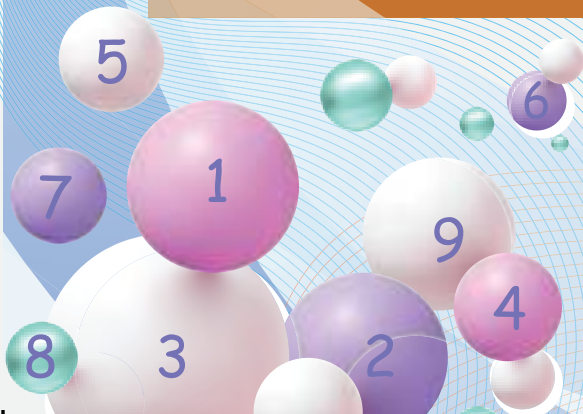


Mathematics

3



With the blessings of:
Our Parents

Mathematics (Part-3)

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- National Education Policy 2020
- NCF 2022
- Activity Based Format
- Innovative Approach
- Learning with fun
- Eco-Friendly Paper

Preface

Mathematics, a well arranged series of Mathematics strictly confirms to the vision of National Curriculum Framework 2022 and also meets the requirement of the NCERT latest syllabus. It is an activity-based maths textbook created to give the students a National Education Policy 2020-based interactive learning foundation in mathematics while also fostering the holistic development of learners through critical thinking and creativity.

These traits will aid the students in better understanding the fundamental ideas through play. Core educational ideas are the foundation of this textbook. The goal is to encourage youngsters to look beyond the theoretical side of arithmetic and to learn about practical applications.

The book's design emphasises effectiveness and logical progression. Through teaching and interactive learning, NEP 2020 seeks to enhance higher order thinking.

The purpose of this book's design and presentation is to reinforce mathematical concepts through the use of simple games. This book includes enough questions in accordance with the NEP 2020 criteria.

Salient Features of the series:

Learning Objectives: Learning objective shows the right path of learning to the teacher as well as students. It determines the direction of learning for effective and quality learning outcomes.

Warm-Up: It aids pupils in remembering lessons learnt in previous years and lets them ready for new concepts. Also, allows learners to process and explore mathematical concepts while applying, extending, and analysing information within their own unique range of understanding.

Teacher's note: A "Teacher's Note" is a set of instructions laid out for the teachers to follow in the classroom in order to make class interactive and discussion based.

Quick Tip: It offers suggestions on how to quickly solve the questions.

Facts To know: The inclusion of it gives the learner plenty of chances to investigate the information regarding the topics..

Think Wisely: These questions have been included to encourage learners to think, analyse and apply.

Mental Maths: The main goal of teaching Mental Maths to the learners is to focus on improving their arithmetic abilities through memory, practice and number manipulation.

Maths Lab Activities: These are provided with the intention of making maths learning efficient, engaging, pleasant, and intellectually stimulating.

This series of Mathematics books from class 1-8 contains sufficient questions for practice on each topic.

I am very appreciative of the entire staff and the management for working so hard to get this book into such a wonderful arrangement.

The books are always open to suggestions and enhancements.

Author

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Revision



Learning Objectives

At the end of this lesson, students will be able to:

- Revise the place value upto hundreds.
- Arrange the numbers in ascending and descending order.
- Sort out even and odd numbers.
- Write multiplication and division facts.



Warm-Up

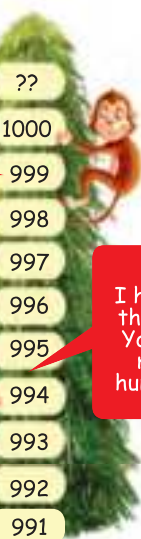
Let's revise

We have learnt to read and write 1 digit , 2 digit and 3 digit numbers using the digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9.

Cheeku and his friend Peeku are climbing on a palm tree with numbered blocks on each step. Meeku and Golu are also climbing trees, but different ones. Fill in the missing numbers.

Yes, Meeku!

I am on block 998, and going up to block 999. I will soon reach 1000. What will come after that?



Cheeku!

I have reached the block 994. You know 994 means nine hundred ninety four.



Meeku!

I want to fill in the blank blocks. Help me!



Golu!

I am on 98. The two numbers after 98 are:



Teacher's Note:

Elucidate the students that the largest three-digit number is 999. If you add 1 to this number, it becomes 1000, which is a four-digit number. So, 999 is the largest three digit number in the number system.





Let's Revise

Ones	Tens	Hundreds

	Hundreds	Tens	Ones
One-Digit Numbers (0 to 9)			1
Two-Digit Numbers (10 to 99)		1	0
Three-Digit Numbers (100 to 999)	1	0	0



Facts to Know

Only three cultures invented a place value numeration system: The Mayans, The Babylonians and The Hindu people of India.

Exercise 1.1

1. Write the number names for the following numerals:

(a) 125

(b) 642

(c) 721

(d) 900



2. Write the following number names in figures:

- (a) Six hundred thirty two
- (b) Seven hundred
- (c) Two hundred one
- (d) Three hundred forty



3. Write the following numbers in ascending order:

- (a) 95, 62, 25, 73, 91
- (b) 986, 429, 536, 418, 721
- (c) 526, 321, 400, 308, 222
- (d) 986, 50, 146, 221, 700

4. Write the following numbers in descending order:

- (a) 532, 221, 645, 386, 118
- (b) 600, 400, 200, 900, 500
- (c) 444, 625, 155, 555, 71
- (d) 226, 431, 536, 429, 300

5. Fill in the boxes with the correct symbol $<$, $>$ or $=$

- (a) 33 21 (b) 46 29
- (c) 130 160 (d) 108 108
- (e) 721 482 (f) 245 564



6. Sort out the following as even numbers and odd numbers:

20, 23, 44, 65, 49, 82, 136, 18, 7, 33, 58, 83, 27, 42, 102, 111

- (a) Even Numbers
- (b) Odd Numbers



Quick Tip

Ascending order:

If all the numbers have an equal number of digits, then the numbers whose first digit is greater will be a higher number.



7. Write the following numerals in expanded form:

(a) $329 = \dots + \dots + \dots$

(b) $621 = \dots + \dots + \dots$

(c) $518 = \dots + \dots + \dots$

(d) $213 = \dots + \dots + \dots$

8. Write the following in short form:

(a) $800 + 80 + 2 = \dots$

(b) $700 + 20 + 9 = \dots$

(c) $500 + 3 = \dots$

(d) $200 + 20 + 5 = \dots$



9. Complete the following number patterns:

(a) 73, 74, $\dots$, $\dots$, $\dots$, 78, $\dots$, $\dots$

(b) 330, 331 $\dots$, $\dots$, $\dots$, 335, $\dots$, $\dots$

(c) 226, 228, $\dots$, $\dots$, $\dots$, 236 $\dots$, $\dots$

(d) 100, 110, 120, $\dots$, $\dots$, $\dots$, $\dots$, 170,

10. What comes AFTER in each of the following numerals?

(a) 321 $\dots$ (b) 436 $\dots$

(c) 225 $\dots$ (d) 581 $\dots$

11. What comes BEFORE in each of the following numerals?

(a) $\dots$ 325 (b) $\dots$ 436

(c) $\dots$ 221 (d) $\dots$ 580



12. What comes in BETWEEN in each of the following numerals?

(a) 333 $\dots$ 335 (b) 426 $\dots$ 428

(c) 500 $\dots$ 502 (d) 729 $\dots$ 731



13. Fill in the blanks:

(a) $3 + 0 = \dots\dots\dots$

(b) $5 + \dots\dots\dots = 5$

(c) $20 - \dots\dots\dots = 20$

(d) $26 - 26 = \dots\dots\dots$

14. Complete the following table:

Numbers	One-Digit	Two-Digit	Three-Digit
Largest			
Smallest			

15. Write the place value of the underlined digit in the following numerals:

(a) $62\underline{5}$ (b) $42\underline{1}$

(c) $\underline{6}35$ (d) $4\underline{5}0$

16. Write the smallest 3-digit number formed by using the digits given below:

(a) 5, 2, 9 (b) 6, 0, 8

(c) 1, 2, 3 (d) 8, 4, 6

17. Write the largest 3-digit number formed by using the digits given below:

(a) 5, 2, 6

(b) 7, 2, 8

(c) 5, 0, 9

(d) 2, 0, 8

18. Add the following:

(a)
$$\begin{array}{r} 43 \\ + 21 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 29 \\ + 65 \\ \hline \end{array}$$

(c)
$$\begin{array}{r} 36 \\ 42 \\ + 90 \\ \hline \hline \end{array}$$

(d)
$$\begin{array}{r} 17 \\ 29 \\ + 83 \\ \hline \hline \end{array}$$



(e)

3	3	6
+	4	2
1		

(f)

8	2	9
+	2	3
6		

(g)

2	8	8
3	9	9
+	1	0
8		

(h)

1	3	0
2	4	9
+	3	5
6		

19. Subtract the following:

(a)

3	6
-	2
9	

(b)

4	2
-	2
8	

(c)

2	2
-	1
9	

(d)

9	3	6
-	5	2
1		

(e)

5	2	9
-	4	2
2		

(f)

6	0	0
-	5	4
2		

20. Write the multiplication facts for the following:

(a) $3 \times 2 =$

(b) $5 \times 8 =$

(c) $7 \times 6 =$

(d) $9 \times 8 =$

21. Multiply the following:

(a)

3	0
$\times$	6

(b)

2	4
$\times$	2

(c)

1	4
$\times$	1

(d)

2	3
$\times$	5

22. Write two division facts for each of the following multiplication facts:

(a) $7 \times 5 = 35$,

(b) $3 \times 6 = 18$,

(c) $4 \times 10 = 40$,

(d) $9 \times 9 = 81$,

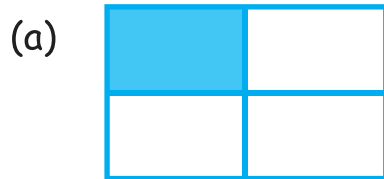


23. Answer the following questions:

- (a) How many 5-paise coins make a rupee?
- (b) How many 10-paise coins make a rupee?
- (c) How many 20-paise coins make a rupee?
- (d) How many 25-paise coins make a rupee?
- (e) How many 50-paise coins make a rupee?
- (f) How many ₹ 1 notes make ₹ 10?
- (g) How many ₹ 5 notes make ₹ 10?
- (h) How many ₹ 10 notes make ₹ 20?
- (i) How many ₹ 50 notes make ₹ 100?
- (j) How many ₹ 100 notes make ₹ 500?
- (k) How many ₹ 500 notes make ₹ 1000?



24. Write the fraction as is represented in the following shaded figures:



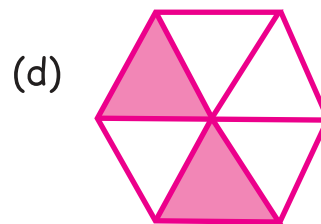
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Think Wisely

Who am I ?

