Joyful Mathematics

Class 2

Part - I

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राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

Foreword

India has a rich tradition of nurturing the holistic development of children during their most formative years. These traditions provide for complementary roles for the immediate family, the extended family, the community, and formal institutions of care and learning. In addressing the first eight years of a child's life, this holistic approach — which includes the cultivation of *sanskar* which are passed on from generation to generation — has a critical and positive lifelong influence on every aspect of a child's growth, health, behaviour, and cognitive capabilities in the later years.

Considering the importance of the early years in a child's lifelong development, the National Education Policy 2020 (NEP 2020) envisioned a 5+3+3+4 curricular and pedagogical structure as providing a much needed focus on formal education and childcare in the country during the first five years corresponding to ages 3-8, naming it the Foundational Stage. Classes 1 and 2 form an integral part of this Foundational Stage, continuing from the ages of 3-6 years, in which a child's holistic growth is taken care of in *Balvatika*. An individual's lifelong learning, social and emotional behaviour, and overall health depend deeply upon the experiences gained during this critical Foundational Stage.

The Policy thus recommended developing a National Curriculum Framework specifically for this Stage, which would comprehensively guide the whole education system toward providing high-quality education in children's early years, thereby carrying this momentum forward to the other later stages of school education. Based on the principles and objectives enunciated under NEP 2020 — as well as on research from a range of disciplines (including neuroscience and early childhood education), on experiences and accumulated knowledge from the ground, and on the aspirations and goals of our Nation — the National Curriculum Framework for Foundational Stage (NCF-FS) was developed and released on 22 October 2022. Subsequently, textbooks have been developed to bring to life the curricular approach of the NCF-FS. The textbooks attempt to connect to the children's real life by recognising their learning in the classroom and the significant learning resources in the family and the community.

The approach in the NCF-FS is also resonant with the *Panchkoshiya Vikas* (the development of the five sheaths of human personality) as elucidated in the *Taittiriya Upanishad*. The NCF-FS enunciates the five domains of learning, i.e., physical and motor; socio-emotional; cognitive; language and literacy; and cultural and aesthetic, which map to the Indian tradition of *Panchkosh* consisting of five *kosh* viz. *Annamaya*, *Pranmaya*, *Manomaya*, *Vijnanmaya* and *Anandmaya*. Besides, it also focuses on integrating a child's experiences at home with the knowledge, skills, and attitudes that would be developed within the school's precinct.

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The NCF-FS, which covers Classes 1 and 2, also articulates a play-based approach to learning. According to this approach, books form an essential part of the learning process; however, it is also important to understand that books are only one among many pedagogical tools and methods, including activities, toys, games, conversation, discussion, and more. This marks a departure from the prevailing system of merely learning from books to a more congenial play-way and competency-based learning system, where children's engagement with what they do and learn becomes critical. Thus, the book in hand must be seen as an instrument to promote a play-based pedagogical approach in its entirety for this age group of children.

The present textbook attempts to provide competency-based content in a simple, interesting, and engaging manner. The endeavour has been to make it inclusive and progressive by breaking several stereotypes through the presentation of text and illustrations. The child's local context, which includes traditions, culture, language usage, and rootedness in India and is central to students' holistic development, has been reflected in the books. An effort has been made to make it engaging and joyful for the child. The book integrates art and craft to help children appreciate the aesthetic sense inherent in such activities. The textbook provides children with situational awareness to understand the underlying concepts relating to them in their own contexts. Though light in terms of content, this textbook is rich in substance, providing varied experiences and integrating play-way methods of learning through toys, games, and a variety of other activities. It includes questions that will help children develop critical thinking and problem-solving abilities. Besides, the textbook has rich subject matter and activities to help children develop the necessary sensitivity towards our environment. It also provides ample scope for our States/UTs to add/adapt content with local perspectives in the versions that they may develop as per the recommendations of NEP 2020.

NCERT appreciates the hard work done by the committee set up to develop the syllabus and learning-teaching material for the foundational stage. I thank the Chairperson of this committee, Professor Shashikala Wanjari, and all other members for completing this task in time and in such an admirable way. I am also thankful to all the institutions and organisations which have generously extended their help and assistance in making this possible. I am especially thankful to Dr. K. Kasturirangan, Chairperson of the National Steering Committee, and its other members, including those of the Mandate Group, its Chairperson Professor Manjul Bhargava, and members of the Review Committee, for their timely and valuable suggestions.

As an organisation committed to reforming school education in Bharat and continuously improving the quality of all learning and teaching material that it develops, NCERT looks forward to critical comments and suggestions from all its stakeholders to further improve upon this textbook.

Professor Dinesh Prasad Saklani
Director
National Council of Educational
Research and Training

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About the Book

The National Policy on Education 2020 has recognised the importance of developing a strong foundation of learning during the early developmental age (3–8 years) of children emphasising on foundational literacy and numeracy. In view of policy's perspective of holistic development of children, the *National Curriculum Framework for Foundational Stage 2022* (*NCF-FS 2022*) has recommended curricular goals, competencies and learning outcomes aligned to developmental domains such as physical, socio-emotional-ethical, cognitive, language and literacy, aesthetic and cultural and positive learning habits. As a follow-up of this, syllabus for foundational stage developed by the NCERT includes mathematics and numeracy under the cognitive domain, also emphasising upon integration of all other domains while developing learning-teaching materials for mathematics including textbooks.

The present textbook of Mathematics for Class 2 named as *Joyful Mathematics* has been designed keeping in view the recommendations of *NEP 2020*, *NCF-FS 2022* and Syllabus for the Foundational Stage. Though it may be assumed that a child entering Class 2 has intervention in the form of Balvatika 1 to 3 and Class 1 (age 3–8 years), yet in view of the diversity in our country, there may be children who have got exposure of numeracy in the institutional setup in Class 1 only. This textbook takes care of such situations.

Children at this stage enjoy free play, toys and games. Therefore, plenty of opportunities are included for play and games within activities while developing various mathematical ideas like spatial understanding, handling numbers, mathematical and computational thinking, etc. This helps the child in smooth transition from concrete to pictorial and to abstract reasoning for every new concept or competence being introduced.

The *Joyful Mathematics* for Class 2, has a lot of activities which are expected to be conducted within and outside the classroom, keeping in view the objective of experiential learning for holistic development. In all the chapters, mathematical understanding is built through play-based activities. The textbook tries to provide children a feeling that they are playing, and mathematics is being

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learnt, rather than forcing them to learn mathematics without any joy.

The learning of languages and age-appropriate physical and mental development have been integrated with the book as learning of mathematics does not take place in isolation. The book provides suggestions to parents, teachers or other concerned like elder siblings on having a healthy discussion with children through thought provoking questions, stories, poems, etc.

Various mathematical ideas have been presented through self-explanatory and contextual illustrations keeping in view the differential abilities among children to read words at this stage. Moreover, such pictures and illustrations also help the children in enhancing their visual and reading comprehension.

The book is designed as text-cum-workbook that includes opportunities for children to draw pictures, colour them and write appropriately. The oral discussions with children have been included in all the chapters to help them to verbalise and express their thinking process. This will also help teachers to continuously assess the learning in a non-threatening manner. The thought provoking practice tasks in the form of questions and activities have been given in this textbook. It is also expected that the teachers and parents will develop similar questions for the children to have more targeted skill practice. The innovative use of the textbook lies with the parents and teachers and that will ensure the joyful learning of mathematics among children of Class 2.

This book emphasise on inculcating logical thinking, analytical skills, mathematical communication and 21st century skills through activities, open ended questions, exploration and discussion in the book. The chapters are framed as a beginning towards mathematical proficiency by adding conceptual understanding, procedural fluency, adaptive reasoning, and a positive attitude towards mathematics.

The content in *Joyful Mathematics* for Class 2 is based on the four blocks mentioned in the *NCF-FS 2022*. These are — Oral math talk, Skills teaching, Skill practice and Math games have been included in all the chapters. Most of them have been presented in an integrated manner. However, one can find the following chapters not only aligned to the curricular goal (CG-8) of developing mathematical understanding and abilities to recognise the world through quantities, shapes and measures but also to all other curricular goals as given in *NCF-FS 2022* and syllabus leading to holistic development:

Oral Math Talk: This includes discussion on mathematical concepts through poems, picture stories and activities as mentioned below:

- Maths poems like 'Seasons' and 'East, West, North or South' in Chapter 9.

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- Picture stories for the introduction of concepts, practice and assessment have been included like 'Heena' and 'Aatif' in Chapter 2, 'Shadow Story' and 'Hide and Seek' in Chapter 4, 'Decorating with Garlands' in Chapter 6, 'Rani's Gift' and 'Pumpkin's Chaupal' in Chapter 7, etc.
- Discussion with children through various daily life contexts like, 'Vallam Kali' on Chapter 1, 'Garba Festival' in Chapter 2, 'Decoration for Festival', 'Let us Count Diyas' in Chapter 6, 'Fruits in the Park' in Chapter 7, 'Let us Share' and 'How many Groups' in Chapter 8, 'Gargi's Day' in Chapter 9, 'Picnic Time', and 'Games we Play' in Chapter 11.

Skill Teaching: All Chapters have activities that can be done by the child all alone, in groups, or with the help of elders (parents, teachers, and siblings). This helps the child in the development of various skills with the guided support of others.

Skill Practice: Opportunities for skill practice have been included in all the chapters in the form of Let us Do, Project Work, and practice questions. For example, 'Origami Fun', 'Mehandi' and 'Stamping' in Chapter 4 and 'Make your Own Balance' in Chapter 7.

Math Games: Math games and activities have been interwoven in all the chapters throughout the book. For example, 'Let us Make 100', 'Mark by Passing the Path' and 'Flash Card Game' in Chapter 1; 'Patterns in Number Chart' in Chapter 3; '*Yoga asanas*' and 'Let us Play with Dots' in Chapter 5; 'Choose the Longest Path' and 'How Many Blocks?' in Chapter 7; 'How Old are We?' in Chapter 9.

The above chapters have been developed keeping in view the need for developing sensitivity towards environment, values, positive habits, cultural rootedness, and inclusive perspectives in children. Multilingual perspective is also reflected in the textbook. Engaging activities also focusing on language development are included in the entire textbook which will trigger interest in children to learn joyfully.

Teachers need to understand the objective of each of the chapters and activities given, their alignment with the curricular goals and competencies as included in the syllabus for the foundational stage, and accordingly make a learning plan for children including a variety of activities addressing the diverse needs of children. In this learning plan, teachers need to be the active observants of learning outcomes achieved by the children and their flow towards the development of identified competencies under all the curricular goals. Mapping with learning outcomes and activities given in different chapters is required on the part of teachers if we want to make our education competency-based in true letter and spirit.

Activities given in this textbook are suggestive. Teachers can develop their own activities and supplement the same with local toys, games or toys created by them and other materials available

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in the child's immediate environment for hands-on learning with concrete material. Teachers are free to adapt, adopt and modify the activities as per their contexts and circumstances without losing the sight and aim of the development of identified competencies in children at this stage.

Mental challenge and engagement in thought provoking tasks lead to better mathematical learning and criticality. Solving brain teasers, puzzles and riddles provide opportunities to children in addition to their routine learning. Many age appropriate puzzles have been given in the book. The child must be engaged for at least a week in finding the solutions of a puzzle. There may be more than one right answer for some of the problems. Also these puzzles are given to provide joyful experiences to a child. Thus, child should not be assessed on the basis of solving these puzzles.

The chapters of the book need to be supplemented by audio-video aids, e-content, material available in the QR codes embedded in the book and other learning-teaching material like educational kits developed by the NCERT.

This textbook is not the only source of learning. Children learn much more while observing the environment; talking to peers and elders including grandparents; making things of their interest; watching TV; playing with mobile; toys and games; listening stories and poems; doing projects; visiting places of cultural importance and traveling. Therefore, we as teachers or parents need to value this learning by going beyond the textbook and try to map it with the competencies and curricular goals identified for this stage. The education of our children is seen as our collective responsibility.

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1 A Day at the Beach

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Look at the above picture. Count and write the number of objects given below.

Coconuts _____ Boats _____

Children _____ Oranges _____

How did you count them? Did you count them one by one or in bunches or groups?

Discuss with children if they have seen or visited a seashore or a river side. Which animals and plants are usually seen there? Encourage them to count in groups.



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Let us Do

A. Look at the shops shown in the picture and fill in the blanks.

i. There are _____ necklaces of shells with 10 shells in each necklace.

ii. There are _____ groups of balloons with _____ balloons in each group and _____ loose balloons.

iii. There are _____ bunches of bananas with _____ bananas in each bunch and _____ loose bananas.

B. Surbhi has collected some seashells. She wants to help her mother in making bracelets and necklaces.





C. Surbhi has made _____ groups of shells with _____ number of shells in each group for her bracelets.





D. Her mother has made _____ groups of shells with _____ number of shells in each group for her necklaces.



Try the tongue twister.

"She sells seashells at the seashore."



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Let us Think

List out the objects that come in packs of ten.

A. _____ B. _____ C. _____

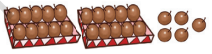
Tasty *Chikoos!*

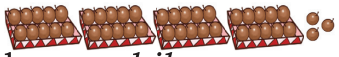
Manoj is helping his father in selling *chikoos* that he has arranged in the trays.

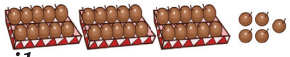
There are _____ *chikoos* in one tray.

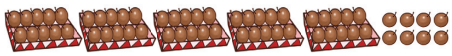
How many *chikoos* are there in total? _____

Now help Manoj in placing all the *chikoos* in the trays for selling.

A. 25 *chikoos*  : ____ trays of ten *chikoos* and ____ *chikoos*.

B. 43 *chikoos*  : ____ trays of ten *chikoos* and ____ *chikoos*.

C. 35 *chikoos*  : ____ trays of ten *chikoos* and ____ *chikoos*.

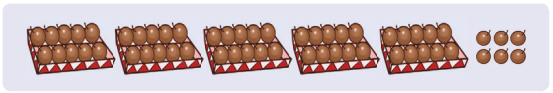
D. 58 *chikoos*  : ____ trays of ten *chikoos* and ____ *chikoos*.



