

New
Countdown
Second Edition

1

Teaching Guide

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A Note to the Teacher from the Author

New Countdown 1 is the third stage of an exciting journey into maths specially designed for the child of today's fast-changing world. It builds on the foundations laid in the beginner-level book, *New Countdown Primer A*, and leads children, step by step, to an understanding of some core mathematical concepts: place value; the ordering of numbers; two-digit addition and subtraction; and, towards the end of the book, multiplication, division and their interrelatedness.

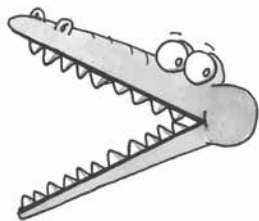
New Countdown 1 not only covers all the concepts recommended for Class One learners by the *latest syllabi* but also reaches beyond them in a systematic and carefully graded way. The aim is to reinforce a child's understanding of the rudiments (for example, numbers up to 100; the concept of zero; elementary addition and subtraction) while also introducing exciting new possibilities (the idea of multiplication as repeated addition, and of division as repeated subtraction; the discovery that there's a special symbol to denote 'greater than', 'less than' in the special language of maths).

New Countdown 1 comprises three roughly equal parts, each containing work which can be covered comfortably in the space of a term. Review pages appear regularly in the text, and there's a special review section at the end of each part. Here are my suggestions for activities and teaching aids that will reinforce learning besides adding excitement and interest to your classes.

PART ONE

Here, there's a conscious emphasis on *review*, on ensuring that the concepts presented in the beginner-level books are well understood and fresh in the child's mind. When reviewing *comparison*, make sure you have plenty of objects at hand for the children to work with: buttons, pebbles, beads, pencils, candles, twigs and even leaves can be used to help children grasp such ideas as 'big', 'bigger', 'biggest' or 'short', 'shorter', 'shortest'; they are also useful for the type of exercise shown on pages 20–21. You can arrange groups of children according to height (better still, get the other members of the class to do the arranging); and, of course, running races are an excellent way of teaching ordinal numbers ('Which child came first?', 'Which came second?', and so on).

In this section, pupils will also learn that the concepts of 'greater than', 'less than' can be shown by a simple symbol. To reinforce the point, make own giant crocodile's head out of thick cardboard, and highlight the open jaws with a strong, bright colour:



A number-hungry crocodile

Make sure you draw on both sides of the cardboard, so that the crocodile can be reversed. Ask some children to come to the front of the class and split them into two unequal groups. Let another child be the 'crocodile', he holds the cardboard head and points it towards the group with the larger number of children. Then write pairs of numbers on the board, and ask the children to come up in turn and show to which number the crocodile's head should point (his wide-open mouth should always be towards the greater number).

PART TWO

The crucially important concept introduced here is that of place value—a clear understanding of which is essential if a child is to progress in addition, subtraction, multiplication and division. It is well worth allocating plenty of time and activity-related practise to this concept. Use simple aids, such as matches or lollipop sticks bundled in tens, with loose ones serving as units. As your pupils progress, link the matchsticks with number cards of different sizes—a long one for 100 (in one colour), a shorter one for tens (in another colour) and an even shorter one for units (in a third colour). Show how the matchstick bundles and units can be represented by the superimposed number cards.

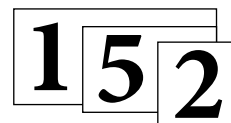


Pencils tens and units

100

50

2

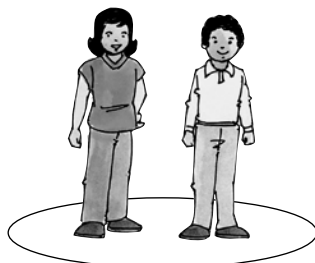


Place-value cards

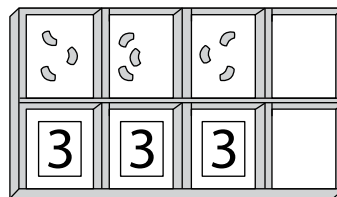
You can also make a giant number square chart, modelled on the one shown on page 64. Use this for a variety of point-and-say exercises and games, perhaps dividing your class into competing teams: ‘How many tens, how many units?’; ‘What is the number name?’; ‘Add ten to this number and what do you get?’ are just a few of the possibilities here. Make sure you have an abacus in the classroom by the time you reach page 36.

PART THREE

Make sure plenty of activity precedes and accompanies your teaching of multiplication and division. Here is a simple idea to introduce multiplication as repeated addition. Two children come to the front of the class. You draw a chalked circle on the floor and ask the two children to stand inside it. You then write 2 on the board. Repeat the exercise with two more children and a second circle, adding to the board so that the text now reads $2 + 2$. Extend the exercise to three groups.



The sum on the board now reads $2 + 2 + 2 = 6$. From this you can easily lead children to the idea of three groups of two, or $3 \times 2 = 6$. Sorting trays are also excellent for teaching multiplication: for example, ask a child to place three objects in one section of the tray and put the right number card below. Ask her/him to repeat the exercise three times.



She/He can then count and write the sum $3 + 3 + 3 = 9$, or $3 \times 3 = 9$. Use the counting tray with 2, 3, 4, 5 and 10 objects in each section as you work through the *New Countdown 1* text.

Chalked circles can also be used to introduce division. Ask 12 children to come to the front. You draw a series of small chalk circles on the floor; you then ask two of the 12 to stand inside one of the circles. Continue until all 12 are paired into circles, then ask the class ‘How many twos have I?’ The children count the twos and say ‘There are six’. You can then demonstrate how this can be written: first, stage by stage as repeated subtraction ($12 - 2 = 10$; $10 - 2 = 8$, and so on) and then as a division statement, $12 \text{ children} \div 2 = 6$. Make sure the children understand each part of the statement.

Encourage the children to use their sorting trays as they explore the concept of division. For example, ask them to choose 10 objects (buttons, seeds, and so on), then instruct them to put the objects, two at a time, into separate sections of the tray. At the end, they count the number of twos and write the exercise as a sum, $10 \div 2 = 5$. To help with the concept of equal shares (see pages 112–113), give the children 4-section trays and 12 objects, then ask them to put the same number of objects into each of the four sections.

On pages 116–117, *New Countdown 1* shows the close relationship between multiplication and division. You can reinforce this point by drawing a set of 12 simple shapes on the board and then asking the children to count them. You then loop them into groups in the manner shown on page 116. Repeat this exercise with many other numbers, for example 6, 8, 9, 10, 15 and 20. The whole of this activity is very important; it helps children move freely from a multiplication fact to a corresponding division fact (for example, $5 \times 2 = 10$ leads to $10 \div 5 = 2$). It also builds up an understanding of the commutative property of multiplication (e.g. $3 \times 4 = 4 \times 3$).

Part Three extends the idea of comparison into measurement. Here, *New Countdown 1* presents some simple suggestions for activities. For example, on page 118 children are invited to use pencils to measure their desks. The body measures mentioned on page 119 are an obvious way of involving children in measuring length; make sure your children also have access to a metre rule and to a 15-cm pocket scale. Encourage your pupils to compare weights, as indicated on page 126. If possible, have a scale (a table model or even a hanging one with two pans) in your classroom so that you can show how it works. When teaching capacity, allow the children to pour water from one container to another; sand can also be used. Have ready, lots of empty containers of different shapes and sizes; plastic tumblers and jugs, old spoons, even thimbles. These can be ordered according to capacity, thereby reinforcing your earlier work on putting objects in order.

