

Model Textbook of **Mathematics**



Based on National Curriculum 2022-23



National Book Foundation
as
Federal Textbook Board, Islamabad



National Book Foundation

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Model Textbook of
Mathematics
Grade 2

Based on National Curriculum 2022-23



National Curriculum Council Secretariat,
Ministry of Federal Education and Professional Training,
Government of Pakistan



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Model Textbook of **Mathematics**
for Grade 2



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**TEST
EDITION**

PREFACE

This Model Textbook for Mathematics grade 2 has been developed by NBF according to the National Curriculum of Pakistan 2022. The aim of this textbook is to enhance learning abilities through inculcation of logical thinking in learners. The main objective of this book is to develop higher order thinking processes by systematically building upon the foundation of learning from the previous grades. A key emphasis of the present textbook is on creating real life linkages of the concepts and methods introduced. This approach was devised with the intent of enabling students to solve daily life problems as they go up the learning curve and for them to fully grasp the conceptual basis that will be built upon in subsequent grades.

An amalgamation of the efforts of experts and experienced authors, this book was reviewed and finalized after extensive reviews by professional educationists. Efforts were made to make the contents student friendly and to develop the concepts in interesting ways.

The National Book Foundation is always striving for improvement in the quality of its books. The present book features an improved design, better illustration and interesting activities relating to real life to make it attractive for young learners. However, there is always room for improvement and the suggestions and feedback of students, teachers and the community are most welcome for further enriching the subsequent editions of this book.

May Allah guide and help us (Ameen).

Dr. Raja Mazhar Hameed
Managing Director



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Unit-1

Whole Numbers and Patterns



By the end of this unit, you will be able to:

- Count numbers up to and across 999 (3-digit numbers) forwards and backwards, beginning from zero or one, or from any given number.
- Read and write numbers up to 999 in numerals and up to 99 in words.
- Recognize the place value of each digit in 3-digit numbers (hundreds, tens, ones/units).
- Compare and order numbers up to 999 using appropriate language and $<$, $>$ and $=$ signs.
- Identify even and odd numbers.
- Round numbers to the nearest tens using different concrete objects and pictorial representations.
- Recognize the position of objects and write it using ordinal numbers up to 20.
- Read and write Roman Numbers up to 12.
- Complete geometrical patterns (e.g., on a square grid) according to one or two of the following orientations:
 - Shape, size or colour.
- Explore patterns in a variety of ways using 2-D and 3-D shapes.
- Identify and extend repeating, increasing and decreasing number patterns (for e.g., on a number line or on a hundreds chart)

Asif is studying in a library.
Can you count the books
on the shelf?



Counting up to 100 in words

Let us read and write counting up to 100.

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

29 Twenty-nine	37 Thirty-seven	45 Forty-five	53 Fifty-three
30 Thirty	38 Thirty-eight	46 Forty-six	54 Fifty-four
<input type="text"/> Thirty-one	39 Thirty-nine	<input type="text"/> Forty-seven	55 Fifty-five
32 Thirty-two	<input type="text"/> Forty	48 Forty-eight	56 Fifty-six
33 Thirty-three	41 Forty-one	49 Forty-nine	57 Fifty-seven
34 Thirty-four	42 Forty-two	<input type="text"/> Fifty	58 Fifty-eight
35 Thirty-five	43 Forty-three	51 Fifty-one	<input type="text"/> Fifty-nine
36 Thirty-six	44 Forty-four	52 Fifty-two	60 Sixty

61

Sixty-one

69

Sixty-nine

77

Seventy-seven



Eighty-five

62

Sixty-two

70

Seventy

78

Seventy-eight

86

Eighty-six



Sixty-three

71

Seventy-one



Seventy-nine

87

Eighty-seven

64

Sixty-four



Seventy-two

80

Eighty

88

Eighty-eight

65

Sixty-five



Seventy-three

81

Eighty-one

89

Eighty-nine



Sixty-six

74

Seventy-four

82

Eighty-two



Ninety

67

Sixty-seven

75

Seventy-five

83

Eighty-three

91

Ninety-one

68

Sixty-eight

76

Seventy-six

84

Eighty-four

92

Ninety-two

93
Ninety-three

Ninety-five

97
Ninety-seven

99
Ninety-nine

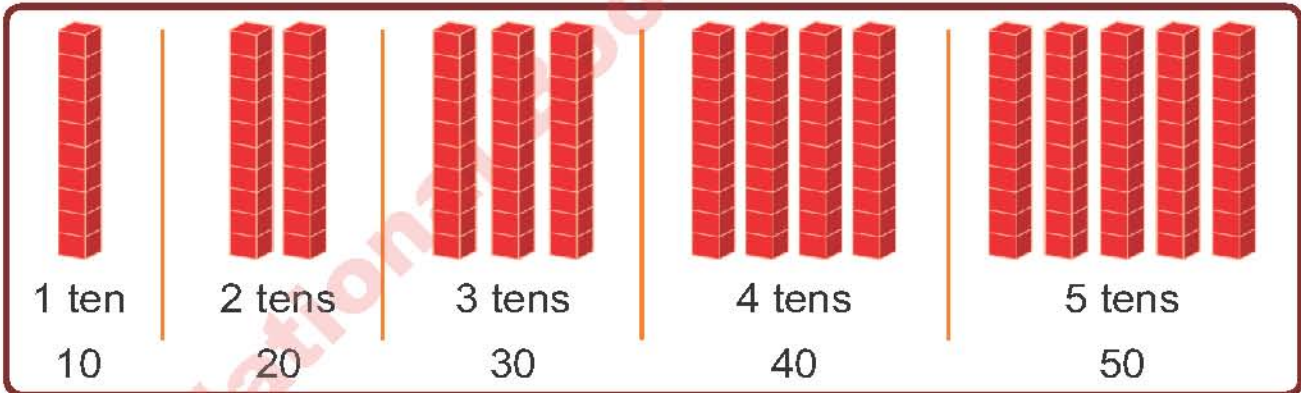
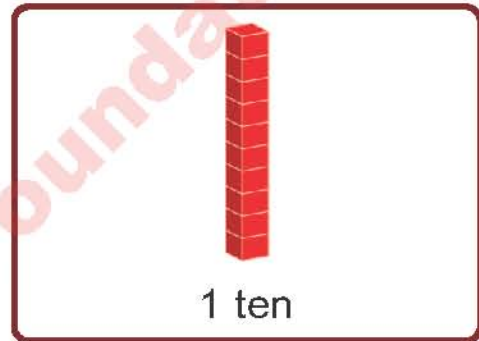
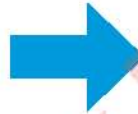
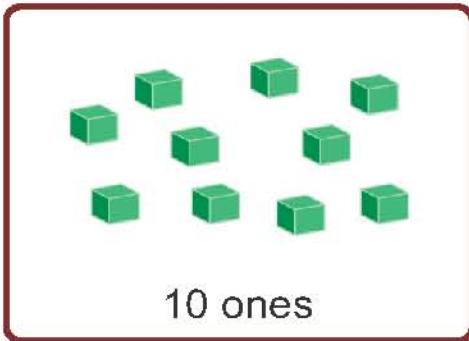
94
Ninety-four

96
Ninety-six

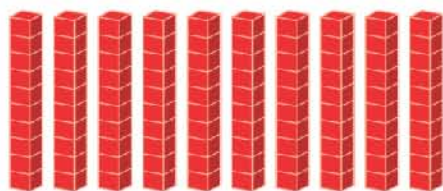
Ninety-eight

100
One Hundred

3-digit Numbers



If we keep counting in tens, we get



10 tens



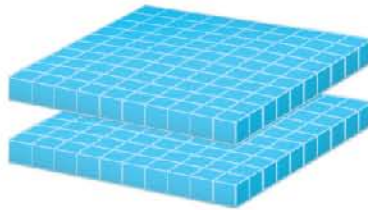
100 (one hundred)

Let us count in 100s with the help of blocks.



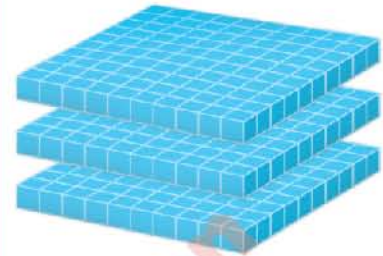
100

1 hundred



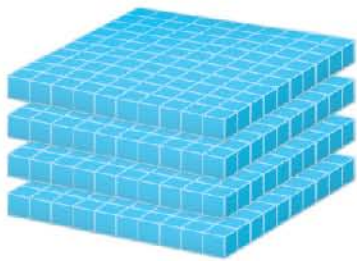
200

2 hundred



300

3 hundred



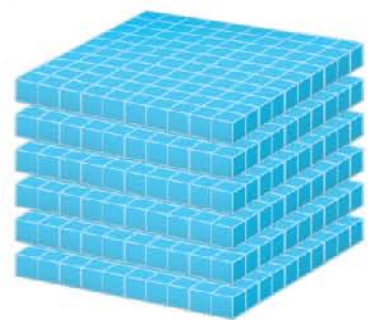
400

4 hundred



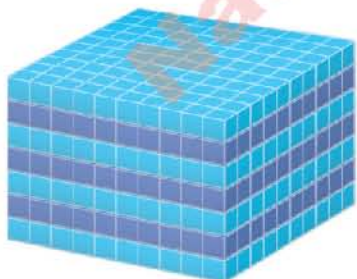
500

5 hundred



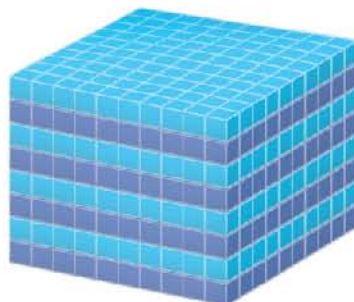
600

6 hundred



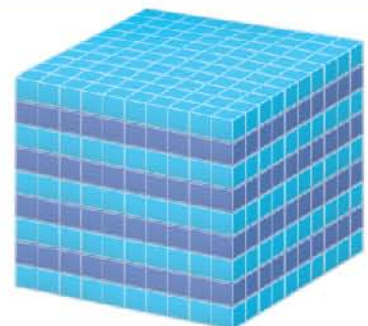
700

7 hundred



800

8 hundred



900

9 hundred

One Thousand

Hundreds	Tens	Ones
9	9	9



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

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

$$999 + 1 = 1,000 \quad \text{one thousand}$$

1,000 is the first 4-digit number.

In the place value chart we represent one thousand as:

Thousands	Hundreds	Tens	Ones
1	0	0	0



Key Fact

1,000 is the smallest 4-digit number.



Introduce to the children that 1,000 as 'one more than 999'. Tell them that 1,000 is the first and the smallest 4-digit number.



EXERCISE - 1

1. Write the following in numerals.

One hundred and fifty-two	
Three hundred and thirty-eight	
Four hundred and fifty	
Five hundred and nine	
Six hundred and fifty-eight	
Seven hundred and eleven	
Eight hundred and sixty-eight	
Nine hundred and ninety-nine	

2. Write the following numbers in words.

275	Two hundred and seventy-five
345	
432	
560	
689	
709	
811	
990	

3. Write the missing numbers.

300	331				335				339					344
		347					352					357		

450						456					461			
	466							473		475				479

500	501			504					509				513	
		517				521								529

650	651				655				659				666		669
		672				677			681					688	

725					730			733	735				740			744
				749							757				762	

800					805						811					
	816									824						829

882				886					891				894			
897							903								910	

869			872							878					882	
								991								998



Divide the students in groups and give them a number. Encourage and guide them to write forward and backwards counting from the given numbers on the board.

4. Fill in the missing numbers when forward counting in tens.

20	30	40						100			130			160
	260				300							370		390
530				570				610						660
		820	830					880	890	900				940

5. Fill in the missing numbers when backward counting in tens.

290	280					230					180			150
350	340			310		290								210
840					790								710	
990						930					880			850

6. Fill in the missing numbers.

0	100	200							900
10	110			410				810	
50		250				650			
80									980

7. Fill in the missing numbers.

910	810	710				310			10
950			650				250		
980		780				380			
900									0





Encourage the students to read and write the next numbers from the given numbers by counting in 10s and 100s.

Place Value of 3-digit Numbers

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



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

Hundreds	Tens	Ones
		
	2 tens	6 ones
	20	6




$$20 + 6 = 26$$

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

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



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

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

$$200 + 40 + 5 = 245$$

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

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

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

EXERCISE - 2

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

<p>136</p> <p>6 ones</p> <p>3 tens</p> <p>1 hundreds</p>	<p>285</p> <p>□ ones</p> <p>□ tens</p> <p>□ hundreds</p>	<p>412</p> <p>□ ones</p> <p>□ tens</p> <p>□ hundreds</p>
<p>360</p> <p>□ ones</p> <p>□ tens</p> <p>□ hundreds</p>	<p>507</p> <p>□ ones</p> <p>□ tens</p> <p>□ hundreds</p>	<p>771</p> <p>□ ones</p> <p>□ tens</p> <p>□ hundreds</p>
<p>649</p> <p>□ ones</p> <p>□ tens</p> <p>□ hundreds</p>	<p>800</p> <p>□ ones</p> <p>□ tens</p> <p>□ hundreds</p>	<p>999</p> <p>□ ones</p> <p>□ tens</p> <p>□ hundreds</p>

2. Write the place value of the coloured digits.

125 (2 tens)	270 (2 tens)	598 (9 tens)
418 (4 hundreds)	600 (6 hundreds)	301 (3 hundreds)
764 (7 hundreds)	996 (9 hundreds)	850 (8 hundreds)

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

$100 + 30 + 2 = 132$

$200 + 10 + 5 = \bigcirc$

$500 + 50 + 0 = \bigcirc$

$400 + 0 + 2 = \bigcirc$

$700 + 10 + 9 = \bigcirc$

$800 + 80 + 8 = \bigcirc$

$600 + 00 + 0 = \bigcirc$

$900 + 90 + 6 = \bigcirc$

4. Write the number for the given place value.

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

COMPARING NUMBERS

Compare 426 and 731.

426		
Hundreds	Tens	Ones
4	2	6

Hundreds	Tens	Ones
4	2	6
7	3	1

731		
Hundreds	Tens	Ones
7	3	1

We compare the digits in the hundreds place.
7 hundreds is greater than 4 hundreds.

731 is greater than ($>$) 426 OR 426 is smaller than ($<$) 731

731 $>$ 426 OR 426 $<$ 731

Compare 583 and 546.

583		
Hundreds	Tens	Ones
5	8	3

Hundreds	Tens	Ones
5	8	3
5	4	6

546		
Hundreds	Tens	Ones
5	4	6

First, we compare the digits in the **hundreds** place. Both digits have the same value.

Now, we compare the digits in the **tens** place. Here **8 tens** is greater than **4 tens**.

583 is greater than ($>$) 546 OR 546 is smaller than ($<$) 583

583 $>$ 546 OR 546 $<$ 583

Compare 893 and 897.

893		
Hundreds	Tens	Ones
8	9	3

Hundreds	Tens	Ones
8	9	3
8	9	7

897		
Hundreds	Tens	Ones
8	9	7

If **hundreds** place digits and **tens** place digits of 3-digit numbers have the same values, then we compare the digits at **ones** place. Here, **7** is greater than **3**.