- If 100 is added to me, I am 936. _____
- If 1000 is subtracted from me, I am 333. _____
- I am the predecessor of the smallest 4 digit number. _____
- If I am added or subtracted from a number, the answer is the number itself. _____



Mental Maths

Solve mentally: call out the steps as you do

1. $6 + 17 = \dots\dots\dots$
2. $19 + 8 = \dots\dots\dots$
3. $9 + 15 = \dots\dots\dots$
4. $15 + 7 = \dots\dots\dots$
5. $4 + 17 = \dots\dots\dots$



Maths Lab Activity

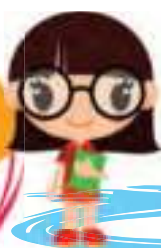
Materials required: Flash cards of any 3 numbers from (0-9).

Steps:

1. Show the cards to the students.
2. Students need to make as many 3 digit numbers as possible with those numbers.
3. Students with maximum numbers will get the points.



2



Learning Numbers Upto 10000



Learning Objectives

At the end of this lesson, students will be able to:

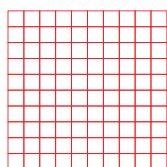
- Read and write the numbers upto 10000.
- Show the four-digit numbers on the abacus.
- Know about the successor and predecessor of a number.



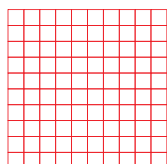
Warm-Up

Let's revise

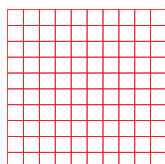
Count the boxes given below and write the number and the place value of its digit.



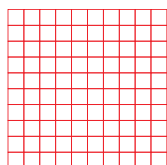
H	T	O



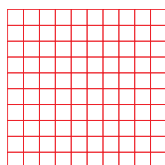
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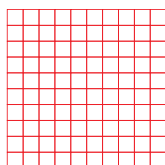
H	T	O



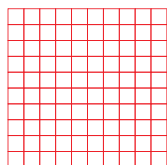
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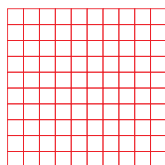
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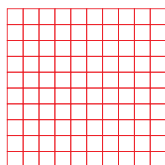
H	T	O



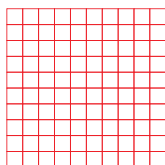
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+



+



H	T	O



Teacher's Note:

Ask the students to write the number name of the final number that comes up.



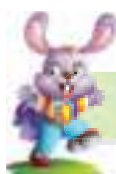


Let's Revise:

	Smallest	Largest
One-Digit Number	1	9
Two-Digit Number	10	99
Three-Digit Number	100	999
Four-Digit Number	1000	9999

1000 is read as One Thousand

9999 is read as Nine Thousand Nine Hundred Ninety Nine.



Let's Learn Place Value:

Th H T O

Th — Thousands H — Hundreds
 T — Tens O — Ones



Numbers From 1001 to 10000

Numbers

1001

1002

1003

1004

.....

1010

1011

.....

1099

Number Names

One thousand one

One thousand two

One thousand three

One thousand four

.....

One thousand ten

One thousand eleven

.....

One thousand ninety-nine



1100

1101

.....

1200

.....

1900

.....

1999

2000

2001

.....

2999

3000

.....

9000

.....

9999

10000



One thousand one hundred

One thousand one hundred-one

.....

One thousand two hundred

.....

One thousand nine hundred

.....

One thousand nine hundred ninety-nine

Two thousand

Two thousand one

.....

Two thousand nine hundred ninety-nine

Three thousand

.....

Nine thousand

.....

Nine thousand nine hundred ninety-nine

Ten thousand



Facts to Know

10,000 is known as a Myriad in Ancient Greek.

Exercise 2.1

Complete the following number grids:

(a)	1054,			1057,		
(b)	1100,	1101,				
(c)	9762,			9765,		
(d)	8201,			8204,		





Learning Four-Digit Numbers On Abacus

Th- Thousands H- Hundreds

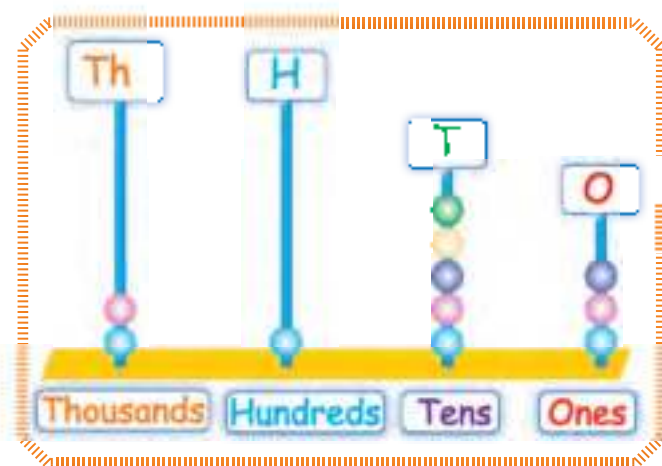
T- Tens O- Ones

Look at the abacus given above:

It shows the numeral: 2153

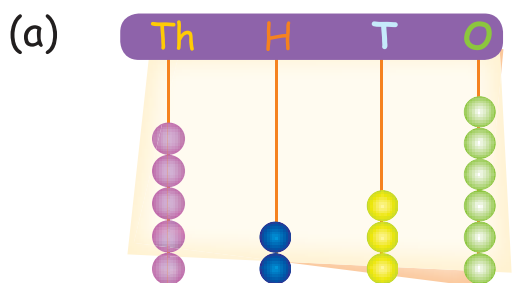
Th	H	T	O
2	1	5	3

Two thousand one hundred fifty-three.



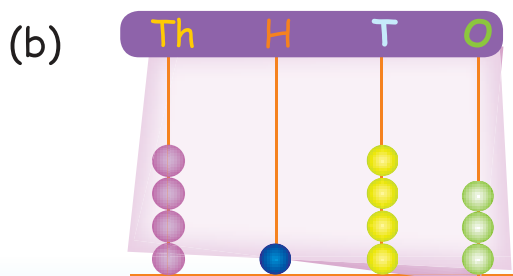
Exercise 2.2

1. Read the number on the abacus and write the number and number name:



5 2 3 6

Five thousand two hundred
thirty-six



.....

.....



2. Write the numeral for the following number names:

- (a) Two thousand five hundred seventy.
- (b) Three thousand two hundred sixty-two.
- (c) One thousand three hundred fifty-three.
- (d) Nine thousand six hundred twenty.
- (e) Two thousand four hundred one.
- (f) Eight thousand fifty-three.

Th	H	T	O
2	5	7	0

3. Write the number names for the following numerals:

- (a) 4065
- (b) 3002
- (c) 2791
- (d) 7356
- (e) 8000
- (f) 2015



Face Value of A Digit

Face value of a digit is the actual value of the digit in a number.

Solved Examples

Example 1 : Find the face value of each digit in the numeral 3429.

Solution : Face value of 9 is 9.
 Face value of 2 is 2.
 Face value of 4 is 4.
 Face value of 3 is 3.

Example 2 : Find the face value of each digit in the numeral 2054.

Solution : Face value of 4 is 4.



Face value of 5 is 5.

Face value of 0 is 0.

Face value of 2 is 2.



Exercise 2.3

Write the face value of encircled digits:

(a) 1 4 5 9

(b) 6 4 2 1

(c) 2 8 5 7

(d) 1 2 3 6

(e) 7 5 0 3



Place Value (or Local Value) Of A Digit

Place value (or local value) of a digit in a number depends upon the value according to the place of a digit in a number.

Solved Examples

Example 1 : Write the place value of each digit in the numeral 2456.

Solution :

Th	H	T	O
2	4	5	6

Place value of 6 = 6 ones = 6

Place value of 5 = 5 tens = 50

Place value of 4 = 4 hundreds = 400

Place value of 2 = 2 thousands = 2000



Example 2 :

Write the place value of each digit in the numeral 7029.

Solution :

Th	H	T	O
7	0	2	9

Place value of 9 = 9 ones = 9

Place value of 2 = 2 tens = 20

Place value of 0 = 0 hundreds = 0

Place value of 7 = 7 thousands = 7000

Exercise 2.4

Write the place value of encircled digits:

- (a) 2 0 4 5
(b) 6 9 2 1
(c) 6 8 2 5
(d) 5 4 3 1
(e) 7 5 0 2



Expansion Of Numbers

When a numeral is expressed as a sum of the place values of its digits, then it is said to be in **expanded form**.



Quick Tip

The place value of 0 is always 0.



Solved Example

Example 1 : Write the number 2856 in expanded form.

Solution :

Th	H	T	O
2	8	5	6

2856 = 2 thousands + 8 hundreds + 5 tens + 6 ones

2856 = 2000 + 800 + 50 + 6

Expanded form of 2856 is,

2000 + 800 + 50 + 6.

Also, the short form of
2000 + 800 + 50 + 6 is 2856.



Exercise 2.5

1. Write the expanded form of following numerals:

(a) 2859 = + + +

(b) 7628 = + + +

2. Write the short form of the following:

(a) 3000 + 50 + 6 =

(b) 8000 + 600 + 20 + 5 =

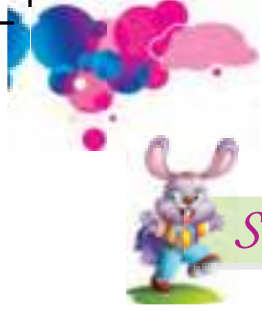


Think Wisely

1. How many odd numbers are there from 4000 to 5001?

2. Write the greatest and smallest 3 digit numbers using the digits 9, 8, 6, 8, or 0.





Skip Counting

When we write some numbers with a fixed gap between two successive numbers, then such counting is known as skip counting.

Solved Examples

Example 1 : Counting by two's, write five numerals from 6052 onwards.

Solution : Starting from 6052, we add 2.

The required numerals are:

6052, 6054, 6056, 6058, 6060

Example 2 : Counting by five's, write five numerals from 3056 onwards.

Solution : Starting from 3056, we add 5.

The required numerals are:

3056, 3061, 3066, 3071, 3076

Example 3 : Counting by ten's, write five numerals from 4015 onwards.

Solution : Starting from 4015, we add 10.

The required numerals are:

4015, 4025, 4035, 4045, 4055

Example 4 : Counting by hundred's, write five numerals from 2056 onwards.

Solution : Starting from 2056, we add 100.

The required numerals are:

2056, 2156, 2256, 2356, 2456





Exercise 2.6



1. Counting by two's, write the numerals from:

- (a) 3059,
.....
.....
- (b) 1022,
.....
.....
- (c) 2030,
.....
.....
- (d) 4056,
.....
.....