When you introduce children to coins (pages 132–134), have ready specimens of each type of coin in current use. One activity is indicated on page 132; children can also be asked to arrange their coin rubbings into designs and pictures. Use your coins to ‘play shop’, an activity all children love. I have given some simple addition and multiplication exercises using coins, and you might like to develop your own subtraction and division games with coins if you feel your children are ready for these.

Wishing you exciting and enjoyable teaching!

Shamlu Dudeja

Introduction

Children are born with a mind which is thinking, receptive and ready to try out new things. So they have a vast potential to grow unless circumstances throttle them. The two most essential aspects for this growth are the two R's, i.e. reading and (w)riting and both of them are dependent on each other.

The primary objective of the *New Countdown* series is to ensure that every child develops a strong affinity towards mathematics (as against a fear for it). And, for this, the following things are necessary:

- Concentration
- A sense of fun
- Retentive memory
- Asking questions and giving answers with confidence
- A sense of discovery and learning (rather than 'being taught')
- Understanding of the subject in a creative, logical and lateral manner
- Individual, easy pace of learning for each child
- A sense of confidence
- Affectionate bonding with the teacher

Teachers need to take the age group of the children into consideration and help them learn in a manner suitable to their age.

The first two years in school aided by Primer A and Primer B of *New Countdown* have been very useful in exposing these children to new things and new ideas in mathematics. At the end of these two years, their power of grasping new topics has improved, they are familiar with the beginnings of the two R's and they are ready to accept a lot more.

BUILDING CONCENTRATION

As children grow older concentration becomes more imperative. This can start with the children shaking their arms and legs while standing at their individual positions and giving out a jolly good laugh. Look right, look left, raise your right hand and thump your left foot... It may sound crazy, but it does help to make a good beginning for the day.

This is followed by a round of meditation. All children sit down, close their eyes, and mentally focus on whatever they wish—be it a beautiful scene on a beach, a colorful flower or the face of his/her mother. They sit in this posture for a minute or two, to start with, and then go on to increase this duration up to five minutes.

The kind of concentration children are likely to develop through this focusing exercise will stay with them for many hours. In fact, this can be repeated after lunch break, once the children are back on their seats.

Note: It is essential to mention here that teachers do not mix this focusing exercise with religious meditation, as a matter of respect for the multi-religious societies we live in.

MEMORY RETENTION AND FUN

All learning needs to start with practical activities in a garden or in the classroom or on the board. This makes learning enjoyable and fun-filled (vis-à-vis rote learning).

Such an approach also goes a long way in making memory retentive. Rote learning, at the most, uses two senses—listening and seeing (reading), whereas activities involve touching (doing) all the

time, and smelling and tasting too, on a few occasions. And the sense of joy or pleasure at discovering new things, which is missing in rote learning, is a great accelerator for learning. The greater the number of senses used during a learning exercise, the better will be the concentration, and subsequent understanding, retention, and application. The joy that children derive out of such a learning experience would be an added bonus.

Formal textbook learning leads to vertical learning, such as:

$$2 + 1 = 3, \text{ therefore } 3 + 1 = 4 \text{ and so on}$$

Nowadays, it is important that children think, learn, and apply their knowledge laterally, i.e. they are actually able to apply the things learnt by them to their environment, throughout the day.

Any aspect of learning done with concentration will lead to retentive memory and the use of retentive memory can never be undermined.

DISCOVERING, LEARNING AND UNDERSTANDING THE CONCEPT

Children learn something new every minute as they discover. Each discovery is a result of a practical activity and without practical activity proper grasp of the subject is not possible.

A child may recite poem-like, $1 + 1 = 2$, $1 + 2 = 3$, and so on. But, unless these numbers are connected to the physical world by presenting the above sums as, say, '1 marble put together with 1 more marble gives 2 marbles' and '2 marbles put together with 1 more marble gives 3 marbles', the entire number sequence makes little sense.

After a start like this, the child's sense of curiosity will be heightened and will remain with him/her throughout life lending it a dimension that many adults have never experienced.

LATERAL THINKING

In today's time, more than ever before, it is important that children think, learn to think, and apply their knowledge laterally, i.e. they apply what is actually learnt from the books in the classroom, to their environment throughout the day, in their every-day life. For example, number families, such as 1, 2, and 3, $2 + 1 = 3$ and $3 - 1 = 2$ or $3 - 2 = 1$ are not only learnt for the classroom but to apply in daily life as:

'I need 3 books to give as gifts to my friends. I have 2 books at home. So I need to buy 1 book ($3 - 2$) more.'

New Countdown 1 may take the child to 1st, 2nd, 3rd, ..., up to 10th. But if the lesson has been creatively handled when a situation arises involving 20 children in a line, a child with a developed lateral power of thinking will apply 11th, 12th, 13th, and so on automatically. So, observation and vocabulary improve, leading to a major jump in learning.

ASKING QUESTIONS AND GIVING ANSWERS

The mother of a well-known intellectual said that the reason for her son's brilliant performance in life was that he always asked too many questions and gave answers, even when he was not asked. Can one say more? A good teacher is the one who encourages children to ask questions and give answers or find solutions to different situations whenever possible.

PACE OF LEARNING

In the 'open' method of learning suggested in *New Countdown* books, it is possible to include children with different learning abilities. Every child works at his/her own pace without being singled out. With greater exposure, he or she will eventually fall in line with the majority, and hence slow learners will not feel a sense of failure.

BUILDING SELF-CONFIDENCE

Being in a familiar and friendly environment itself is a confidence-building exercise. The more relaxed and confident a child is, the easier it is for him or her to absorb new concepts, as the year progresses.

BONDING WITH THE TEACHER

Children are born with a mind which is thinking, receptive, and ready to try out new things. So they have a vast potential to grow if handled properly by the teacher. A happy and fun-filled atmosphere, which the teacher creates, leads to a greater bonding between the children and the teacher. This is very important at the primary levels and should never be ignored. A comfortable, tension-free atmosphere leads to healthier mental growth. What else could be a better reward for a teacher than a class full of happy and confident children.

PART ONE

Revision of the Concepts (Pages 1-13)

Page 1	matching objects	Pages 9-10	subtraction
Pages 2-3	counting	Page 11	concept of 0
Pages 4-5	shapes	Pages 12-13	making 10
Pages 6-8	addition		

OBJECTIVES

The concepts in these pages are a revision of the work done in the previous class. They are designed to reinforce and consolidate the lessons learnt and the concepts taught there.

The children work with numbers up to 10, using 10 as a 'symbol', representing fingers of two hands, rather than a 2-digit number.

LEARNING AIDS

The teacher sets up an area for number work, as was done in the previous class, to help children consolidate the concepts learnt.

Net bags, mobiles, number rods, number boxes, grouping on charts for recognition of numbers, and adding up to 10, all these are useful in Classes 1 and 2.

Comparison—Leading to Order/Sequence (Pages 14-21)

OBJECTIVES

Children learn order through visual differences in a group of 3 or more things. They also learn to use expressions, such as biggest, tallest and shortest, smallest, etc., which leads to better visual skills and logic.

LEARNING CURVE (10 MIN)

The children already know differences through simple vocabulary defining the differences, such as long and short, fat and thin, and 'big and small'.

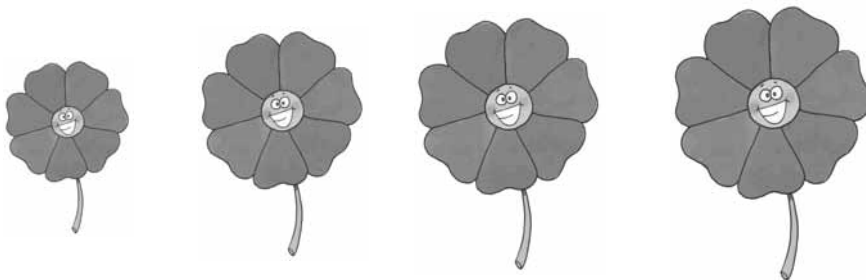
Here they carry on this visual concept to order or sequence: big, bigger, biggest; thin, thinner, thinnest; and so on. They learn to place these objects in order of size, based on the order of numbers learnt in previous classes.

