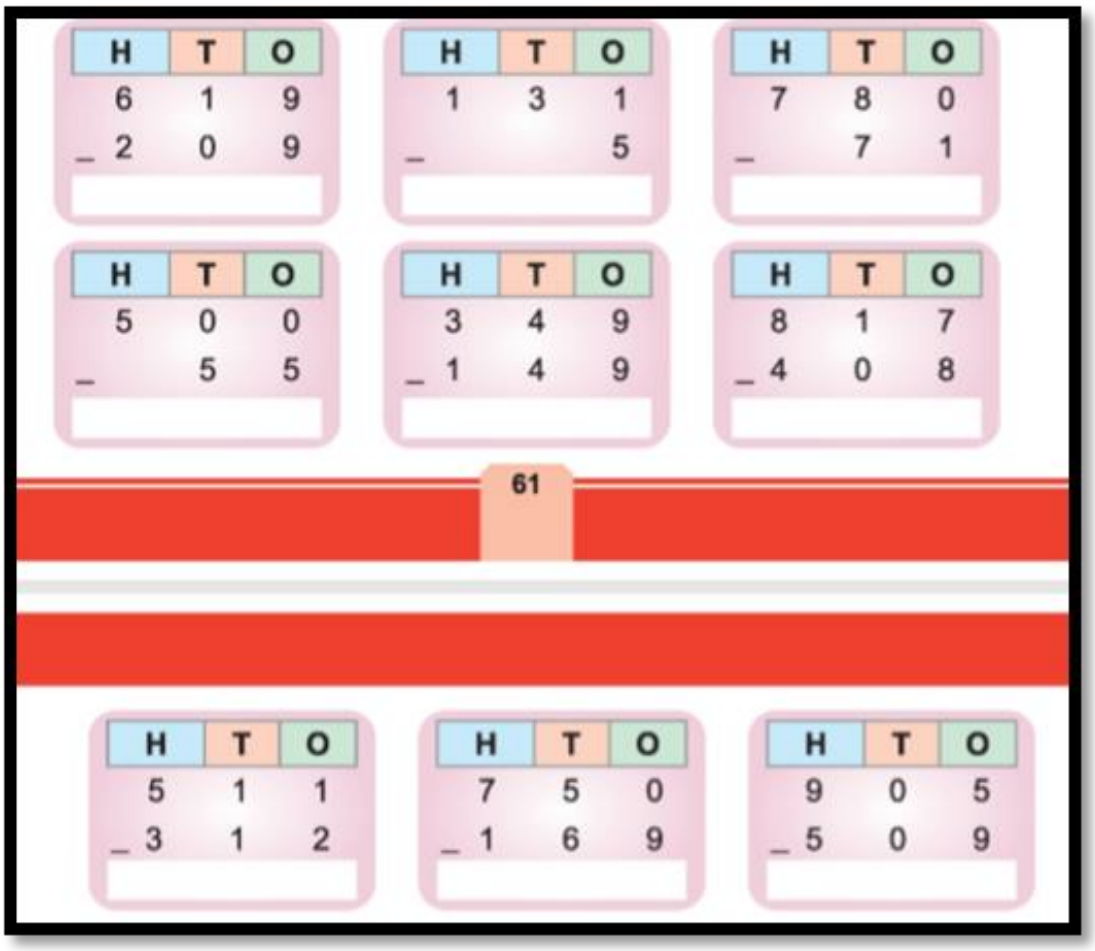
- Ask one student to get up and tell the answer while the others will verify.
- Let maximum student participate and tell the correct answer.
- Let students responde if any student has incorrect answer with reason.

Assessment:

- Read a question
  - Alia says 256-5 is 249 and Ali says 256-5 is 251. Who is correct and why?
- Let students process the working in their mind and then answer.

Follow up:

Ask students to do Q2 of page 61-62 of **Mathematics Grade 2** at home.


H T O
6 1 9
_ 2 0 9
H T O
1 3 1
_ 5
H T O
7 8 0
_ 7 1
H T O
5 0 0
_ 5 5
H T O
3 4 9
_ 1 4 9
H T O
8 1 7
_ 4 0 8
61
H T O
5 1 1
_ 3 1 2
H T O
7 5 0
_ 1 6 9
H T O
9 0 5
_ 5 0 9

Teacher Guide
Grade-2

Lesson Plan
16

SUBTRACTION OF 3-DIGIT NUMBERS WITHOUT BORROWING

 **Duration:** 40 Minutes

 **Students Learning Outcome:**

- Solve real life number stories of subtraction up to 3 - digit without borrowing.

 **Materials:**
Flash cards with word problems written on them, basket, Mathematics Textbook Grade 2.

Information for Teachers:

- 3-digit number is a number made up of 3 digits.
- To subtract 3-digit number, subtract ones (O) from ones, tens (T) from tens and hundreds (H) from hundreds.
- Teaching tips. This lesson is about the application of subtraction of a 3-digit number without borrowing in real life scenarios. Repeated instruction of use of place value will help them solve sums without borrowing.

Introduction:

Warm up: Let us think logically (Pair work)

- Provide students with two scenarios;
  - Ali has Rs.78 and he spends Rs.45. Alia has Rs 56 and she spends Rs.25. Who is left with more money?
- Let students have thinking time.
- Ask students to discuss with the student sitting next to you
- Let them solve and then compare the two values. *(78-45=33) (56-21=35) Alia is left with more money.*

Development:

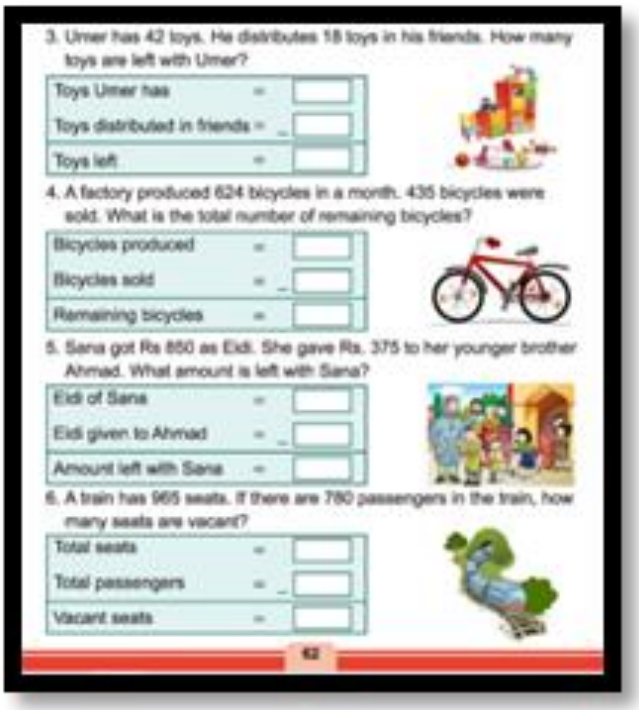
Activity 1:

- Make students sit in group of 4-5 students per group depending on class strength.
- Distribute one flash card to each group.

- Ask them to discuss and solve within the group.
- Monitor and facilitate wherever needed.
- Let one representative of the group to share the strategy used for solving the word problem and the answer.
- Emphasize on the key word used for subtraction.

Activity 2:

- Ask students to open page 62 of **Mathematics Grade 2 Exercise 2.**
- Let them solve subtraction problems Q,3-6 by themselves
- Monitor and facilitate wherever it is needed.



Conclusion / Sum up / Wrap up:

- Discuss the key words present in the given problems.
- Randomly ask different students to tell the answer while others will verify.

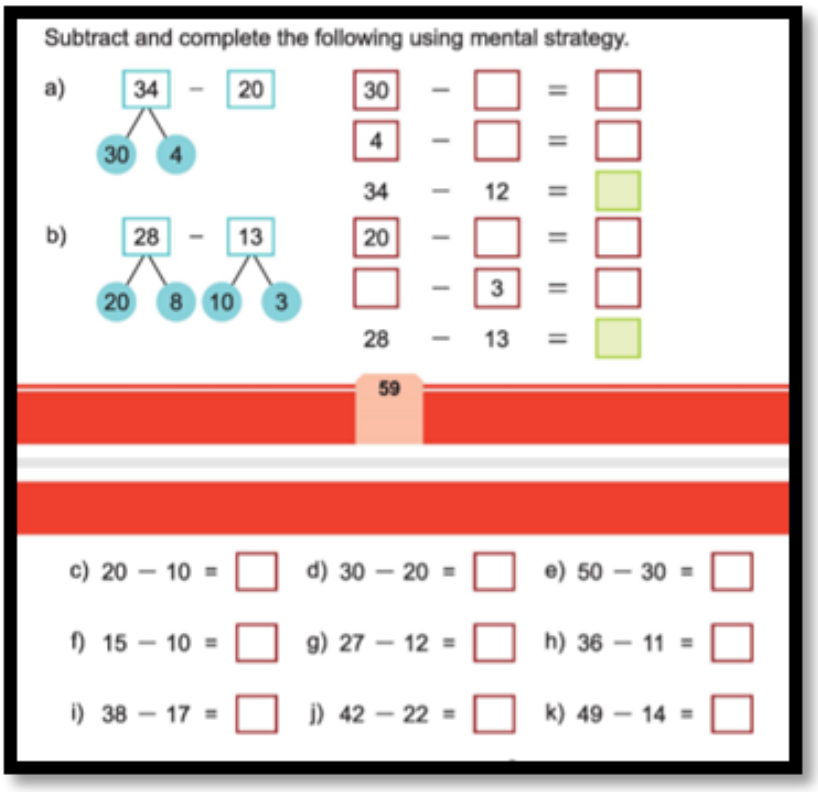
Assessment:

- Write the following sums on the board and ask for correct one with reason.

```
  3 4 5          3 4 5
 -2 1 4         -2 1 4
 ------         ------
  2 3 1            1 3 1
```

Follow up:

Ask students to do Q a-k of page 59-60 of **Mathematics Grade 2** at home.



Flash Cards

Shahid has scored 75 runs in a cricket match whereas Babar has scored 63 runs. How many more runs has Shahid scored than Babar?

There are 245 pages in a story book. Hammad has read 230 pages. How many pages are left for Hammad to read?

Razia has Rs.256. She brought a tissue box for Rs.125. How much money is left with Razia?

Qasim's weight was 45 kilogram. He lost 11 kg when he was sick. What is Qasim's weight now?

There are 35 students in class II-B. On Friday, 11 students were absent. How many students were present on Friday?

Ahmed has Rs.256. He bought a book for Rs.125. How much money is left with him?

SUBTRACTION OF 3-DIGIT NUMBERS WITH BORROWING

Duration: 40 Minutes

Students Learning Outcome:

- Subtract 3 - digit number from 3 - digit number with borrowing.

Materials:
Mathematics Textbook Grade 2

Information for Teachers

- 3-digit number is a number made up of 3 digits.
- To subtract 3-digit number, subtract ones (O) from ones, tens (T) from tens and hundreds (H) from hundreds.

- Teaching tips. Give them the literal meaning of borrowing in real life situation. Repeated instruction of use of place value will help them solve sums with borrowing.

Introduction:

Warm up: Let us think logically (Pair work)
Ask students "What you do when you don't have enough money to buy anything from the canteen? (Borrow from friends). Who do you borrow when you want to buy a book? (Parents)

Development:

Activity 1:

- Ask students to open page 54-56 of **Mathematics Grade 2 Exercise 2**
- Explain subtraction with borrowing with the help of examples.

Activity 2:

- Ask students to open page 57 (5-16) of **Mathematics Grade 2 Exercise 2.**
- Let students solve Q1 of Exercise 3.
- Monitor and facilitate wherever it is needed.

H	T	O
7	4	0
–		3

H	T	O
5	6	2
–	3	4

H	T	O
2	8	4
–	5	6

H	T	O
4	4	5
–	5	7

H	T	O
7	6	0
–	7	1

H	T	O
8	3	2
–	7	8

H	T	O
7	0	1
–	5	4

H	T	O
3	4	2
–1	5	8

H	T	O
4	5	2
–1	5	4

H	T	O
7	1	1
–2	6	7

H	T	O
8	0	3
–2	8	9

H	T	O
9	0	0
–6	1	2

Conclusion / Sum up / Wrap up:

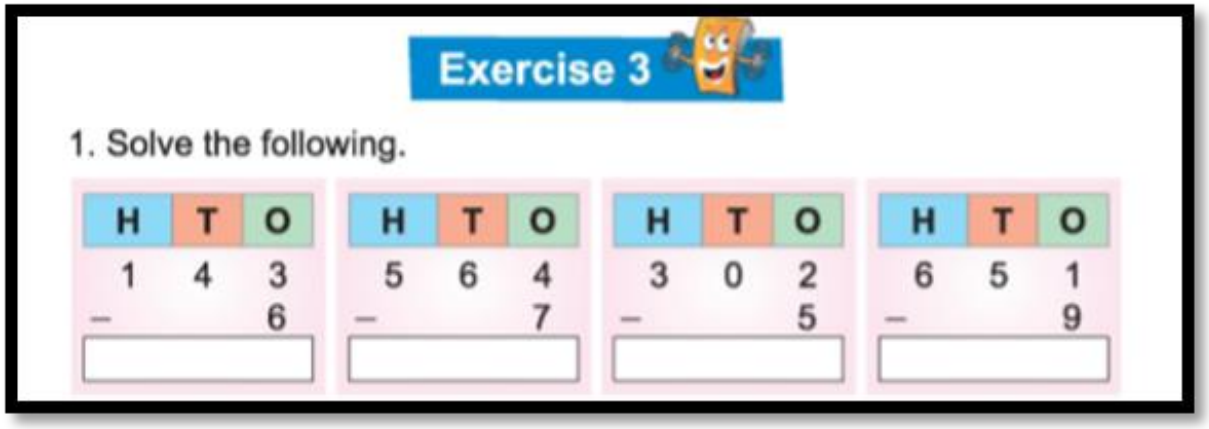
- Tell students the answers and ask students to check their work.

Assessment:

- Ask students to make a question and explain it to the class on the board.
- Let other students participate while solving the question.
- Monitor and facilitate if required.

Follow up:

Ask students to do Q1 (a, b, c, d) of page 57 of **Mathematics Grade 2** at home.



Exercise 3

1. Solve the following.

H	T	O
1	4	3
–		6

H	T	O
5	6	4
–		7

H	T	O
3	0	2
–		5

H	T	O
6	5	1
–		9

SUBTRACTION OF 3-DIGIT NUMBERS WITH BORROWING

Duration: 40 Minutes

Students Learning Outcome:

- Solve real life number stories of subtraction up to 3 - digit with borrowing.

Materials:
Blank Flash cards, Mathematics Textbook Grade 2.

Information for Teachers:

- 3-digit number is a number made up of 3 digits.
- To subtract 3-digit number, subtract ones (O) from ones, tens (T) from tens and hundreds (H) from hundreds.
- Teaching tips. This lesson is about application of knowledge. Bring such problems from real life situations where students can apply their knowledge to solve problems

Introduction:

Warm up. **Story time**.

Ali was going to masjid. He started counting his steps. He walked 550 steps to reach the Masjid, when he was returning home, he chose a different route. He took 620 steps to come back. How many more steps had he taken in his return journey?

- Give them thinking time, then let them solve to get the correct answer. (620-550=70)
- Ask the strategy used by students for getting the correct answer.
- Discuss the steps to solve a question with borrowing.
- Ask any student to solve on the board.

Development:

Activity 1:

- Make students sit in group of 4-5 students per group depending on class strength.
- Distribute flashcards to each group
- Ask each member to write a question of subtraction of 3-digit number with borrowing.
- Let each group exchange one flash cards with each other.
- Place the remaining cards in the basket for further use.
- Instruct them to solve the given question.

- Ask the students to share how they have solved the question with the class.
- Provide one quarter chart paper in groups to the students.
- Write on the board a word problem related to addition of 3-digit and 2 or 3-digit number, e.g. Salma went to a bird shop with Rs 500. She learnt that a talking parrot is being sold for Rs. 425 and pigeon for Rs.70. She wants to buy the talking parrot. How much money will be left if she buys talking parrot?

- Ask the students to discuss and list down all information on chart paper.
- Also discuss how to subtract numbers given in the problem.
- Ask the students to write their answers on chart paper.
- Call 2 or 3 students to share their work on the board.

Activity 2:

- Write the word problems on the board. (attached at the end of the plan)
- Ask students to copy down the problems and solve in their class work notebooks.

Grade II Mathematics Lesson 18

Solve the following word problems.

1) 169 cupcakes were made for a carnival. If 148 cupcakes were sold, how many cupcakes were left?

2) A cricket match was played in front of 985 cheering spectators. There were 530 men, and the rest were women. How many women turned up to watch the game?

3) A fruit seller sold 957 boxes of red and green apples. If 485 boxes had green apples, how many boxes contained red apples?

4) Ahmed had 820 T-shirts to sell. At the end of the week, only 243 remained. How many T-shirts did Ahmed sell?

Conclusion / Sum up / Wrap up:

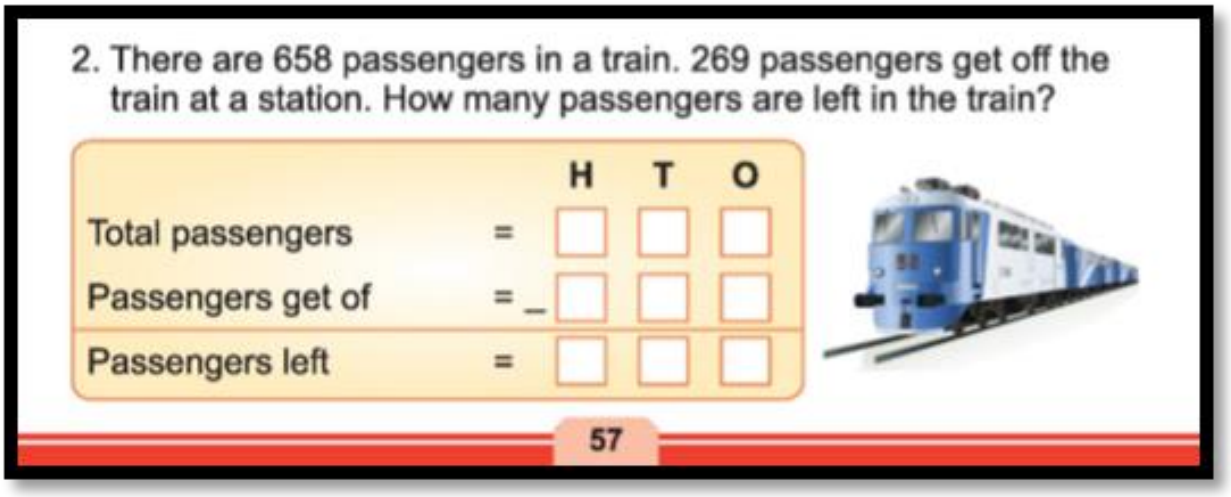
- Tell them the answer of the questions and ask them to cross check their answer.
- Discuss the problems faced by them during solving.