2. Counting by three's, write the numerals from:

- (a) 1023,
.....
.....
- (b) 7328,
.....
.....
- (c) 2059,
.....
.....
- (d) 2002,
.....
.....

3. Counting by five's, write the numerals from:

- (a) 556,
.....
.....
- (b) 1525,
.....
.....
- (c) 7621,
.....
.....
- (d) 2150,
.....
.....

4. Counting by twenties, write the numerals from:

- (a) 1030,
.....
.....
- (b) 5042,
.....
.....
- (c) 6721,
.....
.....
- (d) 5892,
.....
.....



5. Counting by fifties, write the numerals from:

- (a) 1050,
 (b) 2065,
 (c) 3012,
 (d) 1029,



Successor And Predecessor



Subtract 1 from a given number to get its predecessor.

The number just after the given number, is called its successor.

Add 1 to a given number to get its successor.

The number just before the given number, is called its predecessor.



Solved Examples

Example 1 : Write the successor of the following numerals:

(a) 329, (b) 462, (c) 1521, (d) 2497, (e) 8000

Solution : Add 1 to the given number,

- | | | | | | |
|-----|-------------------|---|------------|---|------|
| (a) | Successor of 329 | = | $329 + 1$ | = | 330 |
| (b) | Successor of 462 | = | $462 + 1$ | = | 463 |
| (c) | Successor of 1521 | = | $1521 + 1$ | = | 1522 |
| (d) | Successor of 2497 | = | $2497 + 1$ | = | 2498 |
| (e) | Successor of 8000 | = | $8000 + 1$ | = | 8001 |



Example 2 : Write the predecessor of the following numerals:

(a) 421, (b) 645, (c) 1295, (d) 7321, (e) 7000

Solution : Subtract 1 to the given number:

- (a) Predecessor of 421 = $421 - 1 = 420$
(b) Predecessor of 645 = $645 - 1 = 644$
(c) Predecessor of 1295 = $1295 - 1 = 1294$
(d) Predecessor of 7321 = $7321 - 1 = 7320$
(e) Predecessor of 7000 = $7000 - 1 = 6999$

Exercise 2.7



1. Write the successor of the following numerals:

- (a) 7990 (b) 4321
(c) 5625 (d) 1429
(e) 8462 (f) 7469

2. Write the predecessor of the following numerals:

- (a) 1435 (b) 6425 (c) 1421
(d) 1008 (e) 2098 (f) 8962

3. Complete the following table:

Predecessor	Numbers	Successor
.....	4165	.....
.....	2986	.....
.....	1453	.....
.....	2009	.....
.....	1081	.....



Comparison Of Numbers

We have already learnt the comparison of numbers upto 3-digits. Now follow the same rule for 4-digit numbers.

Comparing numbers having different number of digits:



Number with more digits is the greater number

1057	>	256
298	>	56
9	>	5

Comparing numbers having same number of digits:

- Step 1 : To compare numbers, always begin with the left most digit (or place).
 Step 2 : First compare thousands. If they are same, then compare hundreds.
 Step 3 : If hundreds are same, then compare tens, and so on.

Solved Examples

Example 1 : Compare 2459 and 2457

Solution : Arrange the numbers in place value chart:



Th	H	T	O
2	4	5	9
2	4	5	7

↑
Same

↑
Same

↑
Same

↑
Different

At ones place,
 $9 > 7$

So,

2459	>	2457
------	---	------



Exercise 2.8

1. Write the correct symbol ($>$ or $<$) in the placeholders:

(a) 2059 2561

(b) 129 586

(c) 1029 929

(d) 2110 2119

(e) 2765 2760



2. Encircle the smallest number:

(a) 236, 941, 535, 642, 156

(b) 1028, 5465, 2091, 9862, 2491

(c) 1200, 1201, 9262, 1001, 2962

(d) 1295, 1293, 1292, 1298, 1297

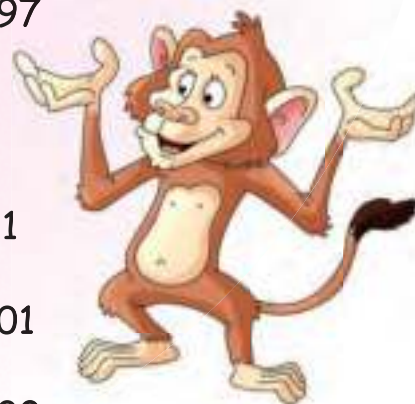
3. Encircle the largest number:

(a) 276, 142, 596, 172, 981

(b) 1296, 1275, 1283, 1200, 1201

(c) 9800, 9865, 9700, 9200, 1000

(d) 7654, 7601, 7691, 7650, 8800



4. Write the smallest and greatest 4-digit numbers, with the help of given digits:

S.No.	Digits	Smallest	Greatest
(a)	7, 2, 0, 9	2079	9720
(b)	5, 4, 3, 6		
(c)	6, 8, 1, 2		
(d)	7, 3, 6, 1		
(e)	5, 6, 2, 0		
(f)	2, 8, 9, 3		
(g)	4, 3, 2, 0		
(h)	7, 2, 9, 5		



Ordering Of Numbers

Ordering of numbers means 'to arrange the numbers in either **ascending** or **descending** order'

Ascending order means to arrange the numbers from the smallest to the greatest number.

Descending order means to arrange the numbers from the greatest to the smallest number.



Solved Examples

Example 1 : Arrange the following numbers in ascending order:
2496, 5421, 108, 2965, 980



Solution : Arrange these numbers in place value chart:



Th	H	T	O
2	4	9	6
5	4	2	1
	1	0	8
2	9	6	5
	9	8	0

Clearly,

$$108 < 980 < 2496 < 2965 < 5421.$$

So, ascending order of given numbers is:

108, 980, 2496, 2965, 5421.

Example 2 : Arrange the following numbers in descending order:

1095, 985, 4265, 129, 2892

Solution : Arrange these numbers in place value chart:

Th	H	T	O
1	0	9	5
	9	8	5
4	2	6	5
	1	2	9
2	8	9	2



Clearly,

$$4265 > 2892 > 1095 > 985 > 129$$

So, descending order of given numbers is:

4265, 2892, 1095, 985, 129.

Exercise 2.9

1. Arrange the following numbers in ascending order:

- (a) 4265, 9341, 285, 962, 1298
- (b) 1095, 9121, 4365, 129, 784
- (c) 9865, 7321, 865, 1295, 5829
- (d) 7695, 8321, 5463, 7321, 280



2. Arrange the following numbers in descending order:

- (a) 7321, 5469, 9296, 480, 9866
(b) 1465, 7320, 776, 121, 4366
(c) 9865, 9989, 4321, 929, 1000
(d) 9000, 8800, 4000, 5000, 7700



Mental Maths

Fill in the blanks:

- (a) The smallest 4 digits number is _____.
(b) The place value of a digits _____ ten times as you move one place from right to left.
(c) The number just after the given number, is called its _____.
(d) The greatest 4 digit number is _____.



Maths Lab Activity

Materials required: Sets of blue, red, orange and green coloured cards numbers from 0 to 9.

Steps:

1. Divide the students into groups of 5 (with one of them as the coordinator).
2. Provide each group with all sets of cards.
 - a. The green cards stand for ones place.
 - b. The blue cards stand for tens place.
 - c. The orange cards stand for hundreds place.
 - d. The red cards stand for thousand place .



- 
- 
3. The coordinator chooses a 4 digit number randomly and asks his/her group to represent the number with the help of cards.
 4. Continue this exercise till all groups have presented at least 4 numbers.
 5. Let the students learn the difference between place value and face value.

Example: 5762



3



Roman Numbers



Learning Objectives

At the end of this lesson, students will be able to:

- Identify the Roman numbers.
- Convert the Hindu-Arabics numbers to Roman numbers.



Warm-Up

Let's revise

Have you ever noticed these symbols in the clock?

What time is it? _____



Teacher's Note:

Use the actual clock and show the roman numbers to the students.





People in Ancient India developed ten digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 to represent all numbers.

Arabs spread them to other countries. Therefore, the number formed by these digits are known as **Hindu-Arabic numbers** or **International numbers**.



Facts to Know

The Roman number system was developed by the Romans thousands of years ago.

They used only 7 symbols to write numbers.

These symbols are:

I, V, X, L, C, D and M. Each letter has its own different value.



Roman Symbols	I	V	X	L	C	D	M
Value	1	5	10	50	100	500	1000





Roman numbers have
no symbol for zero.

Note: In this class, we will discuss the usage of three symbols: I, V and X.



Rules For Writing Roman Numerals



Quick Tip

The only symbols I and X can be repeated to form a number.
No symbol can be repeated more than 3 times.
Symbol V is never repeated.

Rule 1 : Repetition of a roman number means addition.

Examples

$$\begin{aligned}\text{II} &= 1 + 1 = 2 \\ \text{III} &= 1 + 1 + 1 = 3 \\ \text{XX} &= 10 + 10 = 20 \\ \text{XXX} &= 10 + 10 + 10 = 30\end{aligned}$$

Rule 2 : When a smaller number is written on the right of a larger number, we add smaller to the larger one.

Examples

$$\begin{aligned}\text{VI} &= 5 + 1 = 6 \\ \text{VII} &= 5 + 1 + 1 = 7 \\ \text{XII} &= 10 + 1 + 1 = 12 \\ \text{XXII} &= 10 + 10 + 1 + 1 = 22 \\ \text{XXV} &= 10 + 10 + 5 = 25\end{aligned}$$



Rule 3 : When a smaller number is written on the left of a larger number, we subtract smaller from the larger one.

Examples

$$IV = 5 - 1 = 4$$

$$IX = 10 - 1 = 9$$



Roman Numbers Table

Hindu-Arabic Numerals	Roman Numerals	Hindu-Arabic Numerals	Roman Numerals	Hindu-Arabic Numerals	Roman Numerals
1	I	15	XV	29	XXIX
2	II	16	XVI	30	XXX
3	III	17	XVII	31	XXXI
4	IV	18	XVIII	32	XXXII
5	V	19	XIX	33	XXXIII
6	VI	20	XX	34	XXXIV
7	VII	21	XXI	35	XXXV
8	VIII	22	XXII	36	XXXVI
9	IX	23	XXIII	37	XXXVII
10	X	24	XXIV	38	XXXVIII
11	XI	25	XXV	39	XXXIX
12	XII	26	XXVI	40	XL
13	XIII	27	XXVII		
14	XIV	28	XXVIII		



Since we cannot repeat X more than 3 times, so we cannot write 40 as XXXX.