Activities of a student during the day are also placed in order: for example, wake up, brush your teeth, take a bath, put on clothes and leave for school. On return from school, the order is different: change clothes, wash hands, say a prayer, have lunch. Let the children observe the order of the blocks in the 'pink tower'.

Let us take an example of an activity like going to the market to buy a pair of shoes: get into the car, drive to the market, look for shoes, choose shoes, pay money, get into the car and get back home. Such activities help understand situations in everyday life.

LEARNING AIDS

A table with different objects of different sizes on it: flowers, pencils, pebbles, dolls, toy cars. Take one small paper flower near three bigger flowers of different sizes. The size of the small flower should be clearly different from the three bigger flowers. Preferably use the small flower and the smallest of the bigger flowers first. So they learn small and big. Then show them the second biggest flower; they learn bigger. Follow the same with the biggest flower. They learn biggest. Now they can arrange these in order of small, big, bigger and biggest.



LEARNING ACTIVITY (20 MIN)

The teacher asks questions like ‘which is the small flower?’ or ‘which is the bigger flower?’, etc. Then the teacher asks a student to place the flowers in order as above.

Children come up to the table and place groups of other objects, such as pebbles, pencils, dolls and toy cars, in the order of small, big, bigger, biggest or short, shorter, shortest, as told by the teacher.

A group of children stand in order according to their height, and use the same language as above.

The bookshelf also can be arranged by the children, books placed vertically in order of the height of the books starting from the left or horizontally one upon another in order of the thickness of the books

ADDITIONAL WORK

The work in the books is preceded by a visit to a garden, play room or an aquarium, where they learn the vocabulary of comparison.

More worksheets on this basis are created by the teacher, and the children number the objects in order.

CLASSROOM ORGANIZATION (10 MIN)

The bulletin board could have a touch of artwork by the children. They print their palms/feet on old newspapers, which are put up on the board according to varying sizes, in order. The teacher then asks the children to put captions: small, big, bigger, and biggest.

Ordinal Numbers (Pages 22-26)

OBJECTIVES

To help the children determine the position of an object in a group.

LEARNING CURVE (10 MIN)

The positioning on big, bigger and biggest leads to the ordinal numbers.

In addition, children have participated in races or in competitions. They have heard their parents motivate them to finish a meal quickly, in order to be first at the table (or 'don't eat and you will be last')

LEARNING AIDS

- Various objects or pictures of animals of different sizes kept in random order
- Children work on their daily routine
- Bookshelves on a wall
- They play games or compete in the task assigned to determine their position in ordinal numbers in each of these
- Open plastic boxes kept in a row

LEARNING ACTIVITY (20 MIN)

The teacher asks the following questions:

'Which is the 4th animal in the row?'

'Place three marbles in the 3rd box.'

'Which is the 5th book from the left?'

'Which is the 7th book from the right?'

The story of 'Grandma's Lost Spectacles' could be narrated to the children. Here the teacher makes up possible places where grandma might be looking for her spectacles.

At the end of the story the children recall where she looked for it first, second, and last.

The children determine the position of animals in the train's wagons (page 22), the birds in flight (page 24) and the days of the week (page 25).

They look at their class timetable, and discuss the position of the activities done on different days of the week.

ADDITIONAL WORK

It is useful to relate ordinal numbers with daily-life activities, such as 'Who reached school first?', 'Who will leave the classroom last?', 'Who goes into the classroom first?', 'Who will tidy up teacher's desk?', and so on.

CLASSROOM ORGANIZATION (10 MIN)

The seating arrangement of the children could be done in order, 1st from the left, 2nd from the left, and 1st row, 2nd row, and so on.

A chart can be put up where the ordinal numbers are written. The child who enters the class first, writes his name next to the box saying 1st, the next child writes his name next to the box saying 2nd, and so on

Greater Than, Less Than and Equal to (Pages 27–30)

OBJECTIVES

By grouping, children recognize the meaning and the symbols $>$ (greater than) and $<$ (less than or smaller than). The story of the crocodile wanting to eat the bigger number helps.

LEARNING CURVE (10 MIN)

- Children already know ‘= (equal to)’ and know how to count
- They become familiar with $>$ and $<$
- They have a visual ability too to judge what is more and what is less
- They are happy when they get more chocolates and more toys.
- They are happy too when they are served less vegetables, than *chaat* or *pakorras*
- Distinguishing between more and less is very important not only in mathematical concepts but also in everyday life

LEARNING AIDS

Two baskets are brought to the class and the teacher fills in identical objects in both, in varying quantities. The children first see and determine and later count and determine which has more and which has a lesser number of objects.

A crocodile puppet could also be made. The teacher says that Crocky, the crocodile, is a special crocodile. He never eats people. He only eats numbers—large numbers.

A staircase is very useful too. Beginning with 1 on the first step, 2, 3 and 4 objects are put on the subsequent steps. Children go up and down, learning the concept of ‘more than’ and ‘less than’. Visually, nothing could be clearer than seeing six toy cars on the 6th step and four dolls on the 4th step, lower than the 6th step.

LEARNING ACTIVITY (20 MIN)

Children work in groups. They go to the table one by one and count the number of objects in the two baskets, and then write the numbers on the board. The rest of the group members determine which number Crocky, the crocodile, would eat and put $<$ or $>$ sign against it.

This concept can also be taught on a number line on the floor or on the board.

These pages help the children identify the greater and the smaller numbers using the number line.

ADDITIONAL WORK

Flannelgraph presentation can be used as an introductory activity in class with groups of ‘more’ and ‘less’. A child is called to go and place the correct sign between the two groups.

CLASSROOM ORGANIZATION (10 MIN)

Activity cards in two sets can be placed in the ‘Mathemagic’ corner. The Crocky of the class can go to the corner and eat the larger number of articles. If he is correct, the class says ‘Snap’ or if Crocky is wrong they say, ‘Hey Crocky! Go for a nap’.

Review (Pages 31–32)

These sheets are provided to practise the concepts of ordinal numbers, and greater than and smaller than. They could be given as homework.

PART TWO

Place Value up to 99 (Pages 33–37 and 51–60)

OBJECTIVES

Children understand the concept of ‘digit’ and learn to write 2-digit numbers. They can work with simple additions and subtractions with 2-digit numbers.

LEARNING CURVE (10 MIN)

By now children know numbers up to 20. The concept of 0 as a place holder is brought in at this level.