897 $>$ 893 OR 893 $<$ 897

ORDERING NUMBERS

Ascending Order

670 → 671 → 672 → 673 → 674 → 675 → 676 → 677 → 678 → 679

Descending Order

900 → 899 → 898 → 897 → 896 → 895 → 894 → 893 → 892 → 891




Ascending Order

300 → 301 → 302 → 303 → 304 → 305 → 306 → 307 → 308 → 309

Descending Order

205 → 204 → 203 → 202 → 201 → 200 → 199 → 198 → 197 → 196



Write different pairs of 3-digit numbers on board and explain how to compare numbers with the help of their place values without using symbols (<, >, =).



EXERCISE - 3

1. Compare each pair of numbers. Use symbols greater than ($>$), smaller than ($<$) or equal to ($=$).

273 341

821 572

583 791

523 543

773 773

483 483

269 296

320 302

560 650

245 323

393 282

867 863

495 446

425 470

782 792

172 172

321 312

178 168

2. Encircle the greater number and tick the smaller one.

18 121

248 98

198 218

600 599

749 497

899 999

895 900

225 226

300 290

3. Write the following numbers in ascending order.



--	--	--	--	--



--	--	--	--	--



--	--	--	--	--

4. Write the following numbers in descending order.



--	--	--	--	--



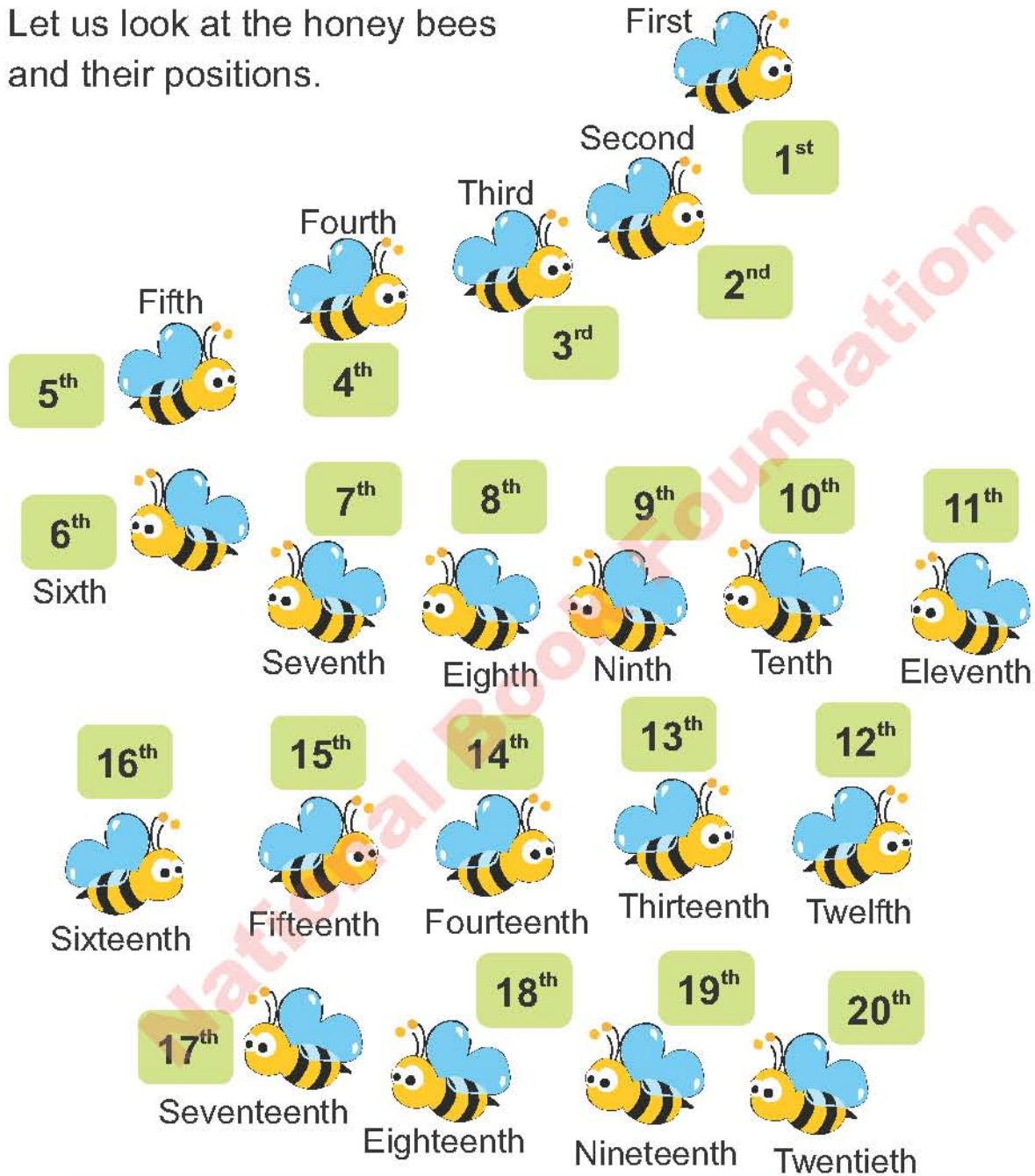
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--	--	--	--	--

Ordinal Numbers

Let us look at the honey bees and their positions.



Ordinal numbers are used to represent the position of objects.



For effective teaching and learning, use 'urdu or local language' as a medium of instruction to explain the concept of numbers.



EXERCISE - 4

Write the missing position of the first 20 English alphabets.

The image shows a winding road with 20 yellow cars. The cars are labeled with letters A through T. The positions of the cars are indicated by boxes above them. The letters and their positions are: A (1st), B (2nd), C (3rd), D (4th), E (5th), F (6th), G (7th), H (8th), I (9th), J (10th), K (11th), L (12th), M (13th), N (14th), O (15th), P (16th), Q (17th), R (18th), S (19th), and T (20th). There are empty boxes for the missing positions: 4th, 5th, 6th, 7th, 8th, 9th, 11th, 12th, 13th, 14th, 16th, 17th, 18th, 19th, and 20th.



Ask the students to stand in a queue (or game) and explain their positions using ordinal numbers.



Count the following sweets in pairs of 2.

What are the **even**, and **odd** numbers?



Key Fact

Numbers that can be arranged in pairs are called **even** numbers.

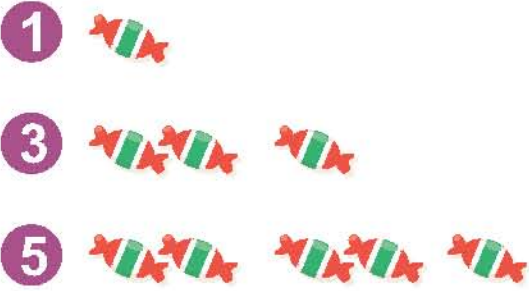


Key Fact

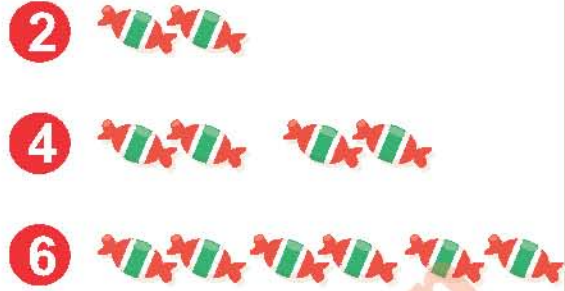
Numbers that can not be arranged in pairs are called **odd** numbers.

The number of sweets which are in pairs, are called **even** numbers, and the sweets that are not in pairs, are called **odd**

Odd



Even



EXERCISE - 5

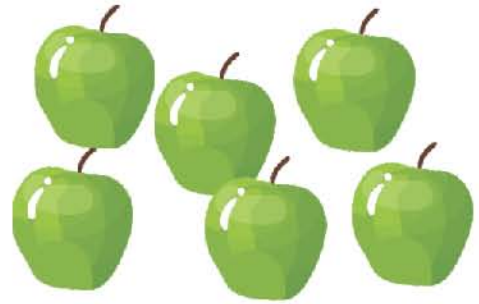
1. Count the following and tick (✓) the appropriate box.



Odd

Even

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------



Odd

Even

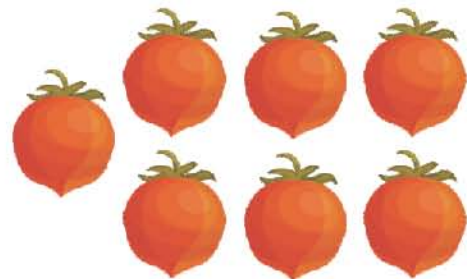
<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------



Odd

Even

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------



Odd

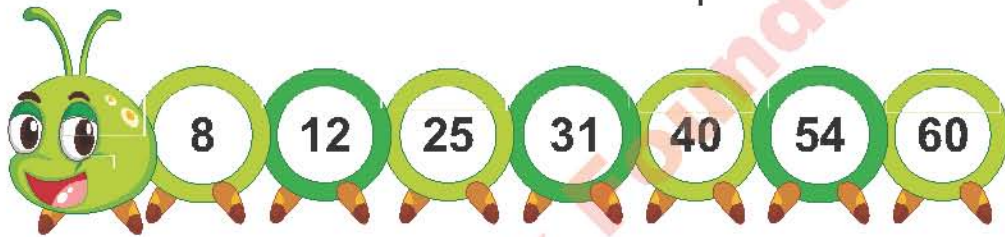
Even

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

2. Write even or odd in front of the given numbers.

2	Even	15	Odd
9		23	
16		64	
42		79	

3. Separate even and odd numbers in the space below.



Even

Odd

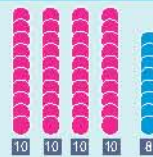
8	25

Estimation

Rounding off to the Nearest 10



My mother paid Rs.48 for buying pencils.
How can I round off this amount to the
nearest 10?



Keep in mind the following rules:

- If the digit at unit place is less than 5, the unit digit is replaced by zero.

$$34 \approx 30$$

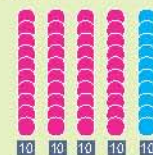
34 is rounded off to 30.

- If the digit at unit place is 5 or greater than 5 then unit place is replaced by '0' and tens place is increased by "1".

So, rounded of value of 48 to the nearest 10 is 50. We write:

$$48 \approx 50$$

48 is rounded off to 50.



Let us round off the following numbers to the nearest 10.

Numbers	Nearest 10
27	30
72	70
177	180
236	240
453	450



EXERCISE - 6

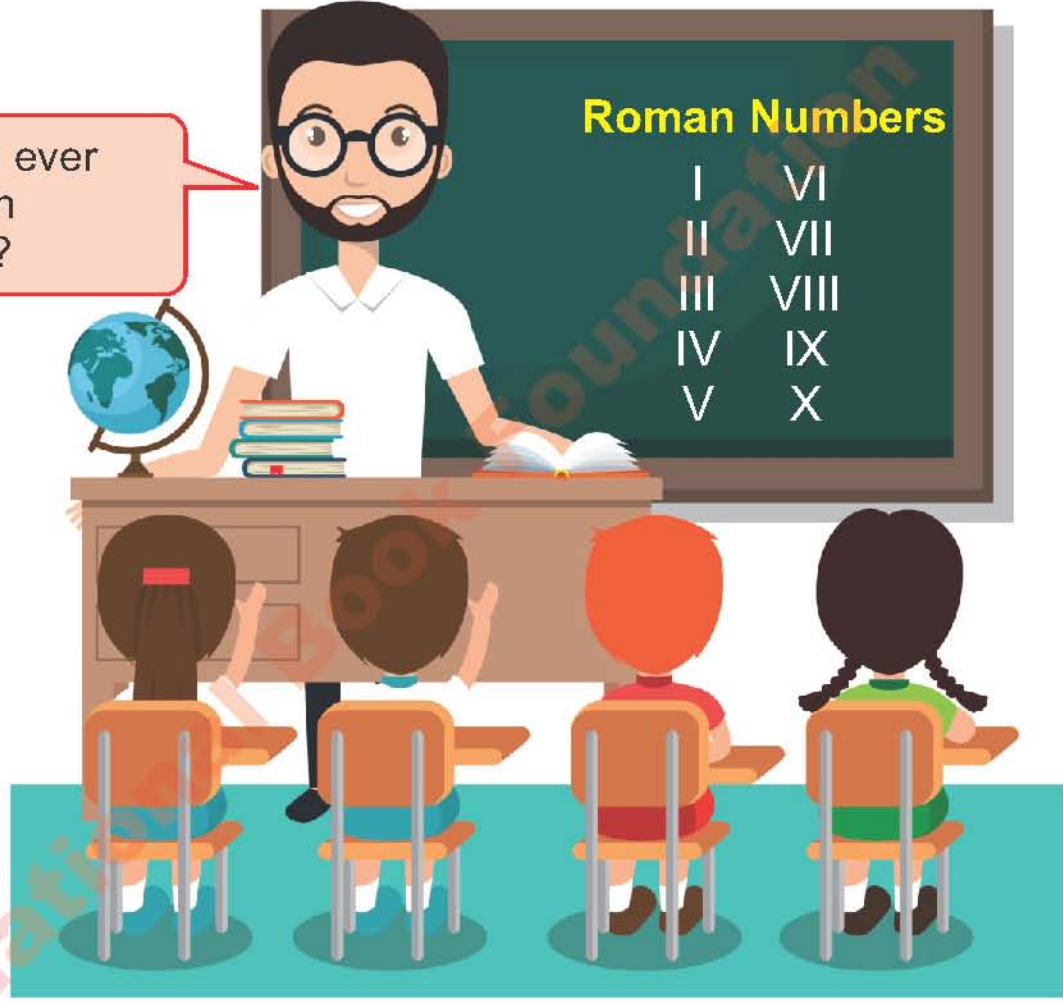
1. Round off the following numbers to the nearest 10.

Numbers	Nearest 10	Numbers	Nearest 10
16		21	
32		34	
126		148	
185		535	
266		777	

Roman Numbers



Have you ever seen such numbers?



Roman Numbers

- | | |
|-----|------|
| I | VI |
| II | VII |
| III | VIII |
| IV | IX |
| V | X |



Are these numbers or symbols?

Ancient Romans used these numbers for counting and are called Roman Numbers.



Roman numbers can be written as:

I	=	1
II	=	2
III	=	3
IV	=	4
V	=	5
VI	=	6
VII	=	7
VIII	=	8
IX	=	9
X	=	10
XI	=	11
XII	=	12

Read the roman numbers:
III, VI, X and XI.



III is called 3
VI is called 6
X is called 10
XI is called 11




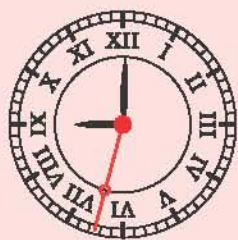
Roman Numbers upto 12

Class Activity: Write the missing numbers.