So, we write, $40 = 50 - 10 = XL$

$40 = XL$

Exercise 3.1

1. Match the following:

S. No.	Hindu-Arabic Numerals	Roman Numerals
(a)	5	XII
(b)	9	XXVII
(c)	15	V
(d)	12	XXXIII
(e)	25	IX
(f)	33	XV
(g)	27	XVI
(h)	20	XXXVIII
(i)	16	XX
(j)	38	XXV



2. Write the Roman numerals for the following:

- | | | | |
|--------|-------|--------|-------|
| (a) 4 | ..... | (b) 29 | ..... |
| (c) 6 | ..... | (d) 10 | ..... |
| (e) 17 | ..... | (f) 36 | ..... |

3. Write the Hindu-Arabic numerals for the following:

- | | | | |
|---------|-------|----------|-------|
| (a) XX | ..... | (b) IX | ..... |
| (c) XIV | ..... | (d) XXIV | ..... |
| (e) IV | ..... | (f) XXIX | ..... |



4. Which of the following are meaningless? Mark (x) or (✓).

- (a) XIIIX (b) XXXI
- (c) XXIX (d) VX
- (e) XVII (f) XXIVV

5. Fill in the placeholders with the correct sign (> or <):

- (a) XXVI XXIV (b) X XI
- (c) XX XXXIV (d) XXV XXIV
- (e) IX XII (f) IV VI

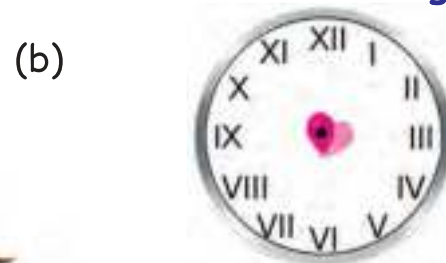
6. Solve the following and write the answer in Hindu-Arabic numerals:

- (a) XI + XI = (b) XI - XI =
- (c) XXX + XX = (d) XXX - XX =
- (e) XXI + X = (f) XXII - XI =

7. Draw the minute hand and hour hand to show the time given below:



5 o'clock



Quarter past 4



Quarter to 8



Half past 10





Think Wisely

Arrange the following roman number in ascending order:

XX

XXVI

VI

XXV

XXII



Mental Maths

A. Tick (✓) the correct answer:

1. Roman numeral for 50 is

i. L

☐

ii. X

☐

iii. C

☐

2. XXII represents

i. 22

☐

ii. 32

☐

iii. 52

☐

3. 40 is written as

i. VIII

☐

ii. XL

☐

iii. XXXV

☐

B. Fill in the blanks with Hindu-Arabic numerals.

1. $V + \underline{\hspace{2cm}} = \underline{VIII}$

2. $VI + \underline{\hspace{2cm}} = \underline{X}$

3. $XXV - \underline{\hspace{2cm}} = \underline{IX}$

4. $VII + \underline{\hspace{2cm}} = \underline{XV}$

5. $XXX - \underline{\hspace{2cm}} = \underline{XVIII}$

6. $XVIII - \underline{\hspace{2cm}} = \underline{X}$



Maths Lab Activity

Materials required: Paper sheet with pencil.

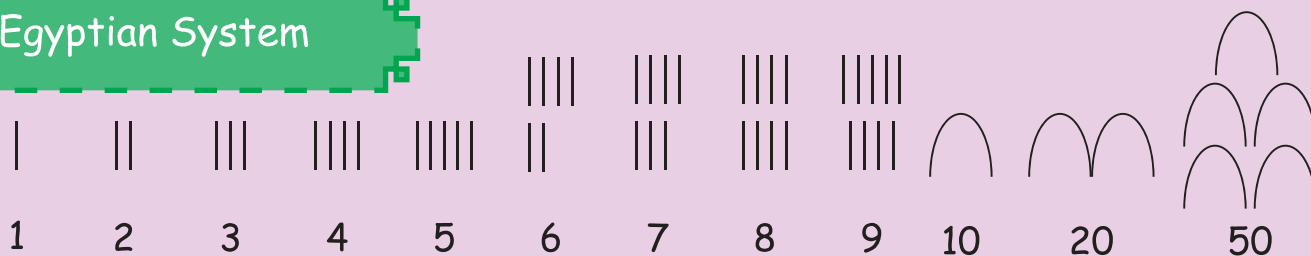
Steps:

1. Divide the class into groups of 4-5 students.
2. Ask the students about the Hindu Arabic and Roman Numerals. Discuss the differences between the two numerals:

The Hindu - Arabic numeral system is based on place values, while the roman system uses combinations of symbols to depict a number.

3. Also share and discuss various other number systems such as.

Egyptian System



Hindi System

१	२	३	४	५	६	७	८	९	१०
1	2	3	4	5	6	7	8	9	10

4. Now let the students work in groups and create their system of numbers. They should be encouraged to create a symbol for each digit and give each digit and the number a unique name.



Learning Objectives

At the end of this lesson, students will be able to:

- Add numbers up to 4 digits with or without regrouping.
- Know the properties of addition.
- Solve the story sums based on addition.



Warm-Up

The worker ants are busy collecting food to store in their anthills. Tiggy with her army of ants meet Teepu and her associates on the way.



H	T	O

Total numbers of food crumbs collected = _____



Addition of 4-digit numbers is same as 3-digit numbers.



Addition of 4-Digit Numbers Without Carry Over

Solved Examples

Example 1 : Add: 2054 and 1523

Solution :

Step 1 : Write the numbers in correct column.

Step 2 : First add ones
 $4 + 3 = 7$

Step 3 : Add tens
 $5 + 2 = 7$

Step 4 : Add hundreds
 $0 + 5 = 5$



Th	H	T	O
2	0	5	4
+	1	5	2
			3

Th	H	T	O
2	0	5	4
+	1	5	2
			7

Th	H	T	O
2	0	5	4
+	1	5	2
		7	7

Th	H	T	O
2	0	5	4
+	1	5	2
	5	7	7



Teacher's Note:

Apprise the students that we can add numbers in any order, for say: $184 + 16 = 16 + 184$. The result will be the same, i.e. 200.



Step 5 : Add thousands

$$2 + 1 = 3$$

So, $2054 + 1523 = 3577$

↑ Addends ↑ Sum

	Th	H	T	O
	2	0	5	4
+	1	5	2	3
	3	5	7	7



Quick Tip

The numbers which are to be added are known as addends.
The result obtained after the addition is known as the sum.

Example 2 : Add: 2051, 3221 and 1304

Solution :

Step 1 : Write in correct column.

Step 2 : Add ones, $1 + 1 + 4 = 6$

Step 3 : Add tens, $5 + 2 + 0 = 7$

Step 4 : Add hundreds, $0 + 2 + 3 = 5$

Step 5 : Add thousands, $2 + 3 + 1 = 6$

So, $2051 + 3221 + 1304 = 6576$

↑ Addends ↑ Sum

	Th	H	T	O
	2	0	5	1
	3	2	2	1
+	1	3	0	4
	6	5	7	6



Exercise 4.1

1. Find the sum:

(a)

	Th	H	T	O
	2	4	3	1
+	5	2	6	8

(b)

	Th	H	T	O
	5	4	2	9
+	3	2	5	0

(c)

	Th	H	T	O
	7	3	2	1
+	2	4	5	6

(d)

	Th	H	T	O
	2	4	3	1
		4	2	0
+			1	5

(e)

	Th	H	T	O
	2	2	3	3
	1	1	5	5
+	4	4	1	1

(f)

	Th	H	T	O
	1	2	4	3
	3	4	3	5
+		1	0	1



2. Arrange the numbers in columns and then find the sum:

- (a) 8532, 1231 and 205
- (b) 3142, 2251 and 2001
- (c) 7206, 151 and 50
- (d) 2224, 3110, 140 and 101
- (e) 1234, 2012, 120 and 23



Addition of 4-Digit Numbers With Carry Over

Solved Examples

Example 1 : Add: 4327 and 2894

Solution :

Step 1 : Write the numbers in correct column.

Step 2 : Add ones

7 ones + 4 ones = 11 ones
= 1 tens + 1 ones

Step 3 : Add tens

1 tens + 2 tens + 9 tens
= 12 tens
= 1 hundreds + 2 tens

Step 4 : Add hundreds

1 hundreds + 3 hundreds + 8 hundreds

Th	H	T	O
4	3	2	7
+	2	8	9
			4

Th	H	T	O
4	3	2	7
+	2	8	9
			4
			1

Th	H	T	O
4	3	2	7
+	2	8	9
		2	1

Th	H	T	O
4	3	2	7
+	2	8	9
	2	2	1



Carry

Carry

Carry



= 12 hundreds

= 1 thousands + 2 hundreds

Step 5 : Add thousands
1 thousands + 4 thousands + 2 thousands
= 7 thousands

So, $4327 + 2894 = 7221$

	Th	H	T	O
	1	1	1	
	4	3	2	7
+	2	8	9	4
	7	2	2	1

Example 2 : Add: 2396, 1765 and 4321

Solution :

Step 1 : Write in correct column.

Step 2 : Add ones

Step 3 : Add tens

Step 4 : Add hundreds

Step 5 : Add thousands

So, $2396 + 1765 + 4321 = 8482$

	Th	H	T	O
	1	1	1	
	2	3	9	6
	1	7	6	5
+	4	3	2	1
	8	4	8	2



Facts to Know

The earliest discovered artefacts suggest that addition was used between 20,000 and 18,000 years BC.

exercise 4.2

1. Find the sum:

(a)

	Th	H	T	O
	7	6	2	2
+	1	7	8	5

(b)

	Th	H	T	O
	8	3	2	1
+	1	9	8	9

(c)

	Th	H	T	O
	9	7	6	0
+		3	8	9



(d)

Th	H	T	O
9	7	6	5
		1	0
+		1	2
			9

(e)

Th	H	T	O
4	3	2	1
4	7	6	5
+		2	8
			6

(f)

Th	H	T	O
5	4	3	6
		2	0
+	1	9	0
			2

2. Arrange the numbers in columns and then find the sum:

- (a) 4562, 2789 and 1076
- (b) 1097, 276 and 2954
- (c) 3721 and 4986
- (d) 5436, 2981 and 109
- (e) 7642, 983 and 706



Estimation

Estimation means rounding to an approximate value.



Rounding Numbers

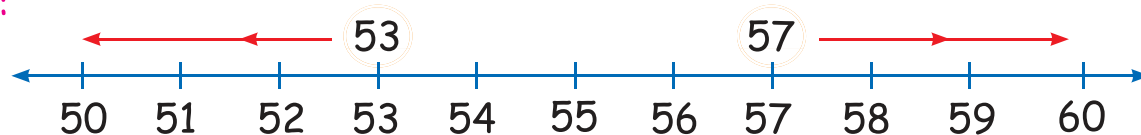
We can round the numbers with the help of a number line.