Assessment:

- Take the basket which has questions written by students.
- Now call a random student to pick a chit and read the question aloud then answer the question. (For example, 320-125, 410-288, 300-220 etc.)

Follow up:

Ask students to do Q2 of page 57 question in their HW notebooks.


2. There are 658 passengers in a train. 269 passengers get off the train at a station. How many passengers are left in the train?

		H	T	O
Total passengers	=			
Passengers get of	= _			
Passengers left	=			

57

Teacher Guide
Grade-2

Lesson Plan
19

ADDITION AND SUBTRACTION IN MIXED FORM

Duration: 40 Minutes

Students Learning Outcome:

- Analyze simple situations identifying correct operation of addition and subtraction with carrying/borrowing in mixed form.

Materials:
Flash cards having addition and subtraction sums (prepared in previous lessons), Mathematics Textbook Grade 2.

Information for Teachers:

- New concepts. Analyze simple situations identifying correct operation of addition and subtraction with carrying/borrowing in mixed form.
- Teaching tips. This lesson is about application of knowledge. Let them focus on key words in a word problem before finalizing the operation sign.

Introduction:

Warm up. **Flash card Activity**.

- Let students sit in group of 4-5 students per group depending on class size.
- Distribute flash cards having questions of addition and subtraction.
- Ask them to solve it individually then discuss in the group.
- Ask the strategy used by students for getting the correct answer.
- Ask 2 students from each group to solve the question of addition and subtraction on the board.

Development:

Activity 1:

- Write two-word problems on the board.
- Ask students how to solve it?
- Take responses. Let them focus on clue words (total, left)

2. A bookseller has 385 books. He buys 145 books more.
Tell total number of books.

He sells 265 books. What is the total number of books has left with him?

- Have a discussion on clue words of addition and subtraction.
- Solve it with the help of students.
- Ask them to open page 58 and see the problem and working

Activity 2:

- Write the word problems on the board. (attached with the plan)
- Ask students to copy down the problems and solve in their classwork notebooks.

Grade II Mixed word problems lesson 19

1) Ahmed has 135 red roses and 315 sunflower in his garden. How many flowers does he have in his garden altogether?
2) Ali harvested 240 kg of tomatoes and 175 kg of potatoes. How many kilogram of tomatoes and potatoes has Ali harvested?
3) Mr. Khan has ordered 680 sacks of fertilizer but he received 340 sacks. How many more sacks of fertilizer does he need?
4) A basket hold 355 oranges. The shopkeeper has 265 oranges. How many oranges cannot be put in the basket?
5) Out of 879 children of town, 698 go to school. How many children do not go to school?
6) Mike has to learn 353 words meaning. He finished learning 120 words. How many more words he has to learn?
7) There were 746 books in the library. 242 more books are added. How many books are now in the library?

Conclusion / Sum up / Wrap up:

- Tell them the answer of the questions and ask them to cross check their answer.
- Discuss the problems faced by them during solving.
- Ask them to tell the key word to each problem.

Assessment:

- Ask the following question to the class.
  - I know the clue words for addition and subtraction problems.
  - I know how to add with or without carrying.
  - I know subtraction with or without borrowing.
- Students will show thumbs up if they have understood and thumbs down if they do not understand the concept.

Follow up:

Ask students to do page 59 of **Mathematics Grade 2**.

Teacher Guide
Grade-2

Lesson Plan
20

MULTIPLICATION

Duration: 40 Minutes

Students Learning Outcome:

- Complete number sequences in steps of 2, 3, 4, 5 and 10 (e.g. in steps of 2 the sequence is expressed as 2, 4, 6…).

Materials:
Cut-outs of insect picture for writing numbers, Mathematics Textbook Grade 2.

Information for Teacher:

- Use of number line is helpful in skip counting.
- When we count by 2s, we count every 2nd number.
- When we count by 3s, we count every 3rd number.
- When we count by 4s, we count every 4th number.
- When we count by 5s, we count every 5th number.
- When we count by 10s, we count every 10th number.
- Teaching tips. This lesson is about number sequence. Let them focus on counting in 2s, 3s, 4s etc.

Introduction:

Warm up. **Flash card Activity**.

- Write few sequences on the board and ask students to tell the next two sequence.
  2,3,4,5,6,_,___
  2,4,6,8,___,____
  ,2,5,8,11,____,___
  31,33,35,____,___

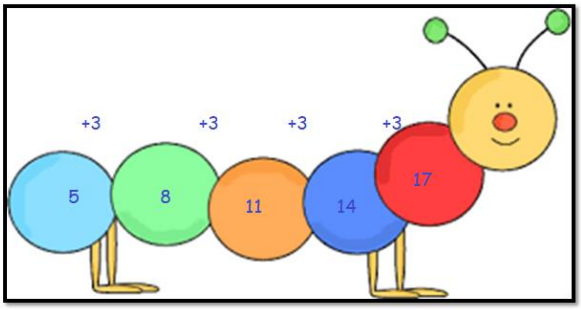
Development:

Activity 1:

- Use page 67 and 68 of **Mathematics Grade 2** for explaining counting in steps.
- Use examples given on these pages.

Activity 2:

- Let students sit in groups of 4-5 students per group.
- Distribute the cute insect's picture.
- Give each group a different sequence to write on the circles of insect picture
  - Group 1. Counting in 2s
  - Group 2: Counting in 3s
  - Group 3. Counting in 4s
  - Group 4: Counting in 5s
  - Group 5. Add 3 after 5
  - Group 6: add 2 after 12
- Monitor and facilitate wherever needed.



Conclusion / Sum up / Wrap up:

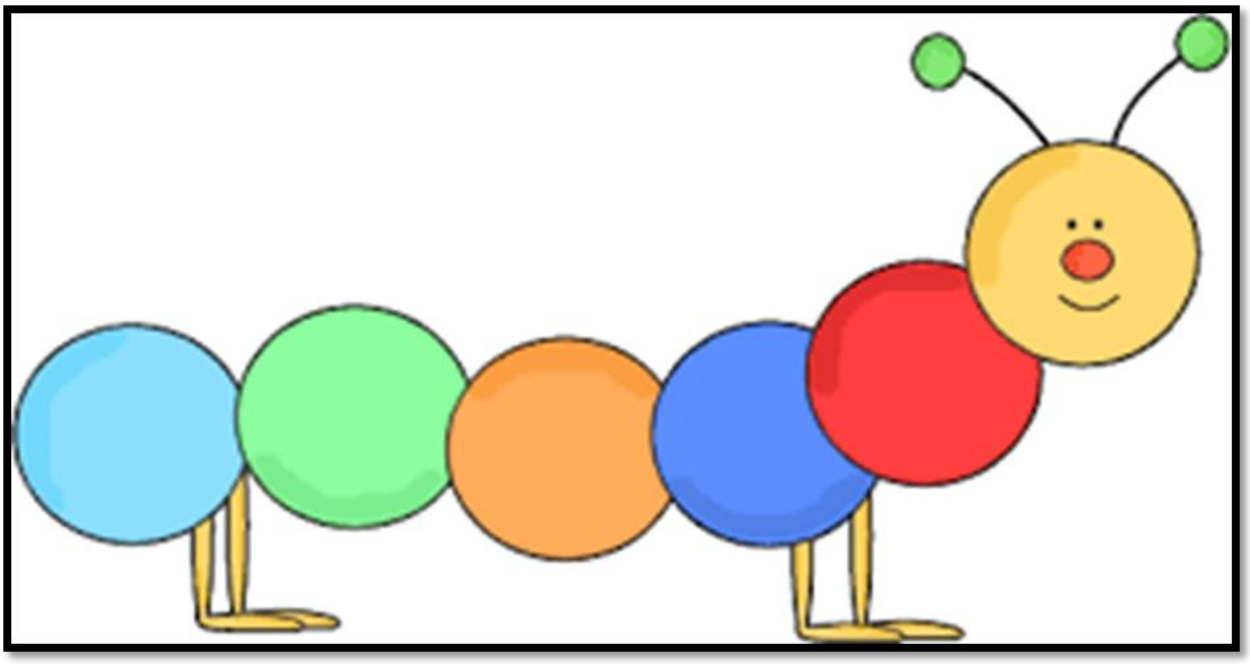
- Ask students to do Q1-3 of page 68 of **Mathematics Grade 2**.

Assessment:

- Ask the following question to the class.
  - I know the counting in 2s
  - I know counting in 5s
  - I can complete the sequence.
- Students will show thumbs up if they have understood and thumbs down if they do not understand the concept.

Follow up:

Ask students to do counting in 6s in HW notebooks.



Teacher Guide
Grade-2

Lesson Plan
21

NUMBER OPERATION: MULTIPLICATION

Duration: 40 Minutes

Students Learning Outcome:

- Write number sentence for multiplication from the picture such as 2 x ☐ = 6

Materials:
Worksheet having animals' pictures, Mathematics Textbook Grade 2.

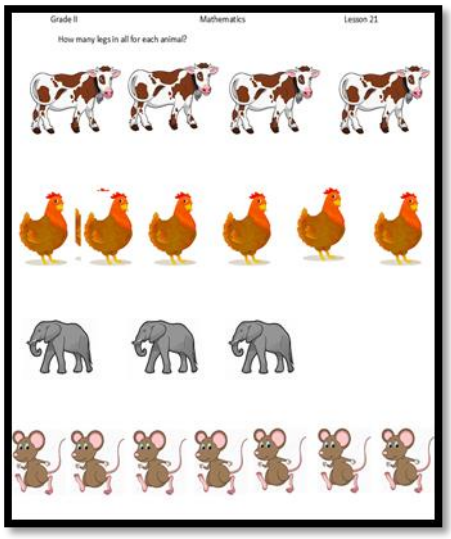
Information for Teacher:

- Repeated addition is called multiplication.
- 'X' is the symbol of multiplication.
- We can multiply numbers in any order.
- Teaching tips. A multiplication sentence is made up of three numbers, first number before the multiplication sign tells us how many groups we have. The second number after the multiplication sign tells us how many are in each group. The third number comes after the equal sign tells us how many are there in total.

Introduction:

Warm up. **Jungle book**

- Make students sit in groups of 4-5 students depending on class strength.
- Give them worksheet (pictures of cows, hens, elephants, and mouse) and ask how many legs are there in all for a group of animal. (if worksheet is not available, then write name of animals with its number on the board)
- Ask them to write the total number of legs under the pictures of each animal.



Development:

Activity 1:

- Explain the number sentence of multiplication on the board with the help of page 64 of **Mathematics Grade 2.**

- Ask that a multiplication sentence is made up of three numbers, first number before the multiplication sign tells us how many groups we have. The second number after the multiplication sign tells us how many are in each group. The third number comes after the equal sign tells us how many are there in total
- Make multiplication sentence for cows on the board with the help of students. (4x4=16)
- Ask them to make number sentence of multiplication for other animals.

Activity 2:

- Ask students to do Q1, 2, 3 of page 65 of **Mathematics Grade 2.**
- Monitor and facilitate wherever it is needed.

Conclusion / Sum up / Wrap up:

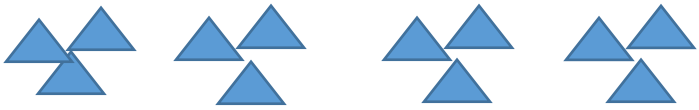
- Ask students to make number sentence of multiplication for eyes of 6 students.
- Ask one student from each group to make the number sentence of multiplication on the board.

Assessment:

- Ask the following questions to evaluate their learning.
- $2 \times \_\_ = 10$
- $3 \times \_\_ = 18$
- $4 \times \_\_ = 8$
- $5 \times \_\_ = 20$

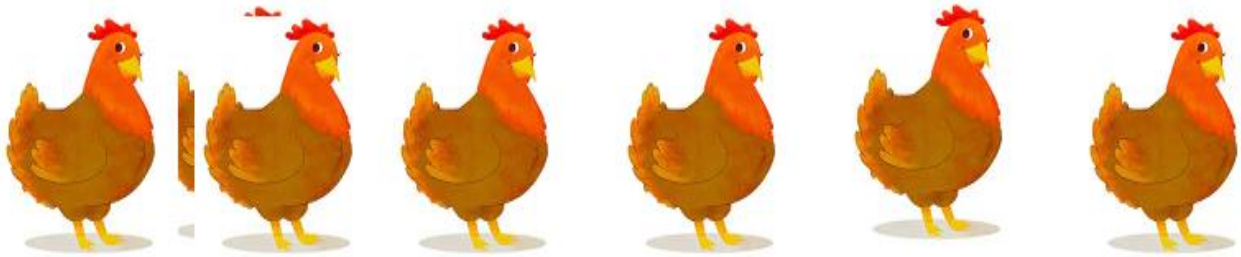
Follow up:

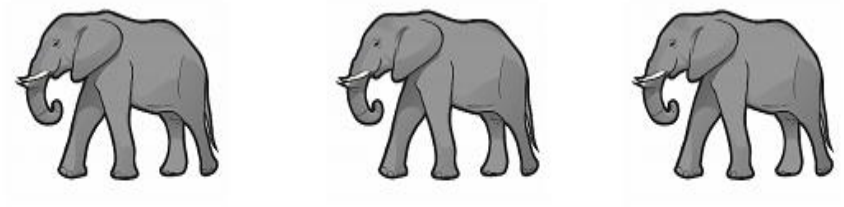
Ask students to make number sentence of multiplication for the following triangles in HW notebooks.



Grade II Mathematics Lesson 21

How many legs in all for each animal?





Teacher Guide
Grade-2

Lesson Plan
22

MULTIPLICATION OF 1-DIGIT NUMBER

Duration: 40 Minutes

Students Learning Outcome:

- Solve number stories on multiplication up to 1 - digit numbers.

Materials:
Flash cards with multiplication number stories written on them, Mathematics Textbook Grade 2.

Information for Teacher:

- Multiplication tables help students to multiply numbers easily.
- We can multiply numbers in any order.
- Teaching tips. Students must know times tables.

Introduction:

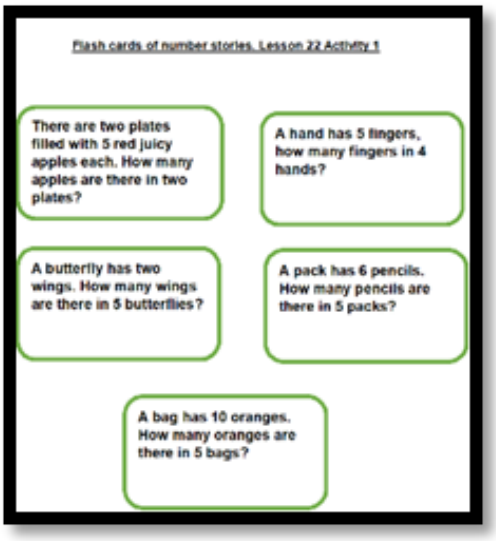
Warm up. Fastest Mathematician

- Ask students to open page 75 and do questions of multiplication.
- Monitor and facilitate wherever needed.

Development:

Activity 1:

- Distribute flash cards (separate document) with number stories to each group.
- Ask students to think and tell the number sentence for this story.
- Give them the example that "A butterfly has two wings. How many wings are there in 5 butterflies?"
- Let them think and answer the question. (5x2=10)
- Ask them to make number stories and find answer.
- Monitor and facilitate wherever needed.



Activity 2:

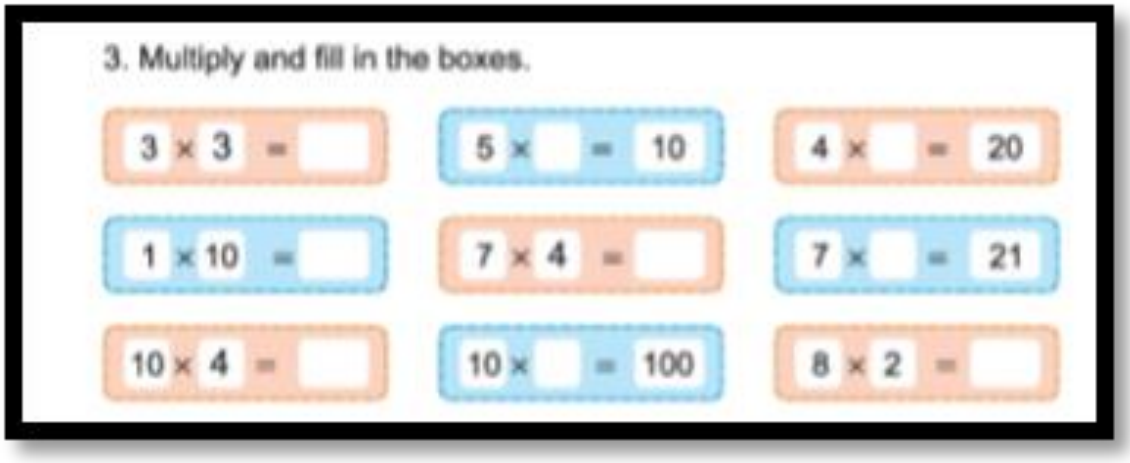
- Ask students to do Q5, 6, 7, 8 of page 77 of **Mathematics Grade 2.**
- Monitor and facilitate wherever it is needed.