Numbers	Roman Numbers	Numbers	Roman Numbers
1		7	
2			VIII
	III		IX



 Try Yourself

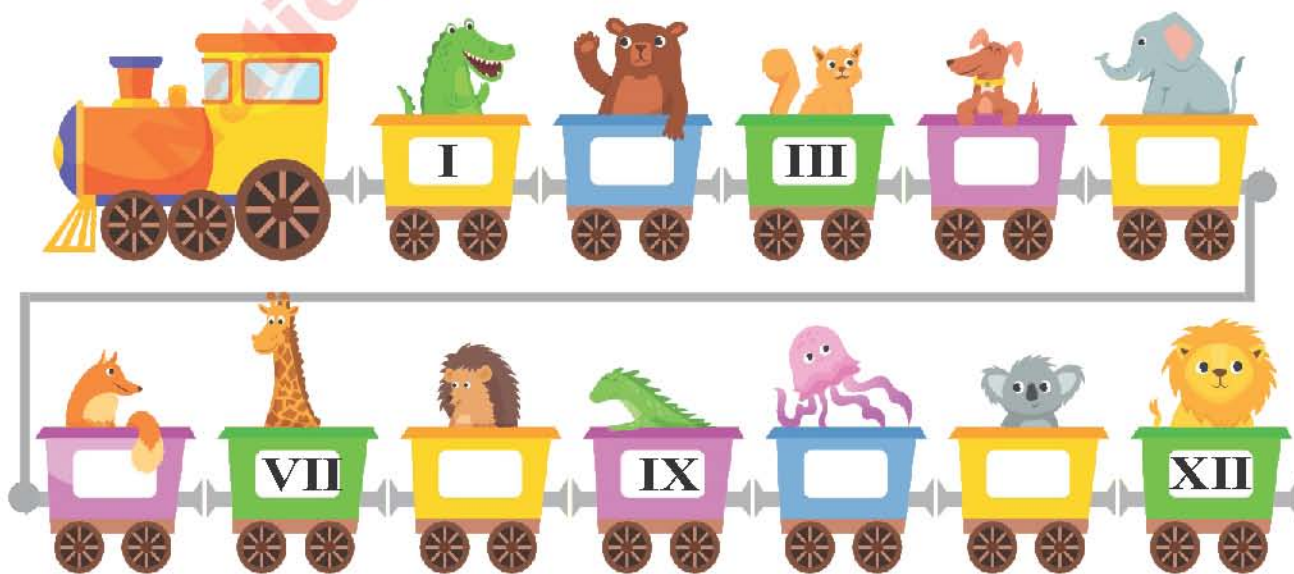


Write the time by looking at the clocks.





EXERCISE - 7


1. Write the missing Roman numbers.



2. Write in Roman Numbers.


2 = 

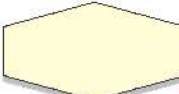
6 = 

12 = 

10 = 

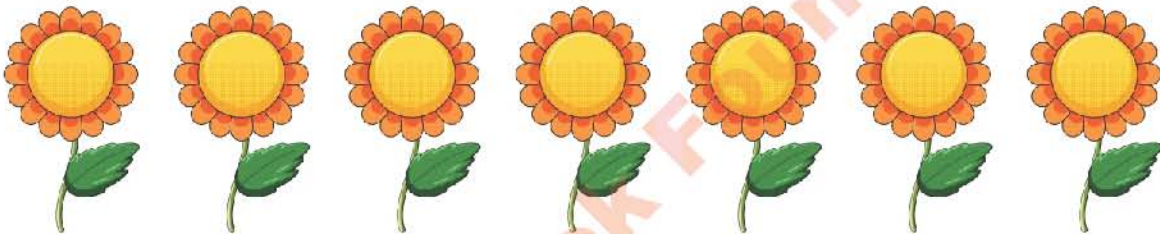
5 = 

8 = 

9 = 

11 = 

3. Count the flowers and write in roman numbers.

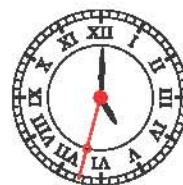
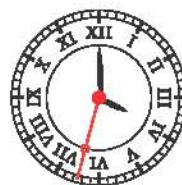
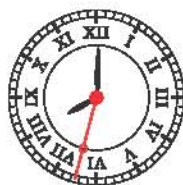


.....

4. Write the missing numbers.



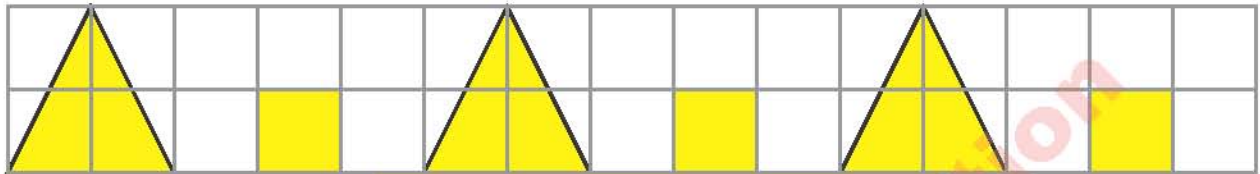
5. Write the time below each clock.



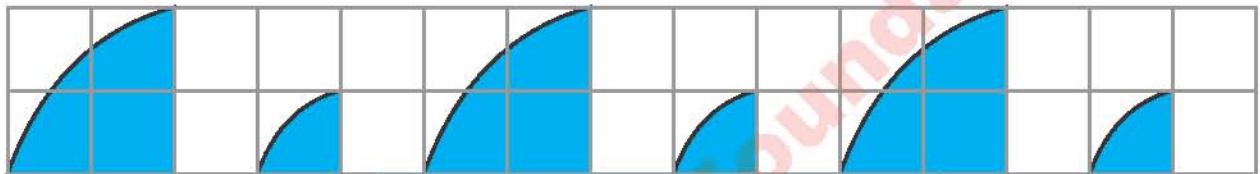
Patterns



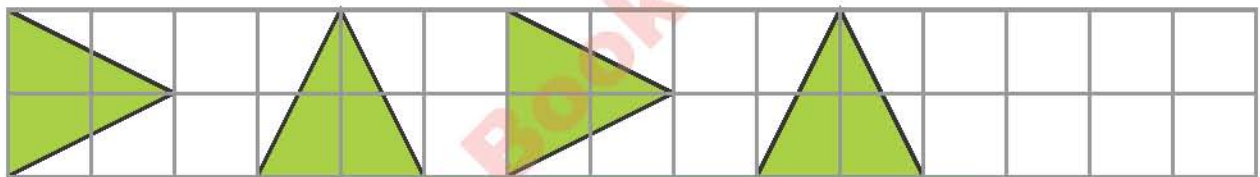
A patterns is an arrangement of repeated numbers or shapes.



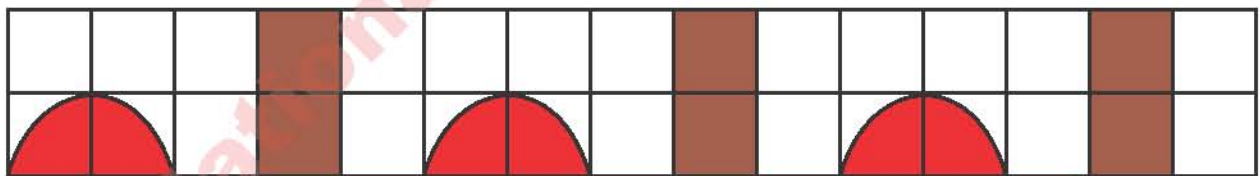
Pattern of change in shape



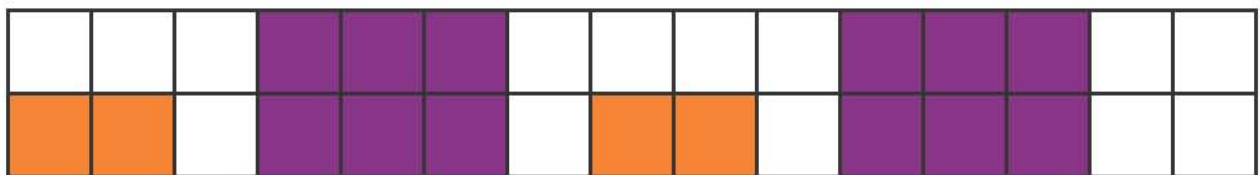
Pattern of change in size



Pattern of change in direction



Pattern of change in shape and colour



Pattern of change in size and colour

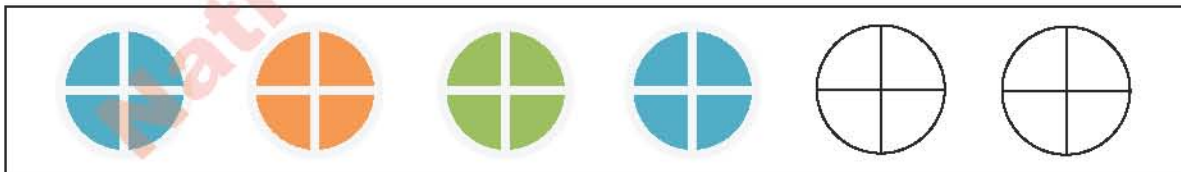
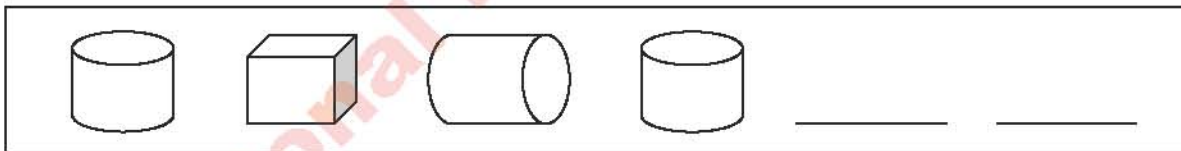
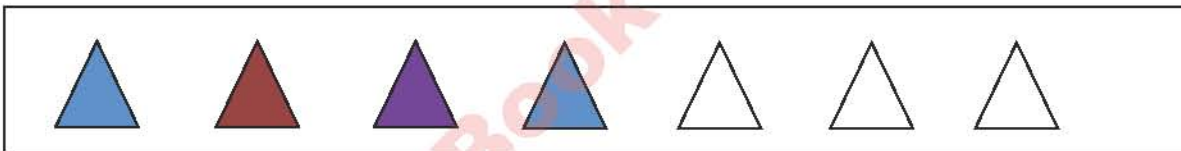
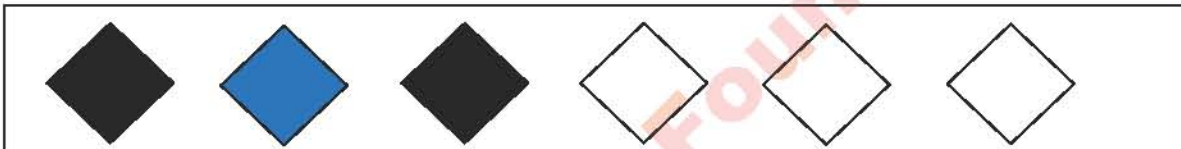
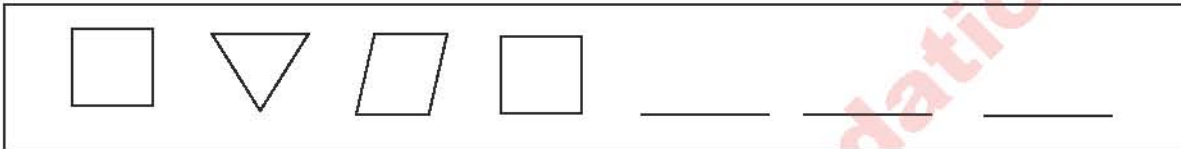
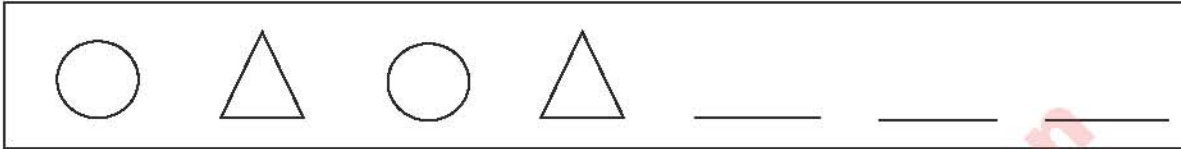


Guide and help the students to make patterns. Provide a square grid to the students.

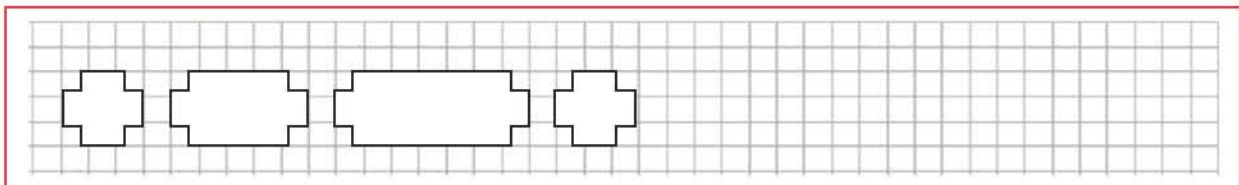


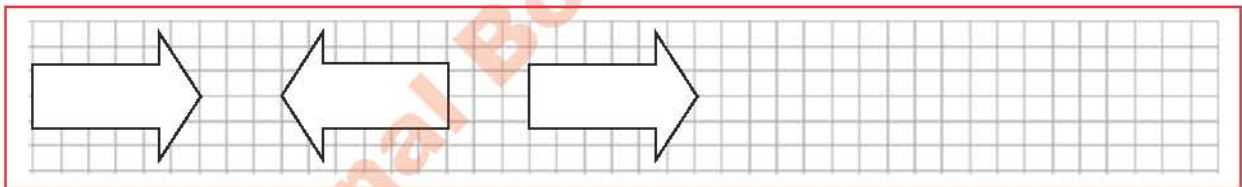
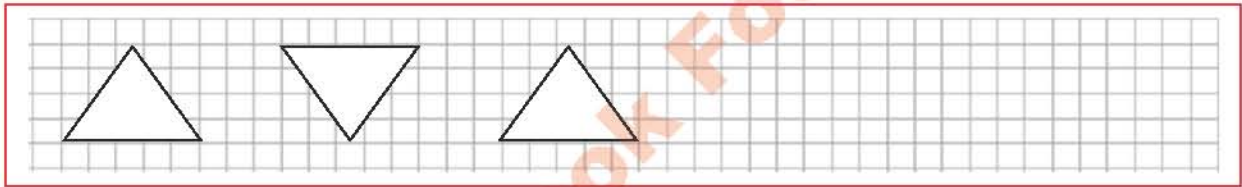
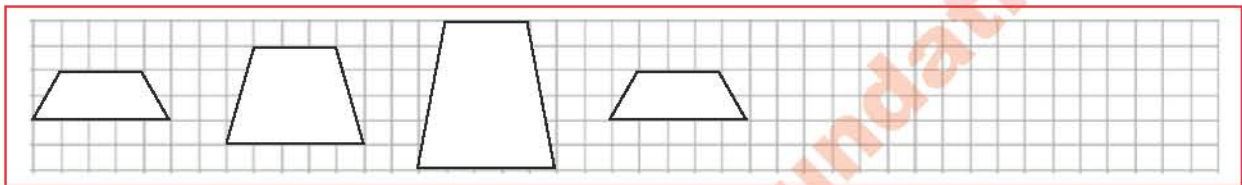
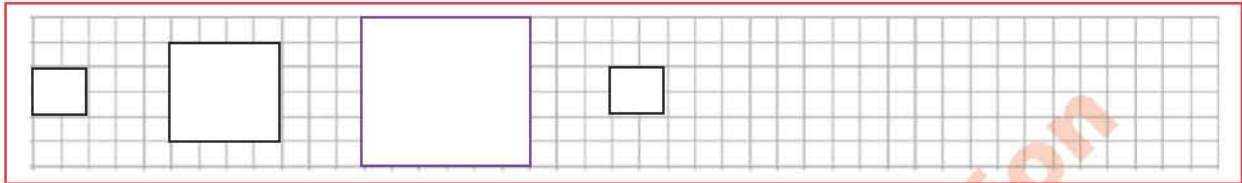
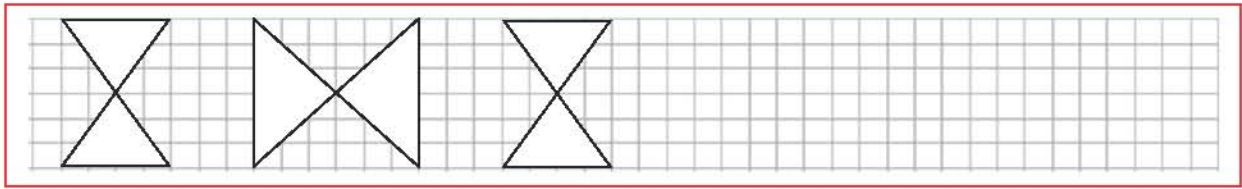
EXERCISE - 8