The number sequence revises the concepts of:

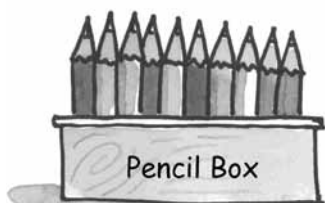
1. Ascending order
2. Descending order
3. Greater than and less than
4. Number names
5. Addition and subtraction

LEARNING AIDS

- An abacus
- Various ‘packs of 10 objects’, for example, pencil boxes containing 10 pencils each, empty medicine strips of 10, closed necklaces with 10 beads, net bags with 10 beads in each, small wooden (or plastic) blocks in heaps of 10, etc.
- Different single objects

An activity corner using the following:

- Flannel board
- Abacus
- Flash cards with new words: twenty, thirty, and so on
- Place-value cards
- Counters and rubber bands



LEARNING ACTIVITY (20 MIN)

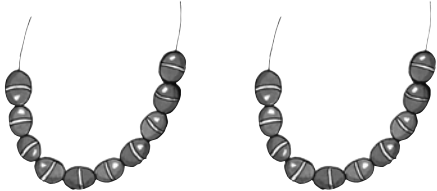

The class begins with a conversation where the teacher says that one more than nine makes 10. The teacher says, “there is no ‘single’ numeral for 10 (showing 1 necklace with 10 beads or a box with 10 pencils)”;

so we write One ten = 1 ten and 0 ones = 1 0 (1 pencil box with ten pencils and no pencils in the other box)

Two tens = 2 tens and 0 ones = 2 0 (2 closed necklaces with 10 beads each and no beads in the 3rd string)



This gradually leads to: Two tens and 3 singles = 23

2 closed necklaces of 10 beads each	3 beads in a necklace
	

Counting in Tens (Pages 45–60)

Children learn counting tens and skip counting in tens with the help of the pages in the book using the abacus, chocobars with 10 pieces, tab packs with 10 tablets, necklaces with beads, etc. They should be able to count 10, 20, 30, ... as easily as they count 1, 2, 3, ...

After learning, skip counting in 10s is practised with slabs of chocolates, strips of medicines, necklaces with beads and Bobo the Bunny, on the number line, larger numbers are introduced as follows:

Four heaps of 10 blocks and 3 singles = 43

Six heaps of 10 blocks and 7 singles = 67

Eight packs of 10 sweets and 2 singles = 82

Through these pages, the study of 2-digit numbers goes up to 99.

Many sessions of practical work, with heaps of 10 blocks and any of the other groups of 10, children learn the significance of place value and understand the meaning of 0. 0 not only signifies

nothing, but also can hold the place of a digit. It is important that children should be able to associate each 2-digit number with the place value of each digit and the number name of each of them (spelt correctly—for example, fourteen not fourteen, and forty not forty etc.)

ADDITIONAL WORK (10 MIN)

Place-value cards and bundles of drinking straws or toothpicks (in bundles of 10s), make the concept clearer.

HUNDREDS (H)	TENS (T)	ONES (O)

Place-value cards:

Nine tags of each kind required

Green tags with numbers 1, 2, 3, ..., 9

Red tags with numbers 10, 20, 30, ..., 90

(You can choose different colours you like.)

The children could be grouped in 10 per group. Each group of 10 children stands within a red ribbon ring. The ones left out (the singles or the ones) are put in charge of counting the number of 'tens'. Rotation at this stage is necessary so that all the children get a chance to count at least once.

Addition and Subtraction (Pages 38–44)

OBJECTIVES

Children work with addition (+), subtraction (–) and with 2-digit numbers with ease and accuracy.

LEARNING CURVE (10 MIN)

By now, children are able to add and subtract numbers up to 10. The practical work here and the written sums on these pages take them to addition and subtraction of numbers with results up to 20.

LEARNING AIDS

- An assortment of countable objects, such as matchsticks, ice cream sticks, drinking straws, plastic cutlery, bangles, buttons, bottle caps, dolls, plastic fruits and vegetables, and toy cars, etc. They can also use any object that children see in their everyday lives.
- Pictures of countable objects
- Flannelograph
- Charts showing addition/subtraction sums
- Number line
- Number strips
- Fish cut-outs with small iron blobs at the back
- A magnet at the end of a cord, to act as a fishing hook

LEARNING ACTIVITY (20 MIN)

Teaching any operation (addition or subtraction) follows the following pattern:

- Concrete objects
- Pictures only
- Picture and number
- Numbers

Once the children are able to handle numbers, they move from horizontal calculation to vertical calculation then to story sums and word problems.

Children love stories. If each of the real-life situations is told to them as a story, children understand it better. Also, they love to make up their own stories.

‘I had 14 fish in my fish bowl. On my birthday, my friend gave me 3 more fish. How many fish do I have now?’ Numbers will be chosen as per the requirement of the age group of the children. If the children can frame sums correctly, it is an indication that they have learnt the concept correctly. A plastic bowl, with fish cut-outs, demonstrates this sum.

Similarly, the concept of subtraction is taught to the students.

Each fish cut-out in a bowl has a number written on it, e.g., 12, 9, 5, and so on. On the reverse, it has a metal clip attached to it. A small magnet is attached at the end of the ‘fishing rod’. One child catches 2 fish with his/her magnet, and adds or subtracts the numbers written on them according to the questions asked by the teacher.

Children start learning addition of the numbers horizontally followed by word problems, which involve addition of numbers. Vertical format of addition is introduced here. Now, they will be able to work with both vertical and horizontal formats and also word problems. They learn to add three numbers. It is necessary to emphasize the fact that the order of numbers does not matter in addition. For example,

$$4 + 3 + 7 = 14; 7 + 4 + 3 = 14; 3 + 7 + 4 = 14$$

Children learn to add pairs of numbers where the sum is 10, first. Then, the third number is added on.

ADDITIONAL WORK

Constant additions and subtractions must be carried out, using fingers, board, flannelgraph or anything else that is a part of children’s everyday life. Children learn by memorizing simple facts, such as

$$2 + \overset{\curvearrowright}{4 + 6} = 2 + 10 = 12$$

$$\overset{\curvearrowleft}{1 + 9} + 7 = 10 + 7 = 17$$

More photocopied addition and subtraction pages are necessary for practice.

Flash cards are also a delight for the children to work with.

CLASSROOM ORGANIZATION (10 MIN)

Charts displaying word problems in a pictorial manner lead to fun learning.

One Hundred and Numbers up to 100 (Pages 61–67)

OBJECTIVES

Children are introduced to the number 100 and the place value of its digits.

LEARNING CURVE (10 MIN)

Children have been working with numbers up to 99. They know of a hundred rupees note and have seen a Rs 100 note.

The addition of numbers from 1 to 99 follows the same pattern as the addition of numbers from 1 to 9.

LEARNING AIDS

- Blocks arranged in stacks of 10
- Exercise books with squares
- Paper money: Rs 100 notes and Re 1 coins
- 1s, 10s and 100s tabs
- Any of the material used for counting from 10 to 99

LEARNING ACTIVITY (20 MIN)

Paper money is the best aid here. Ali has nine Rs 10 notes and nine Re 1 coins. He has Rs 99 in all. He finds one more Re 1 coin in his draw and takes it out. Now he has ten Re 1 coins. His mother gives him one Rs 10 note for the 10 single coins. So in all he now has Rs 100 with him.

Raja has ten Rs 10 notes. How much money does he have? Rs 100. He can exchange his Rs 10 notes for one Rs 100 note. And he can buy a pair of leg pads for his game of cricket.

It is necessary to emphasize the place value of the digits in a number.

		H	T	O
Ten Ones make 1 ten	written as		1	0
Ten Tens make 1 hundred	written as	1	0	0

Each digit has a place and the place has a value associated with it.

In the O column (extreme right column) each numeral is One.

In the T column each numeral is Ten

In the H column each numeral is Hundred

Several charts of 100 squares on the board, with only 10, 20, 30, ..., 100 are put up. Each child goes up and fills in a number or two in the blank squares.

PAGES 61–63

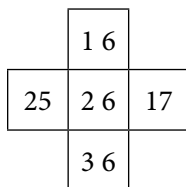
Children learn the concept of the 3rd digit in a number, or the smallest 3-digit number 100. They simply fill in the empty boxes on the 1–100 chart and the bricks on the 1–100 wall.