Conclusion / Sum up / Wrap up:

- Ask students to make a number story in group.
- Exchange the questions with other groups.
- Solve the questions and discuss the answers.

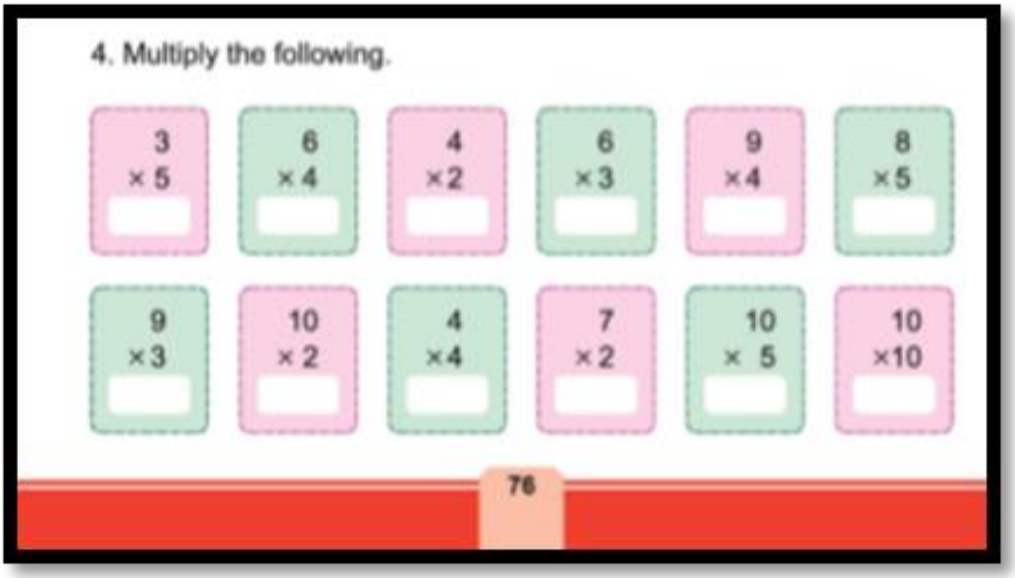
Assessment:

- Ask students to do Q3 of **Mathematics Grade 2.**
- Tell the answers and ask students to recheck.



Follow up:

Ask students to do Q4 of page 76 of **Mathematics Grade 2** at home.



Flash cards of number stories. Lesson 22 Activity 1

There are two plates filled with 5 red juicy apples each. How many apples are there in two plates?

A hand has 5 fingers, how many fingers in 4 hands?

A butterfly has two wings. How many wings are there in 5 butterflies?

A pack has 6 pencils. How many pencils are there in 5 packs?

A bag has 10 oranges. How many oranges are there in 5 bags?

Teacher Guide
Grade-2

Lesson Plan
23

DIVISION

Duration: 40 Minutes

Students Learning Outcome:

- Divide numbers within the multiplication tables with remainder zero.

Materials:
Mathematics Textbook Grade 2.

Information for Teachers:

- Division is a method of distributing a group of things into equal parts.
- Teaching tips. Students must know times tables.

Introduction:)

Warm up. **Mental Math test**

- Randomly choose students to answer the following questions orally as quickly as possible.

2x3=____, 5x6=___, 6x7=_____, 10x9=____, 3x9=_____, 2x8=____
4x5=____, 6x6=____, 5x9=____, 4x9=_____, 5x5=_____, 6x8=_____

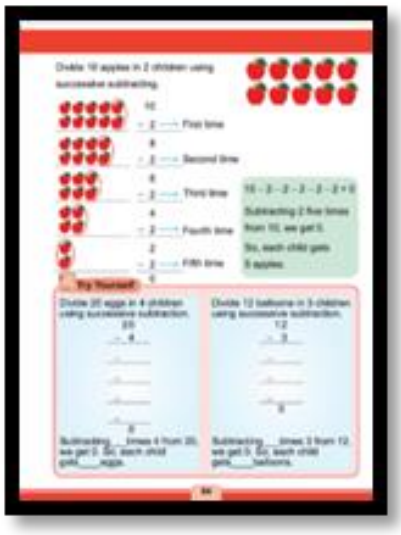
Development:

Activity 1:

- Ask a question to generate the discussion about equal distribution of things.

I have 8 pencils to distribute among 4 students. How much should each student get?

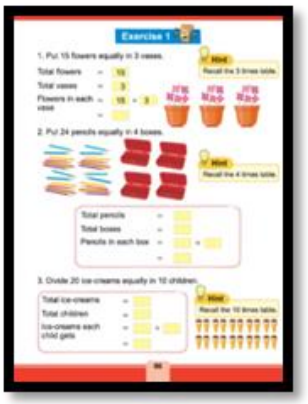
- Show them 8 pencils and call 4 students.
- Let the class think and come up with a solution. (First everyone will get 1 pencil each 8-4=4 then again distribute one pencil to each student 4-4=0. Hence each child will get 2 pencils each.)
- Explain that this is called division and we can get answer with repeated subtraction.
- Instruct them to open page 83-84 and apply repeated subtraction to write the correct number on page 84 in the blanks.

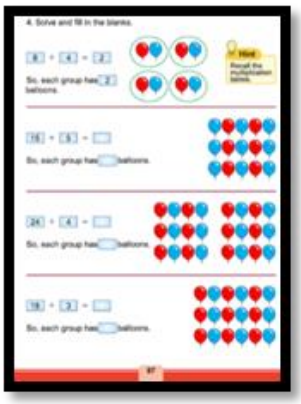


- Also them the direct answer of division with the help of times table. ($8 \div 2 = 4$)

Activity 2:

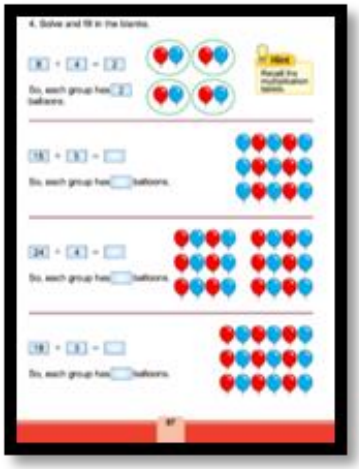
- Ask students to do Q1-4 of page 86-87 of **Mathematics Grade 2.**
- Monitor and facilitate wherever it is needed.





Conclusion / Sum up / Wrap up:

- Ask students to directly divide numbers on page 87 of **Mathematics Grade 2.**
- Ask them for answers one student at a time and let the remaining students to check their work.

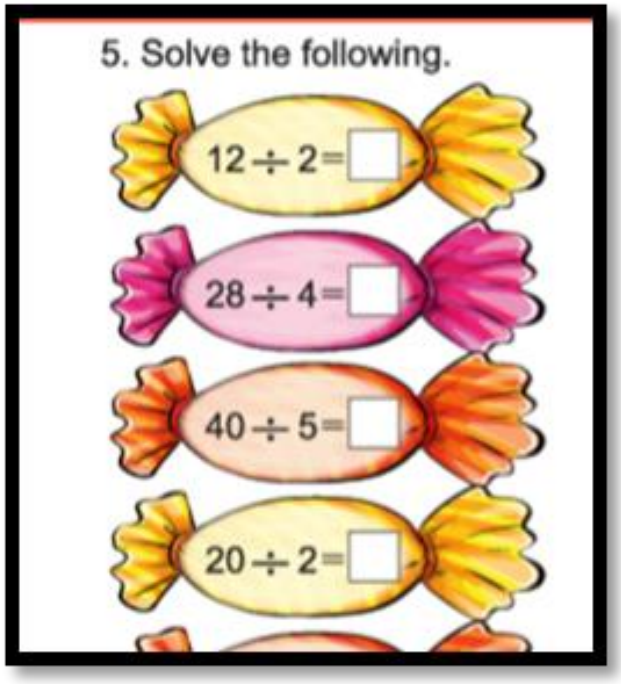


Assessment:

- Ask the class the following question to evaluate their learning.
  - I know how to divide numbers with repeated subtraction.
  - I know times tables
  - I can apply times tables to directly divide numbers.
- Thumbs up show their full understanding and Thumbs down will show to reinforce the concept.

Follow up:

Ask students to do Q5 (four parts) of page 88 of **Mathematics Grade 2** at home.



Teacher Guide
Grade-2

Lesson Plan
24

DIVISION

Duration: 40 Minutes

Students Learning Outcome:

- Solve number stories involving division up to 1 - digit numbers.

Materials:
Mathematics Textbook Grade 2.

Information for Teacher:

- Division is a method of distributing a group of things into equal parts.
- '÷' is the symbol of division.
- Teaching tips. Students must know times tables.

Introduction

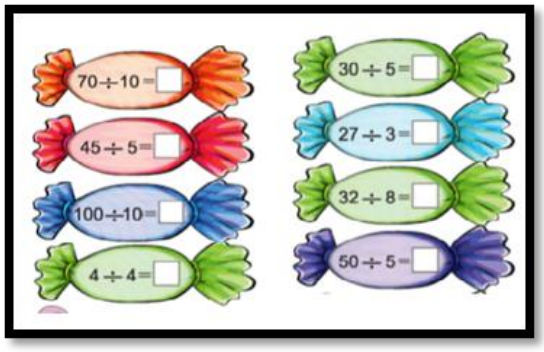
Warm up. Mental Math test

- Randomly choose students to answer the following questions orally as quickly as possible.
  12÷3=____, 3x6=___,6 ÷ 2=_____, 10x8=____, 18÷9=_____, 2x7=____
  4x9=____, 36÷6=____, 45÷9=____, 6x9=_____, 25÷5=_____, 6x4=_____

Development:

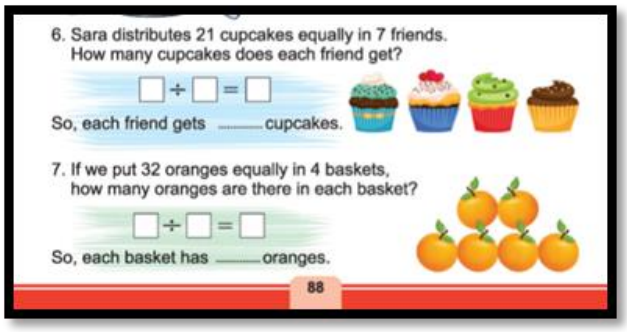
Activity 1:

- Ask students how to divide a number (by repeated subtraction or with the help of times tables)
- Ask them to do the question 5 of page 88
- What are the key words for division.(divide, distribute)



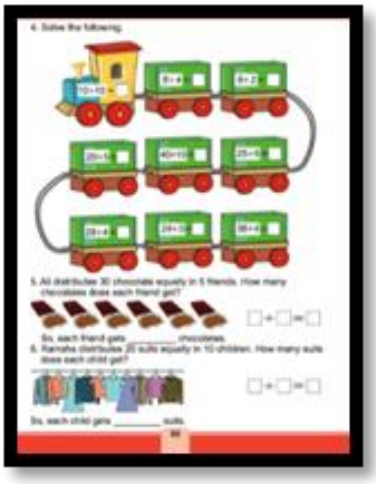
Activity 2:

- Instruct them to sit in group of 4-5 students per group.
- Ask students to do Q6-7 of page 88 of **Mathematics Grade 2** in group**.**
- Discuss the strategy applied for solving these two-word problems.



Conclusion / Sum up / Wrap up:

- Ask students to do Q4,5,6 of page 93 of **Mathematics Grade 2.**
- Monitor and facilitate wherever it is needed.

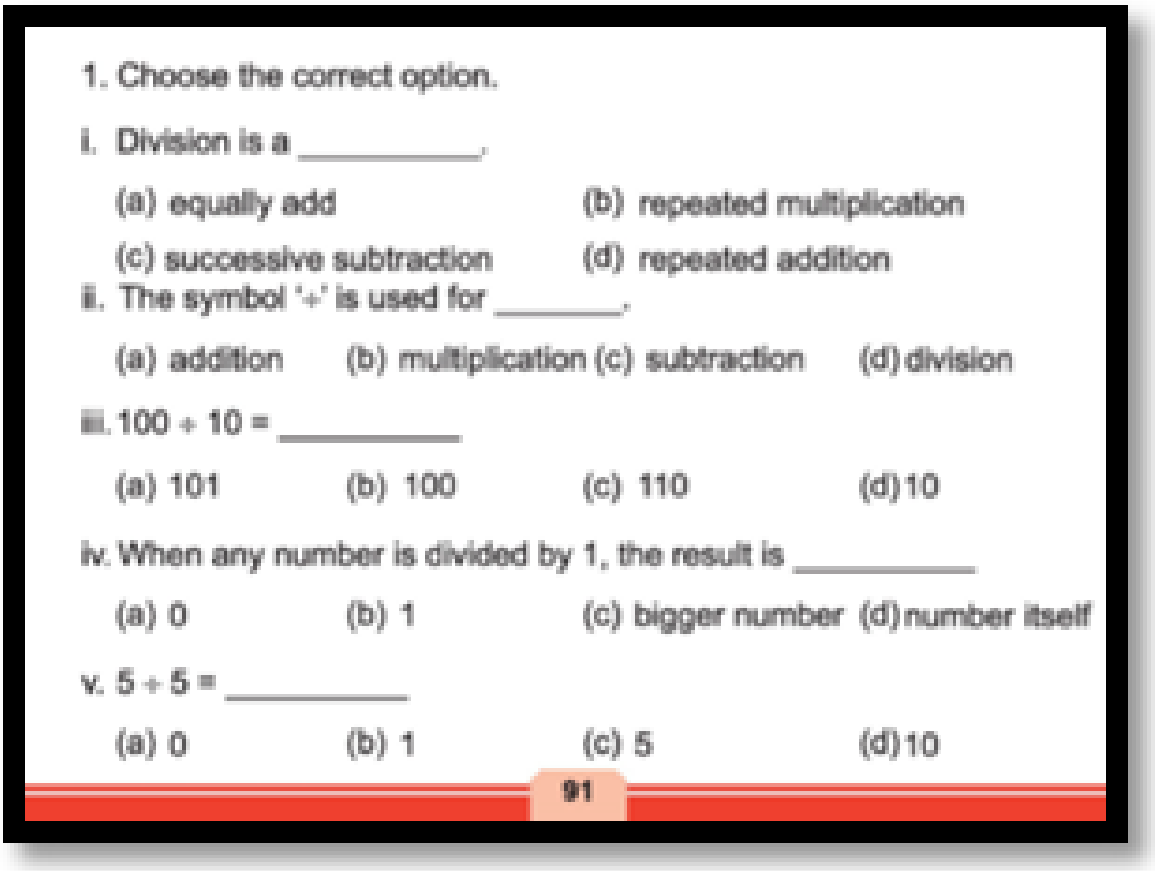


Assessment:

- Ask the class the following question to evaluate their learning.
- Discuss answers for students to self-check their work.

Follow up:

Ask students to do Q1 of page 91 of **Mathematics Grade 2** at home.



1. Choose the correct option.

i. Division is a _____.

(a) equally add (b) repeated multiplication

(c) successive subtraction (d) repeated addition

ii. The symbol '÷' is used for _____.

(a) addition (b) multiplication (c) subtraction (d) division

iii. 100 ÷ 10 = _____

(a) 101 (b) 100 (c) 110 (d) 10

iv. When any number is divided by 1, the result is _____

(a) 0 (b) 1 (c) bigger number (d) number itself

v. 5 ÷ 5 = _____

(a) 0 (b) 1 (c) 5 (d) 10

91

Teacher Guide
Grade-2

Lesson Plan
25

NUMBER OPERATION (DIVISION)
MIXED NUMBER STORY

Duration: 40 Minutes

Students Learning Outcome:

- Solve real life situations (using Pakistani currency as well) involving addition, subtraction, multiplication, and division. Give reasons for choosing the correct operation.

Materials:
Mathematics Textbook Grade 2, rules to solve a word-problems on a chart paper.

Information for Teachers:

- New concepts. Solve real life situations (using Pakistani currency as well) involving addition, subtraction, multiplication, and division. Give reasons for choosing the correct operation.
- Teaching tips. Students must know times tables, clue words to be placed on soft board and reinforce these words.

Introduction:

Warm up. **Mental Math test**

- Randomly choose students to answer the following questions orally:
- Add 500 and 30, subtract 15 from 25, 5x4, 12÷ 6, 200+110, 750-100, 23-10, 14 ÷ 2, 280+100, 45+20
- Appreciate students with clapping.

Development:

Activity 1:

- Ask students to open page **89** of **Mathematics Grade 2.**
- Show students the clue words to identify the correct operation.
- Let students read the clue words after you for practice.
- Discuss the rules to solve a word problem.

Solve the mixed number stories using following steps.

Step 1	Read the problem carefully.
Step 2	Underline the clue words to identify the correct operation.
Step 3	Draw a picture, if needed.
Step 4	Write a number sentence.
Step 5	Solve the words problem.

89

- Write a sample problem on the board.

Ali has Rs.300. He spent Rs 185 for buying bread and butter. How much money is left with Ali?

- Ask students to apply rules to solve this problem.
- Solve the question.

Activity 2:

- Ask students to do Q1-4 of page 90 of **Mathematics Grade 2.**
- Ask them to underline the key word before deciding the correct operation.
- Monitor and facilitate wherever it is needed.


Read the following word problems carefully. Solve the problem with the identification of correct operation. Write reason to choose the operation.

1. A tailor stitched 65 suits in the first month and 58 suits in the second month. How many suits did he stitch altogether?

Clue word is altogether
So, we add.

2. Ahmed has Rs. 500. He buys grocery for Rs. 225. How much amount is left with Ahmed?

Clue word is _____
So, we _____

3. Ahmed has 5 books in a bag. How many books will there be in 6 such bags?

Clue word is _____
So, we _____

4. Divide 27 bananas in 3 monkeys equally.

Clue word is _____
So, we _____

98

Conclusion / Sum up / Wrap up:

- Ask students about the clue words for each operation
- Ask them to revise rules to solve any word problem.

Assessment:

- Ask your students, either individually or with a partner, to respond in writing to a single prompt on a piece of paper.
  Most important learning from the day and why
  Most confusing topic and why?
- Collect papers and read to decide for the next lesson.