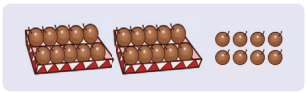
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Let us Match

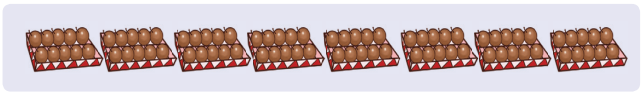
A. 80 *chikoos*



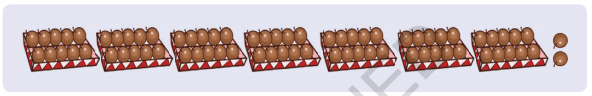
B. 72 *chikoos*



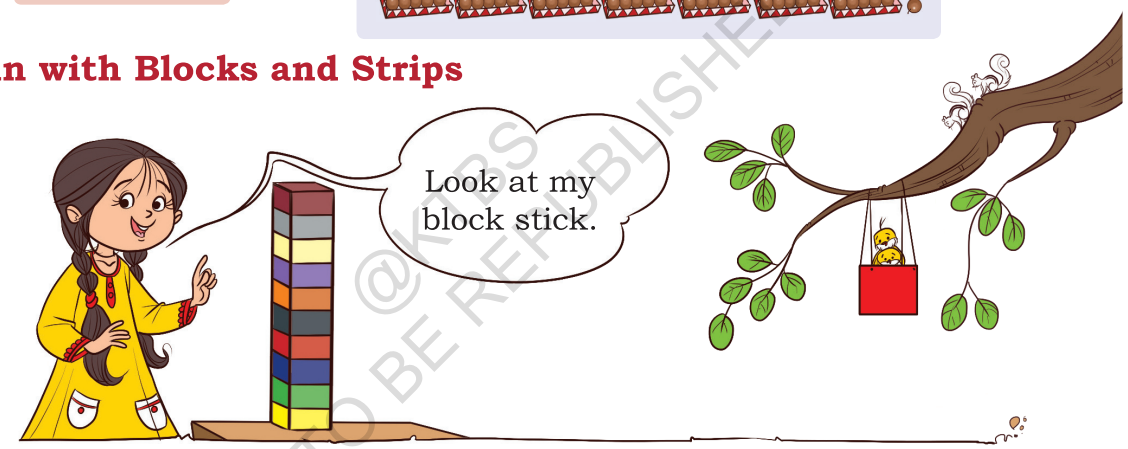
C. 56 *chikoos*



D. 28 *chikoos*

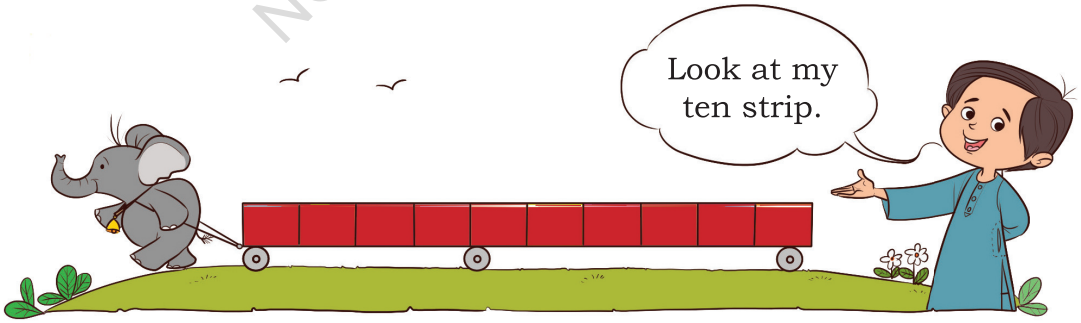


Fun with Blocks and Strips



Can you tell how many blocks are there in this block stick?

1 block stick = _____ blocks



Can you tell how many units are there in this ten strip?

1 ten strip = _____ units

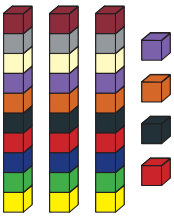


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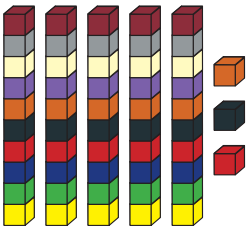
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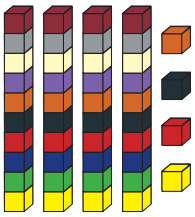
Let us Do



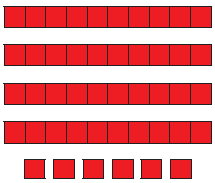
_3_ block sticks
and _4_ blocks
_34_ total blocks



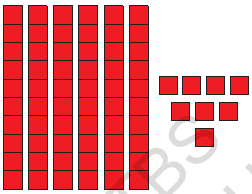
___ block sticks
and ___ blocks
___ total blocks



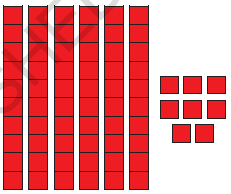
___ block sticks
and ___ blocks
___ total blocks



___ ten strips and
___ units
___ total units



___ ten strips and
___ units
___ total units



___ ten strips and
___ units
___ total units

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Complete the below table.

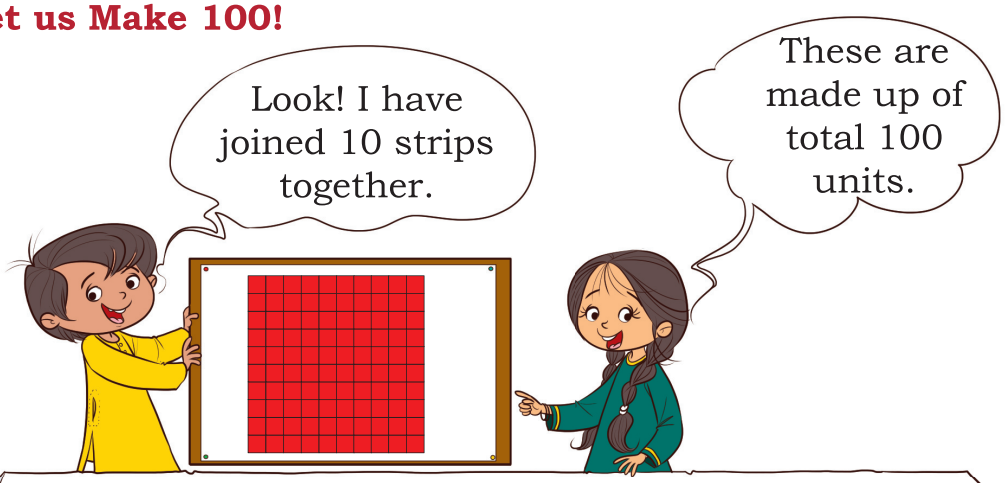
Total blocks/ units	Ten strips 	Units 
24	2	4
36		
72		
69		
46		

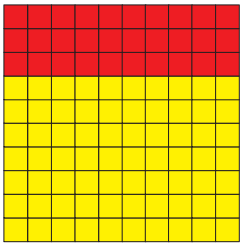
Use sticks or bundles of sticks or similar material which can be grouped to develop number sense among children.



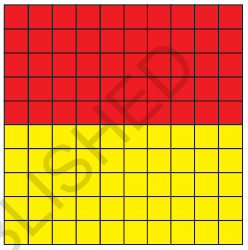
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Let us Make 100!

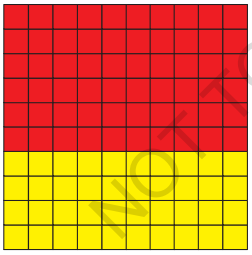




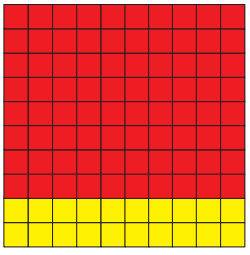
70 yellow units and 30 red units. 7 yellow ten strips and 3 red ten strips. Total 100 units or 10 ten strips.



___ yellow units and ___ red units ___ yellow ten strips and ___ red ten strips. Total ___ units or ___ ten strips.



___ yellow units and ___ red unit ___ yellow ten strips and ___ red ten strips. Total ___ units or ___ ten strips.



___ yellow units and ___ red units ___ yellow ten strips and ___ red ten strips. Total ___ units or ___ ten strips.

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Discuss some other combinations of ten strips that make a 100 units grid.





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Let us Make 100!

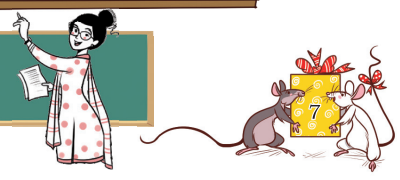
Let us play this game in groups of 5 or 6. One member will become the banker. Each team member will roll two dice together and take that many units from the bank. Whenever there are units that are equal to or more than 10, they will exchange the ten units for a ten strip from the banker. Play the same and collect 10 tens strips and put them to make a 100 units grid. We can also use items like *rajma*, pebbles, *chana*, etc., as units.

Counting through Cards





Encourage children to use different cards for tens and ones.



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Let us Think

Complete the following.



3 tens



1 one

= 30 + 1 or

▲	●
T	O
3	1

So, there are total of 31 shells.



___ tens



___ ones

= ___ + ___ or

T	O



___ tens



___ ones

= ___ + ___ or

T	O



___ tens



___ ones

= ___ + ___ or

T	O

Draw tens (▲) and ones (●) cards and fill in the blanks.

___ tens ___ ones

= 90 + 3 or

T	O

___ tens ___ ones

= ___ + ___ or

T	O
7	5

___ tens ___ ones

= ___ + ___ or

T	O
2	9



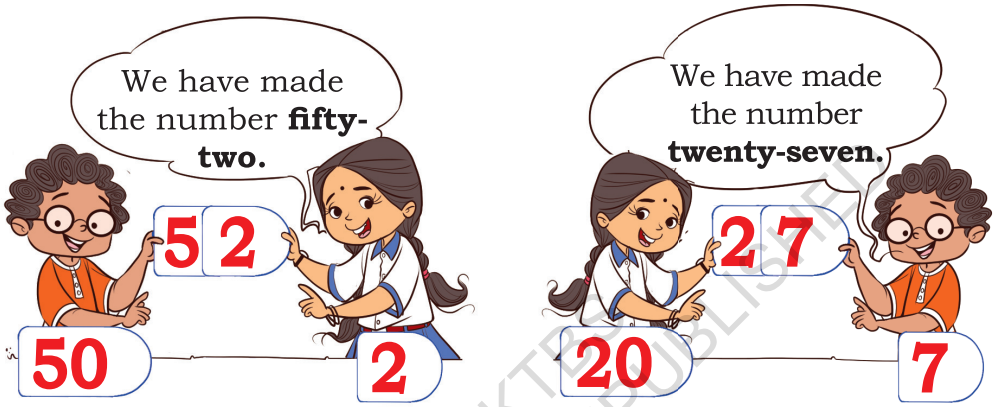
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Let us Play

Make Numbers

Children can make numbers using different number cards either of tens or ones. The teacher calls out a number, say, 52. The children with numbers cards of 50 and 2 will come together and form the number 52 as shown below. The game continues for other numbers such as 27.

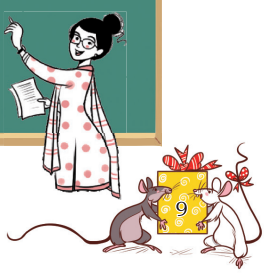


Trays of Oranges



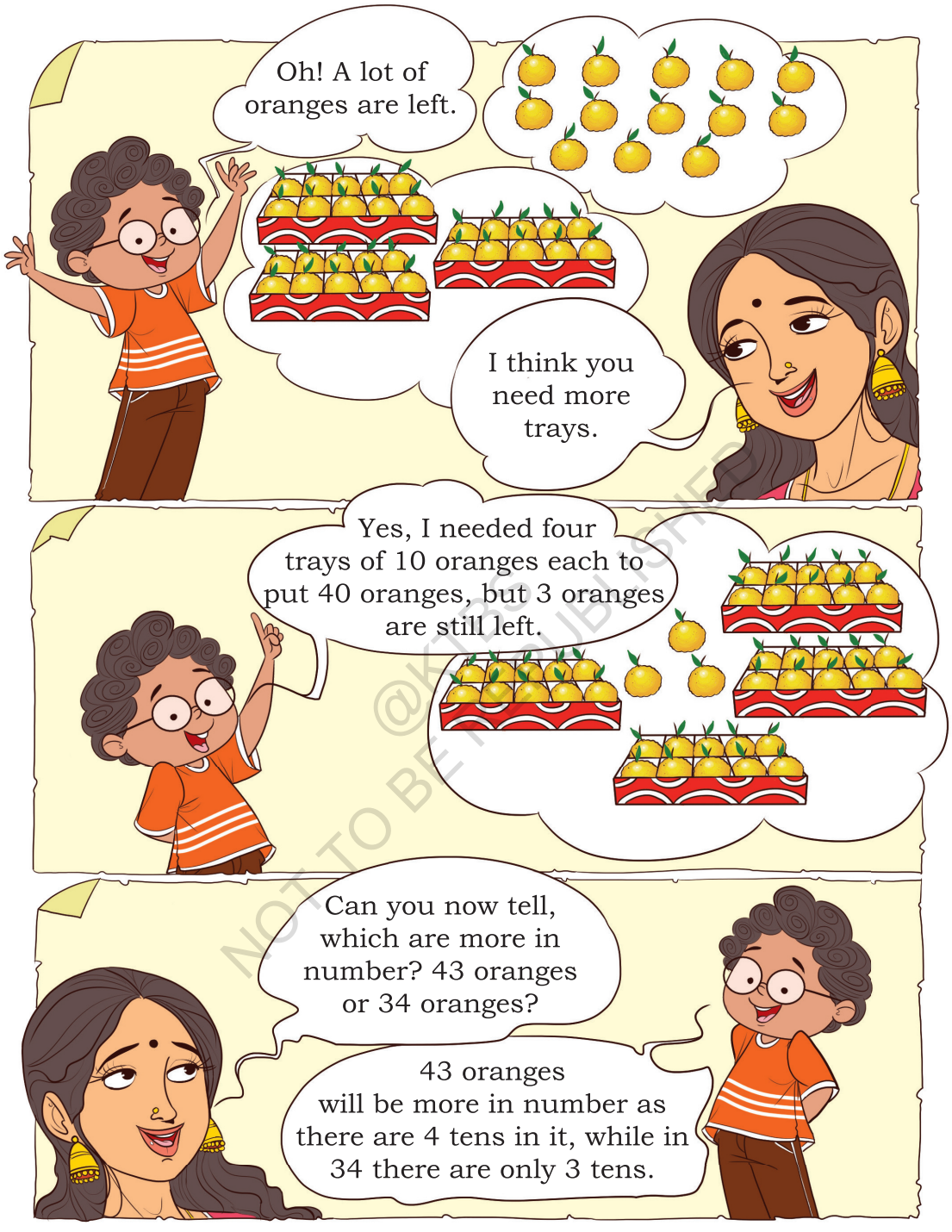
Let children have lots of practice on regrouping a number in tens and ones. For example, 73 is made up of 70 and 3 or 7 tens and 3 ones. Let children make their own worksheets for two digit numbers.

		T	O
73	70 + 3	7	3



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Which is less **27** oranges or **72** oranges? Why?