PAGES 64–67

With the help of the 1–100 number square, children learn the concepts of greater than ($>$) and smaller than ($<$) leading to ascending and descending orders of numbers. They also learn that two even numbers are separated by an odd number and two odd numbers are separated by an even number.

ADDITIONAL WORK

A hopscotch-type pattern can be created on the board (and on sheets of paper) and children work with numbers from 1 to 100.



Crosses are cut out from a piece of stiff paper, with 5 small squares as shown. One pattern can accommodate 5 numbers in the number square. Add the 3 vertical numbers and the 3 horizontal numbers separately. What do you find? The answers are 78 and 68, respectively. Then find the difference, for example, $78 - 68 = 10$. Children then try with other groups of 5 numbers in the number square.

CLASSROOM ORGANIZATION (10 MIN)

On the bulletin board, Humpty Dumpty is drawn sitting on a 100-bricks wall. Not all the numbers are written on the bricks. Children pick up paper bricks with numbers written on them (cards shaped like bricks with numbers written on them) and put them in the right places.

Addition and Subtraction (Pages 68–81)

OBJECTIVES

Children learn to work out 2-digit additions and subtractions with ease.

LEARNING CURVE (10 MIN)

Children can work with addition and subtraction of numbers up to 20 and counting in tens. They learn to work with addition and subtraction of numbers up to 99.

LEARNING AIDS

- An abacus
- Bundles of 10 drinking straws and single straws
- Blocks of 10 (strips of paper with 10 squares and one square)
- House board
- 1–100 number squares for individual work
- Small rectangles cut out from 1–100 number squares with a few numbers filled in (these will somewhat resemble bingo sheets)

LEARNING ACTIVITY (20 MIN)

The children fill in numbers randomly from 1–100 in number squares. They will count the numbers backwards from 99 to 1.

The teacher moves step by step and goes up to 20 and its family from 20 to 29, followed by 30 and its family up to 39, and so on till 99. All this facilitates working with addition and subtraction sums.

A great deal of physical addition and subtraction of 2-digit numbers is required with all the aids (using the objects in groups of 10 and ones) before working out the sums in the book where children work out the sums with ease.

ADDITIONAL WORK

In this age of calculators (and computers), it is still very necessary for children to hone their memory with pairs of numbers adding to 8, 9 and 10. This will lead to the ability to instant subtraction and addition as well.

$$3 + 4 = 7, \text{ so } 30 + 40 = 70 \text{ and } 70 - 40 = 30 \text{ or } 70 - 30 = 40$$

$$5 + 1 = 6, \text{ so } 50 + 10 = 60, \text{ and } 60 - 10 = 50 \text{ or } 60 - 50 = 10$$

$$24 + 32 = 56, \text{ so } 56 - 32 = 24 \text{ or } 56 - 24 = 32$$

This kind of checking helps children accuracy and commits number facts to memory.

CLASSROOM ORGANIZATION (10 MIN)

A flannelboard is to be placed on the wall in a corner of the classroom and some number squares made from rough paper are kept in a bowl near it. One child comes up to the board and puts up an addition or subtraction sum. The rest of the students in the class work it out. The process is repeated with another child and this continues till each student has a fair chance to participate.

$$\begin{array}{r} \boxed{32} \\ + \boxed{44} \\ \hline \end{array}$$

Larger paper squares with numerals or addition and subtraction sums written upside down on it are put up on the flannelboard and children are to visualize and decipher the numbers and work out the sums.

Review (Pages 82–86)

These review pages are creative and fun pages, where the following concepts have been revised. They could be used for homework or tests to gauge comprehension.

- Addition
- Subtraction
- Number names
- Place value

All these reinforce the concepts learnt earlier and prepare children for the new concepts to be learnt ahead.

Counting in Twos: Even and Odd Numbers (Pages 87–88)

OBJECTIVES

Children learn to use the number line accurately to count from 0 to 20 in 2s to start with, beginning either with 0 or with 1, to show even numbers and odd numbers. They proceed to numbers up to 100 on a number square with more practice.

LEARNING CURVE (10 MIN)

Earlier, children have learnt skip counting in 10s. In these pages, they reinforce their knowledge of skip counting and count in 2s beginning with an even number and then with an odd number (1 and 3). This leads to multiplication.

LEARNING AIDS

- Chocolates, balls, pencils, erasers, etc.
- A number line on the board (or on the floor)
- A number square on the board

LEARNING ACTIVITY (20 MIN)

The concept may be introduced through a game. The rule of the game is to ‘share’ whatever is given to you between you and your friend keeping in mind that nothing is left over. If something is left over it is an odd number. If you share things equally, and nothing is left over it is an even number.

Bobo the Bunny’s jumps can also be used to teach counting in 2s. The teacher draws a number line and uses a paper cut-out of Bunny. She tells the class that whenever he jumps, he misses a number and lands on the next one. Thus, he only counts in 2s. I’m sure you can do it using the following type of jumps.

Bobo starts at 0, Bobo starts at 1, etc. Ask the children to note the outcomes.

The children also discover that if the ones digit of a number is even, the number will be even (e.g. 12, 24, 30, ...are all even). If the ones digit of a number is odd the number is odd (e.g. 13, 25, 37, ... are all odd). They will also learn that each odd number alternates with an even number and vice-versa while counting the numbers 1, 2, 3, ...

ADDITIONAL WORK (10 MIN)

Work at the math’s table to ensure recognition of odd numbers and even numbers instantly.

Playing with net bags and sweets, children discover that two odd numbers make an even number.

$5 \times 2 = 10$	**	**	**	**	**					
$6 \times 2 = 12$	**	**	**	**	**	**				
$7 \times 2 = 14$	**	**	**	**	**	**	**			
$8 \times 2 = 16$	**	**	**	**	**	**	**	**		
$9 \times 2 = 18$	**	**	**	**	**	**	**	**	**	
$10 \times 2 = 20$	**	**	**	**	**	**	**	**	**	**

Remember: 0 added to any number (for example, $5 + 0 = 5$) does not change the number, but any number multiplied by 0 becomes 0 (for example, $5 \times 0 = 0$). It is easy for children to understand this: I give you 0 sweets 7 times. $0 + 0 + 0 + 0 + 0 + 0 + 0 = 0$. How many sweets do you get? The answer is 0 sweets.

These pages help the children identify numbers in groups and build up 2s, 3s, 4s, 5s, and 10s tables.

ADDITIONAL WORK

Number stories are fun! Read the following story.

“This is a tale of 2s. Watch out for 2s.

I held up my *hands* when my mother asked me to.

I stood on my *feet* when my dad asked me to.

I looked at his *feet* with my little *eyes*, and saw that they were bigger than mine.”

How many 2s are there in the story? Answer is four 2s.

Work cards also help. Memorizing multiplication facts (in the age of computers and calculators) is highly recommended. In addition to instant speed and accuracy in everyday calculations it helps ones memory.

CLASSROOM ORGANIZATION (10 MIN)

With the help of the teacher, children build up multiplication tables of bigger numbers and put them up on the bulletin board as shown above. It is not necessary to memorize these at this level.

Division (Pages 109–115)

OBJECTIVES

Children learn division through equal sharing and repeated subtraction.

LEARNING CURVE (10 MIN)

Children are familiar with multiplication. Division can be understood if there is a sound knowledge of multiplication to build on and if children have adequate practical experience in subtraction.

Knowingly or unknowingly, children have plenty of division activities in their everyday lives. Any process that involves sharing is after all a form of division.

LEARNING AIDS

- Concrete objects of different types are used to start off the lesson on division
- Number line on the board or on the floor (if it is convenient)
- Sorting trays are also useful to group the same number of buttons/counters in each compartment

LEARNING ACTIVITY (20 MIN)

It is through conversation that the vocabulary of children will increase. They will be made familiar with terms, such as share, decrease, take away again and again, and left with less number of objects.