Follow up:

Ask students to do the following questions in HW notebooks.

234+346=_____

700-679= _____

45÷ 9 = _____

7x 8=_____

Teacher Guide
Grade-2

Lesson Plan
26

FRACTIONS

Duration: 40 Minutes

Students Learning Outcome:

- Identify half, one third and quarter with the help of objects and figures (without writing 1/2, 1/3, 1/4).

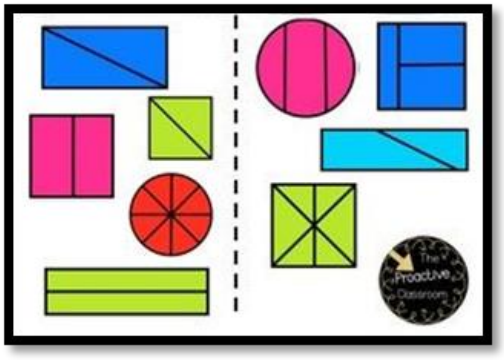
Materials:
Mathematics Textbook Grade 2, color pencils.

Information for Teacher:

- One half is 1 part out of 2 equal parts.
- One quarter is 1 part out of 4 equal parts.
- One third is1 part out of 3 equal parts.

Introduction:

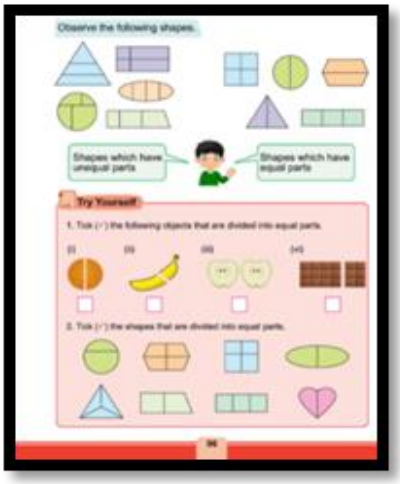
- Draw these shapes on the board and ask them to identify equal and unequal parts.
- Discuss that equal parts are called fraction of a whole.
- Tell them that
  - equal parts have same shape and size.
  - Fraction have equal parts of one whole



Development:

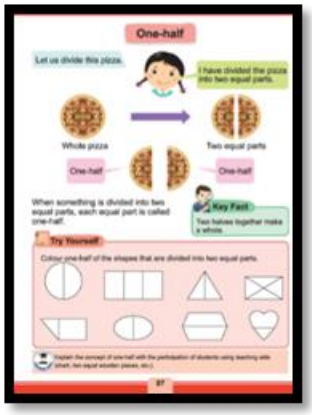
Activity 1:

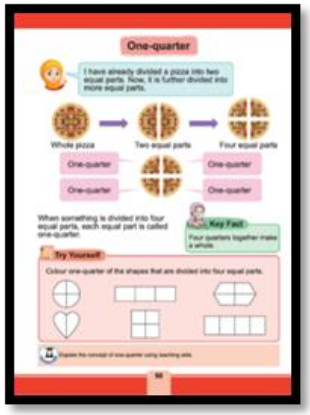
- Instruct students to open page number 95-96 of **Mathematics Grade 2.** Explain the equal and unequal parts of any shape.
- Instruct students to sit in group of 4-5 students per group depending on class size.

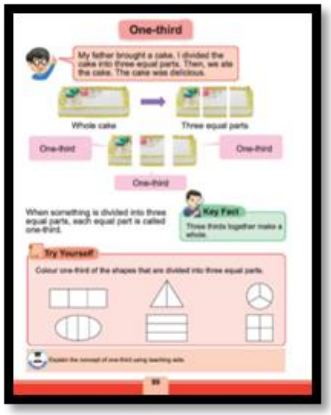


- Give one page to one group.

Group 1 and 2: page 97 Group 3 and 4: page 98, Group 5-6 Page 100



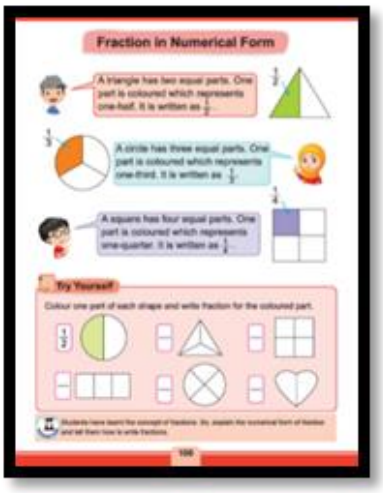




- Instruct them to complete the assigned page first.
- Call two representatives from each group to come and explain one half, one third and one quarter to the whole the class with the help of pictures to be drawn on the board.
- Write one half, one third and one fourth in numeric form as 1/2, 1/3, 1/4.
- Introduce terms numerator and denominator. Numerator tells the parts taken and denominator tells the total parts.
- Show them 6 pencils and ask them to show 1/2 of these 6 pencils. (divide the pencils in two equal parts)
- Call one child to tell how many pencils will be in one half of 6 pencils.
- Instruct them to read number of half pencils as fraction. (3/6)
- Ask what will be the 1/3 of 6 pencils. (divide the pencils in three equal parts 2/6)
- Ask what is the numerator and denominator in 2/6 (2 numerator, 6 denominator)

Activity 2:

- Ask students to do page 100 of **Mathematics Grade 2.**
- Monitor and facilitate wherever it is needed.



Conclusion / Sum up / Wrap up:

- Ask groups to show the following fractions with the help of colour pencils.
  - Group 1: Take out 4 pencils and show 3/4.
  - Group 2: Take out 6 pencils and show 2/6
  - Group 3: Take out 6 pencils and show 3/6
  - Group 4: Take out 2 pencils and show 1/2
  - Group 5: Take out 3 pencils and show 1/3
  - Group 6: Take out 6 pencils and show 4/6
- Facilitate if necessary.

Assessment:

- Ask students the following questions.
  - Do you know fractions as 1/2, 1/3, 1/4?
  - Do you know how to these fractions in pictures and numbers?

  Students showing "Thumbs up' have understood the concept. If majority shows Thumbs down, then you have to reinforce the lesson.

Follow up:

Ask students to do page 97, 98, 99 of **Mathematics Grade 2** at home.

Teacher Guide
Grade-2

Lesson Plan
27

FRACTIONS

Duration: 40 Minutes

Students Learning Outcome:

- Recognize and name unit fractions up to 1/10.

Materials:
Recognize and name unit fractions up to 1/10.

Information for Teacher:

- Each part of the whole is one unit fraction.
- Teaching tips: Students must know that the parts taken is numerator and it is written above the line and denominator shows the total division which is written below the line.

Introduction:

- Show them 10 pencils and ask what fraction of pencils are in my hand.
- 1 pencil (expected answer=1/10) 2 pencils (2/10), 3 pencils (3/10),
  4 pencils 4/10, 5 pencils (5/10), 6 pencils (6/10, 7 pencils (7/10), 8 pencils (8/10), 9 pencils (9/10) 10 pencils (10/10)

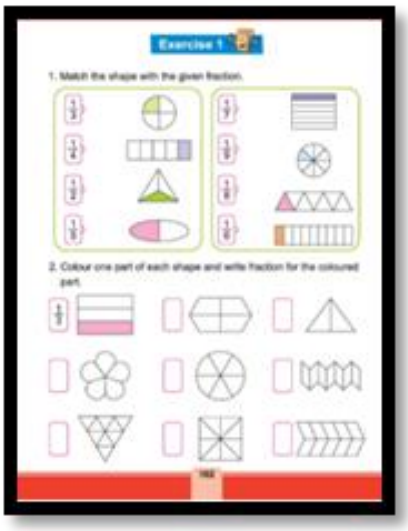
Development:

Activity 1:

- Instruct students to open page number 101 of **Mathematics Grade 2.** Explain the fractions from 1/2 till 1/10.
- Instruct students observe which two fractions have the same size. 2/4 and 1/2, 3/6, 4/8. 5/10. All these fractions show ½.

Activity 2:

- Ask students to do page 102 of **Mathematics Grade 2.**
- Monitor and facilitate wherever it is needed.



Conclusion / Sum up / Wrap up:

- Ask groups to draw one rectangle and divide it into 5 equal parts and shade 3/5.
  - Facilitate if necessary.

Assessment:

- Ask what is the numerator and denominator in 2/7, 3/5. 8/10
- Ask what will be the fraction of half of class 2?

Follow up:

Ask students to draw a rectangle, divide it into 6 equal parts and shade 4/6 in their notebooks.

Teacher Guide
Grade-2

Lesson Plan
28

FRACTIONS

Duration: 40 Minutes

Students Learning Outcome:

- Recognize fractions like two thirds (2/3), three fourths (3/4), four fifths (4/5), up to nine tenths (9/10).

Materials:

Mathematics Textbook Grade 2, color pencils

Information for Teacher:

- A fraction is a part of a whole.
- When we divide a whole into 3 equal parts, then 2 parts out of these 3 parts are called two thirds.
- When we divide a whole into 4 equal parts, then 3 parts out of these 4 equal parts are called three fourths.
- Teaching tips. Students must know that the parts taken is numerator and it is written above the line and denominator shows the total division which is written below the line.

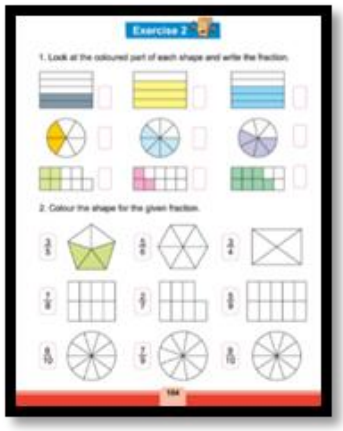
Introduction:)

- Call 12 students to stand in a row. 10 students will stand together and Two students stand separately to follow the instruction.
- Ask two students to pass the instructions to10 standing students," 1/2 of the students stand with the wall.'
- Observe how many students are standing with the wall. (They should be 5 as half of 10 is 5). Let these 5 students to go back to their places.
- Call another two students to follow the given instruction 'take out 2/5 of students and instruct them to go back to their places.
- Observe how many students are going back and how many students are left? (2 should go back and 3 will be left).

Development:

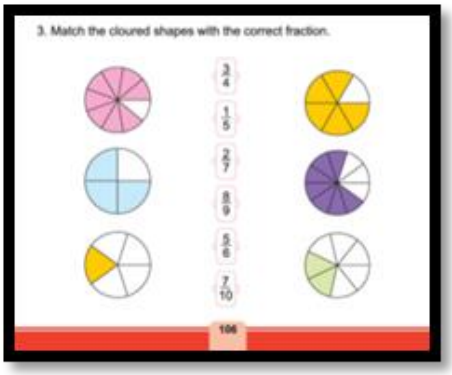
Activity 1:

- Instruct students to do page number 104 of **Mathematics Grade 2.**
- Monitor and facilitate if needed.
- Discuss the fractions answers.



Activity 2:

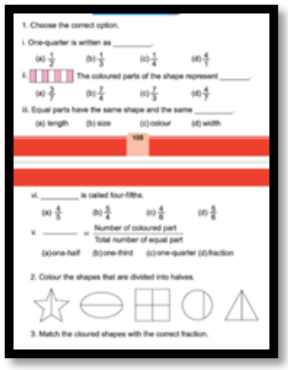
- Ask students to do page 106-107 of **Mathematics Grade 2.**



Monitor and facilitate wherever it is needed.

Conclusion / Sum up / Wrap up:

- Ask groups to do 105-106 to review the concept of fraction.
- Facilitate if necessary.



Assessment:

- Call 5-6 students to the board and ask them to draw rectangles and show these fractions by shading (3/4, 5/6, 1/2. 7/8, 5/8, 4/10)

Follow up:

Ask students to draw a rectangle, divide it into 4 equal parts and shade ¾

Teacher Guide
Grade-2

Lesson Plan
29

LENGTH

Duration: 40 Minutes

Students Learning Outcome:

- Compare the lengths of different objects.

Materials:
Mathematics Textbook Grade 2, ruler, inch tape, ribbons of different length, large ruler (if not available then make with a chart paper to show centimeter.

Information for Teacher:

- We can compare the lengths of different objects using terms: long, longer, longest and short, shorter, shortest.
- Teaching tips. Let students use different ways for measuring length for example, inch tape, ruler, meter rod etc.

Introduction:)

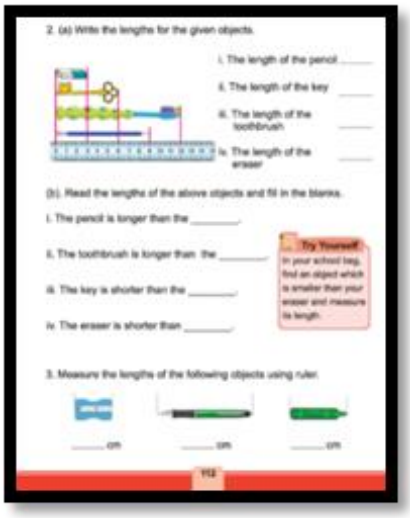
- Show them ribbons of two different lengths and ask,' which ribbon is longer?
- Demonstrate the concept by comparing the lengths of stationery items e.g. pencils of two different lengths or ruler and a pencil.

Development:

Activity 1:

- Ask students to tell how to measure the lengths of different objects?
- Collect their feedback (Expected responses: measure with the help of ruler or measuring tape)
- Ask them to measure the length and width of Mathematics book with the help of a ruler.
- Let them take out their ruler and check the length and width of their Math book.
- While they are measuring the length, guide and teach them about centimeter and meter.
- Monitor them while measuring. Provide support if needed
- Note down the length and width of Math book on the white board.
- Initiate discussion by asking, "which side is longer and how much?"
- Focus on 'longer than' and 'shorter than' during discussion.
- Now ask how to measure the length of the classroom?

- Collect their responses on the board.
- Explain that for longer objects we use meter.
- Ask 2 students to measure the length of the classroom with the help of meter ruler.
- Ask other two students to measure the width of the classroom with the help of meter ruler.
- Record it on the board.
- Now ask them to compare the lengths of the two side of the room in their notebooks by writing 'longer than' or shorter than'.
- Check 3 to 5 students' work randomly and give your input to the whole class.



Activity 2:

- Ask students to do Q2 and 3 of page 112 of **Mathematics Grade 2.**
- Monitor and facilitate wherever it is needed.

Conclusion / Sum up / Wrap up:

- Ask groups to do 111 of **Mathematics Grade 2**.
- Facilitate if necessary.

Assessment:

Ask your students, either individually or with a partner, to write about;

- The most important learning from the day and why
- The most surprising concept and why
- The most confusing topic and why

Follow up:

Ask students to measure the length of your window at home in cm.

Teacher Guide
Grade-2

Lesson Plan
30

LENGTH

Duration: 40 Minutes

Students Learning Outcome:

- Recognize the units of length (meter and centimeter).
- Use standard metric units of length (meter and centimeter) and their abbreviation to measure and record lengths of variety of objects.

Materials:
Mathematics Textbook Grade 2, ruler, inch tape, ribbons, meter rod or meter measuring tape.

Information for Teacher:

- Meter is the standard unit to measure length.
- Long/Tall objects are measured in meters.
- We write 1metre as 1m.
- Centimeter is used to measure the length of short objects.
- We write 1 centimeter as 1 cm.

Teaching tips. Let students construct their knowledge by asking questions about when to use centimeter and when to use meter.

Introduction:

- Show them a meter rod and a six-inch long ruler and a ask them about their names and function (Expected responses: meter/ ruler, to measure length).
- Display ribbons of two different lengths, pencil, eraser and a book and ask them, ‘what should I use to measure the lengths of these objects? (Expected response: meter ruler for ribbons and ruler for other things).

Development:

Activity 1:

Task 1.

- Make three sets of two dots on the floor at some distance.
- Let two students stand one on each dot.
- Tell students that “Distance between two points is called length”.

- Ask 2 students to measure this distance with meter rod or measuring tape.
- Move around and see how other students are measuring the distance between the two points where two students are standing.
- Facilitate wherever necessary.
- By writing on board, tell the students that we use symbol / abbreviation 'm' for meter. For example, if the distance between the two students is 3 meters, we will write it as '3 m' and read as 3 meters.
- Repeat this abbreviation with students three or four times.

Task 2.

- Ask students to take out their pencils and measure its length with the help of ruler.
- Now write word 'centimeter' on board and tell the students that the small unit of length is centimeter.
- We measure the length of small objects like pencil, eraser, book, comb, etc. in centimeter.

Activity 2: Practice

- Assign different groups different objects which they have to measure in cm or meter.
  - Group1: Measure the length of window.
  - Group 2: Measure the length of duster.
  - Group 3: Measure the length of eraser.
  - Group 4: Measure the height of cupboard.
  - Group 3: Measure the length of pencil
  - Group 3: Measure the length of black/green board.

Name of the object	Length in cm/m
Window	
Eraser	
Cupboard	
Pencil	
Black/Green board	

- Ask them to use appropriate unit of length for measuring longer and shorter objects.
- Instruct them to note down these measurements in Math CW notebooks.
- Monitor and facilitate wherever it is needed.

Conclusion / Sum up / Wrap up:

Conclude the lesson by recalling the important points of the lesson.

Assessment:

Ask students the following questions:

- What is the basic standard unit for measuring length? (meter)
- What is the smaller unit for measuring length? (cm)
- What instrument is used for measuring the lengths of wall or play grounds? (m)
- What is the abbreviation for meter? (m)
- 'cm' is abbreviation of what? (centimeter)

Follow up:

Ask students to measure the length of any two objects at home in cm/m.

Teacher Guide
Grade-2

Lesson Plan
31

ADDITION OF LENGTHS

Duration: 40 Minutes

Students Learning Outcome:

- Use addition and subtraction within 100 to solve real life situations involving lengths in same units.

Materials:
Writing board, board marker, geometry box, lunch box, pencils, pen, ruler, measuring tape/meter rod, mathematics textbook grade 2

Information for Teacher:

- This lesson plan is for addition only.
- Length is the distance between two points.
- Standard units of lengths are meter and centimeter, meter is used to measure longer lengths and its symbol is 'm' while centimeter is used to measure shorter lengths and its symbol is 'cm'.