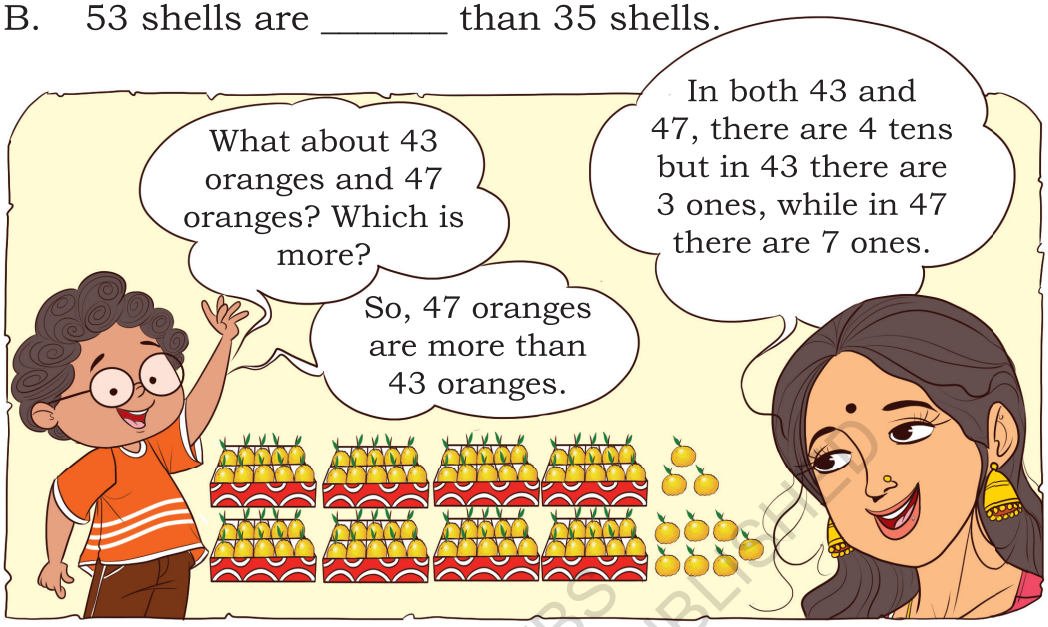
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Fill in the blanks with more or less.

A. 67 *chikoos* are _____ than 76 *chikoos*.

B. 53 shells are _____ than 35 shells.





Let us Do

Fill in the blanks.

A. 29 is more than 20.

B. _____ is less than 41.

C. _____ is less than 76.

D. 49 is more than _____ .

E. 25 is less than _____ .

F. _____ is less than 2.

G. 36 is more than _____ .

H. _____ is more than _____.

Discuss with children the situations where they can compare two quantities. Ask children to make two groups of concrete objects like pebbles, marbles, bottle caps, seeds, etc., and to estimate which group as more number of objects.

Let them then verify their estimate by counting the objects.





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Let us Play

Flash Card Game

A. Make flash cards of numbers from 0 to 9. Make the desired number according to the rules given below by placing these cards appropriately at tens and ones place.

i. A number greater than 50.

ii. A number less than 30.

iii. A number between 47 and 59.

iv. Which is the smallest two-digit number you can make?

v. Which is the largest two-digit number you can make? Why do you think that the number you made is the largest?



B. Choose any two flash cards and make a two-digit number. Now swap these flash cards to get another number and find out whether it is bigger or smaller than the previous number. How will you get the largest number using same digits?

Tens	Ones	Tens	Ones
3	5	5	3

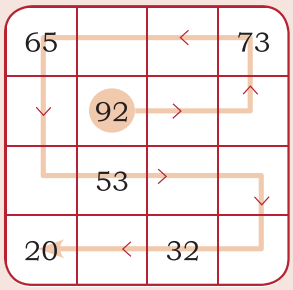




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Mark by Passing the Path

From the largest number, try to reach the smallest one in decreasing order by passing through each and every number atleast once.



34			53	
	91			76
	14			11
				19
23				

			51	
58				
			63	43
75			86	
29				34

Play with Numbers

Who am I?

A. I am the largest two-digit number. ☐

B. I am the largest two-digit number where no digit is repeated. ☐

C. I am the smallest two-digit number. ☐

D. I am the smallest two-digit number, my digits are repeated. ☐

E. I am the smallest two-digit number with 3 at the tens place. ☐

F. I am the largest two-digit number with 2 at the ones place. ☐

Make your own such questions.

_____

_____

_____

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Vallam kali

In Kerala, Onam is celebrated through a famous snake boat race called as *vallam kali*. The race has nearly come to an end. Look at the picture and observe the position of each boat.



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A. Which colour boat came first in the race? _____

B. Which colour boat is likely to come third? _____

C. At which positions are blue and green boats? _____

D. Write the position of pink and orange boats on the basis of the picture. _____ _____

Look at the month of August in the calendar given below.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	**15** Independence Day	16	17	18	19
20	21	22	23	24	25	26
27	28	**29** Onam	**30** Raksha Bandhan	31		

*Calendar based on 2023



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Read the calendar and answer the following questions.

A. Onam will be celebrated on which day of the month? ____

B. When is the Independence day celebrated? ____

C. Raksha Bandhan is on ____ Wednesday of this month.

Find out if any of your friends celebrated their birthday in the month of August. Mark it on the calendar.

Jersey Number 17



Discuss with students about various other places where they can see numbers as labels or names around them. For example, house number, pillar number, roll number, bus or train number, etc. Tell children that the beautiful way in which we all write numbers today, using the digits 0 and 1–9, originated in India.



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2 Shapes Around Us



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Let us Do

A. Look at the picture and observe different musical instruments.

i. Circle ◯ the musical instruments that are similar in shape to a  drum.

ii. Tick ✓ the musical instruments that are similar in shape to a  *matka*.

iii. Tick ✓ the shape similar to the shape of a  shehnai ( ,  , ).

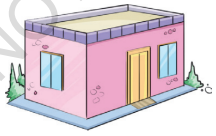
iv. How is the shape of harmonium  different from the shape of a  drum?

B. Have you seen or played any of the musical instruments? Share your experiences with your classmates.

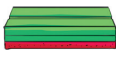
C. Cross the odd one out.







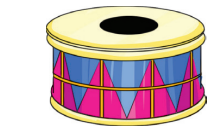
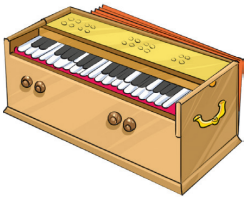

Initiate discussion about the similarities in the shape of various musical instruments and talk about locally available instruments and the way they are played. For example, drum and *tabla* are played by beating them, whereas guitar and *sitar* are played using their strings, and *shehnai*, flute, etc., are played by blowing air into them.

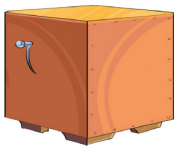


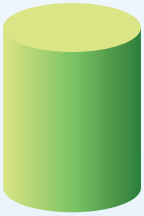
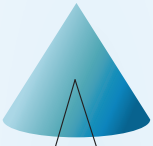
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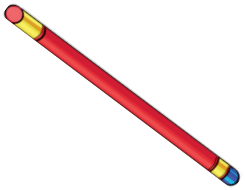
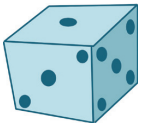
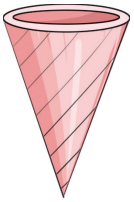
Match the musical instruments and objects with their solid shapes. One has been done for you.

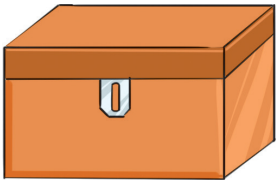
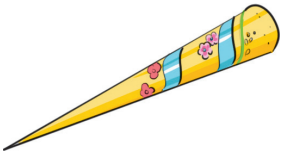









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Heena and Atif



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Let the children experience the surfaces, edges and corners of solid objects like chalk box, duster, chalk, etc.



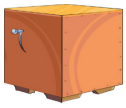
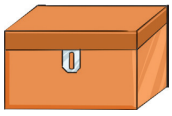
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Let us Do

If you also have to decorate the following shapes in the same way with stars, ribbon stripes and pompom balls, how many of these items will you need?

Object	Number of stars for the faces	Number of ribbon stripes for the edges/sides	Number of pompom balls for the corners
			
			
			

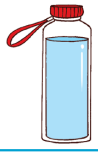
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Let us Think

Look at the objects and fill the table.

Object	I look like a	Faces	Edges	Corners
	Cube			
	Cuboid			
	Cone			
	Cylinder			
	Sphere			
	Cuboid			
	Cone			
	Cylinder			

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Let us Play

Touch and Tell. Who am I?

Collect different objects with variation in faces, corners and edges. Blindfold the child and ask them to pick an object as per the details given by other children. For example, a child may be asked to take out an object with one corner. Similarly, continue with other objects.



Let us Do

Name the objects which have—

No Corners	One Corner
A. _____	A. _____
B. _____	B. _____
C. _____	C. _____

Three Corners	_____ Corners
A. _____	A. _____
B. _____	B. _____
C. _____	C. _____

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Project Work

Take a cardboard sheet and try to make an object with four faces.
Now, try to make an object with one face.

Encourage children to discuss and find out the objects which have one, two, three or no corners. They may make such objects using clay or dough.





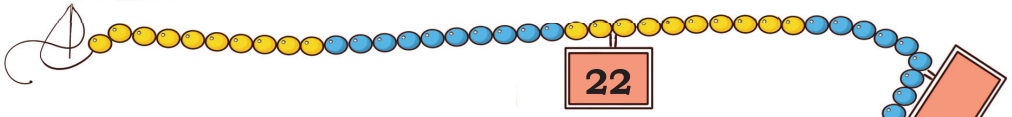
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3 Fun with Numbers

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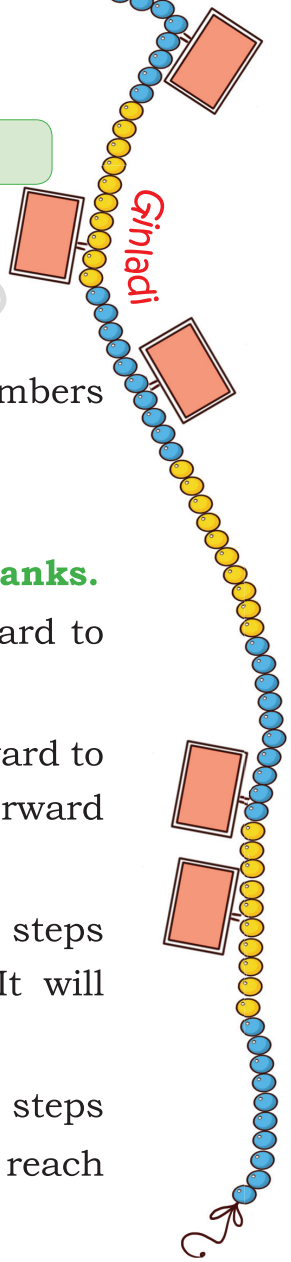
Look at the *Ginladi*.

A. How many beads are there in *ginladi*?

B. There are some blank cards on the *ginladi*. Write the numbers on them by counting the number of beads.

C. Make number cards for the following numbers and place them on your *ginladi*.

38, 44, 58, 65, 98



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Look at the number strip and fill in the blanks.

A. The butterfly moves _____ steps forward to reach the pink flower.

B. The honey bee moves _____ steps forward to reach the red flower and _____ steps forward to reach the yellow flower.

C. The squirrel jumps 2 steps backward, five steps forward and again 3 steps backward. It will reach at _____.

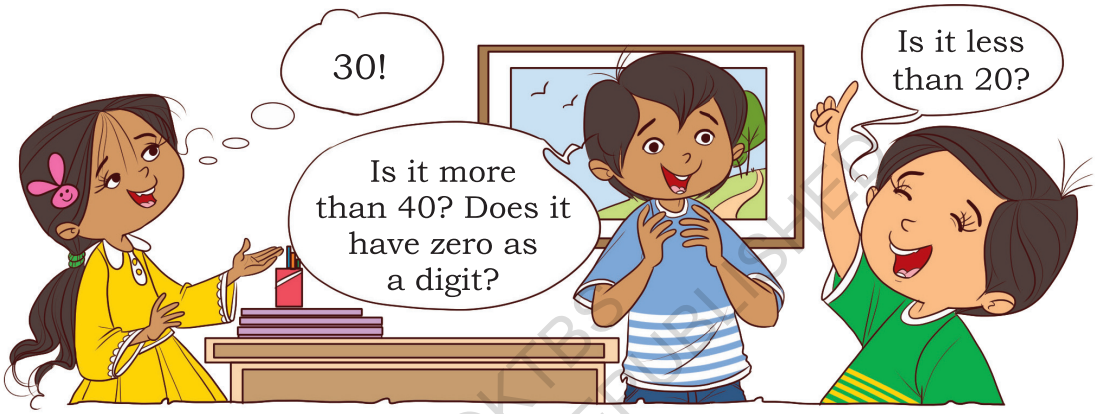
D. The frog jumps 2 steps forward, seven steps backward and again 3 steps backward to reach _____.



Let us Play

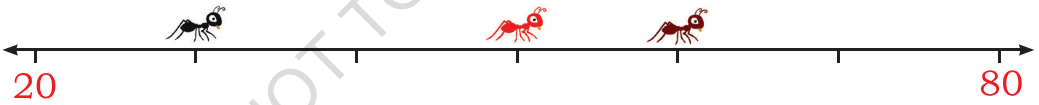
Guess my Number

A child thinks of a number and other children have to guess it. Children will ask questions like, is it more than 50? Are the two digits of the number same? Questions that can be answered in 'yes/no'. They can ask maximum 10 questions to guess the number.



Guess my Place

Three ants are sitting on a number line. Write the numbers for these ants.



Black ant is sitting on the number _____

Red ant is sitting on the number _____

Brown ant is sitting on the number _____

Draw an ant on number 65 on the number line shown above.

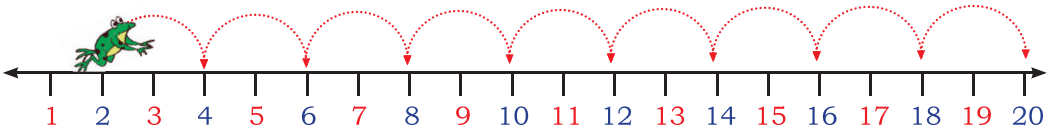
Draw a sugar cube on number 79 on the number line shown above.

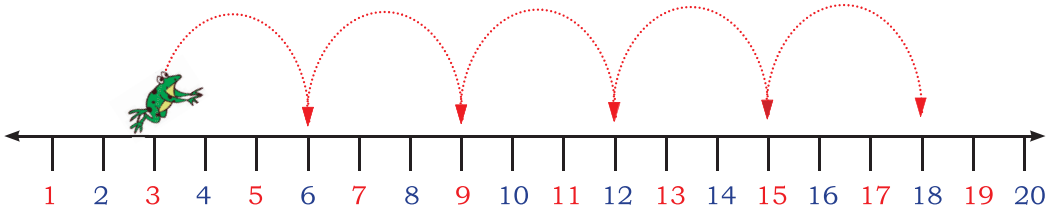


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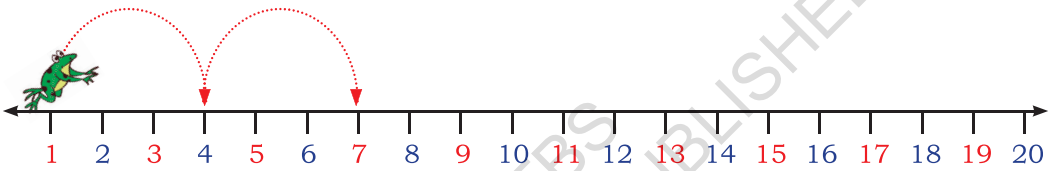
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Look! How Jumpy, the frog is jumping. Do you observe a pattern here?