1. Complete the patterns according to shape or colour.

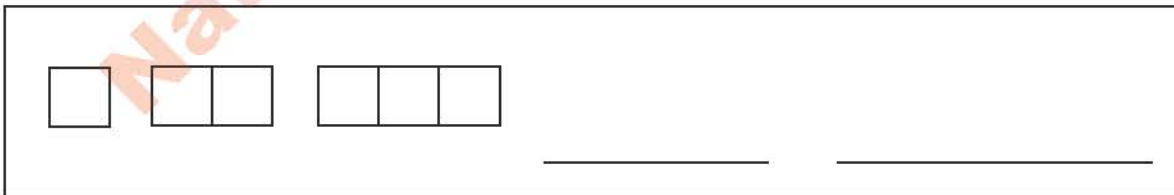


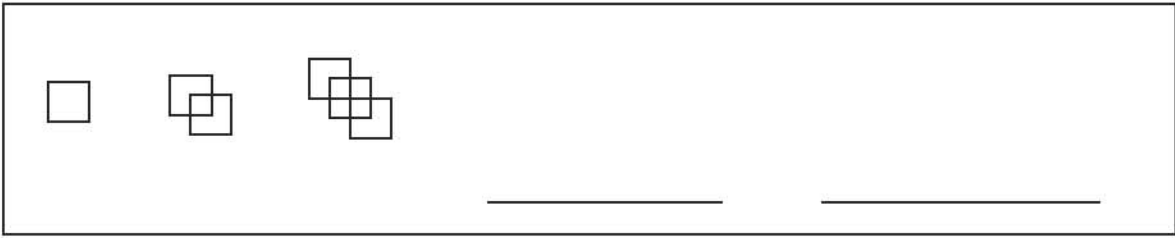
2. Complete the patterns according to size or direction.





3. Complete the patterns.





Number Patterns



We can create patterns of numbers like shapes.

Let us create a pattern starting from 2 and by adding 3.

2

Second number in the pattern is: 5 ← $2 + 3 = 5$

Similarly, third number in the pattern is:

8 ← $5 + 3 = 8$

In the same way first five terms of the pattern can be written as:

2 5 8 11 14

Above pattern can be shown on the number line as follows.

Try Yourself

Find the next 3 terms of the pattern.

1 3 5



EXERCISE - 9

1. Write the missing numbers in the following number patterns.

- (i)

10	15	20						
----	----	----	--	--	--	--	--	--
- (ii)

5	8		14	17				
---	---	--	----	----	--	--	--	--
- (iii)

1	5				21		29	33
---	---	--	--	--	----	--	----	----
- (iv)

2	12		32					
---	----	--	----	--	--	--	--	--
- (v)

3	9	15			33	39		
---	---	----	--	--	----	----	--	--
- (vi)

90	80		60					10
----	----	--	----	--	--	--	--	----
- (vii)

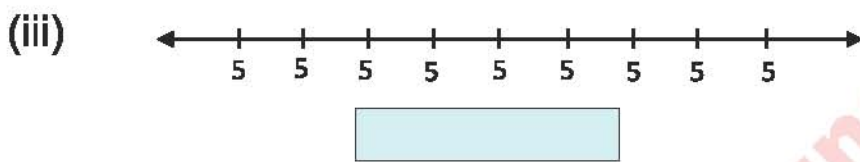
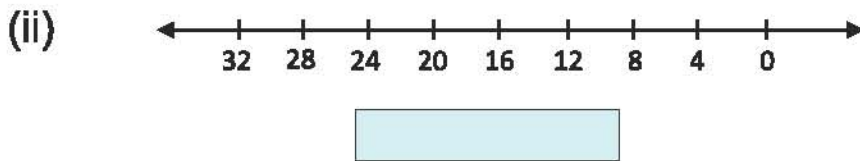
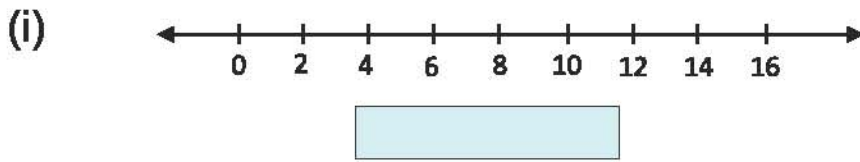
4	7		13	16				
---	---	--	----	----	--	--	--	--
- (viii)

		7	9	11				
--	--	---	---	----	--	--	--	--

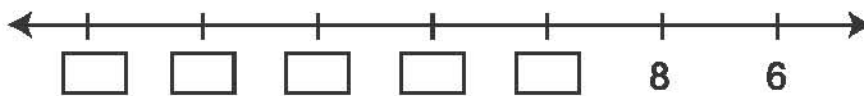
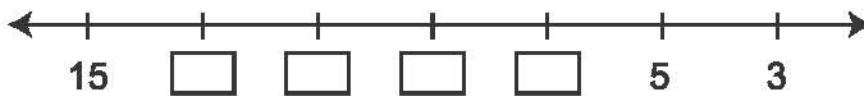
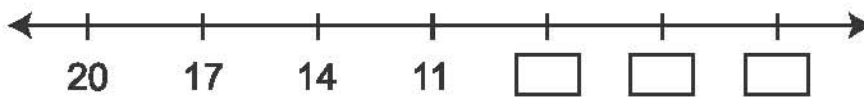
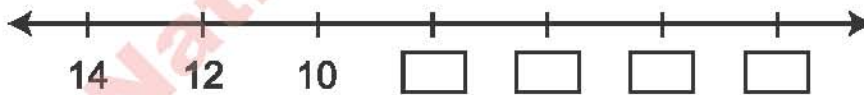
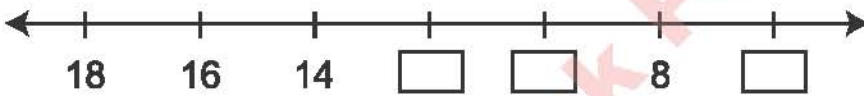
2. Locate a minimum of 10 patterns from the table of first 100 numbers. One have been done for you.

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

3. Identify the following patterns on number lines as increasing, decreasing or repeating.



4. Find the missing numbers on the following number line patterns.





- using the ordinal numbers to represent the position of the objects.
- reading and writing numbers up to 3-digits.
- identifying the place value of 3-digit numbers.
- comparing and ordering 3-digit numbers.
- recognizing even and odd numbers.
- counting and writing in 10s and 100s.
- recognizing that 1,000 is one more than 999 and the first 4-digit number.
- recognizing Roman Numbers up to 12.
- completing geometrical patterns according to shape, size or colour.
- exploring patterns in a variety of ways using 2-D and 3-D shapes.
- identifying and extending repeating, increasing and decreasing number patterns.

Vocabulary

ordinal numbers
 compare
 ascending order
 descending order
 Roman Numbers
 Pattern
 Shapes Pattern
 Numbers Pattern

Review Exercise



1. Choose the correct option.
 - i) In words, 46 is written as _____.
 (a) thirty-six (b) forty-six (c) fifty-six (d) sixty-six
 - ii) Ordinal numbers are used to represent the _____ of the objects.
 (a) shapes (b) quantity (c) position (d) place value
 - iii) Nine hundred and nine is written in numeral form as _____.
 (a) 109 (b) 901 (c) 999 (d) 909

- iv) In 158, the place value of 1 is _____.
- (a) 1 (b) 10 (c) 100 (d) 1,000
- v) In 989 990 909 999, which number is the greatest?
- (a) 999 (b) 909 (c) 990 (d) 989
- vi) The sixth term in the pattern of numbers 1, 3, 5, ... is:
- (a) 7 (b) 9 (c) 11 (d) 13
- vii) The 5th term in the pattern of numbers 10, 8, 6, ... is:
- (a) 1 (b) 2 (c) 3 (d) 4
- viii) What is the first number of pattern: ____, 10, 15, 20, 25?
- (a) 5 (b) 6 (c) 7 (d) 9
- ix) The missing number of pattern 12, 16, ..., 24, 28 is:
- (a) 17 (b) 18 (c) 19 (d) 20

2. Recall English alphabets and write the position of the given alphabets.

D <u>4th</u>	G <u> </u>	J <u> </u>	M <u> </u>	I <u> </u>
T <u> </u>	Q <u> </u>	K <u> </u>	S <u> </u>	N <u> </u>

3. Write the numbers in numerals.

- i) Eighty-nine _____
- ii) Three hundred and thirteen _____
- iii) Five hundred and six _____
- iv) Seven hundred and eighty-six _____
- v) Eight hundred and fifty-nine _____
- vi) Nine hundred and seventy-six _____

4. Write the numbers in words.

i) 96

ii) 269

iii) 404

iv) 890

v) 967

5. Write the place value of the coloured digits.

589 8 tens

490

756

600

850

915

6. Separate even and odd numbers.

78	19	23	98	20	56	36	79	97	38	11
----	----	----	----	----	----	----	----	----	----	----

7. Write the numbers in ascending and descending order.

415 105 145 514 501 405

Ascending order

Descending order

8. Express 1 to 12 numbers as Roman numbers.

1	2	3	4	5	6	7	8	9	10	11	12
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Unit-2

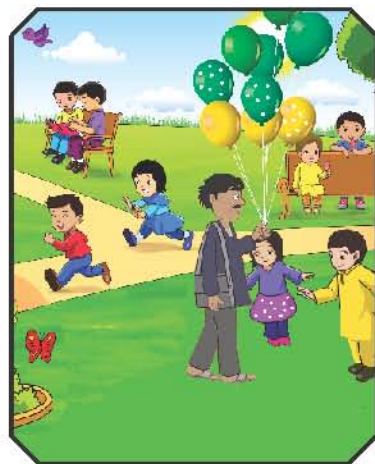
Addition and Subtraction



By the end of this unit, you will be able to:

- add up to 3-digit numbers with and without carrying.
- solve real life number stories, involving additions of 2-digit numbers with carrying.
- solve real life number stories involving addition of 3-digit numbers without carrying.
- add numbers up to 50 using mental calculation strategies.
- estimate the addition.
- subtract up to 3-digit numbers with and without borrowing.
- solve real life number stories of subtraction of 2-digit numbers with borrowing.
- solve real life number stories of subtraction up to 3-digits without borrowing.
- solve real life number stories of subtraction up to 3-digit numbers with borrowing.
- analyze simple situations identifying correct operation of addition and subtraction with carrying/borrowing in mixed form.
- subtract numbers up to 50 using mental calculation strategies.

Have you ever heard the bell of the balloon seller?
Here he has 5 green balloons and 3 yellow balloons.
How many balloons are there altogether?

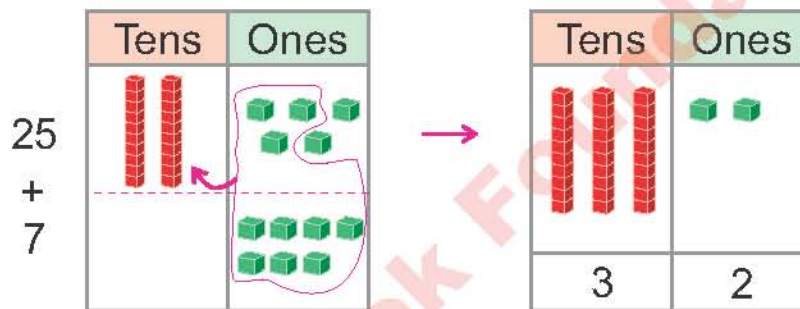


Addition of Numbers with Carrying

Ahmad's lawn has 25 plants. He adds 7 more plants in his lawn. How many plants are there altogether?



We will find the total number of plants by adding 25 and 7.



	T	O
Plants in the lawn =	2	5
Plants Ahmad added = +		7
Total plants =	3	2

Step 2

Add the tens.
 ①ten + 2 tens = 3 tens

Step 1

Add the ones.
 5 ones + 7 ones = 12 ones
 because 10 ones = 1 ten
 So, 12 ones = ①ten + 2 ones
 Carry ① to the tens place.

So, Ahmad's lawn has 32 plants in all.



Explain the concept of 'making tens from ones' and tell student how to carry the ten to the tens place. Recall counting in tens.

Example: Add 26 and 47.

Solution:

Tens	Ones
① 4	7
+ 2	6
7	3

Step 1

Add the ones.
 $7 \text{ ones} + 6 \text{ ones} = 13 \text{ ones}$
because $10 \text{ ones} = 1 \text{ ten}$
So, $13 \text{ ones} = 1 \text{ ten} + 3 \text{ ones}$
carry ① to the tens place.



Key Fact

When zero is added to any number, the result is the number itself.

Step 2

Add the tens.
 $1 \text{ ten} + 4 \text{ tens} + 2 \text{ tens} = 7 \text{ tens}$



EXERCISE - 1

1. Solve the following.

T	O
1	7
+ 0	5

T	O
3	5
+ 0	6

T	O
4	8
+ 0	7

T	O
5	5
+ 0	8

T	O
8	9
+ 0	3

T	O
2	5
+ 1	5

T	O
4	3
+ 2	9

T	O
5	6
+ 3	5

T	O
6	8
+ 2	5

T	O
1	2
+ 7	9

T	O
2	8
+ 5	4

T	O
6	7
+ 2	6

2. Amna has 24 books and Hina has 8 books. How many books do both girls have altogether?

	T	O
Amna's books	=	<input type="text"/> <input type="text"/>
Hina's books	= +	<input type="text"/> <input type="text"/>
Total books	=	<input type="text"/> <input type="text"/>



3. Raza



There are
35 students
in my class.

Maryam



There are
28 students
in my class.

How many students are there in both classes?

	T	O
Students in Maryam's class	=	<input type="text"/> <input type="text"/>
Students in Raza's class	= +	<input type="text"/> <input type="text"/>
Total students	=	<input type="text"/> <input type="text"/>

4. A fruit seller sold 36 oranges in the morning and 48 oranges in the evening. How many oranges did he sell in all?

	T	O
Oranges sold in the morning =	<input type="text"/> <input type="text"/>	
Oranges sold in the evening = +	<input type="text"/> <input type="text"/>	
Total oranges sold	=	<input type="text"/> <input type="text"/>


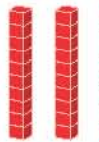




Addition of Numbers without Carrying

Sajid likes to collect coins. He has 132 coins. His brother gives 6 coins to him. How many coins does Sajid have altogether?