Introduction:

- Ask students the following questions:
  - What do you mean by length? (expected answer: measurement between two points, distance between two points)
- Tell them that length is a measurement from one end to another end of any object.
- Now ask,
  - Which unit (s) do you usually use to measure the length? (Expected answers: centimeter, meter etc.)
- Share with them that today they will study about addition within 100 to solve real life situation (involving lengths in same units).

Development:

Activity 1:

- Divide the class in groups containing 4 members in each group.
- Ask them to take out a lunch box and a geometry box from their school bags.
- Advise the students to open their notebooks.

- Ask them to measure length of a lunch box and a geometry box with the help of ruler by drawing a line along its boundary in their notebook and note down measurement of each object.
- Now ask them to place lunch box and geometry box close to each other in series such that they appear to be one container (as shown in the picture).
- Ask the students to draw the lengths of lunch box and geometry box together
- Ask them to add their individual lengths mathematically as
  15 + 12 = 27

- Now walk all students through all steps given on **page # 113 of the mathematics textbook grade-2** to teach them how to solve word problems. For example:
  Length of the lunch box = 15 cm
  Length of the geometry box = +12 cm
  Total length = 27 cm

Activity 2:

- Make pairs of the students and call them member 1 and member 2.
- Write following questions on the writing board and ask all member 1 to solve question #1 and member 2 to do question #2

1. In a car race, there are 2 colors of cars. The blue car is 15 meters long and the red car is 17 meters long. What is the total length of red and blue cars?
2. Kamran's bedroom is 12 meters long. His brother's bedroom is 16 meters long being constructed in same line. What will be the total length required for T.R. for both rooms

- Give them 5 minutes to solve.
- Monitor and facilitate.
- After 5 minutes instruct them to exchange their sheets/ notebooks and check each other's work.
- Once they are done, invite 2-4 pairs to solve their questions on board.
- Encourage other students to ask questions.
- Give your feedback, if required.

Conclusion / Sum up / Wrap up:

- Summarize the lesson by sharing with them:

We can measure the total length of different objects by adding their individual lengths.

Assessment:

- Write the following questions on the writing board and divide the class into three groups by calling them 1, 2 and 3.
  1. I have 25 cm long red ribbon and 18 cm long green ribbon. What is the total length of both ribbons?
  2. Nadia bought 18 m of white cloth and 15 m of green cloth. How much cloth did Nadia buy altogether?
  3. The length of Ahmad's lunch box is 24 cm and the length of his brother's lunch box is 18 cm, what will be their combined length?
- Assign Q-1 to group 1, Q-2 to Group 2 and Q-3 to Group 3.
- Give them 2 minutes to solve.
- Collect their written responses and go through quickly.
- Give your input, if required.

Follow up:

- Write the following questions on the writing board and ask them to solve them at home.
- Instruct them to bring them to the next class.
    - Sarah and Danish have chocolate bars. Sarah's chocolate bar is 14 centimeters. Danish's chocolate bar is 17 centimeters. What is the total length of both chocolate bars?
    - The length of main wall of Khalid’s house is 15 meter and Kashif's house is 20 meters. What will be the total length of main wall of Khalid and Kashif houses?

Gulzar's pencil box is 16 centimeters long. Hafeez’s pencil box is 12 centimeters long. What will be the total length of both pencils?

Teacher Guide
Grade-2

Lesson Plan
31A

SUBTRACTION OF LENGTHS

Duration: 40 Minutes

Students Learning Outcome:

- Use addition and subtraction within 100 to solve real life situations involving lengths in same units.

Materials:
Writing board, board marker, hockey stick (or table tennis racket for girls), cricket bat (or badminton racket for girls), ruler, measuring tape/meter rod, and mathematics textbook grade 2.

Information for Teachers:

- This lesson plan is for subtraction only.
- Subtraction is the mathematical operation in which the difference between two numbers or quantities is calculated.
- Subtraction of lengths is the difference between shorter and longer lengths.
- Standard units of lengths are meter and centimeter, meter is used to measure longer lengths and its symbol is 'm' while centimeters is used for shorter lengths and its symbol is 'cm'.

Introduction:

- Ask students the following questions?
  - What do mean by same units? (Expected answers: if two or more objects are measured in the same unit e.g., centimeter is one unit, meter is another unit etc.)
  - Tell them that same unit means that two or more objects' lengths are measured in the one unit e.g., cm or m.
- Share with them that today they will study about subtraction within 100 to solve real life situation involving length in same unit, which will tell us about shorter and longer objects and how much.

Development:

Activity 1:

- Call one student from the front row and other student from the last row to come in front of the class.
- Give hockey stick to one student and cricket bat to another student.
- Ask first student to measure the length of cricket bat with the help of meter rod (expected length: approx. 96 centimeters).
- Ask second student to measure the length of hockey stick with the help of meter rod (expected length: approx. 81 centimeters).
- Ask first and second student to write the lengths of cricket bat and hockey stick on writing board respectively.
- Now ask all the students to subtract the length of hockey stick from the length of cricket bat mathematically as
  96 - 81 = 15
- Now tell them that we can calculate difference by subtracting shorter length from longer length.

Activity 2:

- Make pairs of the students and call them member 1 and member 2.
- Write following questions on the writing board and ask all member 1 to solve question #1 and member 2 to do question #2

1.The length of Amna's English book is 26 cm long and her Mathematics book is 30 cm long. Find the difference between the lengths of both books?

2.A man wants to construct two rooms in his house. One room requires 4 meter guarder and other room requires 6 meter guarder. Tell which room is longer in length and how much?

- Give them 5 minutes to solve.
- Monitor and facilitate.
- After 5 minutes instruct them to exchange their sheets/ notebooks and check each other's work.
- Once they are done, invite 2-4 pairs to solve their questions on board.
- Encourage other students to ask questions.
- Give your feedback, if required.

Conclusion / Sum up / Wrap up:

- Now summarize the lesson by sharing:
- Like addition, subtraction is very important in our daily life. In our routine activities we apply subtraction for calculation.

Assessment:

- Write the following questions on the writing board and divide the class into two groups by calling them 1 and 2 respectively.
  1. The length of Ahmad's coat is 55 centimeters and length of Danial's coat is 45 centimeters. Whose coat is longer and how much?
  2. The height of Areeba is 95 centimeters and the height of Benish is 83 centimeters, whose height is shorter and how much?
- Assign question 1 to group 1 and question 2 to group 2.

- Give 3 minutes to solve.
- Once they are done, call one student to solve the question on the writing board.
- Facilitate where needed.
- Encourage students to ask questions to clarify their concept further.

Follow up:

- Write the following question on the writing board and ask them to solve them at home.
- Instruct them to bring them to the next class.
  Measure the heights of any two appliances at home. Find the taller and shorter and also calculate by how much?

Teacher Guide
Grade-2

Lesson Plan
32

SUBTRACTION OF LENGTHS

Duration: 40 Minutes

Students Learning Outcome:

- Compare the mass of different objects.

Materials:
Writing board, board marker, flash cards (having pictures of chair, table desk, pen, sharpener, onion, pumpkin, mango, strawberry), balls of the same size but different material, and mathematics textbook grade 2.

Information for Teacher:

- Matter: Anything which occupy space and have mass is called matter.
- Mass: The amount of matter present in any object or body is called mass.
- The more matter something has, the more it will weigh.

Introduction:

- Show them plastic ball and rubber ball of the same size.
- Randomly call a student and ask him/her to hold balls i.e., one ball in each hand and ask, which is heavier and which is lighter? (Expected answer: rubber ball is heavier than plastic ball).
- Repeat the same activity with the remaining students.
- Tell the students that today we will study how to compare mass of different objects.

Activity 1:

- Divide ten flash cards among the students randomly, which contain pictures of different objects.
- The objects on flash cards are chair, table, book, pencil, sharpener, onion, pumpkin, notebook, mango, strawberry.
- Call two students in front of the class having flash cards containing chair and table.
- Tell the students that table is heavier than chair because it has greater quantity of matter in it, so it has greater mass than chair.
- Now call the students having flash cards containing book and notebook.
- Ask them to take out book and notebook from the school bags and hold them in your hands, also ask them which is heavier, book or notebook?
  (Expected answer is book is heavier than notebook).

- Repeat the activity by comparing onion with pumpkin, mango with watermelon and pencil with sharpener.

Activity 2:

- Divide the class in groups of four.
- Ask group-1 to make a comparison of kitchen utensils/ crockery at home to find out heavier and lighter items (Water jug, glass, dish, plate, cutting board, knife, pressure cooker, spoon) for example:

Heavier	**Lighter**
Pressure cooker	Spoon

- Ask group-2 to compare stationery items and make a list of heavier and lighter objects (lunch box, pencil, water bottle, marker, book, geometry box, sharpener, notebook, ruler) for example:

Heavier	**Lighter**
Lunch box	pencil

- Ask group-3 to compare classroom objects and make a list of heavier and lighter items (ceiling fan, board marker, table, duster, chair, colour charts, writing board) for example:

Heavier	**Lighter**
Ceiling fan	board marker

- Tell the students that the more matter something has, the more it will weigh.

Conclusion / Sum up / Wrap up:

- Ask the following oral questions to conclude the lesson:
  - What makes an object heavy? (expected answer: mass)
  - Why objects of the same size may differ in weight? (expected answer: because of mass)
- Conclude that heavier objects carry more mass than the lighter objects.

Assessment :

- Write the following blanks on writing board.
- Instruct the students to fill blanks in their notebooks.
- Ask them to use heavier or lighter word in the blanks.

1. Bus is ---------- than car. (heavier, lighter)
2. Car is ---------- than bus. (heavier, lighter)
3. Bicycle is ---------- than motorcycle. (heavier, lighter)
4. Motorcycle is ---------- than bicycle. (heavier, lighter)
5. Table is ---------- than chair. (heavier, lighter)
6. Chair is ---------- than table. (heavier, lighter)

- Give your input, if required.

Follow up:

- Ask the students to find 3 pair of objects at home and compare in respect of heavier and lighter, for example
  - Ceiling fan is _heavier_ than an LED bulb

  LED bulb is _lighter_ than ceiling fan.

MASS
(KILOGRAM AND GRAM)

Duration: 40 Minutes

Students Learning Outcome:

- Recognize the units of mass i.e., kilogram, gram.
- Use standard metric units of mass (kilogram and gram) and their abbreviation to measure and record mass of variety of objects.

Materials:
Writing board, board marker, Mathematics textbook grade-2, weighing/ lab balance/ kitchen scale.

Information for Teacher:

- Mass is the quantity of matter present in an object.
- Standard units of mass are kilogram and gram.
- The symbol 'kg' is used for kilogram and 'g' is used for gram.
- Kilogram is used to measure the mass of heavy objects like sugar bag, flour bag and cement bag etc.
- Gram is used to measure the mass of lighter objects like pin, paper clip, a pack of biscuit, etc.

Introduction:

- Ask the students, have you ever visited grocery store with your parents?
- Ask the following questions from the students who say 'yes' in response of the above question.
  - In which unit we buy sugar, rice, vegetable, fruits etc.? (Expected answers: kilogram and gram)
    Now share with the students that today they will study about the units of mass i.e. kilogram and gram and their abbreviation and also the use of standard metric unit of mass to measure and record mass of variety of objects.

Development:

Activity 1:

- Display weighing machine/ kitchen scale/ lab scale and take few minutes to teach

students how to use it. Also guide them about reading in grams and kilograms.

- Demonstrate how to measure weight of anything (book, glass, cup etc.) with the help of weighing machine.
- Divide the class in triads.
- Divide flash cards of different objects like water bottle, school bag, lunch box, geometry box, book and notebook among the groups.
- Call each group to measure and record the mass of the object shown in flashcards.
- Once they are done, ask them to share their observations. (Expected observations: lunch box, geometry box, notebook mass will be measured in gram, School bag, measurement will be in kg.
- Now write 'Kilogram' and 'gram' on the board and tell them that for convenience we use 'kg' and 'g' for 'Kilogram' and 'gram'.
- Also explain that gram is used to measure light/ small objects while kilogram is used to measure heavy/ big objects.

Activity 2:

- Divide the class in 3 groups.
- Give the following tables to respective group to measure and record mass with the help of weighing machine.
- Encourage every member of the group to participate in the activity.
- Monitor closely to find out if they have understood the concept or still need clarity in terms of selecting unit for measuring object.

Group 1

Object	Kg	G
Board marker		
Duster		
Dustbin		

Group 2

Object	Kg	G
Water bottle		
Register		
Guide book		

Group 3

Object	Kg	G
Lunch box		
School bag with books		
School bag without books		

Conclusion / Sum up / Wrap up:

- Explain that kilogram and gram are standard units to measure mass.
- Tell the students that 1000 grams is equal to 1 kilogram.
- The symbol of kilogram is kg and of gram is g.
- Kilogram is a unit to measure heavier objects for example bag of potatoes or bag of flour.
- Gram is a unit to measure lighter objects like pack of chocolates, pack of biscuits, pack of candies etc.
- Tell the students to measure mass we can use weighing machine, spring balance or kitchen scale.

Assessment :

- Write the following list on writing board and ask the students to write a unit in which they are measured (kg or g).
  1. Biscuits
  2. Apples
  3. Chocolate
  4. A pencil
  5. Sugar bag

Follow up:

- Write the following questions on the writing board and ask them to solve at home.
- Instruct them to bring their homework to the next class.
  - Measure and record the mass of a brick using balance available at your home with the help of your parents.
  - List the names of 10 items in your home that are heavier than 1 kg.
  - Measure or read the amount of salt in one salt packet and record that in your notebook.

Teacher Guide
Grade-2

Lesson Plan
34

ADDITION AND SUBTRACTION OF MASSES

Duration: 40 Minutes

Students Learning Outcome:

- Use addition and subtraction within 100 to solve real life situations involving mass in same units.

Materials:
Writing board, board marker, Mathematics Textbook grade-2, weighing machine

Information for Teacher:

- This lesson plan is only for addition of masses.
- MASS: The quantity of matter in an object is called mass.
- Standard units of mass: Kilogram and gram are the standard units of mass.
- Kilogram is used to measure the masses of heavier objects, like sugar bag, sack of potatoes, flour bag and rice bag.
- Gram is used to measure the masses of lighter objects like candy packets, a loaf of bread and a pack of chocolates.
- Addition of masses: masses of two objects are added in same units like kilogram with kilogram, and gram with gram.

Introduction:

- Ask students the following questions?
  - What is the measuring unit of heavier objects? (Expected answer is kilogram)
- Which unit is used to measure the mass of lighter objects? (Expected answer is gram).
- Inquire, can we add gram to kilogram? (Expected answer No, Yes)
- Tell them that same units are added to same units, like kilogram to kilogram and gram to gram.
- Now share with the students that we will study today addition within 100 in real life situations involving mass.

Activity 1:

- Call 8 volunteer students in front of the class and divide them into 2 groups of four for this activity.
- Ask group 1 to make a bundle of four lead pencils and writing pens.
- Place this bundle on weighing machine and note the mass. (Expected answer: approx. 20

grams).

- Instruct group 2 to get their empty geometry boxes and place them on weighing machine.
- Note the mass on weighing machine. (Expected answer: approx. 80 grams).
- Put the geometry boxes and bundle of lead pencils and writing pens together on weighing machine.
- Instruct them to note the masses on weighing machine.
- Tell the students that addition is to combine the masses of different objects.

Activity 2:

- Call three pairs of students in front of the class.
- Ask first pair to write the quantity of flour used at their homes in one month and tell them that an average family (4 people) consumes 30 kg per month
- Ask second pair to write the quantity of rice used at their homes in one month and tell them that an average family (4 people) consumes 10 kg per month)) (expected answers: 10 kg and 15 kg.)
- Ask third pair to write the quantity of sugar used at their homes in one month and tell them that an average family (4 people) consumes 6 kg per month) (expected answers: 6 kg and 8 kg.)
- Now guide the first pair to write flour quantity vertically and perform addition i.e.
  Amount of flour required for one month in member 1 home = 2 5 kg
  Amount of flour required for one month in member 2 home = 4 0 kg
- Tell the students that addition is done in the similar way as in case of ordinary numbers i.e. to add ones in ones and tens in tens such that

	T	O
Amount of flour required for one month in member 1 home =	2	5 kg
Amount of flour required for one month in member 2 home =	+4	0 kg
Total amount of flour	= 6	5 kg

Conclusion / Sum up / Wrap up:

- Summarize the lesson by sharing with them that masses in same units are added with each other.
- Tell them if we combine two masses of same units then it is called addition of masses.

Assessment:

- Write the following questions on the writing board and divide the class into two groups by calling them 1 and 2 respectively.
  1. Maryam bought 60 grams red pepper and 35 grams black pepper. Tell the total mass of both peppers.
  2. A vegetable seller buys 85 kg of potatoes and 15 kg tomatoes, calculate total mass of potatoes and tomatoes.
- Assign question 1 to group 1 and question 2 to group 2.
- Give 3 minutes to solve.
- Invite a student to solve the question on writing board.
- Facilitate and guide if necessary.

Follow up:

- Write the following questions on the writing board and ask them to solve them at home.
- Instruct them to bring them to the next class.
- Ahmad purchased 60 kg sugar from one shop and 45 kg sugar from another shop, how much sugar did he purchase in total?
- Ali sold 10 kg of potato chips on Monday and 15 kg of potato chips on next day, what is the total amount of potato chips he sold?

Kamran's mass (weight) is 55 kg and Akram's mass (weight) is 40 kg. What is the total mass (weight) of Kamran and Akram?

Teacher Guide
Grade-2

Lesson Plan
34A

ADDITION AND SUBTRACTION OF MASSES

Duration: 40 Minutes

Students Learning Outcome:

- Use addition and subtraction within 100 to solve real life situations involving mass in same units.

Materials:
Writing board, board marker, Mathematics Textbook grade-2, weighing machine

Information for Teacher:

- This lesson plan is only for subtraction of masses.
- Subtraction of masses: Difference in measurement of two objects in the same units (like kilogram from kilogram, and gram from gram).