Folding a sheet of paper with dots is also an interesting activity. The child is given a strip of paper with dots at regular intervals. First, the child counts the dots (e.g. 21) and then folds the paper after every 3 dots. Finally, he counts the number of folds to determine how many groups of 3 dots make 21.

After some practical experience the children are introduced to the symbol \div . Some examples of sums in the book are then worked out so that children understand and grasp the link between everyday activity and the operation required. For example, Raja distributes 21 sweets on his birthday. Each child gets 3 sweets. How many children will get the sweets?

These pages help the children divide the numbers in groups so that there is no remainder.

ADDITIONAL WORK (10 MIN)

Other teacher-made aids, such as number slides are also useful. The teacher cuts a small strip of paper (with three equal sections) and sees how many times it will fit into 15, 18, or 21. A lot of patience is required for this.

Review (Pages 116–117)

Creative and fun pages, where the following concepts have been revised:

- Multiplication
- Division

All these reinforce earlier concepts and prepare children for the new concepts to be learnt ahead.

CLASSROOM ORGANIZATION

Rhymes and jingles related to division could be written and illustrated and put up on the soft board later.

Measurement—Length, Weight, Capacity (Pages 118–131)

Length (Pages 118–125)

OBJECTIVES

Children learn the concept of length as a distance between two points either in a straight line or in a curved line and measurement of length in the metric system.

LEARNING CURVE (10 MIN)

The children have learnt tall and short; long and short; long, longer, and longest. They are also familiar with many words in their daily life, such as length of cloth, height of a child, distance from home to school, etc. which mean the measurement of length.

LEARNING AIDS

There is a wide variety of learning aids that can be used.

- Pencils
- Lollipop sticks
- Short rulers
- Strings
- Metre rulers

LEARNING ACTIVITY (20 MIN)

In olden days man used handspan, cubit, foot, or stride to measure length and distance. Situations arose where men got into a fight because their 'handspans' and 'cubits' were of different sizes. Thus, it became necessary to use standard measurements for length to avoid arguments.

Make up stories about how caveman used his span, his cubit, and his pace to measure length and distance in his everyday life and how the present standard unit of measurement—metre, centimetre, kilometre, etc.—comes into existence.

Like a rupee has 100 paise, a metre is also divided into 100 parts and each part is called a centimetre. The teacher will also explain what a kilometre is. The word 'kilometre' is derived from the word 'kilo' meaning 1000. Abbreviations used for the measurement of length, km, m, and cm, are to be explained to the children.

It is important that children learn to use proper abbreviations, such as g for gram (not gm), l for litre, etc.

The pages in the book follow the activity. A string can be used to measure straight lines or curved lines. Children estimate the length of the board, the width of the door, length of a book, height of a friend, height of the table, length and breadth of the classroom, etc.

ADDITIONAL WORK (10 MIN)

Children work in pairs or in groups. A height chart can be made for children to measure their individual heights. Ribbons and strings of various sizes are also a part of the measurable items.

In an art and craft lesson, each child makes his/her own ruler from a strip of cardboard following the teacher's sample and measure different objects available in and around the classroom.

Children measure different parts of their school, using a ruler, or a trundle wheel. They guess various lengths and determine which instrument can be used to measure.

Weight (Pages 126–129)

OBJECTIVES

Children learn the concept of weight and also how to measure weight correctly in the metric system.

LEARNING CURVE (10 MIN)

In their everyday lives, children are familiar with many words, such as heavy bag, light bag, so many kilos of fruit or vegetables, etc. which indicate nothing but weight. Slowly, they discover that the lighter object is not necessarily the smaller one.

LEARNING AIDS

- A wide variety of concrete objects with varying weights that can be lifted by the child
- See-saw/beam balance/metric scale
- A table with several sets each with 4 or 5 objects—plastic, stone and metal—of varying weights

LEARNING ACTIVITY (20 MIN)

It is good to begin with the story of measurement. In olden days, men compared the weight of objects by lifting them in their hands. Children try this using various objects as explained on Page 126 and make a note of their findings. Charts and a story about astronauts going to the Moon also make a good beginning. On the Moon, everything weighs less than it does on our planet Earth.

An estimate card for weights is made for each group (in grams and kilograms), after the children have had experience of assessing weights by holding various objects in their hand.

Use of different weighing scales, such as a beam balance, grocer's scales, and metric scales is encouraged.

Children are asked to arrange various objects from a group of objects on the table in order of their weight, such as feather, pencil, pebble, and geometry box. They can identify heavier objects and lighter objects using a balance as illustrated on Page 127.

These pages in the book are designed in such a way that the concept of weight can be taught easily to the children using practical situations in their everyday life.

ADDITIONAL WORK (10 MIN)

The children are taken to the school playground and they work in groups of 3 or 4. Children sit on the see-saw two at a time (one on each side) to compare their weights. A comparative chart for each group is made saying 1st, 2nd, 3rd, and 4th according to the weight of the children.

CLASSROOM ORGANIZATION

The bulletin board could be titled 'Who is Heavier' and paper cut-out of the images of boats could be stuck on the board tilted with the heavier side down.

Capacity (Pages 130–131)

OBJECTIVES

Children learn and are able to estimate the concept of capacity of containers.

LEARNING CURVE (10 MIN)

Children get a fair idea about capacity by playing with different containers, filling them with sand, clay, and water. Vocabulary, such as full, empty and half-full, is applied to various containers.

A bucketful of water, a spoonful of medicine, a cupful of hot chocolate, etc. are the words children are familiar with in their daily life. Situations, such as the petrol tank gets 20 litres of petrol in it, the bathtub is filled with 50 buckets of water when there is water shortage, and the bottle has 1 litre of soda, are discussed. Also, comparative capacities, such as ‘Will a narrow, tall glass hold more water than a flat, wide one?’ are discussed.

With practical work, children understand that the word capacity refers to the amount of liquid a container can hold.

LEARNING AIDS

- Empty bottles and containers
- Liquids
- Sand (for sand play with different sizes of bucket)
- Containers of different shapes, such as, round water jug, fish bowl, glass, bucket, etc.

LEARNING ACTIVITY (20 MIN)

The teacher will help to give children a lot of practical experience to transfer liquid from one container into another to compare the capacity of the containers. The teacher then introduces the term litre to the children and explains the meaning.

ADDITIONAL WORK

Children make a record of how much water each child drinks and how much their older brother or sister drink throughout the day. Questions like ‘Who drinks more? How much do you drink?, etc, should be asked and the answers be noted.

Here, it is important to talk about the shortage of clean water in the world and to emphasize the need for conserving water. For example, Don’t take more water in a glass than you can drink; If there is a little water left in a glass or in a bottle don’t throw it in the sink, use it for a plant; Do you know how much water you waste by keeping the tap open while brushing your teeth?; etc.

CLASSROOM ORGANIZATION (10 MIN)

Estimate cards can be put in the maths corner in front of different containers. The children guess the capacity of the container and write it down on the cards. Later, they fill the containers and write down the actual capacity of the containers.

Money (Pages 132–134)

OBJECTIVES

Children learn about money as a means of exchange for goods. They are taught to recognize coins and currency notes of different denominations.

LEARNING CURVE (10 MIN)

Little children get their first idea of money from their shopping expedition with adults. They realize that in exchange of currency notes and coins, they are able to buy a whole lot of things.