Add 132 and 6 to find the total number of coins.

	Hundreds	Tens	Ones
132			
+			
6			
	1	3	8

	H	T	O	
Sajid's coins	=	1	3	2
Coins given by his brother	=			6
Total coins	=	1	3	8

Step 2

Add the tens.
3 tens + 0 tens = 3 tens

Step 1

Add the ones.
2 ones + 6 ones = 8 ones

Step 3

Add the hundreds.
1 hundred + 0 hundred = 1 hundred



Key Fact

When adding 3-digit numbers, first add the ones, then the tens and finally the hundreds.

So, Sajid has 138 coins altogether.

EXERCISE - 2

1. Solve the following.

H	T	O
2	5	2
+		6

H	T	O
1	6	5
+		3

H	T	O
5	6	8
+		1

H	T	O
6	8	0
+		6

H	T	O
3	4	5
+	3	4

H	T	O
4	2	6
+	7	0

H	T	O
4	4	1
+	5	8

H	T	O
6	0	7
+	8	2

H	T	O
2	7	2
+ 1	2	7

H	T	O
5	6	2
+ 4	3	7

H	T	O
6	0	8
+ 2	9	1

H	T	O
2	4	2
+ 5	4	4

2. Rehan likes to play cricket. He buys a bat for Rs. 390 and a ball for Rs. 208. What amount does Rehan spend altogether?

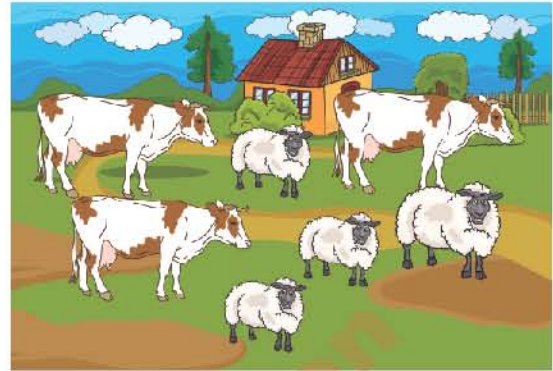
	H	T	O	
Cost of the bat	=	<input type="text"/>	<input type="text"/>	<input type="text"/>
Cost of the ball	= +	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total amount spent	=	<input type="text"/>	<input type="text"/>	<input type="text"/>



Addition of 3-digit Numbers with Carrying

In an animal farm, there are 345 cows and 265 sheep.

How many animals are there in the farm altogether?



We will find the total number of animals by adding 345 and 265.

	Hundreds	Tens	Ones
345			
+			
265			
	6	1	0

	H	T	O
Cows in the farm	= 3 ^①	4 ^①	5
Sheep in the farm	= + 2	6	5
Total animals	= 6	1	0

Step 1

Add the ones.
 $5 \text{ ones} + 5 \text{ ones} = 10 \text{ ones}$
 because $10 \text{ ones} = 1 \text{ ten}$
 Carry ① ten to the tens place.

Step 2

Add the tens.
 $① \text{ ten} + 4 \text{ tens} + 6 \text{ tens} = 11 \text{ tens}$
 because $10 \text{ tens} = 1 \text{ hundred}$
 So, $11 \text{ tens} = 1 \text{ hundred} + 1 \text{ ten}$.
 Carry ① hundred to the hundreds place.

Step 3

Add the hundreds.
 $① \text{ hundred} + 3 \text{ hundreds} + 2 \text{ hundreds} = 6 \text{ hundreds}$

So, there are 610 animals in the farm altogether.

EXERCISE - 3

1. Solve the following.

H	T	O
1	8	5
+		6
<input type="text"/>		

H	T	O
2	4	9
+		6
<input type="text"/>		

H	T	O
5	7	4
+		7
<input type="text"/>		

H	T	O
7	9	5
+		8
<input type="text"/>		

H	T	O
8	9	7
+		3
<input type="text"/>		

H	T	O
5	3	3
+	4	9
<input type="text"/>		

H	T	O
3	5	4
+	6	8
<input type="text"/>		

H	T	O
2	0	9
+	9	1
<input type="text"/>		

H	T	O
8	2	7
+	7	6
<input type="text"/>		

H	T	O
7	3	9
+	6	2
<input type="text"/>		

H	T	O
2	2	3
+	1	5
<input type="text"/>		

H	T	O
3	8	4
+	1	2
<input type="text"/>		

H	T	O
4	9	3
+	3	0
<input type="text"/>		

H	T	O
6	1	6
+	2	8
<input type="text"/>		

H	T	O
3	9	5
+	2	9
<input type="text"/>		

2. In a test match, the Pakistan team scored 426 runs in the first innings and 378 runs in the second innings. Find the total runs scored by the Pakistan team in both innings.

	H	T	O
Runs in first innings =	<input type="text"/>	<input type="text"/>	<input type="text"/>
Runs in second innings = +	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total runs in both innings =	<input type="text"/>	<input type="text"/>	<input type="text"/>



Addition of Numbers using Mental Strategy



Add 20 and 15 using mental strategy.

$$\begin{array}{c}
 20 \\
 \swarrow \quad \searrow \\
 20 \quad 0
 \end{array}
 +
 \begin{array}{c}
 15 \\
 \swarrow \quad \searrow \\
 10 \quad 5
 \end{array}
 =
 \begin{array}{l}
 20 + 10 = 30 \\
 0 + 5 = 5 \\
 \hline
 20 + 15 = 35
 \end{array}$$

Add 32 and 17 using mental strategy.



$$\begin{array}{c}
 32 \\
 \swarrow \quad \searrow \\
 30 \quad 2
 \end{array}
 +
 \begin{array}{c}
 17 \\
 \swarrow \quad \searrow \\
 10 \quad 7
 \end{array}
 =
 \begin{array}{l}
 30 + 10 = 40 \\
 2 + 7 = 9 \\
 \hline
 32 + 17 = 49
 \end{array}$$

Estimating the Addition

Estimate the answer to an addition.



When we estimate addition in numbers, we can use rounded numbers to make the addition easier. We round each number to the nearest ten and hundred.

Example: Add 18 and 29.

We can round 18 to the nearest 10, which is 20 and 29 to the nearest 10 which is 30 add 20 and 30 which is 50. 50 is approximately equal to the actual sum which is 47.



EXERCISE - 4

1. Add using mental strategy and complete the following.

(a)
$$\begin{array}{c} 20 \\ \swarrow \quad \searrow \\ 20 \quad 0 \end{array} + \begin{array}{c} 18 \\ \swarrow \quad \searrow \\ 10 \quad 8 \end{array}$$

$$20 + 18 = \square$$

$$0 + 8 = \square$$

$$20 + 18 = \square$$

(b)
$$\begin{array}{c} 15 \\ \swarrow \quad \searrow \\ 10 \quad 5 \end{array} + \begin{array}{c} 12 \\ \swarrow \quad \searrow \\ 10 \quad 2 \end{array}$$

$$10 + 10 = \square$$

$$\square + 2 = \square$$

$$15 + 12 = \square$$

(c) $30 + 10 = \square$ (d) $20 + 10 = \square$ (e) $30 + 20 = \square$
(f) $10 + 12 = \square$ (g) $20 + 11 = \square$ (h) $14 + 12 = \square$
(i) $23 + 15 = \square$ (j) $35 + 13 = \square$ (k) $42 + 7 = \square$

2. Estimate to nearest ten.

$9 + 39$ is estimated to 50

$17 + 11$ is estimated to ____

$19 + 31$ is estimated to ____

$13 + 39$ is estimated to ____

$22 + 17$ is estimated to ____

$38 + 12$ is estimated to ____

$49 + 14$ is estimated to ____

$48 + 18$ is estimated to ____

3. Add the following numbers by using mental strategies.

$61 + 13 = \underline{\hspace{2cm}}$

$47 + 11 = \underline{\hspace{2cm}}$

$36 + 23 = \underline{\hspace{2cm}}$

$16 + 72 = \underline{\hspace{2cm}}$

$82 + 07 = \underline{\hspace{2cm}}$

$77 + 12 = \underline{\hspace{2cm}}$

$14 + 52 = \underline{\hspace{2cm}}$

$35 + 24 = \underline{\hspace{2cm}}$

Subtraction of 2-digit Numbers with Borrowing

Nida has 42 apples.
She gives 15 apples to Ali.
How many apples are left with Nida?



We can tell how many apples are left with Nida by subtracting 15 from 42.

Apples Nida has	=	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="border: 1px solid black; padding: 2px 5px; text-align: center;">3</td> <td style="padding: 0 5px;">T</td> <td style="border: 1px solid black; padding: 2px 5px; text-align: center;">10</td> <td style="padding: 0 5px;">O</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px 5px; text-align: center;">4</td> <td style="border: 1px solid black; padding: 2px 5px; text-align: center;">2</td> <td colspan="2"></td> </tr> </table>	3	T	10	O	4	2		
3	T	10	O							
4	2									
Apples given to Ali	=	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="border: 1px solid black; padding: 2px 5px; text-align: center;">1</td> <td style="border: 1px solid black; padding: 2px 5px; text-align: center;">5</td> <td colspan="2"></td> </tr> </table>	1	5						
1	5									
Apples left	=	<table style="border-collapse: collapse; margin: auto;"> <tr> <td style="border: 1px solid black; padding: 2px 5px; text-align: center;">2</td> <td style="border: 1px solid black; padding: 2px 5px; text-align: center;">7</td> <td colspan="2"></td> </tr> </table>	2	7						
2	7									

Step 1

Subtract the ones.
We cannot subtract 5 from 2.
Therefore, we borrow 1 ten as 10 ones from the tens place and carry to the ones place.
 $1 \text{ ten} + 2 \text{ ones} = 10 \text{ ones} + 2 \text{ ones} = 12 \text{ ones}$
 $12 \text{ ones} - 5 \text{ ones} = 7 \text{ ones}$

Clue Words for Subtraction

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

Step 2

Subtract the tens.
 $3 \text{ tens} - 1 \text{ ten} = 2 \text{ tens}$

So, 27 apples are left with Nida.



Give the real life examples of subtraction and explain the clue words for subtraction.

EXERCISE - 5

1. Solve the following.

T	O
2	3
-	5
<input type="text"/>	

T	O
3	4
-	8
<input type="text"/>	

T	O
9	1
-	2
<input type="text"/>	

T	O
4	0
-	6
<input type="text"/>	

T	O
6	3
- 2	7
<input type="text"/>	

T	O
5	7
- 1	8
<input type="text"/>	

T	O
9	5
- 3	6
<input type="text"/>	

T	O
6	1
- 4	2
<input type="text"/>	

T	O
7	0
- 4	1
<input type="text"/>	

T	O
8	2
- 5	5
<input type="text"/>	

T	O
9	8
- 5	9
<input type="text"/>	

T	O
8	0
- 7	2
<input type="text"/>	

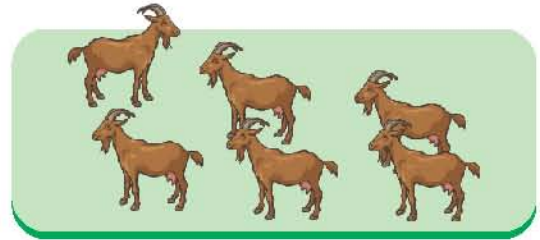
2. There are 45 children in a bus. If there are 18 girls, how many boys are there?

	T	O
Passengers in the bus =	<input type="text"/>	<input type="text"/>
Number of girls =	<input type="text"/>	<input type="text"/>
Number of boys =	<input type="text"/>	<input type="text"/>


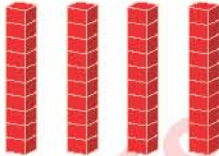



Subtraction of 3-digit Numbers without Borrowing

In a goat farm, there are 148 goats.
If 5 goats are sold, how many goats are left?



When subtracting 3-digit numbers, first subtract the ones, then the tens and finally the hundreds.

Hundreds	Tens	Ones
		
1	4	3

	H	T	O	
Goats in the farm	=	1	4	8
Goats sold	= -			5
Goats left in the farm	=	1	4	3

Step 1
Subtract the ones.
 $8 \text{ ones} - 5 \text{ ones} = 3 \text{ ones}$

Step 2
Subtract the tens.
 $4 \text{ tens} - 0 \text{ tens} = 4 \text{ tens}$

Step 3
Subtract the hundreds.
 $1 \text{ hundred} - 0 \text{ hundreds} = 1 \text{ hundred}$

So, 143 goats are left.



Explain to the students when subtracting 3-digit numbers, first subtract the ones, then the tens and finally the hundreds.

EXERCISE - 6

1. Solve the following.

H	T	O
2	4	8
-		6

H	T	O
3	0	9
-		7

H	T	O
6	7	5
-		4

H	T	O
7	6	3
-	1	2

H	T	O
8	4	5
-	4	2

H	T	O
6	8	7
-	2	3

H	T	O
4	3	8
-	2	3

H	T	O
7	8	6
-	4	3

H	T	O
5	6	9
-	3	0

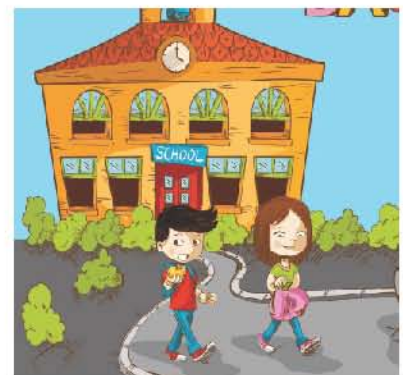
H	T	O
8	5	2
-	4	2

H	T	O
7	0	1
-	2	0

H	T	O
9	8	7
-	8	7

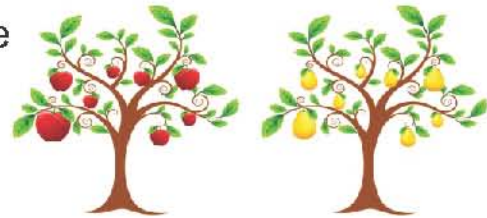
2. There are 685 students in a school. If there are 384 girls, how many boys are there?

		H	T	O
Students in the school =	=			
Girls in the school =	=			
Boys in the school =	=			



Subtraction of 3-digit Numbers with Borrowing

There are a total of 502 guava and apple trees in a garden. If there are 245 guava trees, how many apple trees are there?



Hundreds	Tens	Ones
5	0	2

Hundreds	Tens	Ones
2	5	7



We cannot subtract 5 from 2. Therefore, we borrow from the tens place but, since zero is at the tens place, we borrow from the hundreds place.

	H	T	O
Total trees =	5 ⁴	0 ¹⁰	2
Guava trees = -	2	4	5
Apple trees =	2	5	7

Step 1

Subtract the ones.
Zero is at the tens place. So, we borrow 1 hundred as 10 tens from the hundreds place and carry to the tens place. Then, we borrow 1 ten as 10 ones from the tens place and carry to the ones place.
 $12 \text{ ones} - 5 \text{ ones} = 7 \text{ ones}$

Step 2

Subtract the tens.
 $9 \text{ tens} - 4 \text{ tens} = 5 \text{ tens}$

Step 3

Subtract the hundreds.
 $4 \text{ hundreds} - 2 \text{ hundreds} = 2 \text{ hundreds}$

So, there are 257 apple trees in the garden.