Introduction:

- Ask students the following question?
  - How to subtract 3-digit numbers? (Expected answer: we arrange them according to place value and then subtract same place value numbers)
- Explain that in subtracting masses of two or more objects, we arrange them according to their units (kg under kg and g under g) and subtract same unit numbers
- Now share with the students that today they will study subtraction within 100 in real life situation involving mass.

Activity 1:

- Call three students voluntarily in front of the class.
- Give a shopping bag to one student and ask him to bring some sand from the school ground.
- Put the sand bag brought by the student on the weighing machine.
- Now ask other student to remove some quantity of sand from the bag and put that into another bag.
- Ask them to measure the mass of the 2nd shopping bag with the help of weighing machine.
- Instruct them to weigh the 1st shopping bag again and record it.
- Initiate discussion and bring them to the point that by removing sand from the bag we reduced its mass, which is subtraction.

- For example mass of the 1st bag = 80 g of sand and the mass of the sand in 2nd shopping bag =20 g then 80 – 20 = 60 gram will be left in the 1st bag.

Activity 2:

- Call two students voluntarily in front of the class.
- Ask one student to stand on weighing machine and note down the mass (weight) of the student (for example 33 kg) and write it on writing board.
- Similarly call other student on weighting machine and note down the mass (weight) of that student (for example 21 kg) and write it on writing board.
- Now ask the rest of the students to calculate the difference between the weight of two students.
- Ask them to talk about who is heavier and by how much?

Conclusion / Sum up / Wrap up:

- Summarize the lesson by sharing with them that in subtraction of masses same units are subtracted from same units
- Discuss the real life situations involving subtraction of mass/ weight.

Assessment:

- Write the following questions on the writing board and divide the class into two groups by calling them 1 and 2 respectively.
  1. A shopkeeper had 50 kg of sugar in stock. He sold 28 kg of it. How much sugar was left in his stock after selling it?
  2. Sara bought 80 grams of red chili powder, she used 1 gram on the same day, how much chili powder is left?
- Assign question 1 to group 1 and question 2 to group 2.
- Give 3 minutes to solve.
- Invite 3-4 students to share their work with the rest of the class.
- Give your input, if required.

Follow up:

- Write the following questions on the writing board and ask them to solve at home.
- Instruct them to bring their notebooks to the next class.
- The bucket full of water weighs 16 kg and the mass of empty bucket is 2 kg. What is the weight/ mass of water in the bucket?

Sara and Marium are friends. Sara's weight is 36 kg and Marium's weight is 30 kg. Who weighs more and by how much?

Teacher Guide
Grade-2

Lesson Plan
35

ADDITION AND SUBTRACTION OF MASSES

Duration: 40 Minutes

Students Learning Outcome:

- Compare capacity of different objects using non-standard units (jug, glass, cup etc.)

Materials:
Writing board, board marker, Mathematics textbook grade-2, glass, jug, bowl, bucket, cup, water bottle

Information for Teacher:

- Capacity: It is a measure of how much a container can hold i.e., the amount of water, a cup can hold.
- Non-Standard units of capacity: The non-standard units of capacity are jug, cup, bucket, glass etc.

Introduction:

- Show a glass and a cup to the class.
- Ask the students, which can hold more water, glass or cup? (Expected answer is glass because the capacity of a glass is more than a cup)
- Now announce that today we will compare capacities of different objects using non-standard units.

Activity 1:

- Invite six students voluntarily to come in front of the class.
- Make 3 pairs of them.
- Give 1st pair a jug and a glass, 2nd pair a water bottle and a cup and 3rd pair a bucket and a bowl.
- Ask 1st member of 1st pair to pour water in a jug to its brim.
- Instruct the 2nd member of 1st pair to fill a glass from the jug.
- Ask, which container contains more water jug or glass? (expected answer jug).
- Now ask the 1st member of 2nd pair to fill the water bottle with water.
- Ask 2nd member of 2nd pair to pour water from water bottle to cup to make it full.
- Tell the class that water bottle has more capacity than a cup.
- Repeat the activity with 3rd pair with bucket and bowl in the same way.

Activity 2:

- Write the following lists of items on the writing board.
- List1: water-cooler, tub, bucket, cup, glass, mug.
- List 2: thermos, sauce pan, pressure cooker, student lunch box, baby feeder, water bottle.
- Draw the following table on the writing table as well.

More Capacity	Less Capacity
•	•

- Divide the class into pairs and call them member 1 and member 2.
- Ask them to fill in the table by using the list of items they are assigned.
- Guide and facilitate them during activity.
- Call 2-3 pairs to present their work with the call.
- Give your input, if necessary.

Conclusion / Sum up / Wrap up:

- Summarize by sharing that capacity is the ability/ capability of a container to hold something for example amount of tea, a teapot can hold.
- Tell them that in our routine daily life we use cups, water glasses, and bowls etc. to measure liquid. These are called non-standard units to measure capacity.

Assessment:

- Write the following blanks on the writing board.
- Invite six students voluntarily to fill the blanks on the writing board.
- Ask them to write more or less in the blanks.
    1. A water tanker holds …….. water than a bucket. (more, less)
    2. A bucket holds …….water than a water tanker. (more, less)
    3. A teapot holds…….tea than a cup. (more, less)
    4. A cup holds …… tea than a teapot. (more, less)
    5. An inkpot holds ……..ink than a pen filler. (more, less)
    6. A pen filler holds ……..ink than an inkpot. (more, less)

Follow up:

- Advise the students to find 2 pair of objects at home and compare their capacities as more or less for example:

    An oil container holds ……more……oil than a cup.
    A bowl holds …less…….lemonade than a jug.

Teacher Guide
Grade-2

Lesson Plan
36

ADDITION AND SUBTRACTION OF MASSES

Duration: 40 Minutes

Students Learning Outcome:

- Compare capacity of different objects using non-standard units (jug, glass, cup etc.)

Materials:
Writing board, board marker, Mathematics textbook grade-2, glass, jug, bowl, bucket, cup, water bottle

Information for Teacher:

- Capacity: It is a measure of how much a container can hold i.e. the amount of water, a cup can hold.
- Non-Standard units of capacity: The non-standard units of capacity are jug, cup, bucket, glass etc.

Introduction:

- Show a glass and a cup to the class.
- Ask the students, which can hold more water, glass or cup? (Expected answer is glass because the capacity of a glass is more than a cup)
- Now announce that today we will compare capacities of different objects using non-standard units.

Activity 1:

- Invite six students voluntarily to come in front of the class.
- Make 3 pairs of them.
- Give 1st pair a jug and a glass, 2nd pair a water bottle and a cup and 3rd pair a bucket and a bowl.
- Ask 1st member of 1st pair to pour water in a jug to its brim.
- Instruct the 2nd member of 1st pair to fill a glass from the jug.
- Ask, which container contains more water jug or glass? (expected answer jug).
- Now ask the 1st member of 2nd pair to fill the water bottle with water.
- Ask 2nd member of 2nd pair to pour water from water bottle to cup to make it full.
- Tell the class that water bottle has more capacity than a cup.
- Repeat the activity with 3rd pair with bucket and bowl in the same way.

Activity 2:

- Write the following lists of items on the writing board.
- List1: water-cooler, tub, bucket, cup, glass, mug.
- List 2: thermos, sauce pan, pressure cooker, student lunch box, baby feeder, water bottle.
- Draw the following table on the writing table as well.

More Capacity	Less Capacity

- Divide the class into pairs and call them member 1 and member 2.
- Ask them to fill in the table by using the list of items they are assigned.
- Guide and facilitate them during activity.
- Call 2-3 pairs to present their work with the call.
- Give your input, if necessary.

Conclusion / Sum up / Wrap up:

- Summarize by sharing that capacity is the ability/ capability of a container to hold something for example amount of tea, a teapot can hold.
- Tell them that in our routine daily life we use cups, water glasses, and bowls etc. to measure liquid. These are called non-standard units to measure capacity.

Assessment:

- Write the following blanks on the writing board.
- Invite six students voluntarily to fill the blanks on the writing board.
- Ask them to write more or less in the blanks.

A water tanker holds …….. water than a bucket. (more, less)
A bucket holds …….water than a water tanker. (more, less)
A teapot holds…….tea than a cup. (more, less)
A cup holds …… tea than a teapot. (more, less)
An inkpot holds ……..ink than a pen filler. (more, less)
A pen filler holds ……..ink than an inkpot. (more, less)

Follow up:

- Advise the students to find 2 pair of objects at home and compare their capacities as more or less for example:

An oil container holds ……more……oil than a cup.
A bowl holds …less…….lemonade than a jug.

Teacher Guide
Grade-2

Lesson Plan
37

ADDITION AND SUBTRACTION OF MASSES

Duration: 40 Minutes

Students Learning Outcome:

- Read and write the time from a clock in hours and minutes (with five minutes intervals) e.g. read 8:15 as eight fifteen and 8:50 as eight fifty.

Materials:
Writing board, board marker, Mathematics Textbook Grade 2, analog clock, worksheets

Information for Teacher:

- Analog clock is the 12-hour clock. It has two moving hands i.e. hour hand and minute hand.
- A short hand on the clock is called hour hand.
- A long hand on the clock is called minute hand.
- The dial of a clock is divided into 12 big parts and each big part is further divided into 5 small parts.
- When the hour hand moves from 1 number to the next number, 1 hour has passed.
- One small part represents one minute.
- 5 small parts between two numbers represent 5 minutes.

Introduction:

Warm up:

- Ask the following questions:
- In how many parts the clock is divided?
  - Which hand shows the hour hand?
  - Which hand shows the minute hand?
  - How many hours in a day?
  - Now share that today they will study how to read and write time from clock in hours and minutes.

Activity 1:

Display a chart having the following analog clock in front of the class.
Ask students the following questions:

- Look at the clock and tell at which number is the short hand pointing? (Expected answer is 1).
    - At which number is the long hand pointing? (Expected answer is 12).
- What time the clock is showing?
- After getting their response, tell the students that the clock is showing 1 o,clock.
- By pointing to the clock, explain the students that there are 12 big parts marked on a clock. The big parts stand for hours.
- When the hour hand moves from one number to the next number . 1 hour has passed. The hour hand completes its 1 round in 12 hours.
- 5 small parts between two numbers stand for 5 minutes.
- When the minute hand moves from one number to the next, 5 minutes have passed.
- When the minute hand moves from one small part to the next, 1 minute has passed.
- The minute hand completes its 1 round in 60 minutes.
- We calculate the minutes by skip count in 5s or using 5 times table.
- Draw the following clock on the board :

- Look at the clock face. The hour hand is at 2. The minute hand is at 3. Recall 5 times table up to 3 i.e. 5x3= 15. It means 15 minutes have passed. So the time is 15 minutes past 2 or two fifteen.
- We can write two fifteen as 2:15. The first number i.e. 2 represents ‘hours’ and the second number after colon i.e. 15 represents ‘minutes’.
- Display different times i.e. 6:25, 3:10, 7:40 with 5 minutes interval on the analog clock to enhance the concept.

Activity 2:

Prepare the following worksheet and distribute to the students.
Ask the students to read time from analog clock and then write it in the box.
Guide the students where needed.

Worksheet

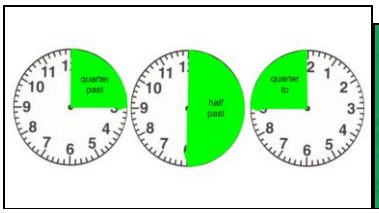
Activity: 4

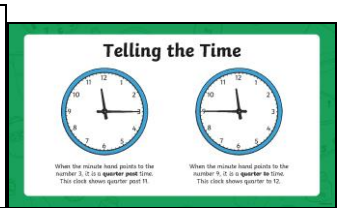
- Display real analog clock in front of the class.
- Call randomly any student and ask him/her to represent the time 1:30 on the clock by moving hour and minute hands.
- Introduce the term “half past” to the students.
- The hour hand is between 1 and 2. The minute hand is at 6.
- So the time is **30 minutes past 1 or half past 1**.

- Call students one by one and ask to represent different half past times like 3:30, 5:30, 12:30, etc. on the analog clock.

Activity: 4

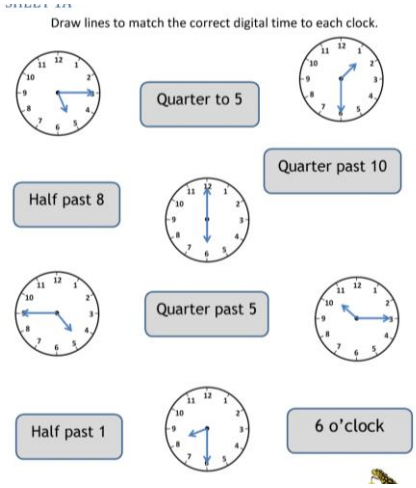
- Recall the concept of a quarter part in fractions. Quarter means fourth part and 2 quarters equal one half.
- Ask the students, can you tell how many minutes are there in a quarter hour?(15)
- Display the following pictures in front of the class and explain the concept of ‘quarter past’ and ‘quarter to’ hour.
- Explain the position of long and short hands for different ‘quarter to’ and ‘quarter past’ hours.





- Prepare the following worksheet and distribute to the students.

Worksheet



Conclusion / Sum up / Wrap up:

Summarize by sharing that:

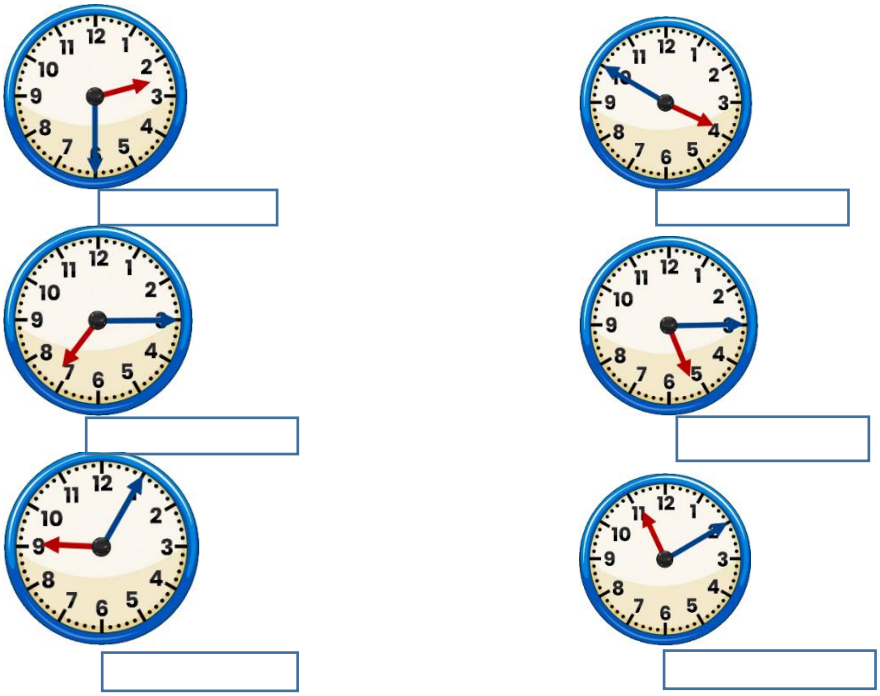
- Analog clock is the 12-hour clock. It has two moving hands i.e. hour hand and minute hand.
- A short hand on the clock is called hour hand.
- A long hand on the clock is called minute hand.
- The dial of a clock is divided into 12 big parts and each big part is further divided into 5 small parts.
- When the hour hand moves from 1 number to the next number, 1 hour has passed.
- One small part represents one minute.
- 5 small parts between two numbers represent 5 minutes.
- There are 60 minutes in one hour.
- There are 15 minutes in a quarter hour.
- There are 30 minutes in half an hour.

Assessment:

Prepare the following worksheet and distribute to the students.

- Ask the students to read the time from analog clock and write it in the box.
- Give 3 minutes to complete.
- After 3 minutes write the answers on the writing board and ask the students to compare the answers by their own.
- Tell them their mistakes and tell the correct answer.

Worksheet



Follow up:

- Ask the students to solve question # 2 of the review exercise given on page # 139 of the **Mathematics Textbook Grade-2**.
- Prepare the following worksheet and distribute to the students.
- Instruct the students to match column A to column B.
- Instruct them to bring their solved worksheets to the next class.

Worksheet

Column A	Column B
	4:35 Four thirty-five
	3:25 Three twenty-five
	3:00 Three’ o clock
	12:15 Twelve fifteen

Teacher Guide
Grade-2

Lesson Plan
38

READ AND WRITE THE TIME USING A.M. AND P.M.

Duration: 40 Minutes

Students Learning Outcome:

- Recognize a.m. and p.m.

Materials:
Writing board, board marker, Mathematics Textbook Grade 2, analog clock, worksheets, chart having pictures of different times of the day, picture of a.m. and p.m.

Information for Teacher:

- There are 24 hours in a day.
- In an analog clock, hour hand (short hand) completes one round in 12 hours and two rounds in 24 hours.
- A complete day starts from midnight and ends at midnight on next day.
- A complete day comprises two parts.
- Each part is called meridiem.

1st part	2nd part
From midnight to noon	From noon to midnight

- The time which lies between 12:00 midnight to 12:00 noon is called a.m. (ante meridiem).
- The time which lies between 12:00 noon to 12:00 midnight is called p.m. (post meridiem).

Introduction:

Warm up:

Ask students the following questions:

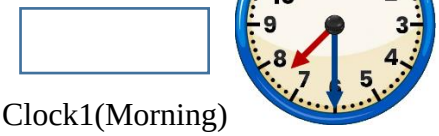
- How many hours are there in a day? (24)
- What is the division of a complete day? (Expected answer is night and day)
- When a new day or next day starts? (From mid night)
- Inquire, when a complete day ends? (At midnight).
- Now announce to the class that today they will study about a.m. and p.m.