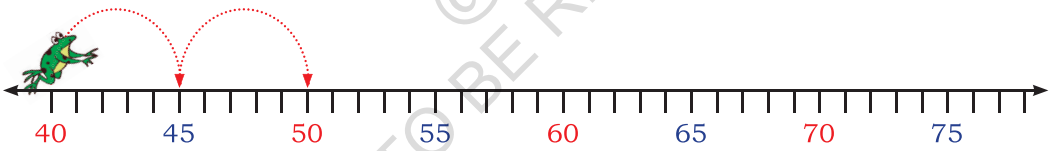




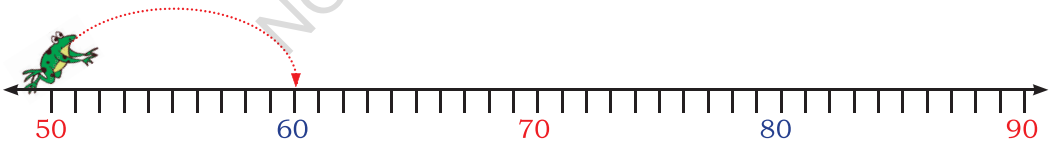
Complete the following patterns.



A. 1, 4, 7, _____, _____, _____, _____



B. 40, 45, 50, _____, _____, _____, _____, _____



C. 50, 60, _____, _____, _____

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Encourage children to make their own number line on the ground and ask them to jump on it. Ask them questions such as if you jump in steps of two, which numbers will you step on, etc.



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Let us Do

A. On the number chart, use skip counting in two and draw ● on the numbers. Now use skip counting in five and draw ▲ on the numbers in the number chart.

B. Write down the numbers that are common to the skips in twos and fives.

_____

C. Write down the numbers that are common to the skips in twos, threes and fives.

_____

D. Write down the numbers common to the skips of fives and sevens?

_____

1	● 2	3	● 4	▲ 5	● 6	7	8	9	▲ 10
11	12	13	14	▲ 15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

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Jump and find the answers. Write 'Yes' or 'No'.

Make a number line on the ground and jump on it.

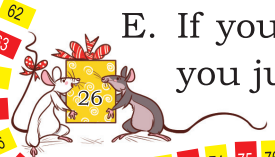
A. If you start from 10 and jump counting in tens, will you land on number 100 at any time?

B. Jump and find out if you start at 5 and count in fives, will you jump on number 40 at any time?

C. If you start from 0 and count in fives, will you jump on number 55 at any time?

D. If you start from 4 and count in twos, will you jump on number 17 at any time?

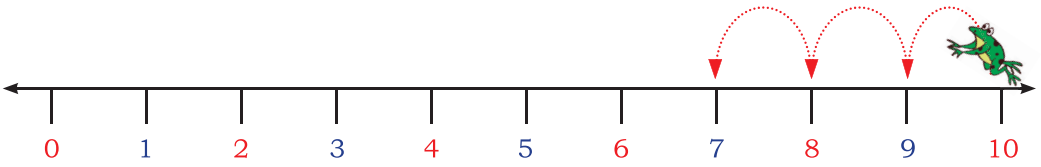
E. If you start from 13 and count in threes, will you jump on number 24 at any time?



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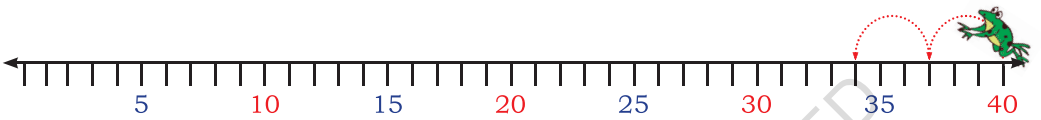
Let us jump backward.

Complete the following patterns.

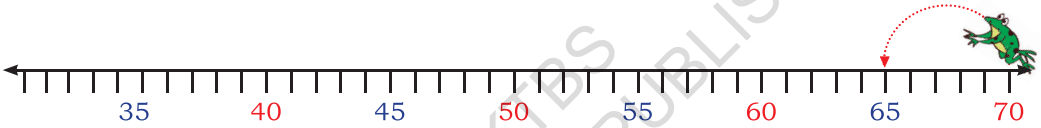


What comes just before 10?
What comes just before 9?

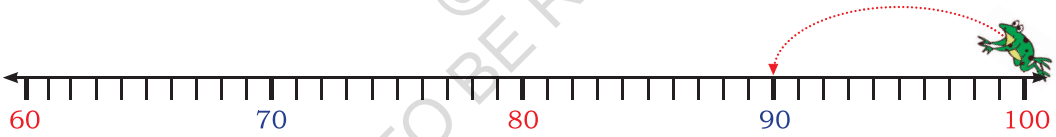
10, 9, 8, ☐ ☐ ☐ ☐ ☐ ☐ ☐



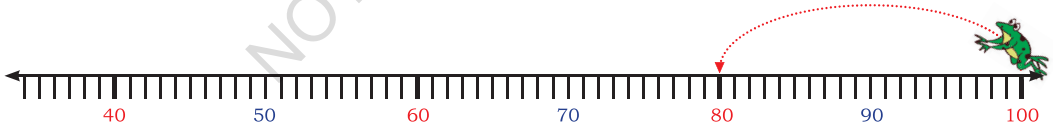
A. 40, 37, 34, ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐



B. 70, 65, 60, ☐ ☐ ☐ ☐ ☐ ☐



C. 100, 90, ☐ ☐ ☐



D. 100, 80, ☐ ☐

Is there a pattern in the given numbers? If not, change the numbers to create a pattern. Also, extend it.

100, 90, 80, 70, 60, ☐ ☐ ☐

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Let us Talk

A. Rizwan is counting numbers from 20 onwards. Will he say the number 19 in his count? Explain why?

B. Chavi is counting numbers in twos from 10 onwards. Will she say 43? Explain why?

C. Mala is counting backwards from 20. How many steps will it take to reach 0? Explain why?

D. Viraaj is counting backwards in twos from 20. How many steps will it take to reach 0? Discuss.

Patterns in Number Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

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Let us Do

Look at the number chart and write down the answers.

_____ comes just before 10

_____ comes just before 20

_____ comes just before 30

_____ comes just before 40

Do you see any pattern? Shade the numbers on the number chart. Does the pattern continue for other numbers? If yes, write the pattern.

_____, _____, _____, _____, _____, _____, _____, _____, _____, _____

Now, look at the numbers coloured green in the number chart. Write them.

1, 12, 23, _____, _____, _____, _____, _____, _____, _____

What pattern do you notice? Discuss.

Lakshanya made a **number window** and placed it on the number chart as shown below.

A. If the centre of the window is placed on 28, which number will be on the top of it? _____

B. Which number will be below it? _____

C. Which number will be on its right? _____

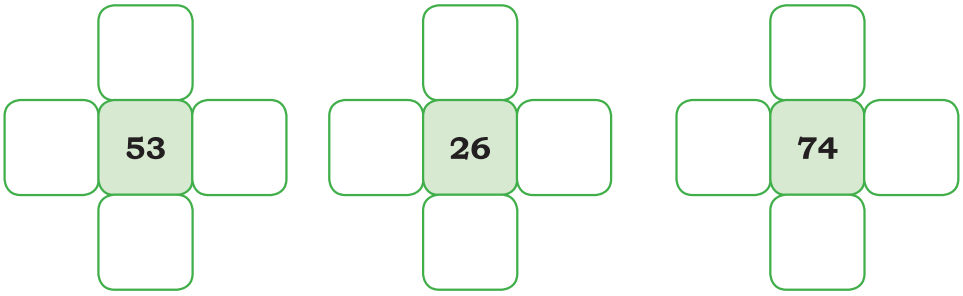
D. Which number will be on its left? _____

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	10 less	19	20
21	22	23	24	25	26	1 less	28	1 more	30
31	32	33	34	35	36	37	10 more	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

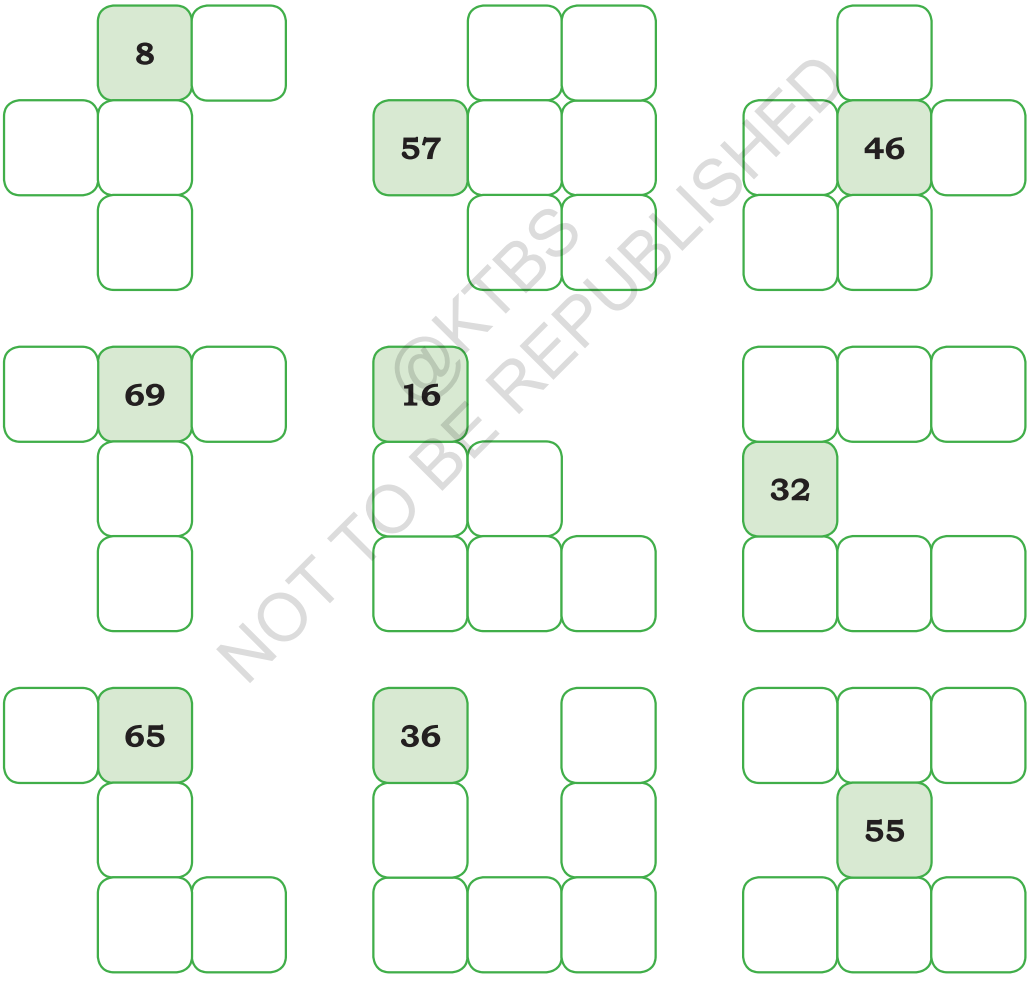
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E. Let us do it for other numbers.



F. Based on the same number grid fill the missing numbers.

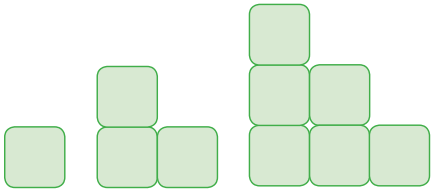


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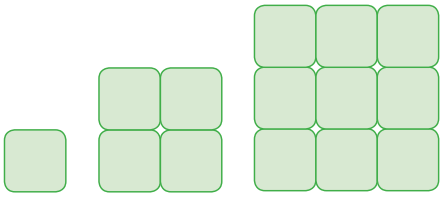


Exploring Patterns

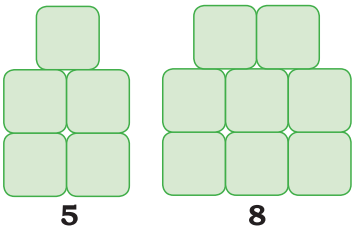
Observe how the number of blocks are increasing in the following shapes and extend the pattern.

A. 

_____ _____

B. 

_____ _____

C. 

_____ _____



Let us Play – Bingo!

Make a 3 × 4 grid  for playing 'Bingo'.

Fill the boxes of the grid with any number from 2 to 12. Numbers can be repeated.

Let one child throw two dice and say the sum of the numbers of dots on the dice. Other children will cross the number on their grid. Continue this till child crosses all the numbers. Bingo!

Encourage children to develop their strategy for selecting the numbers to be written on the grid.



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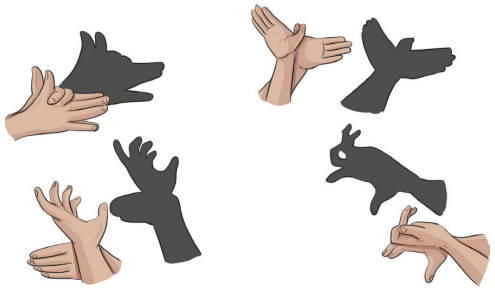
4 Shadow Story (Togalu)



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Nakul and his friends saw a shadow play known as *Togalu Gombeyaata* in a village fair. They all were fascinated to see the shadows.

They also wanted to make shadows. So, they made different animal shadows on the wall with their fingers. You can also try to make the shadows.



Share information about *Togalu Gombeyaata* with children which is a puppetry art form practised in Karnataka. The puppets are used to depict scenes from Indian epics. Let children also share their experiences of watching a puppet show.



Let us Do

Do a role-play by making the shadows of different animals and creating their sounds.

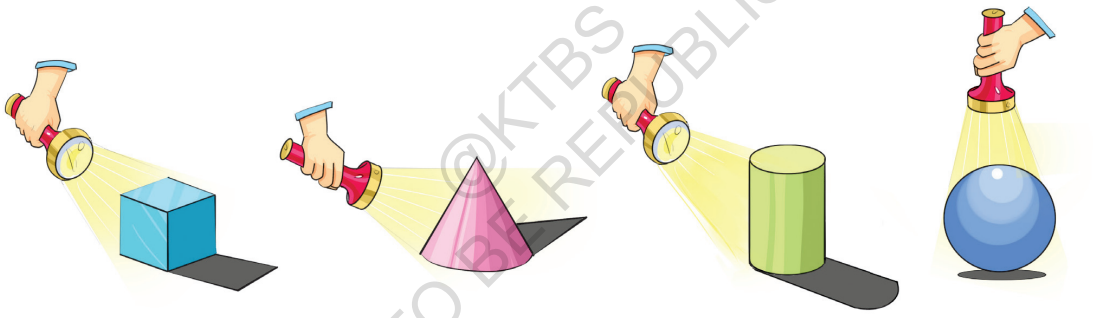
Let us Talk

A. Have you seen your own shadow or the shadow of a tree, a dog, a cow or any other animal?

B. When do we see a shadow?

C. When does a shadow vanish?

Fun with Shadows



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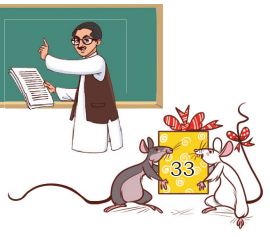
Now put the torch light on the objects around you and observe the shapes of their shadows.