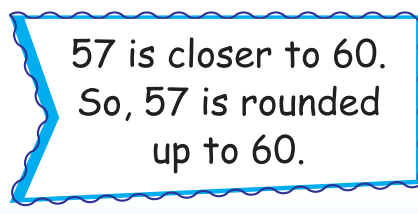
Solved Examples

Example 1 : Round 53 and 57 to the nearest ten.

Solution :



53 is closer to 50.
So, 53 is rounded down to 50.

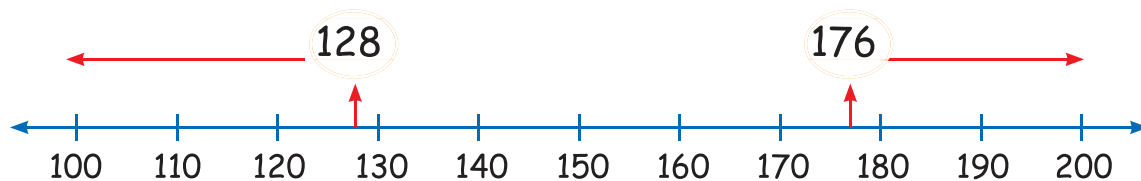


57 is closer to 60.
So, 57 is rounded up to 60.



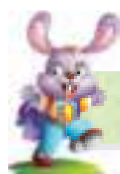
Example 2 : Round 128 and 176 to the nearest hundred.

Solution :



128 is closer to 100.
So, 128 is rounded
down to 100

176 is closer to 200.
So, 176 is rounded up
to 200.



Estimation of Sum

Estimation of sum means to
get approximate value of sum.



Solved Examples

Example 1 : Estimate the sum of 52 and 68 to the nearest ten.

Solution : 52 is rounded down to 50

68 is rounded up to 70

Estimated sum

$$\begin{array}{r} 50 \\ + 70 \\ \hline 120 \end{array}$$



Example 2 : Estimate the sum of 124 and 196 to the nearest hundred.

Solution : 124 is rounded down to 100

196 is rounded up to 200

Estimated sum

$$\begin{array}{r} 100 \\ + 200 \\ \hline 300 \end{array}$$



Exercise 4.3

1. Round the following numbers to the nearest ten:

- | | | | | | |
|--------|----------------------|--------|----------------------|--------|----------------------|
| (a) 42 | <input type="text"/> | (b) 58 | <input type="text"/> | (c) 21 | <input type="text"/> |
| (d) 85 | <input type="text"/> | (e) 82 | <input type="text"/> | (f) 9 | <input type="text"/> |

2. Round the following numbers to the nearest hundred:

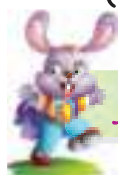
- | | | | | | |
|---------|----------------------|---------|----------------------|---------|----------------------|
| (a) 102 | <input type="text"/> | (b) 186 | <input type="text"/> | (c) 495 | <input type="text"/> |
| (d) 620 | <input type="text"/> | (e) 535 | <input type="text"/> | (f) 666 | <input type="text"/> |

3. Estimate the sum of the following numbers to the nearest ten:

- | | |
|---------------|-------------------|
| (a) 23 and 56 | (b) 82 and 91 |
| (c) 12 and 89 | (d) 16, 25 and 36 |

4. Estimate the sum of the following numbers to the nearest hundred:

- | | |
|-----------------|----------------------|
| (a) 126 and 542 | (b) 229 and 658 |
| (c) 721 and 456 | (d) 889, 720 and 541 |



Addition Facts (Properties of Addition):



1. Adding Zero (Additive Property for Zero)

Adding zero to a number is equal to the number itself.

Examples,

$$\begin{aligned} 86 + 0 &= 86 \\ 53 + 0 &= 53 \\ 0 + 79 &= 79 \\ 0 + 110 &= 110 \end{aligned}$$



2. Adding numbers that end in zero.

First add the digits and then put the zeros.

For example,

$$500 + 200 = 700$$

$$(5 + 2 = 7)$$

Now put zeros 700



3. Adding 1:

Adding 1 to a number, increases the value of the one's place digit by 1.

It means it gives its successor.

Examples,

$$20 + 1 = 21$$

$$51 + 1 = 52$$

$$169 + 1 = 170$$

$$1296 + 1 = 1297$$



4. Adding 10:

Adding 10 to a number, increases the value of the ten's place digit by 1.

Examples,

$$425 + 10 = 435$$

$$60 + 10 = 70$$

$$4381 + 10 = 4391$$

$$170 + 10 = 180$$



5. Adding 100:

Adding 100 to a number, increases the value of the hundred's place digit by 1.

Examples,

$$326 + 100 = 426$$

$$58 + 100 = 158$$

$$1295 + 100 = 1395$$

$$1400 + 100 = 1500$$



6. Adding 1000:

Adding 1000 to a number, increases the value of the thousand's place digit by 1.

Examples,

$$6459 + 1000 = 7459$$

$$729 + 1000 = 1729$$

$$85 + 1000 = 1085$$

$$8000 + 1000 = 9000$$



7. Commutative Property:

Adding two numbers in any order does not change their sum.

For example, $53 + 22 = 75$

$$22 + 53 = 75$$



Exercise 4.4

1. Fill in the blanks:

(a) $129 + 0 =$

(b) $0 + 721 =$

(c) $20 + 10 =$

(d) $126 + 10 =$

(e) $7325 + 10 =$

(f) $26 + 1 =$

2. Guess the addends for the following:

(a) $200 +$ $= 800$

(b) $500 +$ $= 600$

(c) $+ 100 = 200$



Think Wisely

Who am I?

If 500 is added to me, the answers is 700 = _____

If 300 is added to me, the answer is 450 = _____

If 100+ 160 is added to me, the answers is 500= _____





Word Problems

Example 1 : There are 725 boys and 698 girls in a school. What is the total strength of that school?

Solution : Number of boys in a school = 725
Number of girls in a school = 698
Total strength of the school
= $725 + 698 = 1423$



H	T	O	
1	1		Carry
7	2	5	
+	6	9	8
1	4	2	3

Hence, the total strength of the school is 1423.

Example 2 : Vinay purchased a mobile phone for ₹ 5321 and a cyber shot for ₹ 4265. How much money did he spend?

Solution : Cost of a mobile phone = ₹ 5321
Cost of a cyber shot = ₹ 4265
Total money Vinay spend
= ₹ $(5321 + 4265)$ = ₹ 9586

Th	H	T	O
5	3	2	1
+	4	2	6
9	5	8	6

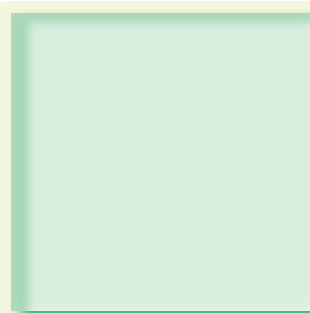


Hence, Vinay spend ₹ 9586.

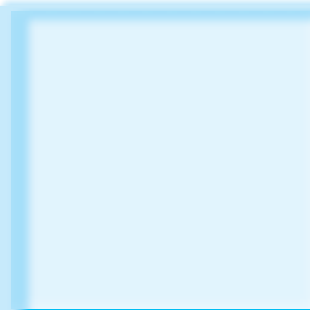


Exercise 4.5

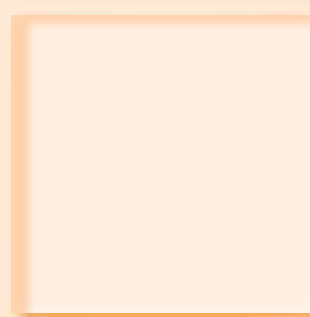
1. There are 4056 men, 2598 women and 1254 children lives in a village. What is the total population of that village?



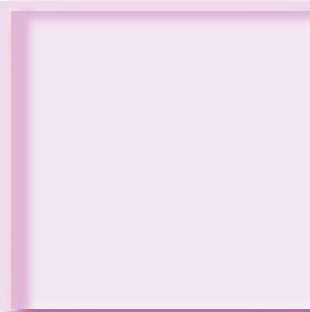
2. Kavita had 4625 envelopes. She bought 985 more. How many envelopes does she have now?



3. There are 1025 passengers in a train. 285 more passengers get into the train. How many passengers are there in the train now?



4. Mr. Goyal bought a TV for ₹ 5432, a washing machine for ₹ 3799 and a fan for ₹ 899 from the sale. How much did he pay in all?

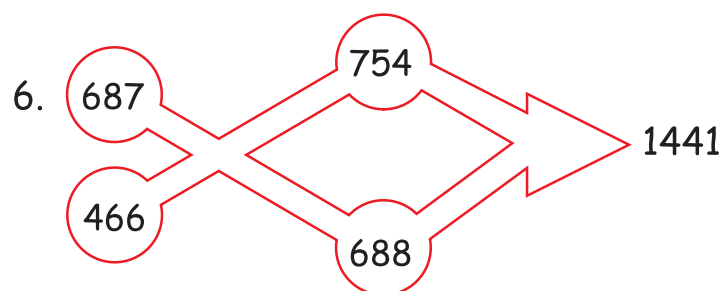
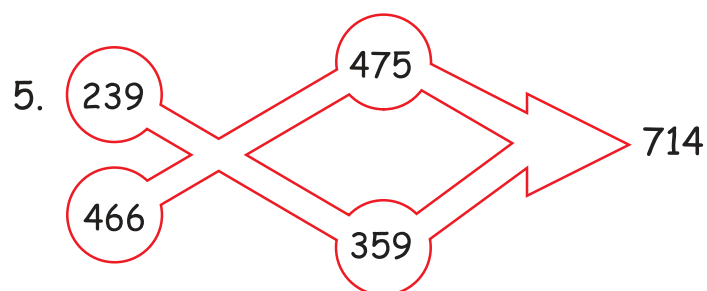
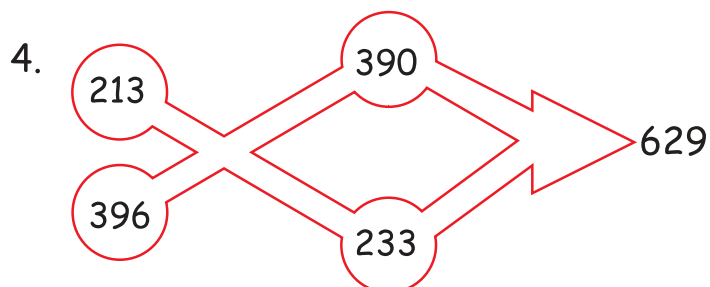
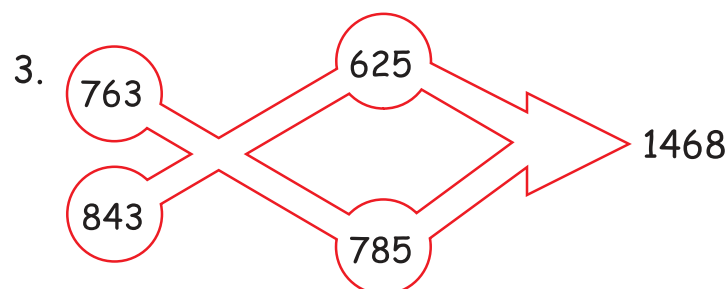
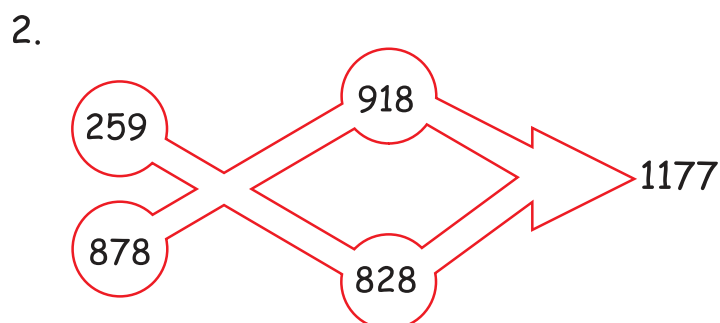
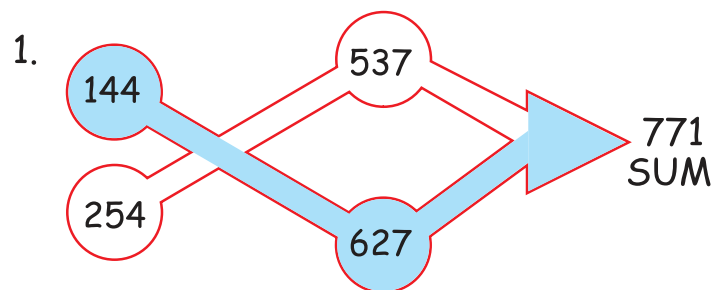