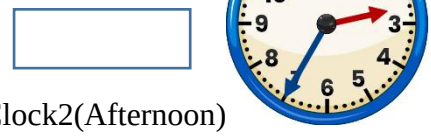
Activity 1:

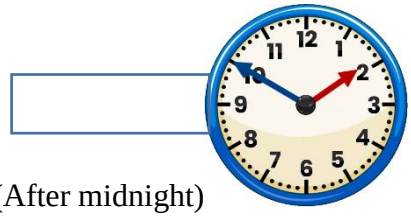
- Ask the students, are you familiar with the terms a.m. and p.m.?

- Display the following picture in front of the class.
- Ask the students, what time the clock is showing? And what is the difference between these two pictures?
- Introduce the terms a.m. and p.m. and explain the concept by using the description given in the Mathematics Textbook Grade 2.

- Display a chart showing pictures of different times of the day using clocks and discuss it with the students by saying terms a.m and p.m.
- Also ask the students to tell which prayers are offered during a.m. and which are offered during p.m.
- Draw some pictures of analog clock on the writing board showing different times of the day.


Clock1(Morning)


Clock2(Afternoon)


Clock3(After midnight)


Clock4(Evening)

- Call students randomly to come in front of the class and write the time using a.m. and p.m.
- Repeat the activity by changing time on the clock and involve all students of the class to perform the activity.

Activity 2:.

- Prepare the following worksheet and distribute to the students.
- Ask the students to write a.m. or p.m. with the given times.

Worksheet

a) At what time does Fatima wake up?

b) At what time does Fatima come back from school?

c) At what time does Fatima take breakfast?

d) At what time does Fatima do homework?

Conclusion / Sum up / Wrap up:

Conclude the lesson by recalling the following points:

- There are 24 hours in a day.
- In an analog clock, hour hand (short hand) completes one round in 12 hours and two rounds in 24 hours.
- A complete day starts from midnight and ends at midnight on next day.
- A complete day comprises two parts.
- Each part is called meridiem.

1st part	2nd part
From midnight to noon	From noon to midnight

- The time which lies between 12:00 midnight to 12:00 noon is called a.m. (ante meridiem).
- The time which lies between 12:00 noon to 12:00 midnight is called p.m. (post meridiem).

Assessment:

- Prepare the following worksheet and distribute to the students.
- Ask the students to write a.m. or p.m. with the given times.

- Give 3 minutes to complete.
- After 3 minutes write the answers on writing board and ask the students to compare the answers by their own.
- Give your input if required.

Worksheet

Write a.m. or p.m. with the given times.

1. Afternoon 1:30
2. Morning 8:00
3. Night 10:30
4. Evening 6:15
5. Noon 12:00
6. Midnight 2:00

Follow up:

- Ask the students to solve question # 4 given on page # 140 of the **Mathematics Textbook grade -2.**
- Make a chart showing different activities that you perform during a.m. and p.m.

Teacher Guide
Grade-2

Lesson Plan
39

DRAWING HANDS OF A CLOCK

 **Duration:** 40 Minutes

 **Students Learning Outcome:**

- Draw hands of a clock to show time in hours and minutes (with five minutes interval).

 **Materials:**
Writing board, board marker, worksheets, Mathematics Textbook Grade 2, analog clock

Information for Teacher:

- Analog clock is the 12-hour clock. It has two moving hands i.e. hour hand and minute hand.
- A short hand on the clock is called hour hand.
- A long hand on the clock is called minute hand.
- The dial of a clock is divided into 12 big parts and each big part is further divided into 5 small parts.
- When the hour hand moves from 1 number to the next number, 1 hour has passed.
- One small part represents one minute.
- 5 small parts between two numbers represent 5 minutes.

Introduction:

- Ask the students that
  - Can you tell what does the short hand of a clock represent? (hours)
  - What does the long hand of a clock represent? (minutes)
  - In how many parts, the clock is divided? (12)
  - In how many hours, the clock completes its 1 round? (12 hours)
  - How many minutes are there in 1 hour? (60)
- Share that today we are going to study how to draw hands on the clock to show time in hours and minutes (with five minutes intervals).

Activity 1:

- Write a time on writing board as 7:55.
- Invite a student and ask him/her to read and write the time. (Seven fifty-five).
- Now call another student from the middle row and ask to tell how many hours and minutes in 7:55. (7 hours and 55 minutes)

- Tell the students to represent the time on a clock we first make a dial of clock and mark its center.

- Then from the center of the dial we draw the hour hand (short hand)but make sure that its length should not reach the digits/ parts on the dial.

- To show 7 hours and 55 minutes on a clock, we will draw hour hand little behind 8 or near to 8.
- To show fifty-five minutes, we will draw the long hand (minute hand), pointing to 11. As 11 shows that 55 minutes have passed. Skip count in 5s up to 11 to get 55.

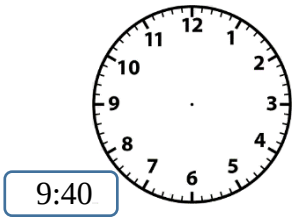
- Hence the time 7:55 is drawn by short and long hands on the analog clock as follows:

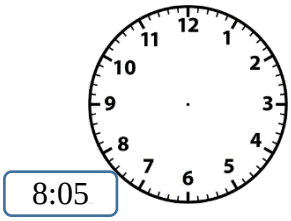
Activity 2:

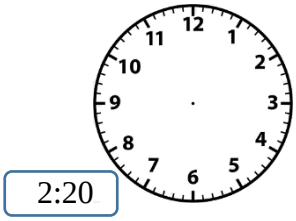
Prepare the following worksheet and distribute to the students.

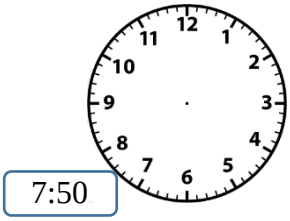
- Ask the students to read the time and draw hands on the clocks.
- Check their work and provide guidance if needed.

Worksheet


9:40


8:05


2:20


7:50

Conclusion / Sum up / Wrap up:

Summarize the lesson by recalling the following points:

- Analog clock is the 12-hour clock. It has two moving hands i.e. hour hand and minute hand.
- A short hand on the clock is called hour hand.
- A long hand on the clock is called minute hand.
- The dial of a clock is divided into 12 big parts and each big part is further divided into 5 small parts.
- When the hour hand moves from 1 number to the next number, 1 hour has passed.
- One small part represents one minute.
- 5 small parts between two numbers represent 5 minutes.

Assessment:

Ask the students to open Mathematics Textbook Grade -2 and solve the question under the heading "**Try Yourself"** given on page # 133.

- Give them 3 minutes to solve.
- After 3 minutes check their work.
- Give your input if required.

Follow up:

Prepare the following worksheet and distribute to the students.

- Ask the students to solve it at home.
- Instruct them to bring their solved worksheets to the next class.

Worksheet

MY DAILY SCHEDULE

WRITE THE TIME YOU DO EACH ACTIVITY EACH DAY IN THE BOXES.
THEN DRAW THE HANDS ON THE CLOCK TO MATCH THE TIME .

1. WAKE UP

WRITE TIME HERE

2. EAT LUNCH

WRITE TIME HERE

3. EAT DINNER

WRITE TIME HERE

4. BED TIME

WRITE TIME HERE

Teacher Guide
Grade-2

Lesson Plan
40

DRAWING HANDS OF A CLOCK

Duration: 40 Minutes

Students Learning Outcome:

- Identify the figures like square, rectangle, triangle, circle, semicircle and quarter circle.

Materials:
Writing board, board marker, Mathematics Textbook Grade 2, glass, scissor, model shapes of square, rectangle and triangle.

Information for Teacher:

- Square: A shape which has four equal sides and form right angles, is called a square e.g. chess board, bread slice, etc.

- Rectangle: A shape which has four sides and only opposite sides are equal and form right angles e.g. writing board, door,etc.
- Triangle: A triangle is a closed figure/shape with 3 sides only e.g. sandwich, cloth hanger,etc.

- Circle: It is a set of points having equal distance from a given point is called a circle. It has 0 sides and 0 corners.
- Semicircle: It is one half of the circle.
- Quarter circle: It is half of a semi circle.

Introduction:

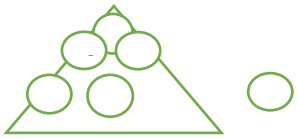
- Ask students the following questions:
  - Are wall clock and writing board of same shape? (no)
  - What is the difference between the shape of a wall clock and a writing board? (wall clock is round but writing board is not round, it has corners).
  - How many corners of a white board (four corners).
  - How many corners of a wall clock? (no corner).
  - Can you find any shape in your surroundings which has 3 corners?
- Now share with the students that today we will study different shapes like rectangle, square, triangle, circle, semicircle and quarter circles.

Activity 1:

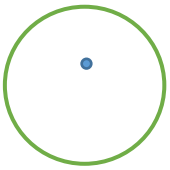
- Ask the students to open notebooks and tell me whether the lengths of all sides of this page are equal? (Expected answer: no)
- Now ask again whether the lengths of its opposite sides are equal? (Expected answer: yes)
- Tell them the shape which have equal lengths of opposite sides is called a rectangle.

- Show the students a piece of paper whose all sides are equal in length and ask them whether all sides of this piece of paper are equal (Expected answer: yes.)
- Tell them this type of shape is called a square.

- Call 6 students in front of class.
- Ask one of them to stand in first row, other two students will stand behind the first student and the remaining 3 students will stand in third row behind the two students, which will make a shape like

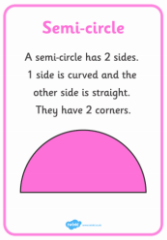


- In this shape each ball represents one student and this arrangement forms a triangle (means 3 sides, 3 corners).
- Tell the students that 3 sides of a triangle may or may not be equal in length.
- Now invite one student in front of the class and give him a glass and a piece of a paper.
- Ask the student to put the mouth of the water glass on the paper and draw its boundary with a lead pencil.
- Now ask him to cut the marked piece of paper with scissor.
- Tell the student, it is a circle which has no corner and equal distant from a fixed point which is called center of the circle.

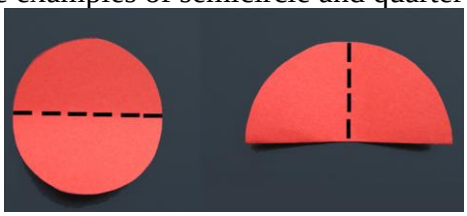


Activity 2:

- Divide the class into group of 4s.
- Give them a piece of paper in circular shape.
- Now ask the students to fold each circular piece into two equal halves.
- Now ask them to cut from the folding point which divides the circle into two halves.
- Now tell them that each half is called a semicircle.
- Display the following picture in front of the class and conclude the important points.



- Now ask the students to fold the semicircle once again from the straight line side and cut it from the folding point with the help of scissor.
- Tell the students that this shape is called quarter circle.
- Discuss real life examples of semicircle and quarter circle.



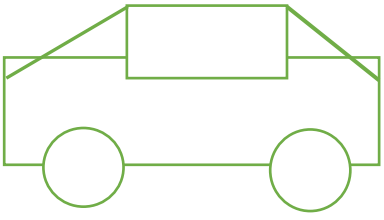
Conclusion / Sum up / Wrap up:

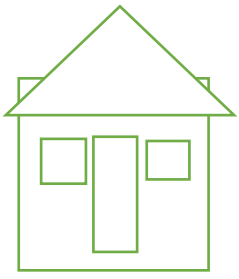
Summarize by sharing that:

- An oval has 0 sides and 0 corners.
- A square has 4 sides and 4 corners.
- A rectangle has 4 sides and 4 corners.
- A circle has 0 sides and 0 corners.
- A triangle has 3 sides and 3 corners.
- One half of the circle is called semicircle.
- One half of the semicircle is called quarter circle.

Assessment:

- Paste the following pictures in the students' notebooks.
- Instruct them to color the circles red, rectangles green, triangles yellow and squares blue.
- Give them 4 minutes to complete the activity.
- After 4 minutes, observe the students' work.
- Give your input if required.





Follow up:

- Ask the students to complete the activity given at page number 144 of Mathematics Textbook Grade 2.
- Also ask the students to solve the question under the heading 'Try Yourself' at page number 144 of Mathematics Textbook Grade 2.

Teacher Guide
Grade-2

Lesson Plan
41

SIDES AND VERTICES OF THE SHAPES

Duration: 40 Minutes

Students Learning Outcome:

- Identify vertices and sides of a triangle, rectangle and square.

Materials:
Writing board, board marker, Mathematics Textbook Grade 2, model shapes (triangle, rectangle and square), colored pencils, cut outs of shapes.

Information for Teacher:

- The shapes having length and width are called two dimensional (2D) shapes, i.e. square, rectangle and triangle.
- Square and rectangle has four sides and four corners.
- Triangle has three sides and three corners.
- A vertex is the corner of any shape.
- The plural of vertex is called vertices.

Introduction:

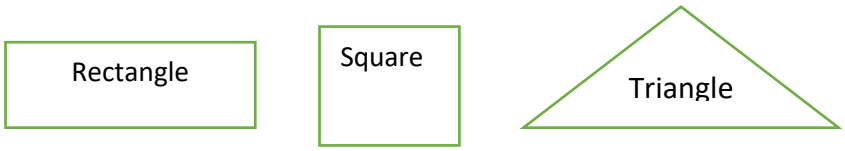
Warm up:

Ask students the following questions:

- How many sides a writing board has? (4 sides).
- Are all the sides of a writing board equal in length or not? (no)
- How many corners a writing board has? (4).
- Tell them that any shape having length and width is called two dimensional shape.
- Tell them that the corners of writing board or any two dimensional shape are called the vertices, and its singular is vertex.
- Now share with the students that today they will study to identify sides and vertices of rectangle, square and triangle.

Activity 1:

- Draw the following shapes on the writing board



- Handover the model shapes of rectangle, square and triangle to the students.
- Now invite 3 students on writing board.
- Ask the 1st students to point out the sides and corners of rectangle by making an arrow on them.
- Now ask the 2nd student to point out the sides and corners of square by making an arrow on them.
- Lastly ask the 3rd student to point out the sides and corners of triangle by making an arrow on them.
- Tell the class that the corners of a rectangle, square, and triangle are called the vertices and the straight lines which make the above shapes are called sides.

Activity 2:

- Provide each group cut outs of different shapes like rectangle, square and triangle .
- Ask to color the boundary of a rectangle (green), square (yellow) and triangle (blue).
- Now again ask them to mark the corners (vertices) of rectangle red, square (purple) and triangle (brown).
- Give them 5 minutes to complete the activity.
- Invite any two groups voluntarily in front of the class to present their work by identifying sides and vertices of the given shapes.

Conclusion / Sum up / Wrap up:

- Share with the students that rectangle or square has four sides and four vertices.
- Triangle has 3 sides and 3 vertices.
- The corner of any shape is called vertex.
- Vertices is the plural of vertex.

Assessment:

- Ask the students to solve Exercise 1 given on page # 146 of the **Mathematics Textbook Grade -2.**
- Give them 3 minutes to solve.
- Check their work and give your input if required.

Follow up:

- Ask students to identify three different objects having shapes like rectangle, square and triangle at home.
- Write the name, number of sides and vertices of each shape in your notebooks.
  Bring this to the next class.

STRAIGHT AND CURVED LINES

Duration: 40 Minutes

Students Learning Outcomes:

- Differentiate between straight line and a curve
- Identify straight lines and a curve from the given drawings.

Materials:

Writing board, board marker, Mathematics Textbook Grade 2, thread or string, small chits of paper having drawings of straight and curved objects, worksheet, cut outs of shapes

Information for Teachers:

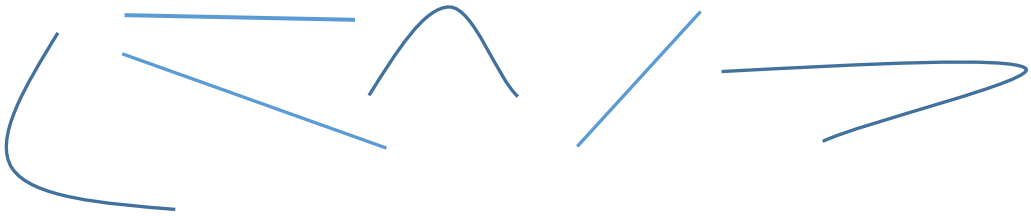
- Straight line: A line that extends to both sides like infinity and has no curve is called a straight line.
- A line that does not change its direction is called straight line.
- Curved lines: lines that bend and changes direction gradually.

Introduction:

- Write some alphabets on writing board i.e. A, B, C D and ask the following questions to the students.
  - How many lines make the alphabet A? (3 lines)
  - Are all lines in 'A' are straight? (yes).
  - How many lines are joined to make alphabet 'C'? (1).
  - Is the line in 'C' straight? (no)
- Share that today we will study to differentiate between straight and curved lines.

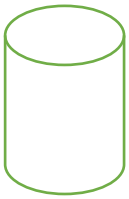
Activity 1:

- Hold the string/thread in your both hands tightly.
- Ask from the students whether the string/thread is straight or not?
- Now loose the string/thread for a moment and again ask whether the string/thread is straight or not?
- Now stretch the string/thread again and tell the students that it is a straight line.
- Again loose the string/thread and tell the students that it is a curved line.
- Now invite the students in front of the class and ask them to repeat the activity by stretching and loosening the string/thread using terms straight and curved.
- Draw the following lines on the writing board and call students randomly to point out the straight and curved line by writing against the given line.



Activity 2:

- Divide the class into group of 4s.
- Paste the following drawings on small chits of paper and distribute to each group.



- Instruct the students to identify straight and curved lines from the given drawings.
- Give them 5 minutes to complete.
- Invite two groups to present their work.
- Give your feedback if required.