A. Will the size of shadows change on changing the position of the torch?

B. At what time of the day is your shadow longest?

C. At what time of the day is your shadow shortest?

Discuss with children about their observations on their shadows at different times of the day and the reasons behind it.



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Let us Trace

A. Trace the shape of the objects around you. For example, eraser, leaf, matchbox, sharpener, pencil colour, etc.



B. Draw the shapes you get after tracing.

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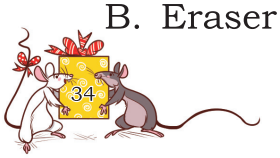


Let us Think

Write the names of objects that have the same trace as:

A. Bottle cap

B. Eraser



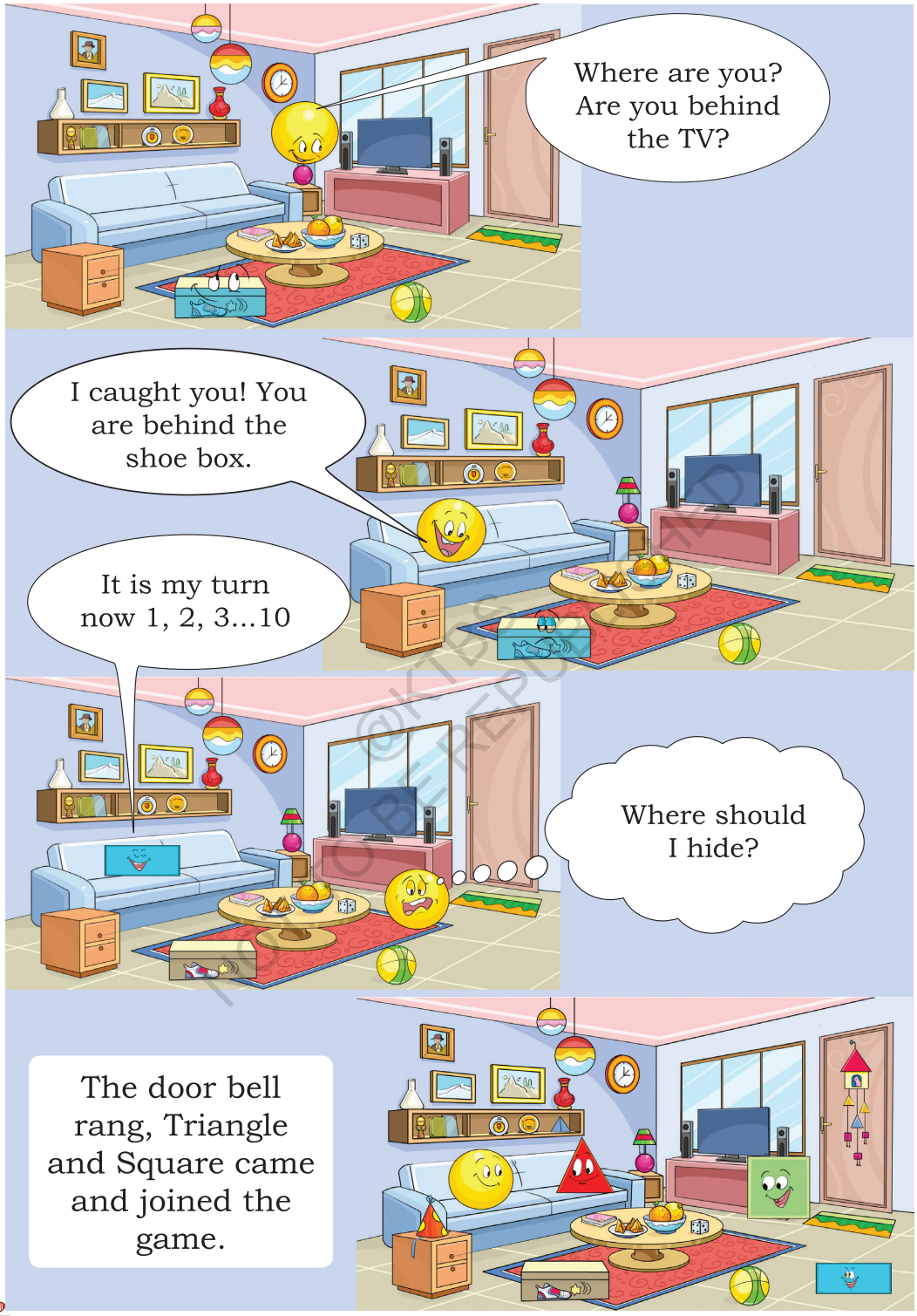
Hide and Seek

Circle ◯ and rectangle ▭ are playing hide and seek. Rectangle is hiding from the circle.



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They all are playing together now.

A. Circle ◯ can hide in the clock, ball, _____, _____.

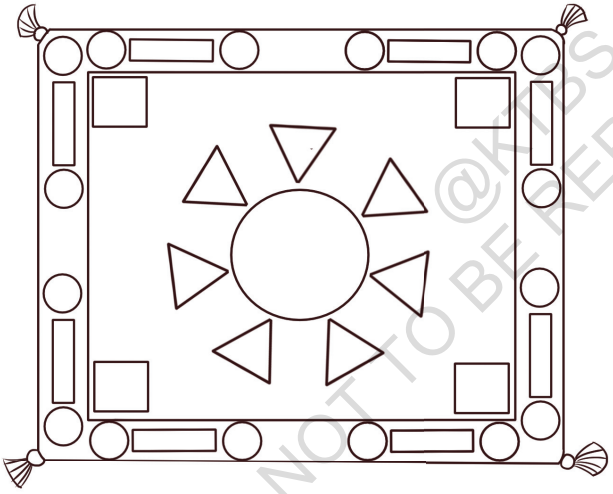
B. Rectangle ▭ can hide in the shoe box, photo frame, _____, _____.

C. But Triangle △ and Square □ are confused and wonder where to hide now. Suggest them some places where they can hide.

i. Triangle △ can hide in _____, _____.

ii. Square □ can hide in _____, _____.

Colour the Carpet



Colour the Triangles red.

Colour the Circles green.

Colour the Rectangles yellow.

Colour the Squares blue.

Make your own design with different shapes and colour them.

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Catch the Corner!

Naveen and his friends are playing a game. Naveen is standing facing the wall and clapping. His friends are running along the table as he claps. When he stops clapping, everybody stops. The child who is not at a corner will be out. Then the child will clap and the game will go on.



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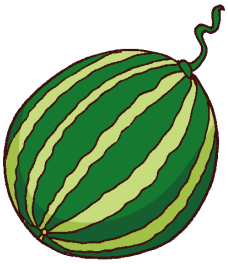
Look at the picture and answer the following questions.

A. Name the children standing near the corners of the table.
B. Can you tell who will clap next?
C. Where is Wasim standing?
D. Can this game be played around a round table? Why or why not?
E. Name the objects around us that have straight edges.
F. Many objects around us have curved edges. Some are shown below. Explore and share the names of such objects that you see around.









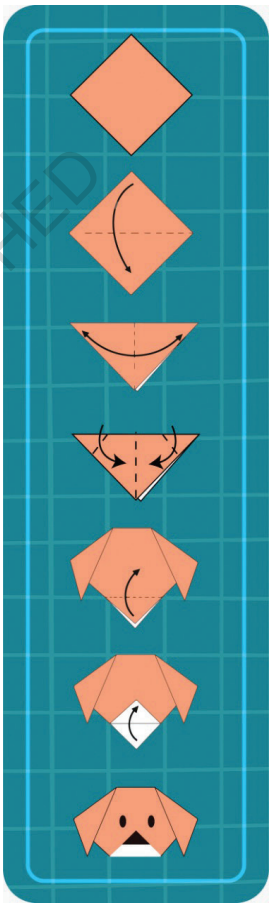


Let us Think

A. How many corners do objects with curved edges have?

B. Name the objects that have both straight and curved edges?

Origami Fun!



A. Take a paper and fold it to make it a square.

B. It has ____ corners and ____ edges.

C. Fold it in half by joining two corners as shown in the picture.

D. Tick ✓ the shape which you get.

i. ● ii. ■ iii. ▲

E. This shape has ____ corners and ____ edges.

F. Fold the paper again into half to get a triangle and then unfold it.

G. Now make two triangles from two corners of the triangle.

H. How many corners are there now? ____

I. Fold the third corner upwards and make the nose and eyes as shown.

Your paper dog is ready!



Can you fold the square sheet in such a way so as to get a shape with 4 sides? How many corners does it have now?

Ask children to explore various objects around them and ask them to find out the number of their edges, corners and sides.





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Patterns

A. Make designs by stamping objects having different shapes like — bottle caps, erasers, pencils, coins, etc.



B. Radha is applying *mehandi* on her hands. You can also trace your hand to make a *mehandi* pattern or design.





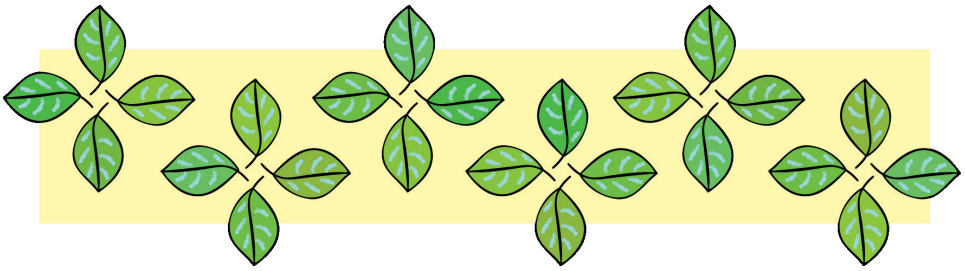
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Let us Do

Nitya is playing with leaves and making patterns.



Now you also collect some leaves and make a pattern. Paint one side of the leaf and print it on the space given below.

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Project Work

Make a wall hanging using cutouts of different shapes with the help of your elders to decorate your home or classroom.

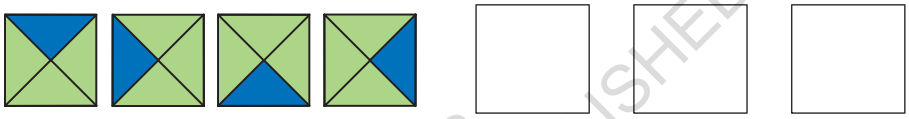


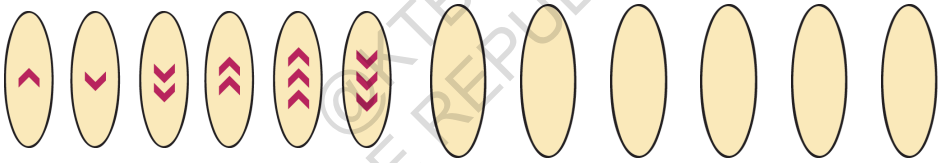
Extend the following patterns.

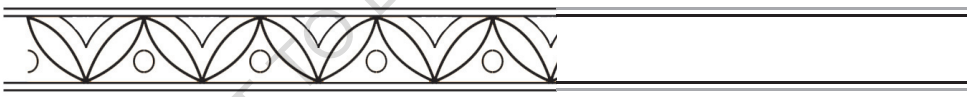
A. 

B. 

C. 

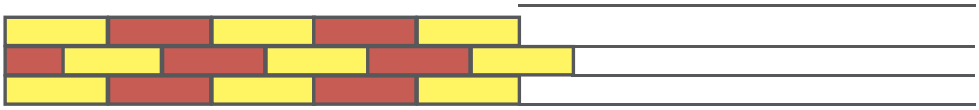
D. 

E. 

F. 

G. AB BC CD

H. AA BB CC DD EE

I. 



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Kikku rabbit jumps on the 4th tile. He forgot where to jump next. Help him by drawing a circle ◯ on the next tiles.

1, 4, _____, _____, _____, _____, _____, _____



Kikku's mother also jumps on the 6th tile. Help her by putting a × on the next tiles.

1, 6, 11, _____, _____, _____, _____, _____



Let us Do

Extend the following number patterns.

A. 5, 10, 15, ☐ ☐ ☐ ☐ ☐

B. 7, 14, 21, ☐ ☐ ☐ ☐ ☐

C. 1, 7, 13, ☐ ☐ ☐ ☐ ☐

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5 Playing with Lines



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Let us Do

A. Circle ◯ the *aasanas* with standing or vertical lines.

B. Tick ✓ the *aasanas* with both vertical and slanting lines.

C. Cross ✗ the *aasanas* which have curved lines.

D. Put a star ★ along the *aasanas* that have sleeping or horizontal lines.

E. Try some of these *aasanas*. Discuss the lines that you notice while doing the *aasanas*.

Facilitate the children in practising yoga poses. Give instructions like, keep the back straight, arms straight, curve the back, slant the arms and legs, etc. Also tell them about *Ashtanga Yoga*, as described in the ancient *Yoga Sutras* of *Patanjali*.

What is Straight?

Hold a piece of thread in your hands.



Is it straight?

Now bring your hands closer.



Is the thread straight now?





This is now standing/sleeping/slanting.



Let us Do

Trace the missing vertical, horizontal, slanting and curved lines in the picture given below.



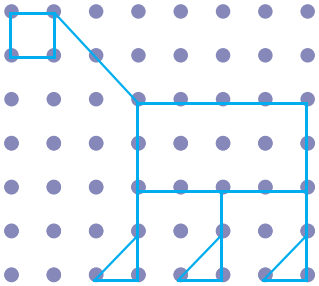
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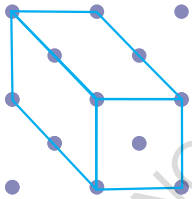
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Let us Play with Dots

A. Make new shapes with straight lines (vertical, horizontal and slanting).





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B. Draw different figures with the help of curved lines, like clouds, rainbow, etc.



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Let us Do

A. Make your own drawing using different types of lines in the space given. Draw a design with any two types of lines.

B. Draw a design with any three types of lines.

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C. Draw a design using all types of lines.

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Project Work

Fun with Folding

If we fold a paper in half, it makes a crease in the center. Now if we keep folding the paper further we get a number of creases. Let us see the different lines we get after folding the paper. Trace the straight lines with red crayon and slanting lines with blue crayon.

A. Fold a paper with your friend and check who gets the maximum number of creases.

B. Try to make curved lines by paper folding.

Discuss various art forms like *Madhubani, Kalamkari, Warli* or any other local art forms that they are familiar with. Teacher might invite local painters to share their process of drawing different lines and shapes with children.