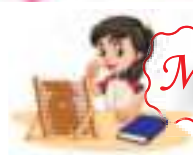
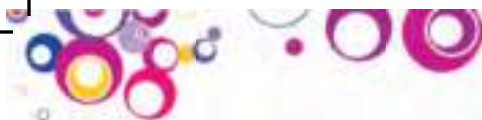
5. A number exceeds 5431 by 2650. What is that number?



Mental Maths

Find the two numbers that when added, give you the sum. Then colour the path that leads to the answer. **One has been done for you.**





Maths Lab Activity

Materials required:

- 4 sets of cards in 4 different colours with numbers 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 written on them.
- 4 containers for keeping them.
- Each set of cards to be placed in a separate container. Red cards for 1000s, purple for 100s, pink for 10s and green for 1s.
- Crayons of the same colour for each child.

Steps:

1. The class will be divided into groups of 4 students.
2. 4 children from a group are asked to pick up a card from each container as shown.

Th	H	T	O
2	7	4	3

3. Another group of children also pick up 4 cards in the same way as shown.

4. Children from both the groups note the numbers and add them as shown.

Th	H	T	O
5	2	8	1

5. Other groups of 4+4 children are asked to pick up the cards and add as shown in steps 1 - 3 above.

6. At least 4 such sums should be done. More practice will help the children understand the problem better.

7. The children should be asked to use the same colour code for the different digits shown.

Th	H	T	O
2	7	4	3
8	0	2	4

+





Learning Objectives

At the end of this lesson, students will be able to:

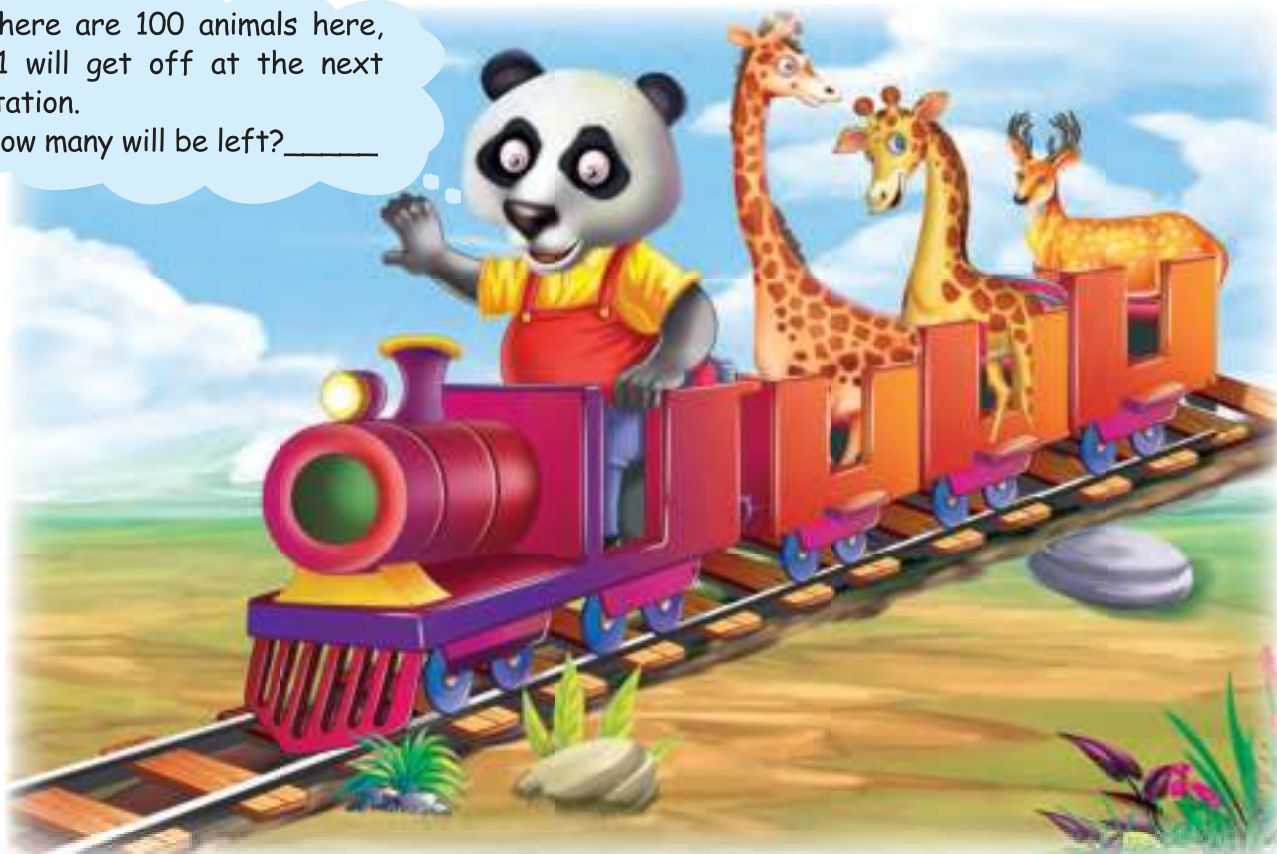
- Subtract up to 4-digit numbers with and without borrowing.
- Estimate the difference.
- Know the properties of subtraction.



Warm-Up

Dodo and Duggu are giraffes. They were going to visit their grandmother's village by train. The train was managed by a Panda.

There are 100 animals here,
31 will get off at the next
station.
How many will be left? _____



Subtraction of 4-digit numbers is same as 3-digit numbers.



Subtraction of 4-Digit Numbers Without Borrow

Solved Examples

Example 1 : Subtract 8562 from 9784.

Solution :

Step 1 : Write the numbers in correct column.

Step 2 : First subtract ones.

$$4 - 2 = 2$$

Step 3 : Subtract tens.

$$8 - 6 = 2$$

Step 4 : Subtract hundreds.

$$7 - 5 = 2$$



Th	H	T	O
9	7	8	4
- 8	5	6	2

Th	H	T	O
9	7	8	4
- 8	5	6	2
			2

Th	H	T	O
9	7	8	4
- 8	5	6	2
		2	2

Th	H	T	O
9	7	8	4
- 8	5	6	2
	2	2	2



Teacher's Note:

Explain to the students that when we subtract two numbers, the difference can be positive, negative, or zero, depending on the specific numbers being subtracted.



Step 5 : Subtract thousands.

$$9 - 8 = 1$$

So, $9784 - 8562 = 1222$

Minuend Subtrahend Difference

	Th	H	T	O
	9	7	8	4
-	8	5	6	2
	1	2	2	2

Example 2 : Find the difference between 5402 and 7564.

Solution : Clearly,

$$7564 > 5402$$

So, $7564 - 5402$

Step 1 : Write the numbers in correct column.

Step 2 : First subtract ones.

$$4 - 2 = 2$$

Step 3 : Subtract tens, $6 - 0 = 6$

Step 4 : Subtract hundreds, $5 - 4 = 1$

Step 5 : Subtract thousands, $7 - 5 = 2$

So, $7564 - 5402 = 2162$

Minuend Subtrahend Difference

	Th	H	T	O
	7	5	6	4
-	5	4	0	2
	2	1	6	2

Exercise 5.1

1. Subtract the following:

(a)

	Th	H	T	O
	7	3	2	1
-	5	2	1	0

(b)

	Th	H	T	O
	9	7	6	5
-	4	3	2	2

(c)

	Th	H	T	O
	7	7	7	6
-	6	6	6	5

(d)

	Th	H	T	O
	8	9	4	0
-	8	2	3	0

2. Arrange the numbers in columns and then find the difference between:

- (a) 8465 and 7321
- (b) 4762 and 3540
- (c) 5462 and 4251
- (d) 3465 and 2154
- (e) 9839 and 7602



Subtraction of 4-Digit Numbers With Borrow

Solved Examples

Example 1 : Subtract 1485 from 6374.

Solution :

Step 1 : Write the numbers in correct column.

Step 2 : First subtract ones.

$$4 < 5$$

Take borrow from tens column.

$$14 - 5 = 9$$

Step 3 : Subtract tens.

$$6 < 8$$

Take borrow from hundreds column.

$$16 - 8 = 8$$

Step 4 : Subtract hundreds.

$$2 < 4$$

Take borrow from thousands column.

$$12 - 4 = 8$$

Th	H	T	O
6	3	7	4
- 1	4	8	5

Th	H	T	O
6	3	⁶ 7	¹⁴ 4
- 1	4	8	5
			9

Th	H	T	O
6	² 3	¹⁶ 7	¹⁴ 4
- 1	4	8	5
		8	9

Th	H	T	O
⁵ 6	¹² 3	¹⁶ 7	¹⁴ 4
- 1	4	8	5
8		8	9



Step 5 : Subtract thousands.

$$5 > 1$$

$$\text{So, } 5 - 1 = 4$$

$$\text{So, } 6374 - 1485 = 4889$$

Example 2 : Subtract 4562 from 8000.

Solution :

Step 1 : Write in correct column.

Step 2 : No Ones, No Tens, No Hundreds.