LEARNING AIDS

- Real coins of all denominations to show the children what real money feels and looks like
- Play money for children to work with
- Vegetable and fruit dummies and toys for setting up a play shop

LEARNING ACTIVITY (20 MIN)

For coins it is useful to have cardboard coins (if real ones are not available) for children to see the different values. Children play with various denominations and find different ways of making up various totals. This can take the H, T, and O course. For example,

Ten one rupee coins = 1 ten rupee note

Five 1 rupee coins = one 5 Re coin

Some time is spent on observation of the writing on coins or notes, where the children discover different things or patterns written on it. They even get acquainted with the different denominations of coins and notes available.

Children are introduced to the different coins. Coin rubbing in scrapbooks is also an activity that can be suggested. It brings out the features of the coin on paper.

Simple addition of money is carried out as on Pages 133 and 134.

ADDITIONAL WORK (10 MIN)

A play shop could be set up for the children where they buy play products (such as plastic fruits and vegetables, toys, books, pencils, crayons, pencil boxes, etc.) using play money.

CLASSROOM ORGANIZATION

Different play shops could be set up for the children.

- Card shop
- Shoe shop
- Grocery store
- Fruit shop
- Haberdashery
- Flower shop
- Meat shop
- Mall

Worksheets (Pages 135-142)

Worksheets are a condensed revision of the entire book and the same objectives and learning activities apply as has been done in the entire book.

Maths Lab Activities (Pages 143-146)

Activities are suggested which are carried on by the teacher to make the lessons fun and meaningful for the children. The activities cater to

- Simple concepts, such as, colours, shapes, numbers and the four operations.

- Number facts of 5 and 10. That is, the children learn to group two numbers that add up to 5 and 10.
- 'Heavy' and 'light' objects
- Concept of multiplication.

Answers

PART ONE

- Let's Count (page 3)
 1. (b) 10 (c) 4 (d) 8 (e) 13 (f) 20
- Do you remember shapes? (page 3)
 2. 2 gifts, 5 years old, 4 marbles, 8 dots, 6 dots.
- Addition (page 6)
 1. (b) 10 (c) 9 (d) 10
 2. (a) 8 (b) 4 (c) 10 (d) 9 (e) 10 (f) 7
 (g) 7 (h) 10 (i) 9 (j) 10 (k) 7 (l) 10
 3. (b) 8 (c) 16 (d) 19 (e) 7
 4. (a) 7 (b) 6 (c) 9
 5. (a) 5 (b) 10 (c) 10 (d) 6 (e) 9 (f) 9
 (g) 10 (h) 9 (i) 9 (j) 8 (k) 10 (l) 5
- Subtraction (page 9)
 1. (a) 2 (b) 4 (c) 7 (d) 1
 (e) 3 (f) 4 (g) 3 (h) 3
 2. (a) 3 (b) 7 (c) 2 (d) 9 (e) 8
 (f) 3 (g) 1 (h) 5 (i) 5
 3. (b) 11 (c) 2 (d) 5 (e) 0
 (f) 10 (g) 1 (h) 17 (i) 13 (j) 0
- Making 10 (page 12)
 1. (b) 10 (c) 10 (d) 4 (e) 10 (f) 7 (g) to (k) 10.
 2. (b) 5 (c) .. (d) 3 (e) 4 (f) 1
 (g) 2 (h) 9 (i) 0 (j) 7 (k) 10
- Greater than, less than (page 28)
 1. (b) < (c) < (d) < (e) > (f) > (g) > (h) >
 (i) > (j) < (k) < (l) > (m) > (n) < (o) >
 2. (a) greater (b) less (c) less
 (d) greater (e) greater (f) less
 3. (b) > (c) < (d) < (e) > (f) <
 4. (d) > (e) > (f) < (g) < (h) > (i) > (j) =
 (k) < (l) > (m) > (n) < (o) > (p) > (q) <
 (r) < (s) > (t) = (u) >

- Review (page 31)

5. (b) = (c) > (d) > (e) > (f) > (g) > (h) <

PART TWO

- Place value: numbers up to 20 (page 33)

- (b) 12 (c) 13 (d) 14 (e) 15 (f) 16
- (a) $7 = 17$ (b) $8 = 18$; (c) $9 = 19$; (d) $10 = 20$;
- (b) 1 ten 4 ones (c) 1 ten 3 ones (d) 2 tens (e) 1 ten 17 ones
(f) 1 ten 5 ones (g) 1 ten (h) 1 ten 8 ones
- (b) 15 (c) 19 (d) 13 (e) 11 (f) 10 (g) 17
- (b) 18 (eighteen) (c) 10 (ten) (d) 14 (fourteen)
(e) 16 (sixteen) (f) 12 (twelve)
- (b) 12 (c) 11 (d) 9 (e) 20 (f) 17
- (b) twenty (c) fifteen (d) nineteen (e) seventeen

- Word problems: addition (page 40)

1. (a) 19 (b) 17 (c) 13 (d) 16 (e) 14

- Word problems: subtraction (page 42)

(b) 6 (c) 14 (d) 9 (e) 10

- Adding three numbers (page 45)

- (a) 15 (b) 15 (c) 15 (d) 17 (e) 17 (f) 17
- (b) 12 (c) 13 (d) 17 (e) 15 (f) 12 (g) 16
(h) 16 (i) 18 (j) 19 (k) 14 (l) 14

- Counting in tens (page 46)

2. 30, 40, 50, 60, 70, 80, 90

3. 70, 60, 50, 40, 30, 20, 10

4. (b) < (c) > (d) > (e) > (f) > (g) >
(h) > (i) < (j) < (k) < (l) >

5. (b) 70 (c) 10

6. (a) 40 (b) 20 (c) 60 (d) 50

7. (b) 6 (c) 9 (d) 8

8. (b) 3 tens 0 ones (c) 7 tens 0 ones

9. (b) ninety (c) sixty (d) ten

10. 20, 30, 40, 50, 60, 70, 80, 90

11. 25, 35, 45, 55, 65, 75, 85, 95

12. (a) 30, 50, 60, 80 (b) 32, 42, 62, 72 (c) 37, 57, 67, 77, 87

(d) 24, 34, 44, 64, 74, 94 (e) 11, 31, 41, 51, 61, 71, 81

- How many tens, how many ones? (page 54)

1. (b) 25 (c) 19 (d) 41 (e) 28 (f) 36 (g) 29 (h) 44

2. (b) 43 (c) 38 (d) 24 (e) 49 (f) 22

- Numbers up to 100 (page 64)