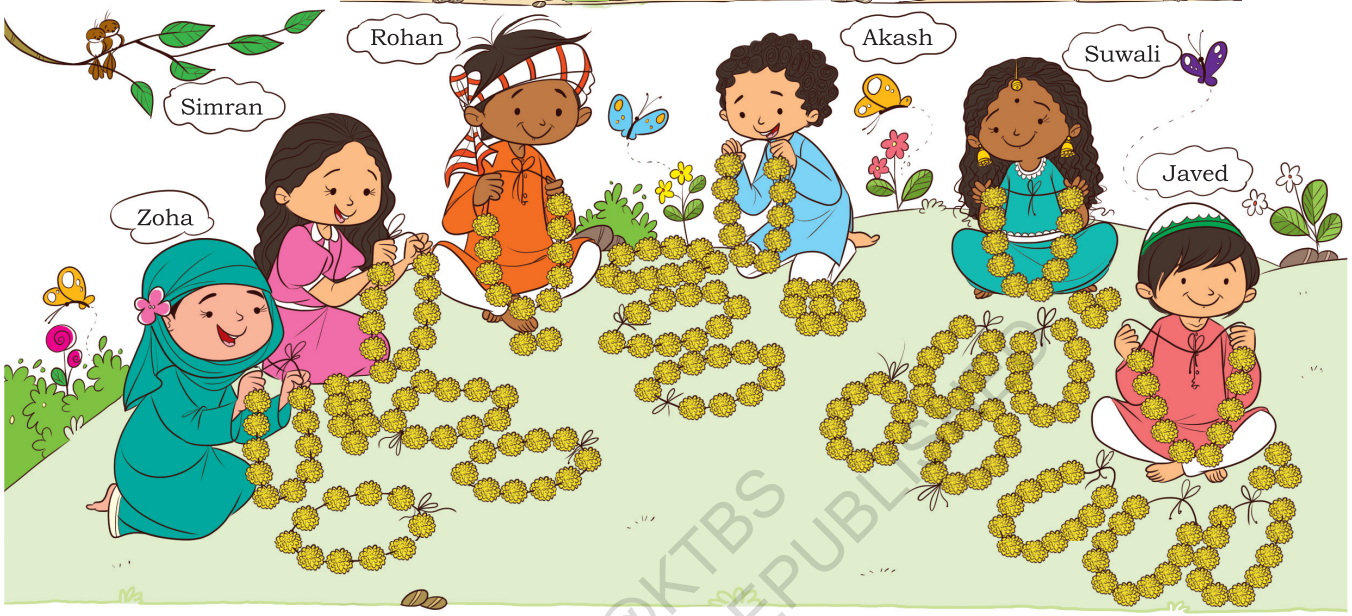


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6 Decoration for Festival



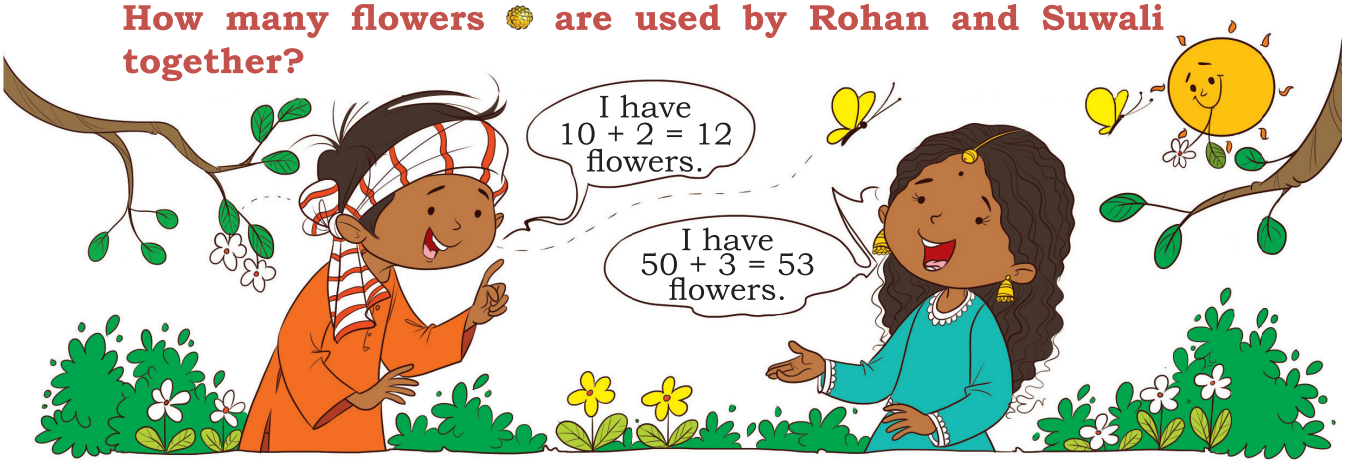
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Decoration for Celebration!

Rohan and his friends need garlands to decorate their homes for celebration. Each has 10 flowers. Complete the given table with the help of the above picture.

Name	Number of	Number of	Total number of
Rohan	1	2	10 + 2 = 12
Simran	3	7	30 + 7 = 37
Akash	4	8	40 + 8 = 48
Suwali	5		50 + 3 = 53
Javed			
Zoha			

How many flowers are used by Rohan and Suwali together?



Rohan brings	1 ten 2 ones	10 + 2 = 12
Suwali brings	5 tens 3 ones	50 + 3 = 53
Suwali and Rohan together bring	6 tens 5 ones	60 + 5 = 65

Tens (T)	Ones (O)
1	2
+ 5	3

T	O
1	2
+ 5	3
	5

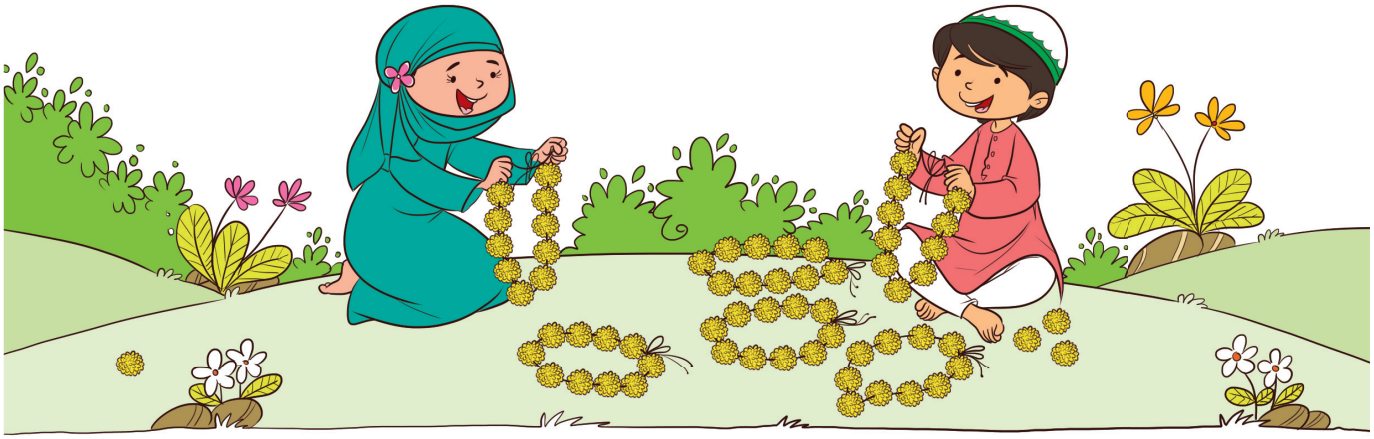
T	O
1	2
+ 5	3
6	5

Wow! We both have 65 flowers.

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How many flowers are used by Zoha and Javed in all?



Zoha brings	2 tens 0 ones	20 + 0 = 20
Javed brings	4 tens 3 ones	40 + 3 = 43
Zoha and Javed together bring	6 tens 3 ones	60 + 3 = 63

T	O
4	3
+ 2	0

→

T	O
4	3
+ 2	0

→

T	O
4	3
+ 2	0

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What is the total number of flowers used by Zoha and Akash?

Zoha brings	2 tens 0 ones	20 + 0 = 20
Akash brings		
Zoha and Akash together bring		

T	O
4	8
+ 2	0



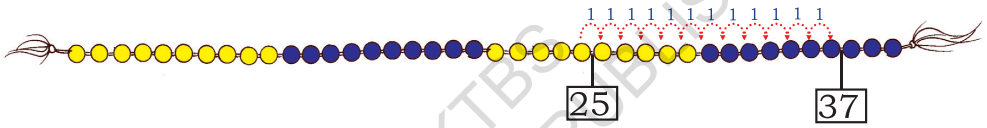
What is the total number of flowers used by Rohan and Simran?

Rohan brings		
Simran brings		
Rohan and Simran together bring		

Let us do it on *Ginladi!*

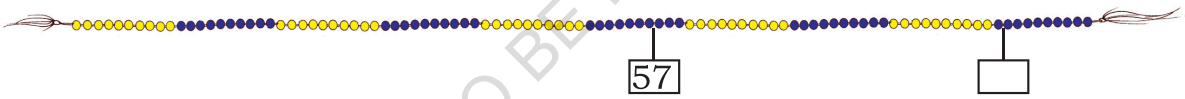


A. 25 + 12 = ☐



B. 57 + 34 = ☐

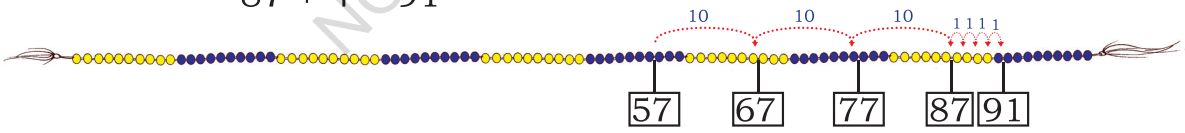
Count ____ ahead of ____



Let us understand this way.

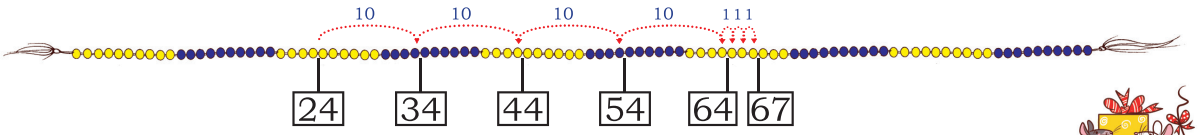
57 + 34 = 57 + 30 + 4

87 + 4 = 91



C. 24 + 43 = ☐

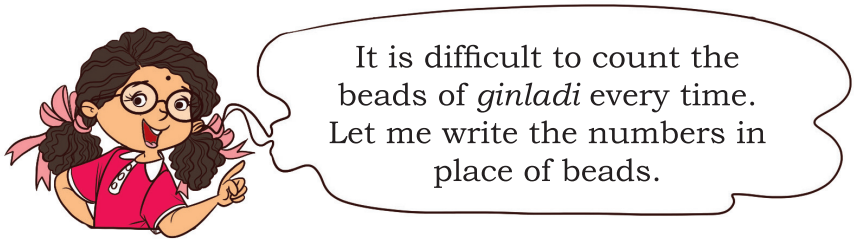
We can write 24 + 40 + 3 = 64 + 3 = 67

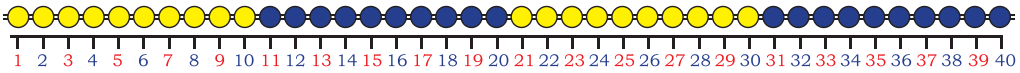




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We can get the number 43 in another way: 20 + 20 + 3

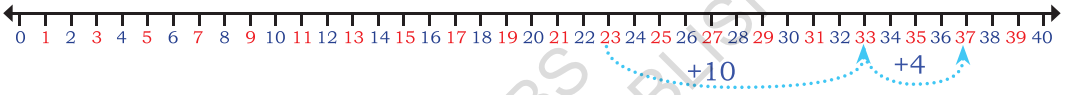




Now add numbers on the number line.



A. 23 + 14 = 37



B. 24 + 16 = ____

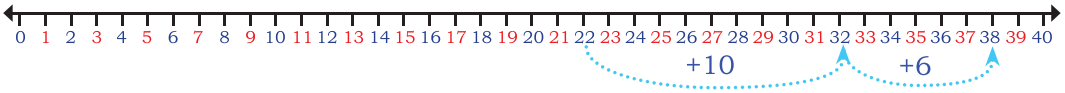


C. 11 + 22 = ____

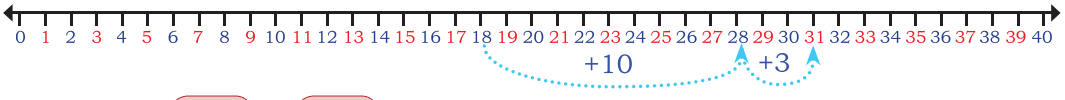


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Read the number line and fill the boxes.

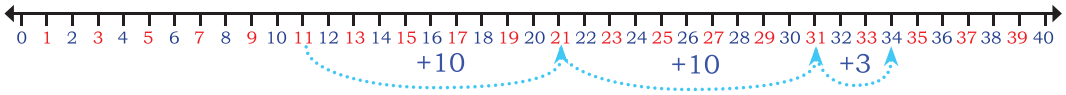


A. 22 + ____ = 38



B. 18 + ____ = ____





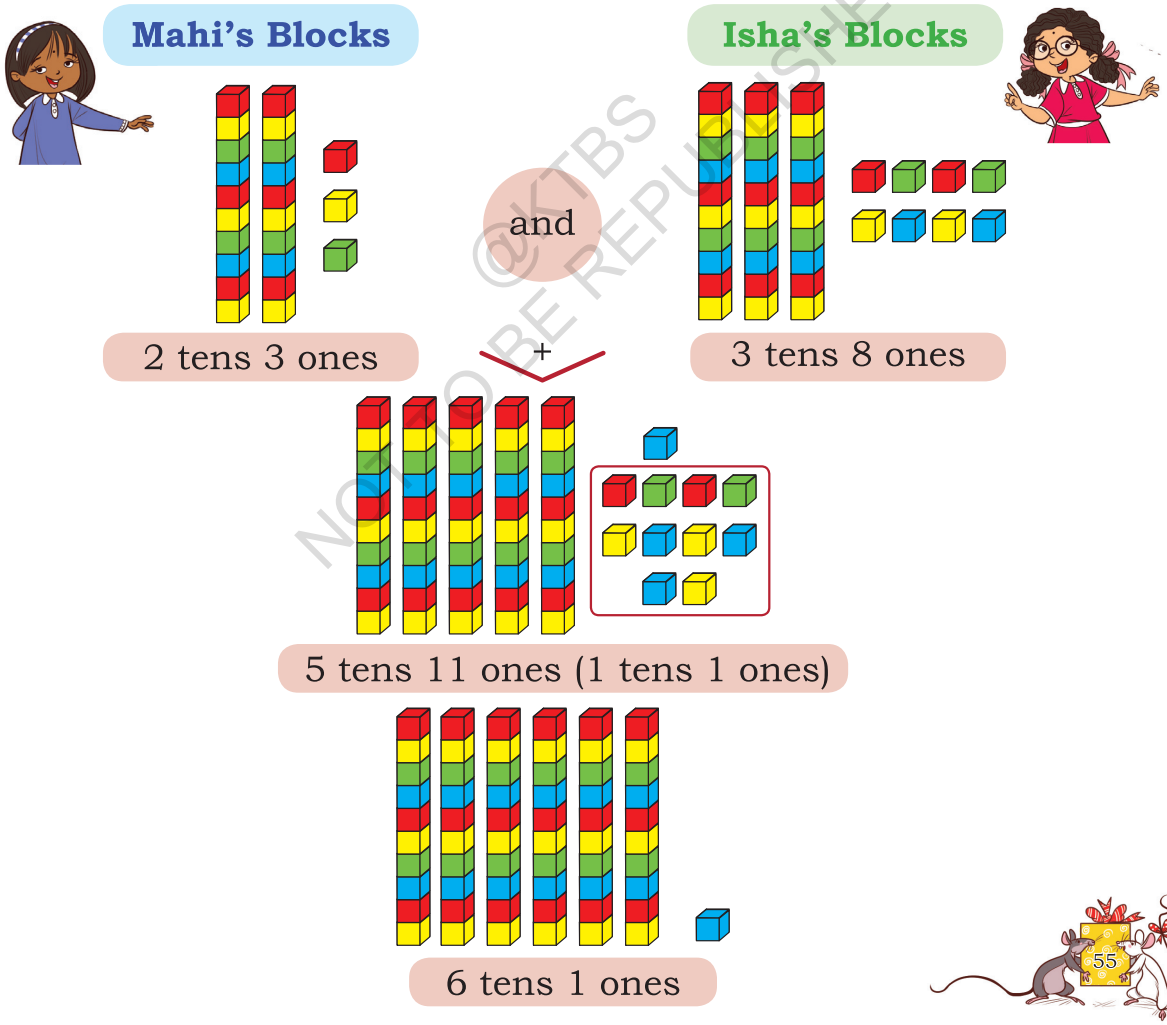
C. ☐ + ☐ = ☐

Add these Numbers

44 + 23 ____	56 + 23 ____	60 + 25 ____	52 + 30 ____

Playing with Blocks

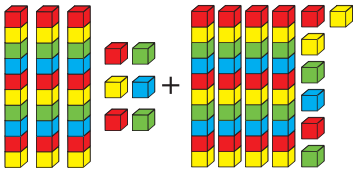
Mahi has some blocks. Isha came with her blocks to play. Let us help them in finding how many blocks they have in total.