Conclusion / Sum up / Wrap up:

Conclude the lesson by asking following questions to the students:

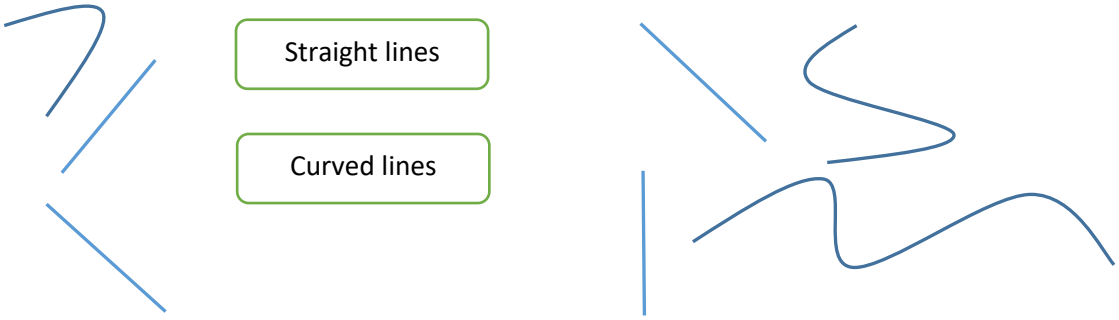
- What is straight line?
- What is curved line?
- Can you tell the name of any shape that is made of curved lines?
- Is the alphabet ‘V’ is made of straight lines?
- How many straight lines are there in alphabet ‘O’?

Assessment:

- Prepare the following worksheet and distribute to the students.
- Ask the students to match the lines with their names.
- Give them 3 minutes to solve.
- Check their response and give your input if required.

Worksheet

Match the lines with their names.



Follow up:

- Ask the students to solve question number 2 of exercise 2 given on page # 148 of the **Mathematics Textbook Grade -2.**
- Paste cut outs of the following shapes in their notebooks.
- Ask the students to write the total number of straight and curved lines in the given shapes.

Teacher Guide
Grade-2

Lesson Plan
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DRAWING STRAIGHT LINE

Duration: 40 Minutes

Students Learning Outcome:

- Use ruler to draw a straight line of given length (exclude fractional length).

Materials:
Writing board, board marker, Mathematics Textbook Grade 2, ruler, lead pencil, worksheet

Information for Teacher:

- We measure and draw a straight line with the help of ruler.
- A small ruler has measurements in cm from 0 to 10.
- A unit to measure small length by ruler is centimeter.
- To measure and draw a straight-line using ruler, we follow these steps:
  Step 1: Mark the starting point i.e., '0'.

Step 2: Mark the end point.
Step 3: Draw a straight line from '0' up to the required length by keeping the pencil tip adjacent to the ruler's side.

Introduction:

- Draw two points on writing board like and invite a student to join the points with the help of board marker.
- Ask from the class whether it is a straight line or not? (Straight line)

- Again ask, which instrument can we use to draw a straight line of given length? (with the help of ruler)
- Now announce to the class that today we are going to study how to draw a straight line of given length using ruler.

Activity 1:

- Show a small ruler to the students.

- Tell them a small ruler measure 15 centimeters and big ruler measure 30 centimeters.

- Tell them measurement starts from 0 cm and there are ten small lines between two measuring numbers say between 1 to 2 cm or 2 to 3 cm and so on.
- Ask the students to take out rulers from their geometry boxes.
- Provide ruler to the students if not available.
- Ask the students, let us draw a straight line of length 5cm using a ruler.
- Demonstrate the rules of drawing straight line using a ruler.
- Ask the students to draw straight line of length 5cm using a ruler by following these steps:
- Step 1: Mark the starting point i.e. '0'.
- Step 2: Mark the end point i.e. '5'.
- Step 3: Draw a straight line from 0 to 5 by keeping the pencil tip adjacent to the ruler's side.
- Thus, we have drawn a straight line of 5cm using a ruler.
- Repeat the steps to ensure students understanding.
- Guide the students where needed.

Activity 2:

- Divide the class into groups of 3.
- Ask the group and its members to draw 3 different lines of lengths 4cm, 7cm and 12cm respectively with the help of ruler.
- Instruct them to measure the lines drawn with the help of ruler.
- Ask them to write the measurement of each line against it.
- Invite any two groups to present their work in the class.

Conclusion / Sum up / Wrap up:

- Summarize that to draw a straight line on a piece of paper or on writing board, a ruler can be used.
- Small length can be drawn with the help of ruler.
- Small length is measured in centimeters.
- To draw a straight line of given length, follow the simple steps:

Step 1: Mark the starting point i.e. '0'.
Step 2: Mark the end point.
Step 3: Draw a straight line from '0' up to the required length by keeping the pencil tip adjacent to the ruler's side.

Assessment:

- Write the following questions on the writing board.
- Question: Measure the following straight lines using ruler and write their lengths.

a) 6 cm

b) 9cm

c) 13cm

- Call students randomly to measure the lines with the help of ruler.
- Ask them to write the measurement of each line against it.
- Verify the measurements and guide the students where needed.
- Repeat the activity by drawing lines of different measurements and assess all students of

the class.

Follow up:

- Prepare the following worksheet and distribute to the students.
- Ask the students to solve the worksheet at home and bring their solved worksheets to the next class.

Worksheet

Q1: Draw straight lines of the given lengths using a ruler.

a) 4 cm
b) 6 cm
c) 10 cm
d) 15cm

Q2: Draw a straight line of your own choice and write its measurement.

Teacher Guide
Grade-2

Lesson Plan
44

DRAWING STRAIGHT LINE

Duration: 40 Minutes

Students Learning Outcomes:

- Make/complete geometrical pattern on square grid according to one or two of the following attributes:
- Shape, size, orientation.

Materials:
Writing board, coloured board markers, Mathematics Textbook Grade 2, square grid, coloured pencils, cut outs of square grids, worksheet

Information for Teacher:

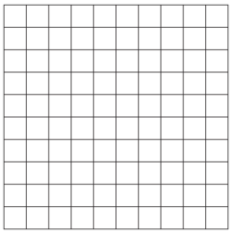
- Square grid: A pattern or structure made from horizontal and vertical lines crossing each other to form squares.
- Pattern: It is a sequence of things and their representation in a particular order.
- Pattern in shape: It is a sequence of shapes and their representation.
- Pattern in size: It is a sequence of size and their representation.

Introduction:

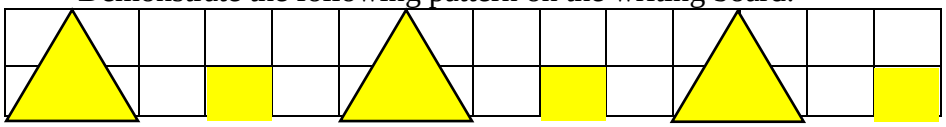
- Involve the students in a discussion about their morning routine to go to school? (Expected answer: to wake up at 6 a.m., taking a bath at 6:15, wearing uniform 6:30, breakfast 6:45, prepare bag 6:55, ready for school 7:00)
- Also tell them that we follow some sequence/pattern in our daily life like office work, preparing lunch, making breakfast.
- Tell them this is a pattern of working.
- Now announce to the class that today we are going to study how to make/complete geometrical pattern on sequence grid according to one or two following attributes: Shape, size, orientation.

Activity 1:

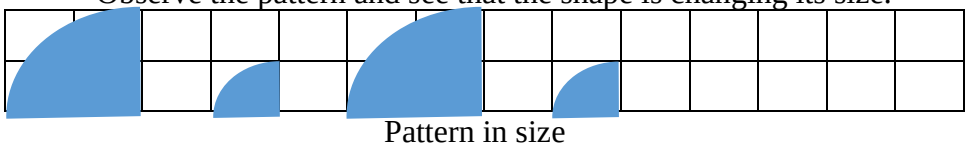
- Paste the cut out of following square grid on the writing board:



- Tell them this is called a square grid.
- A square grid is a pattern or structure made from horizontal and vertical lines crossing each other to form squares.
- Demonstrate the following pattern on the writing board:

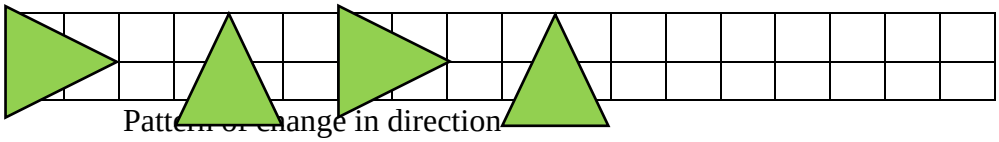


- Ask the students to observe the pattern and tell them that there are two different shapes i.e. triangle and square to make a pattern.
- Conclude that this is a pattern of change in shape.
- Tell them we can make different patterns on a square grid.
- Now let us make a pattern on a square grid according to size.
- Observe the pattern and see that the shape is changing its size.



Pattern in size

- Invite a student to complete a pattern.
- Tell them that this pattern is of change in size.
- Now let us make another pattern:



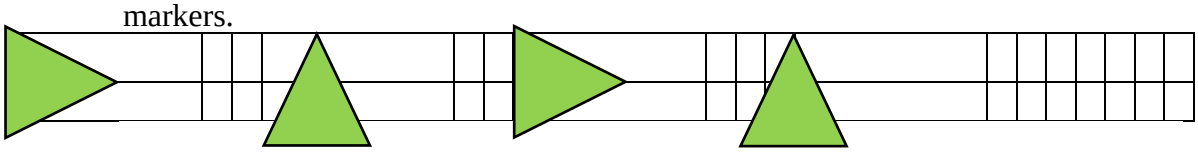
Pattern of change in direction

- Ask the students to observe the pattern and tell what is this pattern called.
- After getting their response, tell them that this is a pattern of change in direction(orientation).
- Explain the concept of shape, size and orientation using the description given in the Mathematics Textbook Grade 2.
- Arrange cut outs of square grids for each student.
- Provide plenty of practice to make patterns on a square grid.
- Guide the students where needed.

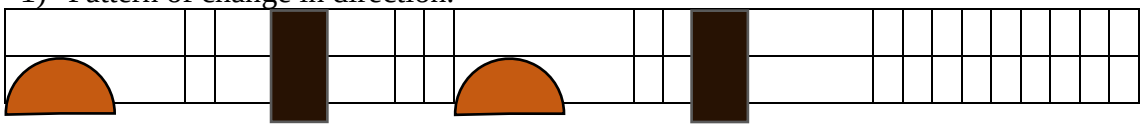
Activity 2:

- Divide the class in 3 groups, call them member 1, member 2 and member 3.
- Draw the following patterns on writing board using different coloured board

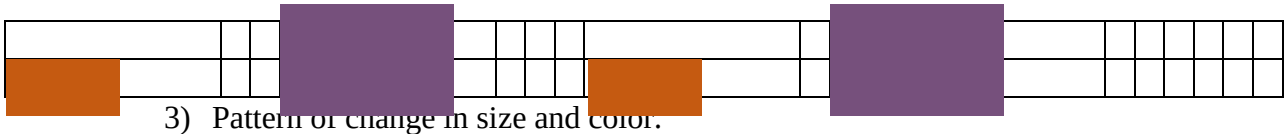
markers.



1) Pattern of change in direction.



2) Pattern of change in shape and colour.



3) Pattern of change in size and color.

- Ask all member 1 to complete the pattern of change in direction.
- Member 2 and 3 to complete 2 and 3 respectively.
- Ask them to complete it in 5 minutes.
- Move around the class to check the progress.
- Give your input if required.

Conclusion / Sum up / Wrap up:

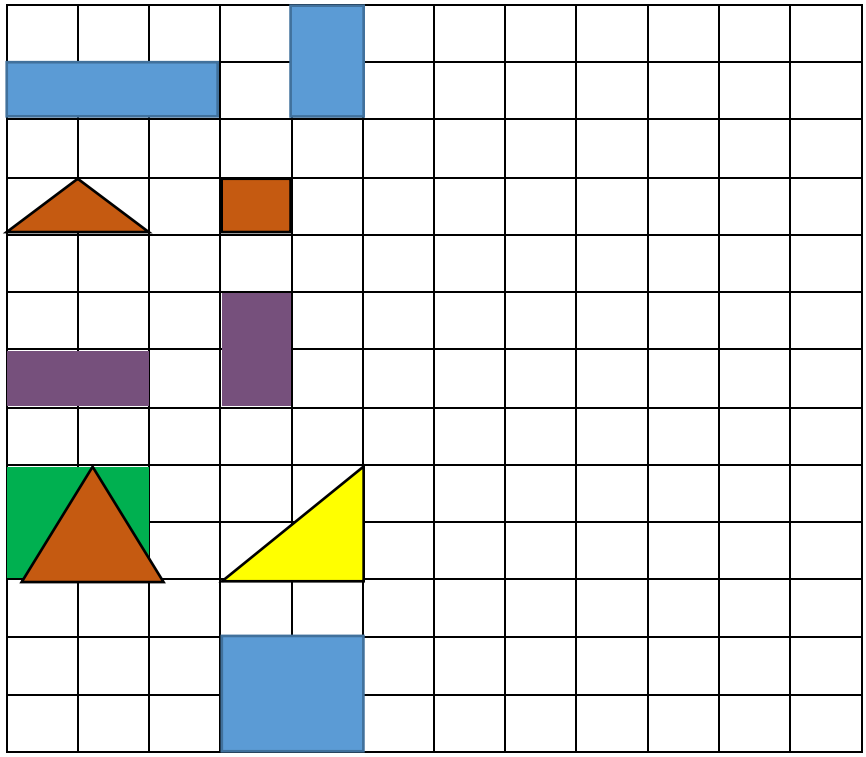
- Summarize that geometrical patterns are used in printing clothes/bed sheets, making wall papers, constructing buildings, etc.
- Let students think of geometrical patterns which they observe around them.
- Square grid is a pattern or structure made from horizontal and vertical lines crossing each other to form squares

Assessment:

- Prepare the following worksheet and distribute to the students.
- Ask the students to complete the patterns by drawing and coloring shapes.

Worksheet

Draw and color the shapes to complete the following patterns:



Follow up:

- Paste the cut outs of the following square grids in their notebooks.
- Instruct them to solve these questions at home with the help of their parents.
- Ask them to bring these two solved questions to the next class.

Q1) Draw a pattern of rectangle, triangle and square using the grid.

Q2) Draw two patterns of shape and size of your own choice and colour them.

a)

b)

Teacher Guide
Grade-2

Lesson Plan
45

DRAWING STRAIGHT LINE

Duration: 40 Minutes

Students Learning Outcome:

- Recognize and name 3-D objects (cubes, cuboids, cylinder, cone and sphere).

Materials:

Writing board, board marker, Mathematics Textbook Grade 2, notebook, dice, cylindrical shape water bottle, football or globe, etc.

Information for Teacher:

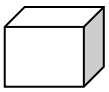
- 2-D shapes have two dimensions length and width. These are flat shapes and can only be drawn at a piece of paper.
- 3-D shapes have three dimensions length, width and height.
- 3-D shapes are solid shapes and can be held in a hand like book, ball, dice, etc.

Introduction:

- Ask students to answer what they know about 2-dimensional shape? (Expected answer: Shape which has length and breadth/width).
- Ask them, if they can quote some examples of 2-D objects. (Expected answer: Rectangle, square and triangle.)
- Tell students that when height is also involved along with length and width in a shape. It is called 3-dimensional shape or 3D shape.
- Now announce in class that today we are going to study about 3-D shapes.

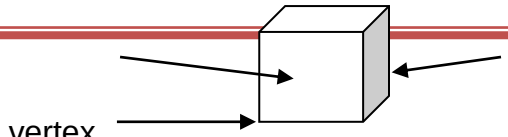
Activity 1:

- Show the class a dice and a square box.

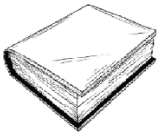


- Handover these to the students one by one and ask them to visualize its faces, edges and vertices.
- Ask the students whether the dice and the box are similar in shape? (Expected answer is yes).
- Draw a box on the writing board as given below:

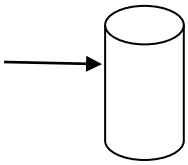
Face Edge



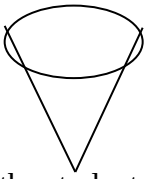
- Tell the students that the box/dice given to them has six squares (faces), 12 edges (join the six squares) and 8 vertices (join the 12 edges) as shown in above figure.
- Also tell the students that when all faces are square, we call it a cube.
- Now show to the students a text book, eraser and duster.



- Tell them that the text book, eraser and duster have six rectangular faces, 12 edges and 8 vertices.
- Ask the students whether square box and a text book are different in shape? (Expected answer is yes because text book has rectangular faces while square box has square faces.)
- Tell them that text book, eraser and duster are called cuboids. Hence, a cube's faces are square in shape, whereas cuboid's faces are rectangular in shape.
- Show the students a cylindrical water bottle which has two circular faces and one curved face, so it has 3 faces and two curved edges and no corner.
- Tell the students that it is called cylinder.



- Ask the students have they ever enjoyed cone ice-cream? (Expected answer is yes)
- Now ask them about the shape of that cone.
- Tell them a cone has one circular face and one curved face while one circular edge and one corner.



- Show the students a football and a cricket ball and ask them if both are similar? (Expected answer is yes these are similar).
- Tell them it has one curved surface and no edge and no corner.

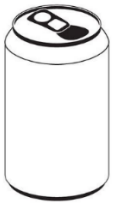
- This type of shape is called sphere.

Activity 2:

- Write the following names on the writing board.

Cube, cuboid, cylinder, cone, sphere.

- Draw the following diagrams on writing board as follows.





- Instruct to the students to write their names against each other from the above given list.

Conclusion / Sum up / Wrap up:

- Now call three students from 1st, 2nd and 3rd row to ask what the learning points are for them in today`s lesson.
- The three students may respond and write on the writing board as follows
  - 3-D objects have three dimensions.
  - They have length, width and height
  - Examples of 3-D objects are cone of ice cream, football, cube shaped items etc.

Assessment:

- Ask the students to solve the question of Exercise 5 at page number 154 of **Mathematics text book grade II**.
- Give 3 minutes to solve.
- Then collect the response who solved earlier and ask them to check the answers of the others.
- Give your input if required.

Follow up:

- Ask the students to solve question number 7 given at page number 158 of **Mathematics text book grade II**.
- Also write the following questions on the writing board.

  QUESTION: Find 3 objects at home and write their 3-D names like cylinder, cube, cuboid, cone and sphere against each other.
- Instruct them to bring their name to the next class.

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Mathematics
Teachers' Guide
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