EXERCISE - 7

1. Solve the following.

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

		H	T	O
Total passengers	=	□	□	□
Passengers getting off	=	□	□	□
Passengers left	=	□	□	□



Addition and Subtraction in Mixed Form

Read the stories carefully. Solve the following by identifying the operation of addition and subtraction.



Hint

Find the clue words to identify the operation and solve the following.

1. There are 528 birds and 395 animals in a zoo.

a) How many more birds are there than animals?

b) What is the total number of birds and animals altogether in the zoo?

Number of birds =

Number of animals =

Number of more birds =

Number of birds =

Number of animals =

Total number of birds and animals =

2. A bookseller has 385 books. He buys 145 more books.

a) Find the total number of books.

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

Number of books =

Bought books =

Total books =

Total books =

Sold books =

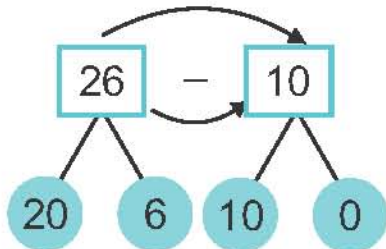
Books left =



Help the students to find clue words for the identification of correct operations in word problems.

Subtraction of Numbers using Mental Strategy

Subtract 10 from 26 using mental strategy.



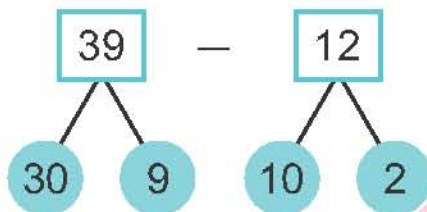
$$\boxed{20} - \boxed{10} = \boxed{10}$$

$$\boxed{6} - \boxed{0} = \boxed{6}$$

$$26 - 10 = \boxed{16}$$



Subtract 12 from 39 using mental strategy.



$$\boxed{30} - \boxed{10} = \boxed{20}$$

$$\boxed{9} - \boxed{2} = \boxed{7}$$

$$39 - 12 = \boxed{27}$$

Estimating the Subtraction



When we estimate subtraction in numbers, we can use rounded numbers to make the subtraction easier. We round each number to the nearest ten and hundred.

Subtract 17 from 39.

We can round **39** to the nearest 10, which is **40** and **17** to the nearest 10 which is **20** subtract **20** from **40** which is **20**.

20 is approximately equal to the actual difference which is 22.

EXERCISE - 8

1. Subtract and complete the following using mental strategy.

a)
$$\begin{array}{r} \boxed{34} \\ \swarrow \searrow \\ \textcircled{30} \quad \textcircled{4} \end{array} - \begin{array}{r} \boxed{20} \\ \swarrow \searrow \\ \textcircled{20} \quad \textcircled{0} \end{array}$$

$$\boxed{30} - \boxed{} = \boxed{}$$

$$\boxed{4} - \boxed{} = \boxed{}$$

$$34 - 20 = \boxed{}$$

b)
$$\begin{array}{r} \boxed{28} \\ \swarrow \searrow \\ \textcircled{20} \quad \textcircled{8} \end{array} - \begin{array}{r} \boxed{13} \\ \swarrow \searrow \\ \textcircled{10} \quad \textcircled{3} \end{array}$$

$$\boxed{20} - \boxed{} = \boxed{}$$

$$\boxed{} - \boxed{3} = \boxed{}$$

$$28 - 13 = \boxed{}$$

2. Subtract the following using mental strategy.

$$20 - 10 = \boxed{}$$

$$30 - 20 = \boxed{}$$

$$50 - 30 = \boxed{}$$

$$15 - 10 = \boxed{}$$

$$27 - 12 = \boxed{}$$

$$36 - 11 = \boxed{}$$

$$38 - 17 = \boxed{}$$

$$42 - 22 = \boxed{}$$

$$49 - 14 = \boxed{}$$

3. Estimate to nearest ten.

$$19 - 11 \text{ is estimated to } 10$$

$$27 - 22 \text{ is estimated to } \underline{\hspace{2cm}}$$

$$83 - 38 \text{ is estimated to } \underline{\hspace{2cm}}$$

$$18 - 9 \text{ is estimated to } \underline{\hspace{2cm}}$$

$$22 - 8 \text{ is estimated to } \underline{\hspace{2cm}}$$

$$38 - 12 \text{ is estimated to } \underline{\hspace{2cm}}$$

$$49 - 14 \text{ is estimated to } \underline{\hspace{2cm}}$$

$$59 - 33 \text{ is estimated to } \underline{\hspace{2cm}}$$

I Have Learnt



- adding numbers up to 3-digits with and without carrying.
- using addition of 3-digit numbers in real life.
- subtracting numbers up to 3-digits with and without borrowing.
- using subtraction of 3-digit numbers in real life.
- adding and subtracting numbers using mental strategies.
- estimating the addition and subtraction.

Vocabulary

addition
addition without carrying
addition with carrying
subtraction
subtraction without borrowing
subtraction with borrowing

Review Exercise



1. Choose the correct option.

- i) $25 + 0 =$ _____
a) 250 b) 205 c) 25 d) 0
- ii) $100 + 10 =$ _____
a) 1,000 b) 101 c) 100 d) 110
- iii) When adding 3-digit numbers, first add the _____ .
a) ones b) tens c) hundreds d) carrying digit
- iv) When zero is added to any number, the result is the _____ .
a) zero b) number itself
c) greater number d) smaller number
- v) When subtracting numbers, first subtract _____ .
a) ones b) tens c) hundreds d) borrow

vi) $500 - 300 = \underline{\hspace{2cm}}$.

- a) 100 b) 200 c) 500 d) 300

vii) $100 - 10 = \underline{\hspace{2cm}}$.

- a) 90 b) 99 c) 101 d) 110

viii) When any number is subtracted from itself, the result is .

- a) zero b) 1 c) number itself d) greater number

Use the following pictures to answer these questions.



Rs. 384



Rs. 245



Rs. 75

Rs. 196



2. Ahmed buys a car and a ball from the toyshop. What amount does Ahmed pay to the shopkeeper altogether?

	H	T	O
The car's price =	<input type="text"/>	<input type="text"/>	<input type="text"/>
The ball's price = +	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total amount paid =	<input type="text"/>	<input type="text"/>	<input type="text"/>

3. Amna buys a teddy bear and a ball from the toyshop. What amount does she pay to the shopkeeper altogether?

	H	T	O
The teddy's price =	<input type="text"/>	<input type="text"/>	<input type="text"/>
The ball's price = +	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total amount paid =	<input type="text"/>	<input type="text"/>	<input type="text"/>

4. Irfan buys a bicycle and a car from the toyshop. What amount does Irfan spend altogether?

	H	T	O
The bicycle's price =	<input type="text"/>	<input type="text"/>	<input type="text"/>
The car's price = +	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total amount spent =	<input type="text"/>	<input type="text"/>	<input type="text"/>

5. Irum wants to buy a teddy bear and a bicycle from the toyshop. What amount does Irum need to buy both toys?

	H	T	O
The teddy's price =	<input type="text"/>	<input type="text"/>	<input type="text"/>
The bicycle's price = +	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total amount needed =	<input type="text"/>	<input type="text"/>	<input type="text"/>

6. Umer has 42 toys. He distributes 18 toys among his friends. How many toys are left with him?

Toys Umer has	=	<input type="text"/>
Toys distributed among friends	= -	<input type="text"/>
Toys left	=	<input type="text"/>



7. A factory produced 624 bicycles in a month. 435 bicycles were sold. What is the total number of remaining bicycles?

Bicycles produced	=	<input type="text"/>
Bicycles sold	= -	<input type="text"/>
Remaining bicycles	=	<input type="text"/>



8. Sana got Rs. 850 as eidi. She gave Rs. 375 to her younger brother Ahmad. What amount is left with her?

Sana's Eidi	=	<input type="text"/>
Eidi given to Ahmad	= -	<input type="text"/>
Amount left with Sana	=	<input type="text"/>



Multiplication and Division



**By the end of this unit,
you will be able to:**

- recognize multiplication as repeated addition and use multiplication symbol “ \times ”.
- complete number sequences in steps of 2, 3, 4, 5 and 10.
- develop multiplication tables of 2, 3, 4, 5 and 10 till the multiplication of 10×10 .
- multiply numbers within multiplication tables.
- write number sentence for multiplication from the picture.
- solve number stories on multiplication up to 1-digit numbers.
- recognize and use division symbols \div .
- recognize division as successive subtraction.
- divide numbers within the multiplication tables with remainder zero.
- solve number stories involving division up to 1 - digit numbers.
- solve real life situations (using Pakistani currency as well) involving addition, subtraction, multiplication, and division.



There are 3 fish in each jar.

$$\begin{aligned} \text{Total fish} &= 3 + 3 + 3 \\ &= 9 \end{aligned}$$



Can you find the total number of fish without repeated addition?



Multiplication as Repeated Addition



We are four friends.

Can you tell how many hands, the four friends have altogether?



$$2 + 2 + 2 + 2 = 8$$

We can read it as 4 times 2 = 8

We can write it as $4 \times 2 = 8$



$$5 + 5 + 5 + 5 + 5 + 5 = 30$$

6 times 5 = 30

$$6 \times 5 = 30$$



$$3 + 3 + 3 + 3 + 3 = 15$$

5 times 3 = 15

$$5 \times 3 = 15$$



Key Fact

- $4 \times 2 = 8$ is read as 4 times 2 equals 8.
- the symbol of multiplication is \times .



For effective learning and teaching, use 'Urdu or local language' as a medium of instruction to explain the concept of multiplication.

Explain the concept of 'multiplication as repeated addition' using teaching aids.

EXERCISE - 1

1. How many stars are there altogether?



$$\text{Total stars} = 3 + 3 + 3 + 3$$

$$= \text{--- times ---}$$

$$= \text{---} \times \text{---}$$

$$= \text{-----}$$

So, there are _____ stars altogether.

2. How many flowers are there in all?



$$\text{Total flowers} = \text{---} + \text{---} + \text{---} + \text{---} + \text{---}$$

$$= \text{--- times ---}$$

$$= \text{---} \times \text{---}$$

$$= \text{-----}$$

So, there are _____ flowers in all.

3. Find the total number of cherries.



$$\text{Total cherries} = \text{---} + \text{---} + \text{---} + \text{---} + \text{---} + \text{---} + \text{---}$$


$$= \text{--- times ---}$$

$$= \text{---} \times \text{---}$$


$$= \text{-----}$$

So total cherries are _____.


4. Count the sweets.




Total sweets = $\underline{\quad} + \underline{\quad} + \underline{\quad}$
 = $\underline{\quad}$ times $\underline{\quad}$
 = $\underline{\quad} \times \underline{\quad}$
 = $\underline{\quad}$



Total sweets = $\underline{\quad} + \underline{\quad} + \underline{\quad}$
 = $\underline{\quad}$ times $\underline{\quad}$
 = $\underline{\quad} \times \underline{\quad}$
 = $\underline{\quad}$



Total sweets = $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad}$
 = $\underline{\quad}$ times $\underline{\quad}$
 = $\underline{\quad} \times \underline{\quad}$
 = $\underline{\quad}$



Total sweets = $\underline{\quad} + \underline{\quad}$
 = $\underline{\quad}$ times $\underline{\quad}$
 = $\underline{\quad} \times \underline{\quad}$
 = $\underline{\quad}$

5. Fill in the blanks.

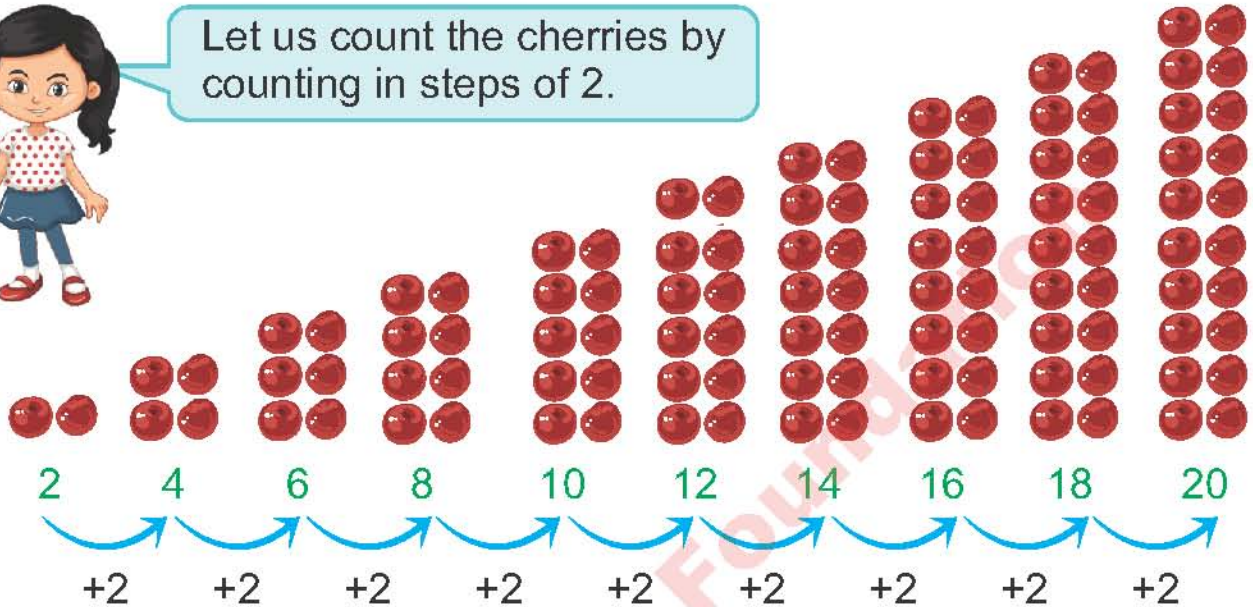
$2 + 2 + 2 + 2 + 2$	$=$	5×2	$=$	10
$4 + 4 + \square + \square + 4 + 4$	$=$	$6 \times \square$	$=$	\square
$5 + 5 + 5 + 5 + 5$	$=$	$\square \times 5$	$=$	\square
$\square + \square + \square$	$=$	3×10	$=$	\square

Counting in Steps

Counting in Steps of 2



Let us count the cherries by counting in steps of 2.



We can write it as

$$10 \text{ times } 2 = 20$$
$$10 \times 2 = 20$$

Counting in Steps of 3



$$10 \text{ times } 3 = 30$$
$$10 \times 3 = 30$$

Counting in Steps of 4



$$10 \text{ times } 4 = 40$$
$$10 \times 4 = 40$$

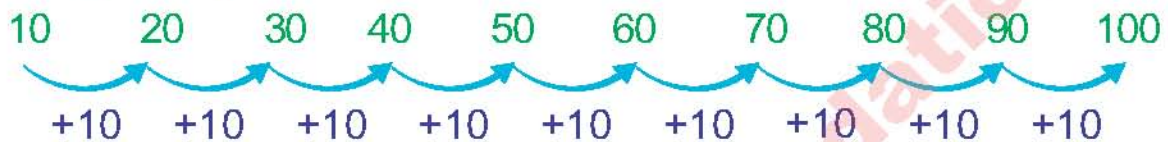
Counting in Steps of 5



$$10 \text{ times } 5 = 50$$

$$10 \times 5 = 50$$

Counting in Steps of 10



$$10 \text{ times } 10 = 100$$

$$10 \times 10 = 100$$



Try Yourself

Complete the following:

1. by counting in steps of 2



2. by counting in steps of 4



3. by counting in steps of 5



3 Times Table



We can develop '3 times table' by counting in steps of 3.