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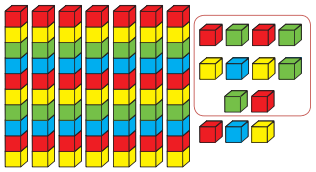
Chapter_06.indd 55 09-06-2023 16:18:56

Let us find the total number of blocks.



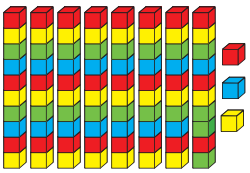
3 tens 6 ones

4 tens 7 ones

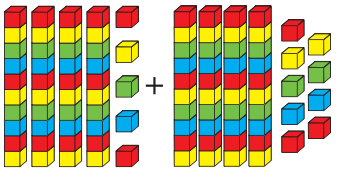


7 tens 13 ones

8 tens and 3 ones

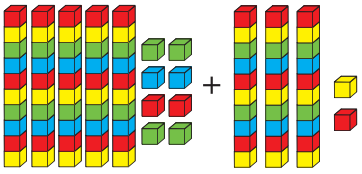


80 + 3 = 83



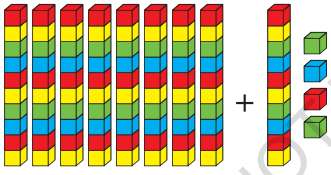
4 tens 5 ones

4 tens 9 ones



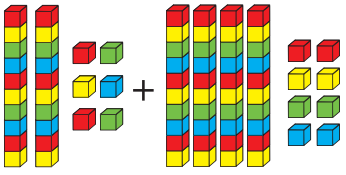
5 tens 8 ones

3 tens 2 ones



8 tens

1 ten 4 ones

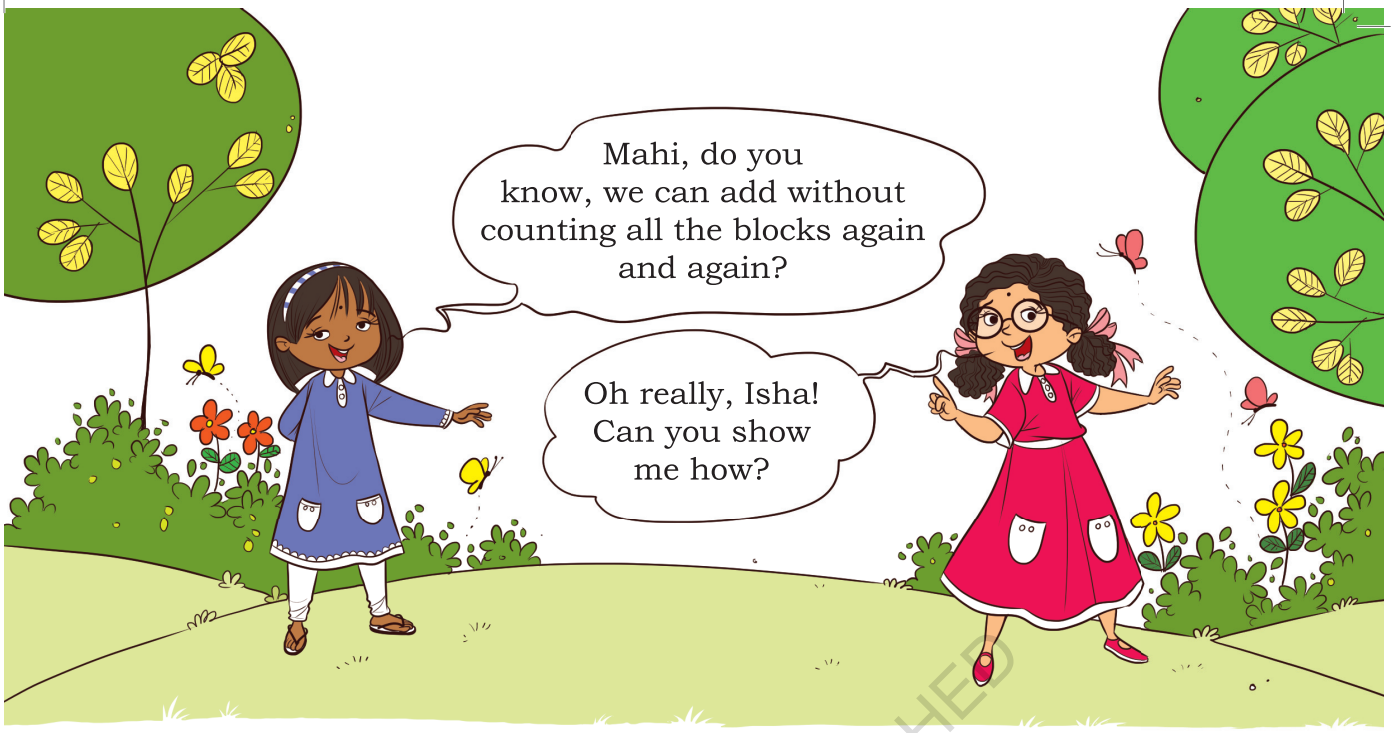


2 tens 6 ones

4 tens 8 ones

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T	O
3	6
+ 4	7

Adding ones

(6 + 7 = 13)

1 tens and 3 ones

	T	O
	1	
	3	6
+	4	7
		3

Adding tens

(3 + 4 + 1 = 8)

8 tens

	T	O
	1	
	3	6
+	4	7
	8	3

Shifting the tens

Add

46	56	36	30	45
+ 39	+ 19	+ 8	+ 58	+ 35



Let us Do

A. Rahim  made 43 runs  in one match and 58 runs in another match. How many runs he made in the two matches together? ____

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B. Simarpreet  had 12 colour pencils  . Her mother gifted her 36 more colour pencils. How many total colour pencils does she have now?

C. Heena  collected 34 red marbles  and 57 blue marbles  . How many total marbles does she have now?

D. Sarika  spent ₹56 in the fair, while Manish spent ₹35 in the fair. What is the total money they both spent in the fair?

E. There are 36 men  and 47 women  in the bus  . How many people are there in the bus?

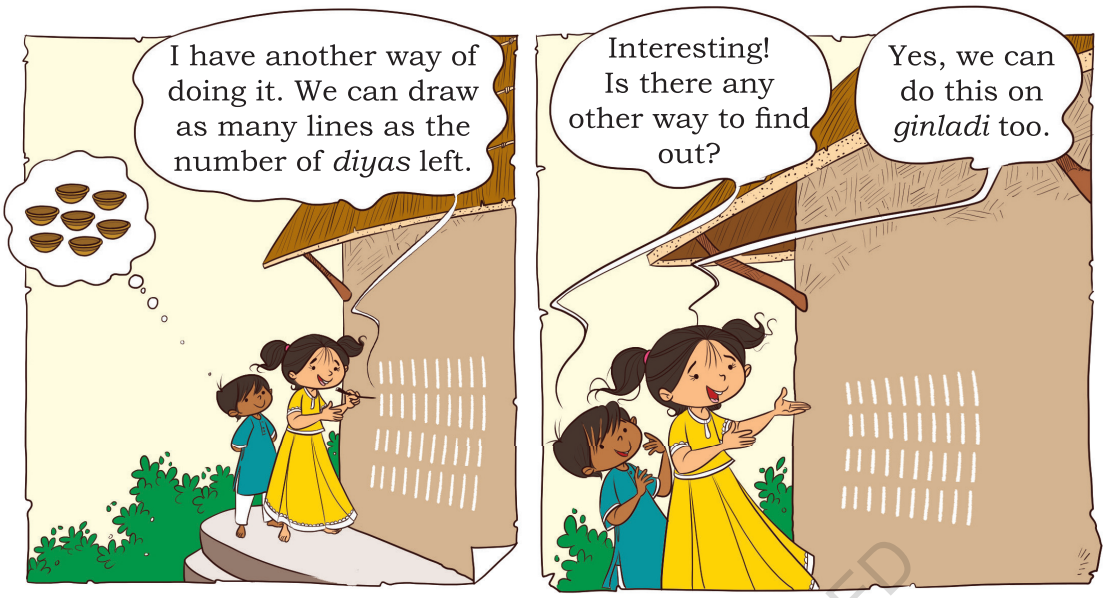


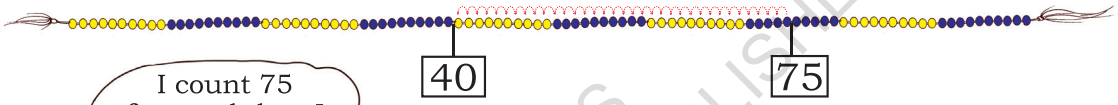
Let us Count *Diyas*



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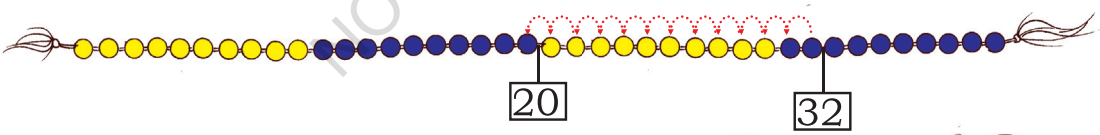




That means if we take away 35 from 75, then the answer will be 40.

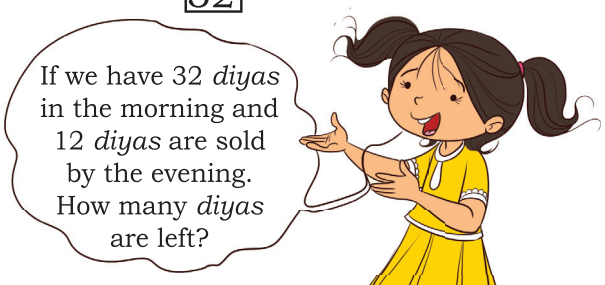
75 – 35 = 40

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On taking away 12 from 32, we get 20.

32 – 12 = 20

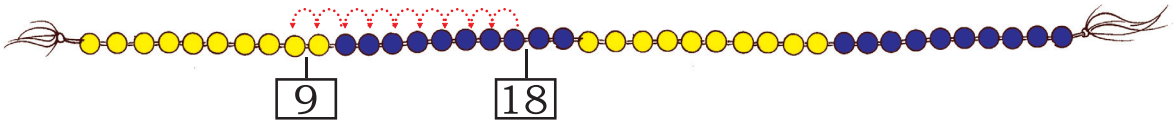




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We can also use the *ginladi* to find the answers of the following.

A. **Take away 9 from 18** | **18 − 9 =**



B. Take away 8 from 12 | 12 − 8 =

C. Take away 18 from 30 | 30 − 18 =

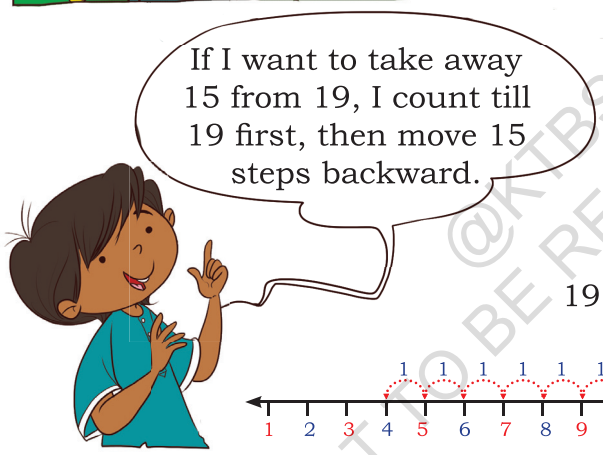
D. Take away 14 from 23 | 23 − 14 =

E. Take away 17 from 26 | 26 − 17 =

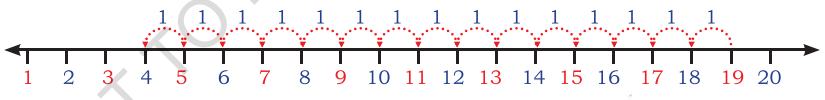


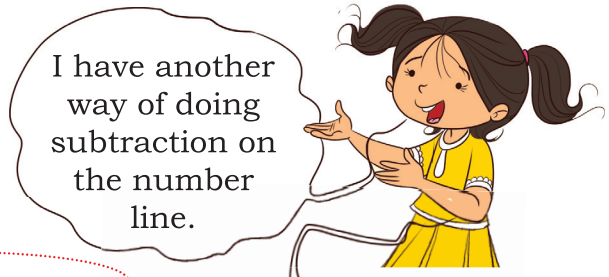
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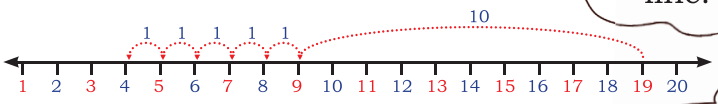




19 − 15 = 4







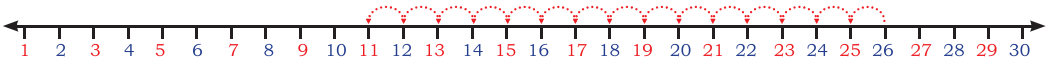
We can directly jump back 10 steps and then go 5 steps back to reach 4.

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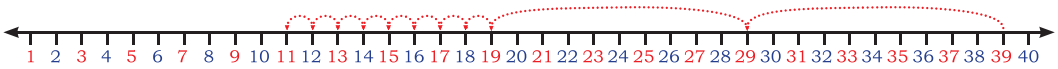
Chapter_06.indd 61 19-06-2023 16:05:10

Let us do some practice on number line.