Let us borrow from thousands.

$$\text{So, } 8000 - 4562 = 3438$$



Th	H	T	O
5 ¹²	2 ¹⁶	8	4
6	3	7	4
- 1	4	8	5
4	8	8	9

Th	H	T	O
7 ⁹	9 ¹⁰	9 ¹⁰	10 ¹⁰
8	0	0	0
- 4	5	6	2
3	4	3	8

Exercise 5.2

1. Find the difference:

(a)

Th	H	T	O
8	3	6	1
- 6	5	8	2

(b)

Th	H	T	O
9	8	4	0
- 7	9	7	2

(c)

Th	H	T	O
7	3	4	5
- 6	4	8	9

(d)

Th	H	T	O
6	0	0	0
- 4	3	2	1



2. Find the difference between:

(a) 4695 and 7390

(b) 6000 and 5321

(c) 8345 and 7987

(d) 3492 and 4007





Estimation of Difference



Solved Examples

Examples 1: Estimate the difference of 67 and 42 to the nearest ten.

Solution :

67 is rounded up to 70

42 is rounded down to 40

Estimated difference =

7	0
- 4	0
3	0

Example 2 : Estimate the difference of 909 and 768 to the nearest hundred.

Solution : 909 is rounded down to 900

768 is rounded up to 800

Estimated difference =

9	0	0
- 8	0	0
1	0	0



Example 3 : Estimate the difference of 5420 and 8867 to the nearest thousand.

Solution : 8867 is rounded up to 9000

5420 is rounded down to 5000

Estimated difference =

9	0	0	0
- 5	0	0	0
4	0	0	0

Exercise 5.3

1. Estimate the difference between the following numbers to the nearest ten:

(a) 59 and 42

(b) 63 and 89

(c) 22 and 36

(d) 69 and 58



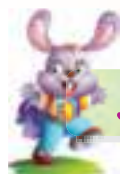
2. Estimate the difference between the following numbers to the nearest hundred:

- (a) 542 and 125
- (b) 229 and 562
- (c) 721 and 890
- (d) 333 and 777



3. Estimate the difference between the following numbers to the nearest thousand:

- (a) 1024 and 7850
- (b) 2159 and 8642
- (c) 3333 and 8888
- (d) 7820 and 4440



Subtraction Facts (Properties of Subtraction)

1. **Subtracting bigger number from smaller number:**

A bigger number cannot be subtracted from a smaller number.

For example, $1256 - 3829$ is not possible.

2. **Cannot change order of numbers in subtraction:**

We cannot change the order of numbers in the subtraction.

For example, $8324 - 3650 \neq 3650 - 8324$



3. **Subtracting itself:**

When the number is subtracted from itself, then the answer is always zero.

For example, $4321 - 4321 = 0$

4. **Subtracting zero:**

When the zero is subtracted from a number, then the answer is number itself.

For example, $2769 - 0 = 2769$



5. Subtracting 1:

Subtracting 1 from a number, decreases the value of one's place digits by 1. It means it gives its predecessor.

For example, $1276 - 1 = 1275$

6. Subtracting 10:

Subtracting 10 from a number, decreases the value of ten's place digit by 1.

For example, $8126 - 10 = 8116$

7. Subtracting 100:

Subtracting 100 from a number, decreases the value of hundred's place digit by 1.

For example, $7321 - 100 = 7221$

8. Subtracting 1000:

Subtracting 1000 from a number, decreases the value of thousand's place digit by 1.

For example, $8629 - 1000 = 7629$



Exercise 5.4

Fill in the blanks:

(a) $126 - 0 =$

(b) $732 - 732 =$

(c) $2465 - 1 =$

(d) $7321 - 10 =$



Think Wisely

Who am I?

If 450 is subtracted from me, the answer is 550. _____

If 3000 is subtracted from me, the answer is 7000. _____

If 100 is subtracted from me, the answer is 100. _____



Word Problems

Solved Examples

Example 1 : There are 2885 passengers in a train. 345 passengers get down from the train. How many passengers are left in the train now?

Solution : Total number of passengers in a train = 2885
Number of passengers get down from the train = 345

$$\begin{array}{r} 2885 \\ - 345 \\ \hline 2540 \end{array}$$



Number of passengers are left in the train = $2885 - 345$
= 2540

Hence, the number of passengers left in the train are 2540.

Example 2 : Mr. Mayank had ₹ 9865. He bought a mobile phone costing ₹ 8820. How much money is left with him?

Solution : Total money Mr. Mayank had = ₹ 9865
Money spent on mobile phone = ₹ 8820
Money left with Mr. Mayank
= ₹ $(9865 - 8820)$ = ₹ 1045.

$$\begin{array}{r} 9865 \\ - 8820 \\ \hline 1045 \end{array}$$

Hence, Mr. Mayank is left with ₹ 1045.

Example 3 : How much 2065 is greater than 1029?

Solution : Greater number = 2065
Smaller number = 1029
Difference = $2065 - 1029$
= 1036



$$\begin{array}{r} 2065 \\ - 1029 \\ \hline 1036 \end{array}$$

Hence, 2065 is greater than 1029 by 1036.



Example 4 : What number must be added to 7321 to get 9000?

Solution : Sum of two numbers = 9000
One number = 7321
Other number = 9000 - 7321
= 1679

	8	9	9	10
		10	10	
	9	0	0	0
-	7	3	2	1
	1	6	7	9

Hence, 1679 must be added to 7321 to get 9000.

Exercise 5.5



1. Sarthak earns ₹ 7500 in a month. If he saves ₹ 2000 per month. How much money did he spend in every month?



2. How much 6042 is greater than 3541?



3. A kite maker made 1800 kites. He sold 1259 kites out of them. How many kites are left with him?



4. Vikram purchased a dinner set and juicer mixer for ₹ 9865. If the cost of dinner set is ₹ 5990, then what is the cost of the juicer mixer?



5. Sum of two numbers is 9052.
If one of the number is 5060,
find the other number.



Mixed Operations (Addition and Subtraction)



Quick Tip

If addition and subtraction are given together, then we always first do addition and then subtraction.

Solved Examples

Example 1 : $2150 + 6321 - 5321$

Solution :

Step 1 :

2	1	5	0
+	6	3	2
1	1	8	2
8	4	7	1

Step 2 :

8	4	7	1
-	5	3	2
3	1	5	0

Thus, $2150 + 6321 - 5321 = 3150$

Example 2 : $5432 - 1265 + 2351 - 3264$

Solution : If a number has no sign, then it means the number has '+' sign.

Step 1 : Adding numbers with '+' sign

5	4	3	2
+	2	3	5
1	7	8	7
7	7	8	3



Step 2 : Adding numbers with '-' sign

-	1	2	6	5	
(+)	-	3	2	6	4
-	4	5	2	9	



Step 3 : Subtract the second sum (step-2) from the first sum (step-1)

7	7	8	3	
-	4	5	2	9
3	2	5	4	



Thus, $5432 - 1265 + 2351 - 3264 = 3254$.

Exercise 5.6

1. Solve the following:

- $2659 + 5432 - 2695$
- $3721 - 2869 + 2659$
- $8362 - 5290 + 269$
- $5322 - 2812 + 2100 - 1502$
- $7321 + 1029 - 2001 - 4095$



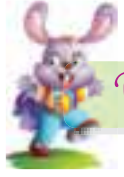
2. Add 5000 to the difference of 3264 and 2795.

3. Subtract 2010 from the sum of 8000 and 1029.

4. Subtract the difference of 3456 and 2400 from 7890.

5. Subtract the difference of 8000 and 5000 from the difference of 9000 and 2000.





Word Problems on Mixed Operations

Solved Examples

Example 1 : Rajat had ₹ 2500. He bought jeans for ₹ 1200 and a shirt for ₹ 900. How much money is left with Rajat?

Solution :

Money with Rajat	=	₹ 2500
Cost of jeans	=	₹ 1200
Cost of shirt	=	₹ 900
Total money he spent	=	₹ (1200 + 900)
	=	₹ 2100
Money left with him	=	₹ (2500 - 2100)
	=	₹ 400

Thus, ₹ 400 is left with him.

Example 2 : The population of a town is 7329. If there are 3930 men and 2000 children, then how many women are there in the village?

Solution :

Total population of a town	=	7329
Number of men in a town	=	3930
Number of children in a town	=	2000
Total number of men and children in a town	=	3930 + 2000
	=	5930
Number of women in a town	=	7329 - 5930 = 1399

Thus, the number of women in a town are 1399.



Exercise 5.7

1. The sum of three numbers is 5020. If two of them are 2000 and 1020, then find the third number.



2. A wire is 5000 m long. Two pieces measuring 1045 m and 2132 m were cut from it. Find the length of the remaining wire.



3. Mr. Raj had to travel 8265 km . He travelled 2359 km by bus, 3125 km by train and rest by aeroplane. What distance did he travel by aeroplane?

4. Mrs. Sharma earn ₹ 7000 per month and Mr. Sharma earn ₹ 8000 per month. They together spend ₹ 6000 per month. How much money do they save together?



5. Raju had ₹ 8620. He purchased a TV for ₹ 5500 and a dinner set for ₹ 3000. How much money is left with him?





Facts to Know

Robert Recorde, the designer of the equals sign, introduced plus and minus to Britain in 1557.



Mental Maths

A. Solve:

1. $204 - 126 + 373 = \underline{\hspace{2cm}}$
2. $740 - 214 + 145 = \underline{\hspace{2cm}}$
3. $999 - 750 + 800 = \underline{\hspace{2cm}}$
4. $444 - 222 + 111 = \underline{\hspace{2cm}}$
5. $125 + 234 - 120 = \underline{\hspace{2cm}}$

B. Subtract the following

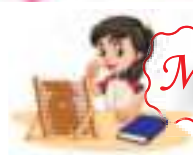
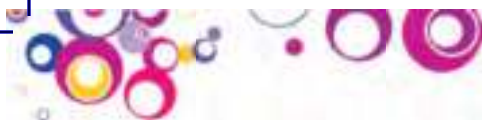
$$\begin{array}{r} 8973 \\ - 4321 \\ \hline \end{array}$$

$$\begin{array}{r} 4616 \\ - 2999 \\ \hline \end{array}$$

$$\begin{array}{r} 6555 \\ - 2329 \\ \hline \end{array}$$

$$\begin{array}{r} 9999 \\ - 8135 \\ \hline \end{array}$$





Maths Lab Activity

Materials required: Chits with 3 to 4-digit numbers written on them (one chit for one number), plastic bowls and a scoreboard.