3. (b) 76 seventy-six (c) 89 eighty-nine

(d) 100 one hundred (e) 37 thirty seven

- Putting in order: numbers up to 100 (page 65)
 - (b) < (c) > (d) < (e) > (f) > (g) > (h) <
(i) > (j) < (k) < (l) > (m) > (n) < (o) <
(p) > (q) > (r) < (s) > (t) < (u) <
 - (a) 68, 79, 35, 27, 99, 56, 18
(b) 15, 100, 56, 50, 12, 88, 39
(c) 20, 71, 39, 58, 99, 47, 82
 - (b) 33, 37, 40, 41, 50
(c) 28, 30, 41, 54, 62
(d) 37, 40, 89, 95, 100
 - (b) 69, 58, 47, 44, 43
(c) 100, 99, 70, 69, 63
(d) 47, 26, 22, 18, 17
- Addition: tens (page 68)
 - (a) 50 (b) 80 (c) 80 (d) 80 (e) 90
- Subtraction: tens (page 69)
 - (a) 30 (b) 50 (c) 0 (d) 70 (e) 30
- Addition and subtraction (page 70)
 - (b) 0 (c) 10 (d) 50 (e) 50 (f) 90 (g) 60
(h) 10 (j) 70 (k) 10 (l) 90 (m) 60 (n) 40
(o) 90 (p) 10 (q) 0
- Addition: 2-digit numbers (page 71)
 - (b) $53 + 24 = 77$
 - (b) $47 + 52 = 99$ (c) $33 + 46 = 79$
 - (b) 64 (c) 78 (d) 99 (e) 96
(f) 79 (g) 64 (h) 98 (i) 88 (j) 77 (k) 48
(l) 49 (m) 59 (n) 63 (o) 58 (p) 75
- Addition of three numbers (page 74)
 - (a) 67 (b) 98 (c) 46 (d) 64 (e) 51 (f) 40
- Word problems: addition (page 75)
 - (b) $15 + 12 = 27$ (c) $54 + 15 = 69$ (d) $18 + 20 = 38$ (e) $22 + 17 = 39$
- Subtraction 2-digit numbers (page 76)
 - (a) 2 tens 2 ones (b) 5 tens 5 ones = 55
 - (a) $9/2 = 92$ (b) $5/1 = 51$
 - (b) 21 (c) 61 (d) 90 (e) 52 (f) 73
 - (b) $2/4$; $65 - 41 = 24$ (c) $87 - 27 = 60$
 - (b) 3 tens 2 ones = $89 - 57 = 32$
 - (b) 28 (c) 21 (d) 39 (e) 24 (f) 12
 - (a) 51 (b) 88 (c) 22 (d) 12 (e) 20 (f) 05
(g) 51 (h) 34 (i) 01 (j) 16 (k) 62 (l) 10
(m) 08 (n) 31 (o) 14 (p) 37

- Word problems: subtraction (page 81)
 - (b) $25 - 11 = 14$ (c) $64 - 43 = 21$
(d) $36 - 24 = 12$ (e) $92 - 41 = 51$
- Review (page 84)
 - (b) 54 (c) 17 (d) 85
 - (b) 17 (c) 84 (d) 29 (e) 41 (f) 98
 - (b) ninety-nine (c) seventy-two
(d) fifty-three (e) twenty (f) one-hundred
 - (a) 12 (b) 44 (c) 32 (d) 48
(e) 18 (f) 64 (g) 19 (h) 74
 - (b) 4 tens 9 ones (c) 3 tens 2 ones (d) 7 tens 5 ones
(e) 6 tens 7 ones (f) 2 tens 8 ones (g) 9 tens 1 ones
(h) 6 tens 3 ones (i) 8 tens 6 ones (j) 9 tens 0 ones
 - (b) 82 (c) 27 (d) 78 (e) 40 (f) 95 (g) 76 (h) 49

PART THREE

- Counting in 2s: even and odd numbers. (page 87)
 - (a) 1, 8, (b) 8, 14, 18 (c) 22, 24, 26, 30, 32
 - (b) 7 odd (c) 11 odd (d) 16 even
- Multiplication (page 90)
 - (b) $2 \times 4 = 8$ (c) $2 + 2 + 2 + 2 + 2 = 10$
(d) $2 \times 7 = 14$ (e) 2
 - (b) 4 feet (c) 12 hands (d) 18 ears
 - (b) 6 (c) 8
 - (a) 6 six (b) 10 ten (c) 12 twelve
 - (a) 10 (b) 12 (c) 16 (d) 18 (e) 8 (f) 4
- Multiplication: 3s (page 95)
 - (a) 3, 9, 15 (b) 6, 12, 18 (c) 15, 21, 27 (d) 12, 15, 21, 27, 30
 - (b) 12 (c) $6 \times 3 = 18$ (d) $3 \times 3 \times 3 = 27$ (e) 3×5
 - (a) 24 (b) 21 (c) 15 (d) 18 (e) $3 \times 3 = 9$; $9 \times 3 = 27$; $6 \times 3 = 18$
- Multiplication 4s (page 98)
 - (a) 4, 12, 20 (b) 16, 28 (c) 8, 16, 24
(d) 8, 16, 24 (e) 20, 24, 32, 36
 - (b) 20 (c) $4 + 4 + 4 + 4 + 4 + 4 + 4 = 7 \times 4 = 28$ (d) $4 \times 3 = 12$ (e) 6×4
 - (a) 24 (b) 8 (c) 40 (d) 16 (e) $3 \times 4 = 12$; $9 \times 4 = 36$; $8 \times 4 = 32$
- Multiplication: 5s (page 101)
 - (a) 5, 15, 25 (b) 15, 20, 30, 35 (c) 10, 20, 25, 35 (d) 25, 30, 35, 45, 50
 - (a) $3 \times 5 = 15$; $6 \times 5 = 30$; $10 \times 5 = 50$; $5 \times 5 = 25$
(b) 35 (c) 40 (d) 10 (e) 45 (f) 20
(g) $6 \times 5 = 30$ (h) $10 \times 5 = 50$
- Multiplication: 10s (page 104)
 - 60; 50

- Review (page 106)
 - (a) 12 (b) $5+5+5+5 = 20$
(c) $6 \times 2 = 12$ (d) $10+10+10+10+10 = 50$
 - $8 \times 3 = 24$; $5 \times 4 = 20$; $6 \times 10 = 60$; $4 \times 3 = 12$
 $3 \times 5 = 15$; $9 \times 3 = 27$; $9 \times 10 = 90$
 - $2 \times 5 = 10$; $1 \times 4 = 4$; $2 \times 6 = 12$; $6 \times 3 = 18$; $4 \times 3 = 12$; $2 \times 2 = 4$
- Division: using number line (page 113)
 - (b) $20 \div 4 = 5$ (c) $15 \div 3 = 5$
 - (b) 5 (c) 3 (d) 6 (e) 8 (f) 7 (g) 4 (h) 6
(i) 2 (j) 9 (k) 3 (l) 5 (m) 3 (n) 9 (o) 4
(p) 10 (q) 2 (r) 7 (s) 1 (t) 10 (u) 6 (v) 7
- Word problems: division (page 115)
 - (b) 4 balloons (c) 10 buns (d) 6 books (e) 4 apples
- Multiplication and division (page 117)
 - (a) 6, 6, 2, 2 (b) 15, 15, 5, 15 (c) 20, 5, 5, 5, (d) 18, 6, 6, 6
 - (a) All answers are 12. (b) 50, 50, 5, 5
- Length: the metre scale (page 121)
 - (b) > (c) > (d) >
- Money: addition (page 134)
 - (a) Rs 12 (b) Rs 8 (c) Rs 10 (d) Rs 9
- Worksheet 3 (page 137)
 - (b) $80+4$ (c) 6 tens + 5 ones = 65
(d) 9 tens + 9 ones = $90+9 = 99$ (e) $10 + 8 = 18$
 - (a) 23, 24, 25, 26, 27, 28, 29
(b) 41, 42, 43, 44, 45, 46, 47, 48, 49
 - 10, 11, 18, 29, 36, 43, 52
- Worksheet 4 (page 138)
 - (a) 25, 40, 62, 45, 69 (b) 10, 75, 40, 48, 31
 - (a) 24 (b) 56 (c) 24 (d) 56 (e) 20 (f) 20
- Worksheet 5 (page 139)

$13-2 = 11$; $18-2 = 16$; $8-4 = 4$; $12-10 = 2$
 $17-5 = 12$; $3+17 = 20$; $14-5 = 9$
Rida got the ice cream!
- Worksheet 6 (page 140)

least = basket 6; most = basket 7
- Worksheet 8 (page 142)
 - 23, 29, 43, 85
 - 20, 27, 79, 64
 - 20, 44, 65, 92
 - 18, 29, 50, 76, 65