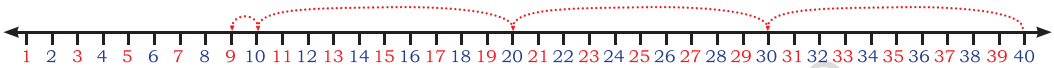
Read the number line and fill the boxes.



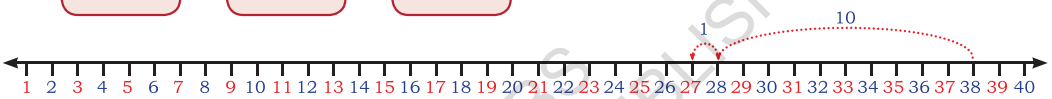
A. 26 − ☐ = ☐



B. 39 − 28 = ☐



C. ☐ − ☐ = ☐



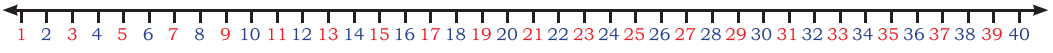
D. 38 − 11 = ☐



E. 22 − 22 = ☐



F. 14 − 0 = ☐



G. 35 − 12 = ☐

Discuss with children about subtracting zero and subtracting the number with itself by taking examples from daily life situations, like, spending all money or spending no money.



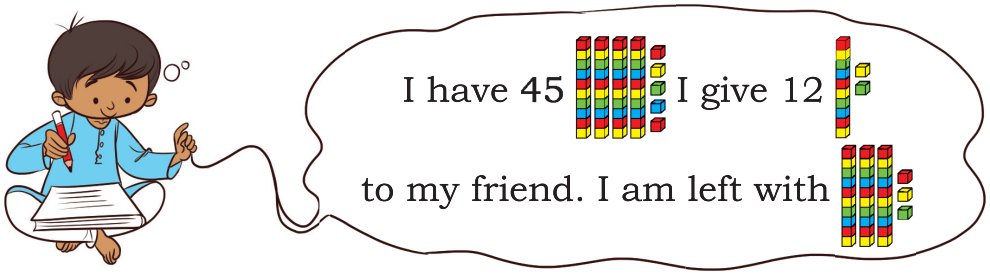


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Playing with Blocks



10 1

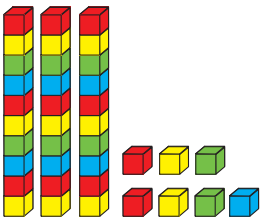


T	O
4	5
− 1	2

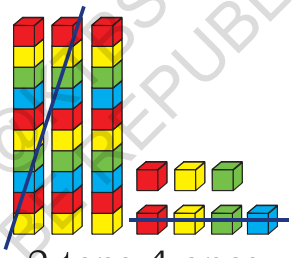
T	O
4	**5**
− 1	**2**
	3

T	O
4	5
− **1**	2
3	3

Subtract 24 from 37



3 tens 7 ones



2 tens 4 ones

T	O
3	7
− 2	4



Let us Do

2 4	5 4	3 2	4 6
− 1 3	− 3 1	− 1 2	− 3 4

A. Shikha has ₹82. She bought pencils for ₹22. How much money is she left with?

B. Ruby has ₹60. She bought a notebook for ₹20. How much money is she left with?

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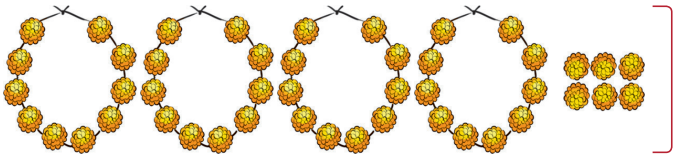


Decorating with Garlands

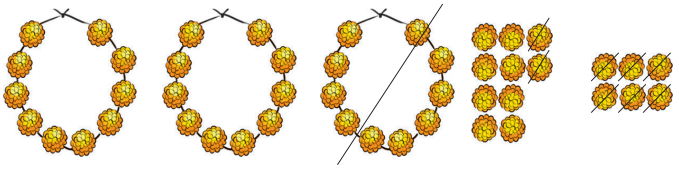


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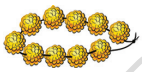
46



To give 18

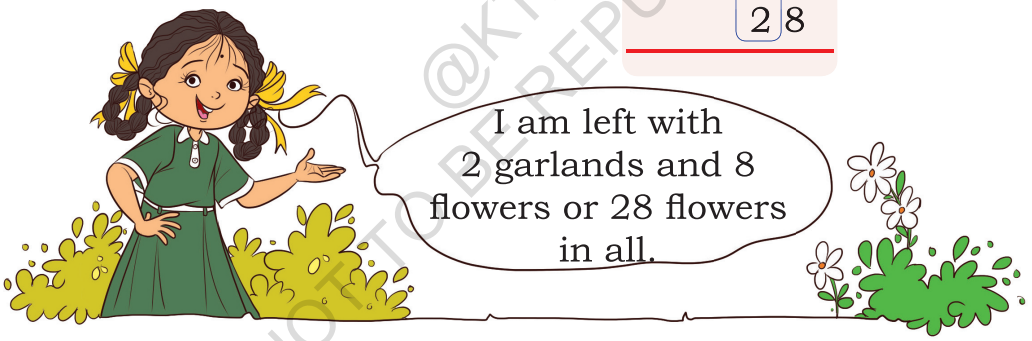
T	O
4	6
− 1	8

T	O
~~3~~	~~16~~
~~4~~	~~6~~
− 1	8
	8

(opens 1  = 16)

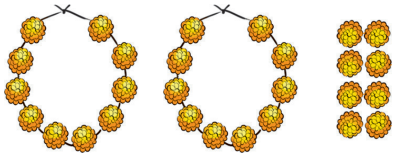
16 − 8 = 8

T	O
~~3~~	~~16~~
~~4~~	~~6~~
− 1	8
2	8



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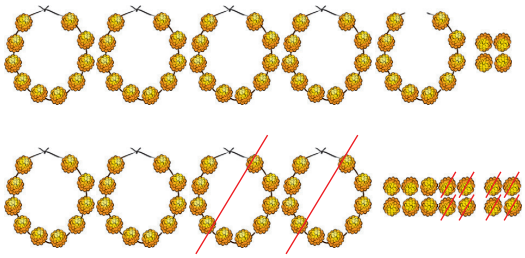
Now, Jyoti has 28 flowers in all. She gives 5 to her friend. Help Jyoti to find out how many flowers is she left with?



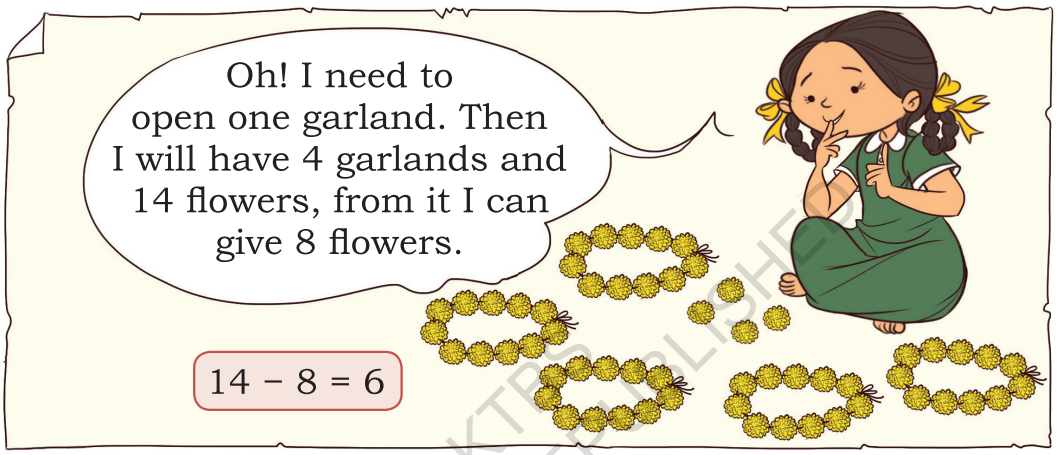
2	8
−	5



Now, Jyoti has 54 flowers in all. She gives 28 to her mother. How many flowers is she left with?



$$\begin{array}{r} 5\ 4 \\ -\ 2\ 8 \\ \hline \\ \hline \end{array} \rightarrow \begin{array}{r} {\scriptstyle 4\ 14} \\ 5\ \cancel{4} \\ -\ 2\ 8 \\ \hline 6 \\ \hline \end{array} \rightarrow \begin{array}{r} {\scriptstyle 4\ 14} \\ \cancel{5}\ \cancel{4} \\ -\ 2\ 8 \\ \hline 2\ 6 \\ \hline \end{array}$$



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Jyoti has 73 flowers in all. She gives 47 to her mother. How many flowers is she left with?



	Garlands	Flowers
Jyoti has	7	3
Jyoti gives	4	7
Jyoti is left with		

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Let us Do

45 − 18 _____	84 − 37 _____	65 − 45 _____	27 − 27 _____	93 − 48 _____

Skip the Rope

Aman and Avni are playing 'skip the rope'. Both have to complete 20 skips. A skip can be counted when the rope passes under the feet. They will get two chances to skip. If one misses any skip in the first time then they will get one more chance to complete 20 skips.



A. Aman skipped 14 times in the first chance. How many more skips he has to make to complete 20 skips?

20 − 14 = ____ 14 + ____ = 20

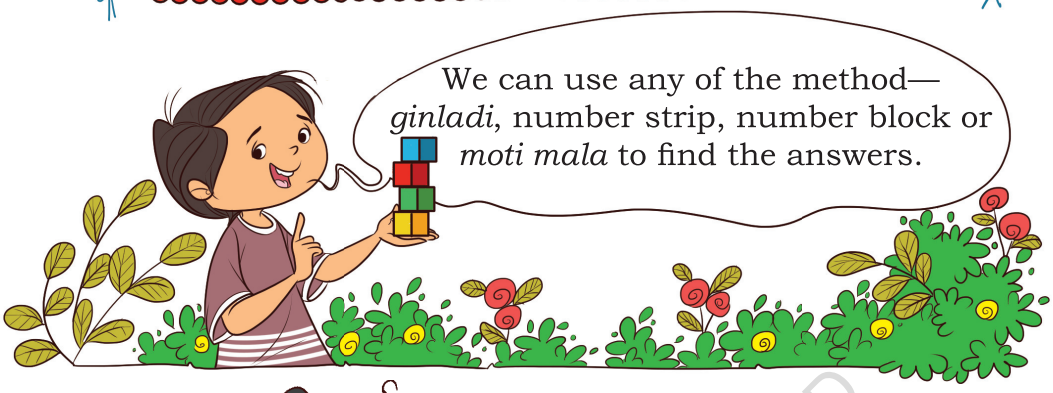
B. Avni skipped 12 times in the first chance. How many more skips she has to make to complete 20 skips?

20 − 12 = ____ 12 + ____ = 20

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Let us Do



A. Anushka collected 63 shells. She gave 26 shells to her brother. How many shells are left with her?

B. 54 passengers were sitting in the bus and 16 got down at the bus stand. How many are there in the bus now?

C. There were 40 balloons and 13 balloons got burst. How many balloons are left?

D. Kanika made 72 bangles. She sold 36 bangles. How many bangles are left with Kanika now?

E. 56 birds were sitting on the tree. A few more birds joined them. Now there are 87 birds. Find out the number of birds that came later.

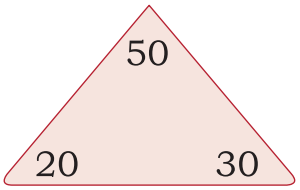
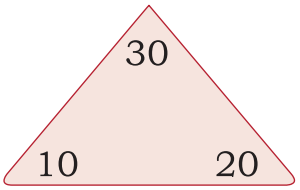
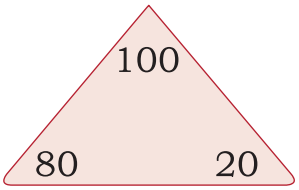
F. Arman dribbled the ball 18 times. How many more times should he dribble the ball to complete 35 taps?

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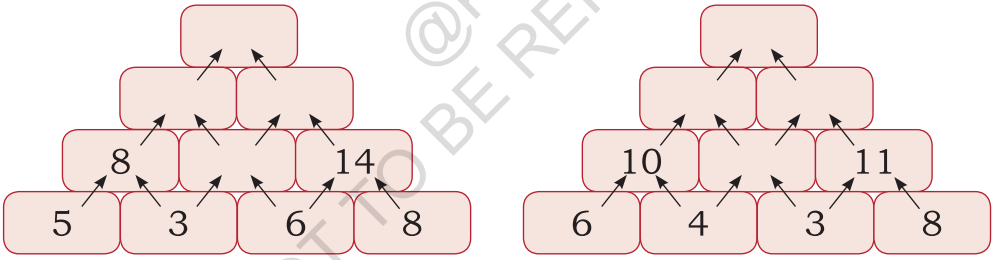
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Addition and Subtraction Facts

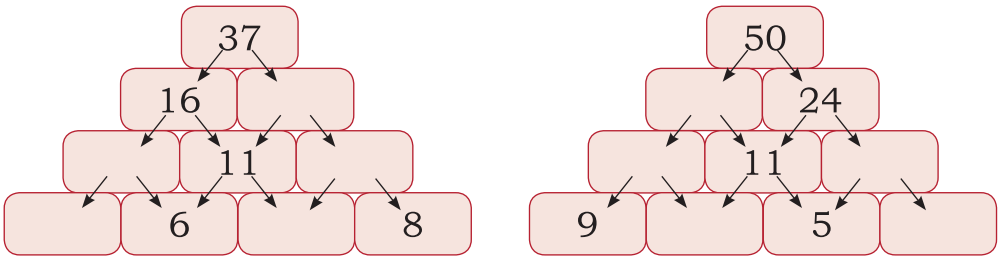
Fill the missing numbers to complete the fact family.

20, 30, 50	10, 20, 30	20, 80, 100
		
20 + 30 = ____ 30 + ____ = 50 50 − 30 = 20 ____ − 20 = 30	10 + 20 = ____ ___ + ___ = ___ 30 − ____ = 10 30 − ____ = 20	

Addition and Subtraction Pyramid



Addition pyramid



Subtraction pyramid

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Look at this diagram.

3	12	9
8		15
5	11	6

Here, 3 + 9 = 12, 9 + 6 = 15, 6 + 5 = 11, 5 + 3 = 8

Now complete the following diagrams.

A.

1	5	
9		10
	14	

B.

	10	
9		13
	12	

Hania and Mansi's Gift

Hania and Mansi want to give a gift to their mother. For its decoration, they purchased some ribbons and a gift wrapper.

There are ₹78 in the purse. The cost of a gift wrapper is ₹24 and the cost of ribbons is ₹37.

A. How much money did they spend?

B. How much money is left with them?





Project Work

Daljeet has solved some questions and writen down their answers. What do you think? Are they correct? Verify the answers.

Correct it if you find them wrong.

25 + 36 = 511	37 + 58 = 131	35 − 17 = 22	57 − 78 = 21	30 − 17 = 27



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