1 time 3

$1 \times 3 = 3$

2 times 3

$2 \times 3 = 6$

3 times 3

$3 \times 3 = 9$

4 times 3

$4 \times 3 = 12$

5 times 3

$5 \times 3 = 15$

6 times 3

$6 \times 3 = 18$

7 times 3

$7 \times 3 = 21$

8 times 3

$8 \times 3 = 24$

9 times 3

$9 \times 3 = 27$

10 times 3

$10 \times 3 = 30$



Make the groups of students and help them to learn the '3 times table' using teaching aids (chart, etc.).

4 Times Table



We can develop '4 times table' by counting in steps of 4.



1 time 4

$1 \times 4 = 4$



2 times 4

$2 \times 4 = 8$



3 times 4

$3 \times 4 = 12$



4 times 4

$4 \times 4 = 16$



5 times 4

$5 \times 4 = 20$



6 times 4

$6 \times 4 = 24$



7 times 4

$7 \times 4 = 28$



8 times 4

$8 \times 4 = 32$



9 times 4

$9 \times 4 = 36$



10 times 4

$10 \times 4 = 40$



Make the groups of students and help them to learn the '4 times table' using teaching aids (chart, etc.).

Multiplication of 1-digit Numbers



Flowers bloom in my lawn. There are 4 flowerpots in the lawn. Each flowerpot has 3 flowers. How many flowers are there altogether?



$$\begin{aligned} 3 + 3 + 3 + 3 &= 12 \\ 4 \text{ times } 3 &= 12 \\ 4 \times 3 &= 12 \end{aligned}$$



$4 \times 3 = 12$
can be written as

$$\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$$



Read '3 times table' up to 4. We get 12.
Now, we will do each multiplication operation with the help of multiplication tables.

So, there are 12 flowers altogether.



Try Yourself

If there are 6 flowerpots, each flowerpot has 3 flowers. How many flowers are there altogether?

Clue Words for Multiplication

Product

In all

Times

Altogether



Explain to the students to solve real life problems related to multiplication using clue words.

Multiplication of Number by 0 and 1



If we multiply a number with zero then the product is always zero.

$4 \times 0 = 0$

$5 \times 0 = 0$

$0 \times 10 = 0$

$0 \times 2 = 0$

$3 \times 0 = 0$

$0 \times 7 = 0$

If we multiply a number with 1 we get the number itself.



$3 \times 1 = 3$

$2 \times 1 = 2$

$5 \times 1 = 5$

$10 \times 1 = 10$

$8 \times 1 = 8$

$1 \times 7 = 7$

Example:

Multiply

$10 \times 1 = 10$

$16 \times 0 = 0$

$1 \times 9 =$

$0 \times 11 =$

$6 \times 1 =$

$12 \times 1 =$

$13 \times 0 =$

$0 \times 14 =$

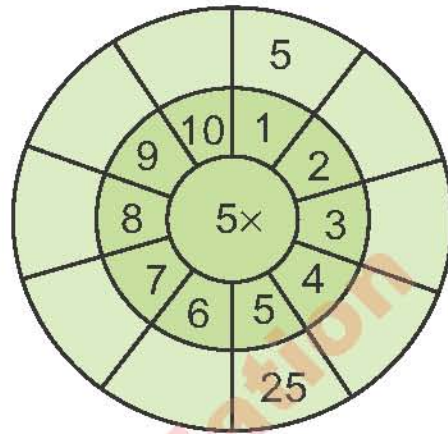
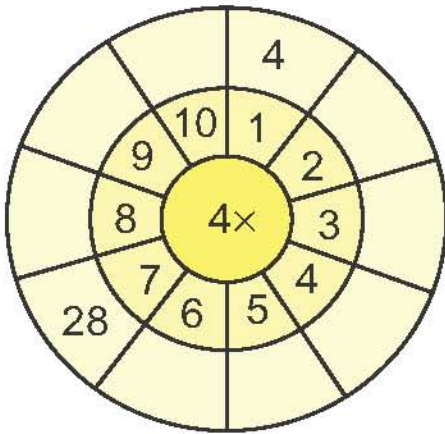


EXERCISE - 2

1. Match the following.



2. Complete the multiplication tables.



3. Multiply and fill in the boxes.

$3 \times 3 = \square$

$5 \times \square = 10$

$4 \times \square = 20$

$1 \times 10 = \square$

$7 \times 4 = \square$

$7 \times \square = 21$

$10 \times 4 = \square$

$10 \times \square = 100$

$8 \times 0 = \square$

4. Multiply the following.

$$\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 0 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ \times 10 \\ \hline \end{array}$$

5. There are 6 cats. Each cat has 4 kittens. How many kittens are there altogether?



×

6. If each flower has 9 petals, how many petals do 10 flowers have altogether?



×

7. How many wheels do 4 bicycles have?



×

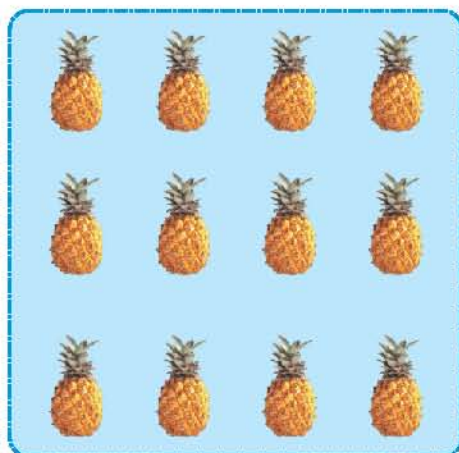
8. What is the total number of legs, of 5 Octopuses?



×

Order of Multiplication

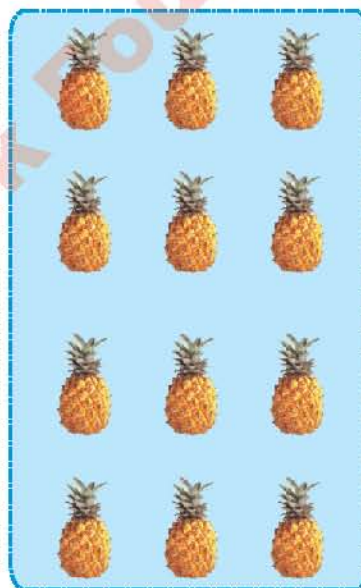
Let us multiply 3 by 4.



3×4 means 3 groups of 4 pineapples which are 12.

So, $3 \times 4 = 12$.

Again we multiply 4 by 3.



4×3 means 4 groups of 3 pineapples which are 12.

So, $4 \times 3 = 12$.

Hence,

$$3 \times 4 = 4 \times 3$$

Therefore, multiplication can be done in any order.

Similarly,

$$2 \times 5 = 5 \times 2$$

Multiplying Numbers by using Mental Calculations

Let us multiply 11 and 4 using mental calculation.

To multiply mentally, we use the following steps.

11 can be estimated to 10.

Multiply $10 \times 4 = 40$

and multiply $1 \times 4 = 4$

Add 40 and 4, which is 44.

So, $11 \times 4 = 44$

Now we multiply 18 and 3 using mental calculation.

To multiply mentally, we use the following steps.

18 can be estimated to 20.

Multiply $20 \times 3 = 60$

and multiply $2 \times 3 = 6$

Subtract 6 from 60, which is 54.

So, $18 \times 3 = 54$

EXERCISE - 3

Multiply the following numbers by using mental strategies.

$12 \times 2 = \underline{\hspace{2cm}}$

$19 \times 2 = \underline{\hspace{2cm}}$

$18 \times 3 = \underline{\hspace{2cm}}$

$22 \times 5 = \underline{\hspace{2cm}}$

$21 \times 4 = \underline{\hspace{2cm}}$

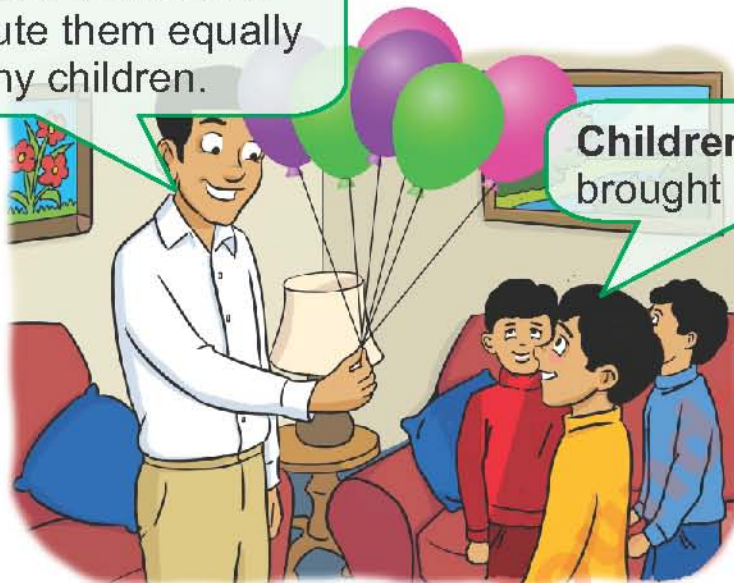
$17 \times 2 = \underline{\hspace{2cm}}$

$12 \times 3 = \underline{\hspace{2cm}}$

$31 \times 2 = \underline{\hspace{2cm}}$

Division as Successive Subtraction

Father: I have 6 balloons.
I will distribute them equally
among all my children.



Children: Father has
brought balloons for us.

Father gives 1 balloon to each child.

$$6 - 3 = 3$$

3 balloons are left with the father.



Again, the father gives 1 more balloon
to each child.

Now, each child has 2 balloons.

$$3 - 3 = 0$$

0 balloons are left with father.



So, each child gets 2 balloons.



Subtracting 3 two times
from 6, we get 0.

$$6 - 3 - 3 = 0$$



- For effective learning and teaching, use 'Urdu or local language' as a medium of instruction to explain the concept of division.
- Demonstrate the concept of successive subtraction using teaching aids.



I want to distribute 8 carrots equally among 4 rabbits.

I give 1 carrot to each rabbit.



Total carrots = 8
 carrots divided = $\begin{array}{r} - 4 \\ \hline \end{array}$
 Carrots left = 4



I give 1 carrot to each rabbit.



Remaining carrots = 4
 Carrots divided = $\begin{array}{r} - 4 \\ \hline \end{array}$
 Carrots left = 0

$8 - 4 - 4 = 0$
 Subtracting 2 times 4 from 8,
 we get 0.

We can write as,

$$8 \div 4 = 2$$

Recall the '4 times table' up to 2.

$$2 \times 4 = 8$$



Key Fact

- division is a successive subtraction.
- the symbol of division is ' \div '.

So, each rabbit gets 2 carrots.



Divide the children in groups. Explain the concept of 'division as successive subtraction' using concrete objects. Let them practice by changing objects and the number of children in the groups.

EXERCISE - 4

1. Put 15 flowers equally in 3 vases.

Total flowers =

Total vases =

Flowers in each vase = ÷

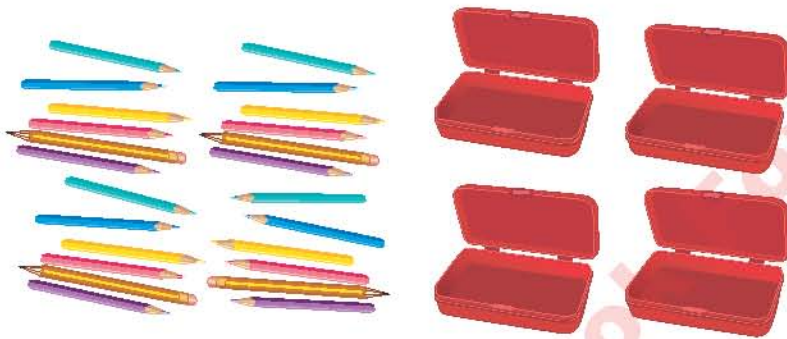
=



Hint

Recall the 3 times table.

2. Put 24 pencils equally in 4 boxes.



Hint

Recall the 4 times table.

Total pencils =

Total boxes =

Pencils in each box = ÷

=

3. Divide 20 ice-creams equally in 10 children.

Total ice-creams =

Total children =

Ice-creams each child gets = ÷

=



Hint

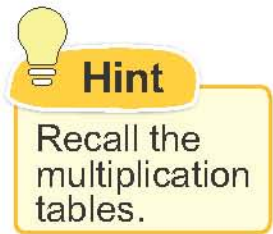
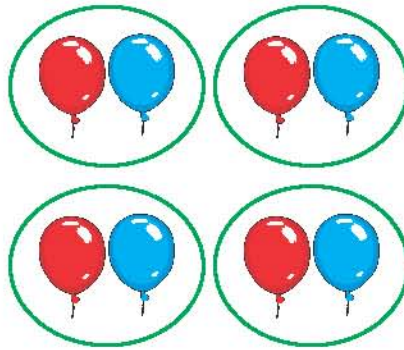
Recall the 10 times table.



4. Solve and fill in the blanks.

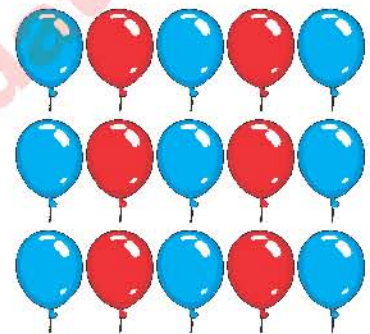
$$\boxed{8} \div \boxed{4} = \boxed{2}$$

So, each group has balloons.



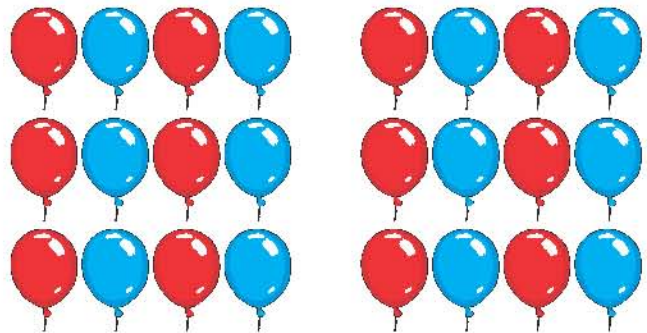
$$\boxed{15} \div \boxed{5} = \boxed{}$$

So, each group has balloons.



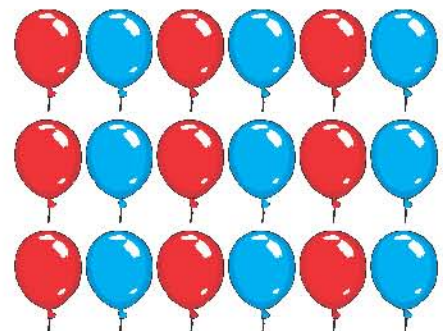
$$\boxed{24} \div \boxed{4} = \boxed{}$$

So, each group has balloons.

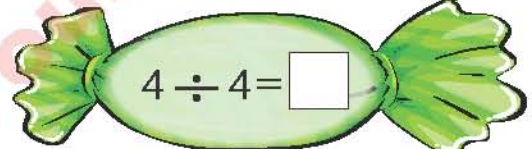
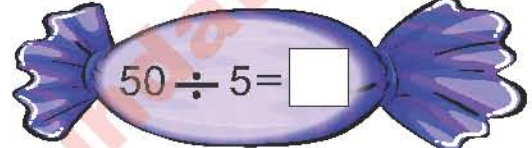
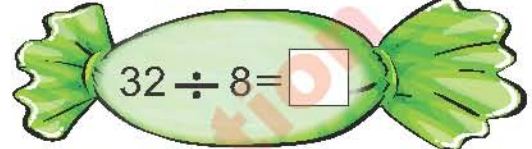
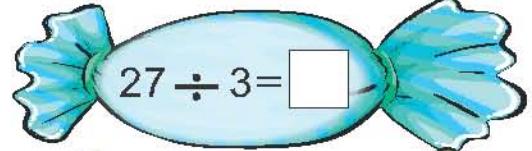
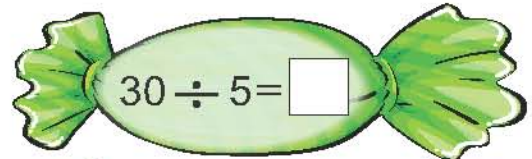
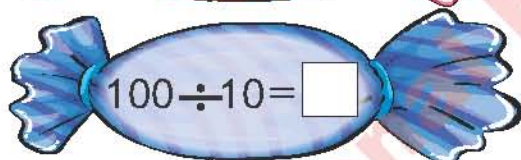
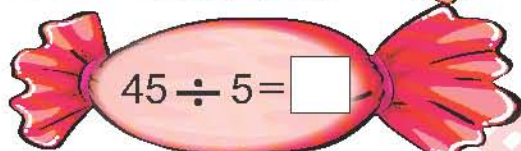
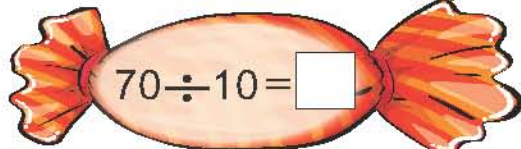
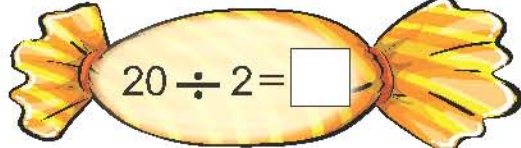
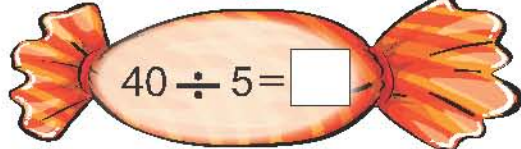
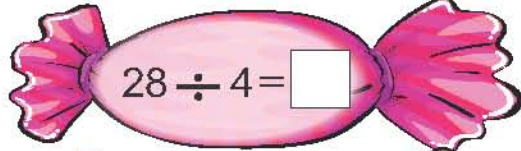
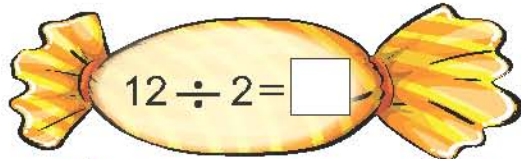


$$\boxed{18} \div \boxed{3} = \boxed{}$$

So, each group has balloons.



5. Solve the following.



Key Fact

When any number (except zero) is divided by number itself, the result is 1.

6. Sara distributes 21 cupcakes equally in 7 friends.
How many cupcakes does each friend get?

$$\square \div \square = \square$$

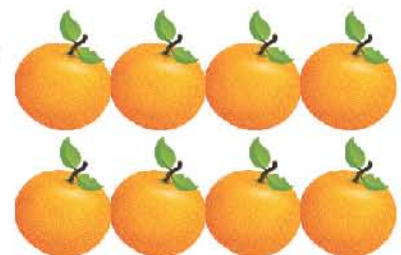
So, each friend gets cupcakes.



7. If we put 32 oranges equally in 4 baskets,
how many oranges are there in each basket?

$$\square \div \square = \square$$

So, each basket has..... oranges.



Order in Division

Let us divide 6 apples among 3 children.



Each child gets 2 apples.

Therefore,

$$6 \div 3 = 2 \text{ apples}$$

Now if we divide 3 apples among 6 children, then each child gets half apple.



Therefore,

$$3 \div 6 = \text{half apple}$$

Hence

$$6 \div 3 \text{ is not equal to } 3 \div 6$$

So, division of numbers can not be done in any order.

Mixed Number Stories

Solve the mixed number stories using following steps.

Step 1 Read the problem carefully.

Step 2 Underline the clue words to identify the correct operation.

Step 3 Draw a picture, if needed.

Step 4 Write a number sentence.

Step 5 Solve the number story.



EXERCISE - 5

Read the following carefully. Solve, by identifying the correct operation. Write the reason to choose the operation.

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

Suits stitched in the first month	=	_____
Suits stitched in the second month	=	<input type="text" value="+"/> _____
_____	=	_____



Tell the Reason

Clue word is altogether. So, we add.

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

Total amount	=	_____
Cost of grocery	=	<input type="checkbox"/> _____
_____	=	_____



Tell the Reason

Clue word is _____.
So, we _____.

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

Books in the bag	=	_____
Number of bags	=	<input type="checkbox"/> _____
_____	=	_____



Tell the Reason

Clue word is _____.
So, we _____.

4. Divide 27 bananas in 3 monkeys equally.

Total bananas	=	_____
Total monkeys	=	<input type="checkbox"/> _____
_____	=	_____



Tell the Reason

Clue word is _____.
So, we _____.

I Have Learnt



- recognizing multiplication as repeated addition.
- counting in steps of 2, 3, 4, 5 and 10.
- multiplying numbers using multiplication tables.
- using multiplication in real life.
- multiplication of numbers can be done in any order.

Vocabulary

repeated addition
multiplication
counting in steps
multiplication table
divide
successive
subtraction
equally sharing
order of division

- recognizing division as successive subtraction.
- dividing by using the multiplication tables.
- using division in real life.
- division of numbers can not be done in any order.

Review Exercise



1. Choose the correct option.

i). $2 + 2 + 2 + 2 =$ _____ .

- (a) 2 times 2 (b) 2 times 4 (c) 4 times 2 (d) 4 times 4

ii). 3, 6, 9, 12, _____.

- (a) 13 (b) 14 (c) 15 (d) 16

iii). $10 \times 5 = 5 \times$ _____

- (a) 10 (b) 15 (c) 25 (d) 50

iv). 7 times 3 = _____.

- (a) 12 (b) 15 (c) 18 (d) 21

v). 4, 8, 12, 16, _____, 24.

- (a) 17 (b) 18 (c) 19 (d) 20

vi). $100 \div 10 =$ _____

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

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

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

viii). $5 \div 5 =$ _____

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

2. Count the balloons.



Total balloons = _____ + _____ + _____ + _____ + _____ + _____
= _____ times _____
= _____ \times _____
= _____



Total balloons = _____ + _____ + _____ + _____
= _____ times _____
= _____ \times _____
= _____

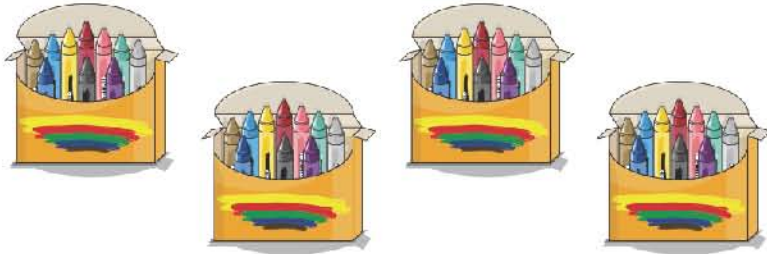


Total balloons = _____ + _____ + _____
= _____ times _____
= _____ \times _____
= _____



Total balloons = _____ + _____ + _____ + _____ + _____ + _____
= _____ times _____
= _____ \times _____
= _____

3. There are 10 pencils in a packet. How many pencils are there in 4 packets altogether?



×

4. If each vase has 8 flowers, how many flowers do 3 vases have altogether?



×

5. There are 5 oranges in a basket. How many oranges are there in 7 baskets altogether?



×

6. There are 7 birds sitting on the branch of a tree. Find how many legs these birds have altogether.



×

7. Divide 8 balls in 2 teams equally.

$$\square \div \square = \square$$



8. Divide 12 pencils in 4 girls equally.

$$\square \div \square = \square$$



9. Solve the following.

$$10 \div 10 = \square$$

$$8 \div 4 = \square$$

$$6 \div 2 = \square$$

$$20 \div 5 = \square$$

$$40 \div 10 = \square$$

$$25 \div 5 = \square$$

$$6 \div 2 = \square$$

$$28 \div 4 = \square$$

10. Ali distributes 30 chocolates equally in 5 friends. How many chocolates does each friend get?



$$\square \div \square = \square$$

So, each friend gets _____ chocolates.

11. Ramsha works in a charity. She distributes 20 suits equally in 10 children. How many suits does each child get?



$$\square \div \square = \square$$

So, each child gets _____ suits.

Unit-3

Money



**By the end of this unit,
you will be able to:**

- Identify international currency and denominations (for instance dollars).
- Solve money problems involving addition and subtraction of Pakistani money and a few selected international currency notes (for instance dollar).
- Solve real-world word problems (including Pakistani currency) involving addition, subtraction, multiplication and division.

Maha has 100 rupee note with her. How many 20 rupee notes will she get in exchange?



Same Denominations

We can receive or pay the amount using various methods. For example if we want to give Rs.20 to someone, we can pay using one 20 rupee note or two 10 rupee notes.



We can also pay Rs.20 as follows:



Different Denominations

5 cents can be exchanged as follows.



Look at the table below. It shows different ways of exchanging money.

Amount	Denominations
8 Rupees	5 Rupee Coin + 2 Rupee Coin + 1 Rupee Coin
22 Rupees	10 Rupee Coin + 10 Rupee Coin + 2 Rupee Coin
9 Cents	5 Cent Coin + 2 Cent Coin + 2 Cent Coin



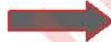
Key Fact

- Five 100 rupee notes make a 500 rupee note.
- Two 50 rupee notes make a 100 rupee note.
- Ten 1 rupee coins make a 10 rupee note.
- 100 cents make one US dollar (\$ 1).
- Ten 5 dollar notes make a 50 dollar note.
- Twenty 50 rupee notes make a 1000 rupee note.



EXERCISE - 1

1. A toy bike costs Rs.600. Tick on the rupee notes that you will pay for the toy.



2. A chair costs 20 dollars. Tick on the dollar notes that you will pay for the chair.



3. Cost of a pen is 36 rupees. Tick on the coins that you will pay for the pen.



4. Fill in the blanks.

- (a) 12 rupees = five rupee coins + two rupee coin
- (b) 7 rupees = five rupee coin + two rupee coin
- (c) 24 rupees = ten rupee coins + two rupee coins
- (d) 43 rupees = twenty notes + two rupee coin
+ one rupee coin
- (e) 75 rupees = twenty rupee notes + ten rupee note
+ five rupee coin
- (f) 75 rupees = fifty rupee note + ten rupee notes
+ five rupee coin

Addition of Money



Mother gave Rs.50 to Aleeza and Rs.20 to Abdulla. What is the total amount they have?



To find the total amount, we will add the amount written on both rupee notes.



So, $\text{Rs.}50 + \text{Rs.}20 = \text{Rs.}70$
Mother gave Rs.70 to both children.

Example:

Count the notes/coins and find the total amount.



Solution:

Total amount = $\text{Rs.}100 + \text{Rs.}10 + \text{Rs.}5$
= $\text{Rs.}115$



Try Yourself

Find the sum of following notes



Subtraction of Money



Tariq bought three breads for Rs.90 and gave a 100 rupee note to the shopkeeper.
How much amount will the shopkeeper return?



To find the amount returned, we will subtract Rs.90 from Rs.100.



Cost of three breads = Rs.90
Shopkeeper gives back = Rs.100 – Rs.90
= Rs.10

Example:

Subtract amount of coins from amount of note.



–



Solution:

Amount of note = Rs.20

Amount of coins = Rs.16

So, we have:

$$\text{Rs.20} - \text{Rs.16} = \text{Rs.4}$$



EXERCISE - 2

1. Count the notes/coins and write the total amount below.

(a)



(b)



(c)



(d)



(e)



2. Subtract the combination of notes and coins.

(a)  -  =

(b)  -  =

(c)  -  =

(d)  -  =

(e)  -  =

(f)  -  =

(g)  -  =

3. Father gave:

Eidi to Moona = Rs.380, Eidi to Samra = Rs. 355

What is total amount of Eidi?

4. Price of tooth brush is Rs.107 and price of tooth paste is Rs.242.

What is total price of both items?

5. Price of 1 kg dates is 12 Riyals. A shopkeeper gives a discount of 2 Riyals. How many Riyals per kg the shopkeeper receives?

6. Musa has \$ 41. He bought grocery items for \$ 25. How much money has he left?

7. Cost of 1 Mathematics book is Rs.250. What is cost of 7 such books?

8. Ali bought 5 burgers for Rs.600. What is cost of 1 burger?

I Have Learnt



- identifying international currency and denominations.
- solving money problems involving addition and subtraction of Pakistani money and a few selected international currency notes.
- solving real-world word problems (including Pakistani currency) involving addition, subtraction, multiplication and division.

Vocabulary

Currency, Denominations,
Notes, Coins, Rupee,
Dollar, Riyal

Review Exercise



1. Encircle the correct option.

(a) 20 rupees = 10 rupee notes

- (i) one (ii) two (iii) three (iv) four

(b) 60 rupees = 20 rupee notes

- (i) one (ii) two (iii) three (iv) four

(c) 5 twenty rupees notes make =

- (i) Rs.100 (ii) Rs.50 (iii) Rs.500 (iv) Rs.50

(d) 100 cents =

- (i) 100 dollars (ii) 50 dollars (iii) 10 dollars (iv) 1 dollar

(e) Rs.75 + Rs.35 =

- (i) Rs.100 (ii) Rs.105 (iii) Rs.110 (iv) Rs.101

(f) \$ 105 – \$ 68 =

- (i) \$ 47 (ii) \$ 37 (iii) \$ 27 (iv) \$ 57

(g) Rs.100 – Rs.80 + Rs.25 =

- (i) Rs.30 (ii) Rs.35 (iii) Rs.40 (iv) Rs.45

2. Fill the third column with 'yes' or 'no'.

Money	Toy with price	Yes/No
	 Rs.155	
	 Rs.560	



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قومی ترانہ

پاک سر زمین شاد باد! کشورِ حسین شاد باد!
تو نشانِ عزمِ عالی شان ارضِ پاکستان
سرکزِ یقین شاد باد!

پاک سر زمین کا نظام قوتِ اخوتِ عوام
قوم، ملک، سلطنت پائندہ تابندہ باد!
شاد باد منزلِ مسدا!

پرچمِ بشارہ و ہلال رہبرِ ترقی و کمال
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سایہ خدائے ڈوالجبال!



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