Steps:

1. This activity will be done in teams. A total of 10 teams will be made in the class.
2. Each team will be given a bowl full of number chits.
3. Each member will draw 2 chits from the bowl. For example: chits with the numbers 8976 and 567.
4. Now, the student will subtract the smaller number from the bigger one.
5. Each member will draw the chits a minimum of 5 times and work out the sums.
6. After each draw, the bowl should be shaken well before the next draw.
7. After all the sums have been worked out the scoring will be done for each team according to a pattern that the teacher decides.
8. The score for each sum will depend upon the difference between the two numbers drawn. For example: the difference between 0 and 100 one mark; the difference between 101 and 200, two marks, etc: or the other way round.
9. The total for each team will decide the winner.

Th	H	T	O
8	9	7	6
-	5	6	7



6



Multiplication



Learning Objectives

At the end of this lesson, students will be able to:

- Learn multiplication tables from 11 to 20.
- Multiply 3-digit numbers by 1-digit numbers.
- Apply the skill of multiplication to solve story sums.



Warm-Up

Let's help the customer to calculate the amount he needs to pay.



One shirt costs = ₹ 295
 32 shirts cost = ₹ 295 × 32
 = _____





Facts to Know

The Babylonians used the oldest known multiplication tables about 4000 years ago.

We have already learnt multiplication tables from 1 to 10.



Let's Study Further..

Multiplication Tables from 11 to 20



Multiplication Tables of 11

11	×	1	=	11
11	×	2	=	22
11	×	3	=	33
11	×	4	=	44
11	×	5	=	55
11	×	6	=	66
11	×	7	=	77
11	×	8	=	88
11	×	9	=	99
11	×	10	=	110

Multiplication Table of 12

12	×	1	=	12
12	×	2	=	24
12	×	3	=	36
12	×	4	=	48
12	×	5	=	60
12	×	6	=	72
12	×	7	=	84
12	×	8	=	96
12	×	9	=	108
12	×	10	=	120

Multiplication Table of 13

13	×	1	=	13
13	×	2	=	26
13	×	3	=	39
13	×	4	=	52
13	×	5	=	65
13	×	6	=	78
13	×	7	=	91
13	×	8	=	104
13	×	9	=	117
13	×	10	=	130



Teacher's Note:

Apprise students to practise skip counting. Skip counting is a type of multiplication by repeated addition. For example, skip counting by 11 is the same as the 11 times table: 11, 22, 33, 44, 55, etc.





Multiplication Table of 14

14	×	1	=	14
14	×	2	=	28
14	×	3	=	42
14	×	4	=	56
14	×	5	=	70
14	×	6	=	84
14	×	7	=	98
14	×	8	=	112
14	×	9	=	126
14	×	10	=	140

Multiplication Table of 15

15	×	1	=	15
15	×	2	=	30
15	×	3	=	45
15	×	4	=	60
15	×	5	=	75
15	×	6	=	90
15	×	7	=	105
15	×	8	=	120
15	×	9	=	135
15	×	10	=	150

Multiplication Table of 16

16	×	1	=	16
16	×	2	=	32
16	×	3	=	48
16	×	4	=	64
16	×	5	=	80
16	×	6	=	96
16	×	7	=	112
16	×	8	=	128
16	×	9	=	144
16	×	10	=	160

Multiplication Table of 17

17	×	1	=	17
17	×	2	=	34
17	×	3	=	51
17	×	4	=	68
17	×	5	=	85
17	×	6	=	102
17	×	7	=	119
17	×	8	=	136
17	×	9	=	153
17	×	10	=	170

Multiplication Table of 18

18	×	1	=	18
18	×	2	=	36
18	×	3	=	54
18	×	4	=	72
18	×	5	=	90
18	×	6	=	108
18	×	7	=	126
18	×	8	=	144
18	×	9	=	162
18	×	10	=	180

Multiplication Table of 19

19	×	1	=	19
19	×	2	=	38
19	×	3	=	57
19	×	4	=	76
19	×	5	=	95
19	×	6	=	114
19	×	7	=	133
19	×	8	=	152
19	×	9	=	171
19	×	10	=	190

Multiplication Table of 20

20	×	1	=	20
20	×	2	=	40
20	×	3	=	60
20	×	4	=	80
20	×	5	=	100
20	×	6	=	120
20	×	7	=	140
20	×	8	=	160
20	×	9	=	180
20	×	10	=	200



Exercise 6.1

1. Fill in the blanks:

(a) $13 \times 6 =$

(b) $12 \times 8 =$

(c) $15 \times 2 =$

(d) $17 \times 9 =$

(e) $11 \times 5 =$

(f) $12 \times 4 =$

2. Complete the following patterns:

(a) 11, 22, , , ,

(b) 19, 38, , , ,

(c) 20, 40, , , ,



*Multiplication of 3-digit numbers by 1-digit number
(Without Carry Over)*



Solved Examples

Example 1 : Multiply 413 by 2.

Solution :

Step 1 : Write in correct column.

H	T	O
4	1	3
	$\times$	2

Step 2 : Multiply 3 ones by 2

$3 \text{ ones} \times 2 = 6 \text{ ones.}$

H	T	O
4	1	3
	$\times$	2
		6



Step 3 : Multiply 1 tens by 2

$$1 \text{ tens} \times 2 = 2 \text{ tens}$$

H	T	O
4	1	3
	$\times$	2
	2	6

Step 4 : Multiply 4 hundreds by 2

$$4 \text{ hundreds} \times 2 = 8 \text{ hundreds}$$

$$\therefore 413 \times 2 = 826$$

Also, **H** **T** **O**

4	1	3	← Multiplicand
	$\times$	2	→ Multiplier
8	2	6	← Product

H	T	O
4	1	3
	$\times$	2
8	2	6



Think Wisely

What is the product of face value and place value of 3 in 4983?

Exercise 6.2

1. Multiply:

(a)

H	T	O
2	1	3
	$\times$	2



(b)

H	T	O
4	2	1
	$\times$	2



(c)

H	T	O
3	2	0
	$\times$	3

2. Multiply:

(a) $242 \times 2 =$

(b) $312 \times 3 =$

(c) $201 \times 3 =$

(d) $421 \times 2 =$

(e) $112 \times 4 =$

(f) $201 \times 4 =$





Multiplication of 3-digit numbers by 1-digit number (With Carry Over):

Solved Examples

Example 1 : Multiply 645 by 7.

Solution :

Step 1 : Write in correct column.



H	T	O
6	4	5
	×	7

Step 2 : Multiply 5 ones by 7.

$$\begin{aligned} 5 \text{ ones} \times 7 &= 35 \text{ ones} \\ &= 3 \text{ tens} + 5 \text{ ones} \end{aligned}$$

H	T	O
6	4	5
	×	7
		5
	3	



Step 3 : Multiply 4 tens by 7

$$\begin{aligned} 4 \text{ tens} \times 7 &= 28 \text{ tens} \\ \text{Now, } 28 \text{ tens} + 3 \text{ (carried over)} \\ &= 31 \text{ tens} \\ &= 3 \text{ hundreds} + 1 \text{ tens} \end{aligned}$$

H	T	O
6	4	5
	×	7
		5
	1	
3		



Step 4 : Multiply 6 hundreds by 7

$$\begin{aligned} 6 \text{ hundreds} \times 7 &= 42 \text{ hundreds} \\ \text{Now, } 42 \text{ hundreds} + 3 \text{ (carried over)} \\ &= 45 \text{ hundreds} \\ &= 4 \text{ thousands} + 5 \text{ hundreds} \end{aligned}$$

H	T	O
6	4	5
	×	7
45	1	5
3		
	3	



∴

$$\boxed{645 \times 7 = 4515}$$

Multiplicand Multiplier Product



Example 2 : Multiply 759 by 4.

Solution :

H	T	O
7	5	9
	×	4
30	3	6



Exercise 6.3

1. Multiply:

(a)
$$\begin{array}{r} 758 \\ \times 2 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 872 \\ \times 6 \\ \hline \end{array}$$

(c)
$$\begin{array}{r} 924 \\ \times 5 \\ \hline \end{array}$$

(d)
$$\begin{array}{r} 836 \\ \times 7 \\ \hline \end{array}$$

(e)
$$\begin{array}{r} 495 \\ \times 8 \\ \hline \end{array}$$



2. Multiply:

(a) $365 \times 7 =$

(b) $820 \times 5 =$

(c) $462 \times 9 =$

(d) $781 \times 6 =$

(e) $986 \times 8 =$

(f) $329 \times 2 =$



Multiplication Facts (Properties of Multiplication)

1. **Multiplicative Property of Zero:**

Multiplying zero to a number is always equal to zero.

Examples, $7325 \times 0 = 0$

$129 \times 0 = 0$



2. Multiplicative Property of 1:

Multiplying 1 to a number is equal to the number itself.

Examples, $2865 \times 1 = 2865$

$$735 \times 1 = 735$$



3. Multiplying by 10:

To multiply a number by 10, we simply put a zero to the right of the number.

Examples, $289 \times 10 = 2890$

$$7265 \times 10 = 72650$$

4. Multiplying by 100:

To multiply a number by 100, we simply put two zeros to the right of the number.

Examples, $986 \times 100 = 98600$

$$5825 \times 100 = 582500$$

5. Multiplying by 1000:

To multiply a number by 1000, we simply put three zeros to the right of the number.

Examples, $731 \times 1000 = 731000$

$$4325 \times 1000 = 4325000$$



Quick Tip

To multiply a number by 9, multiply the number by 10. Subtract the number from the product.

$$\begin{aligned} &= 421 \times 9 \\ &= 421 \times 10 - 421 \\ &= 4210 - 421 \\ &= 3789 \end{aligned}$$



Exercise 6.4

Fill in the blanks:

(a) $435 \times 0 =$

(b) $7321 \times$ $= 0$

(c) $9802 \times 1 =$

(d) $986 \times 100 =$

(e) $1000 \times 9736 =$

(f) $723 \times 595 =$ $\times 723$

(g) $\times 1528 = 1528 \times 595$ (h) $595 \times$ $= 595$

(i) $642 \times$ $= 6420$



Multiplication By 10, 20, 30,, 90

Example 1 : Multiply 12 by 10

Solution : $12 \times 10 = 12 \times 1 \text{ tens}$
 $= 12 \text{ tens}$
 $= 120$

Example 2 : Multiply 32 by 20

Solution : $32 \times 20 = 32 \times 2 \text{ tens}$
 $= 64 \text{ tens}$
 $= 640$

Example 3 : Multiply 27 by 60

Solution : $27 \times 60 = 27 \times 6 \text{ tens}$
 $= 162 \text{ tens}$
 $= 1620$

Example 4 : Multiply 721 by 80

Solution : $721 \times 80 = 721 \times 8 \text{ tens}$
 $= 5768 \text{ tens}$
 $= 57680$





Multiplication By 100, 200, 300,, 900

Solved Examples

Example 1 : Multiply 268 by 100

$$\begin{aligned}\text{Solution : } 268 \times 100 &= 268 \times 1 \text{ hundreds} \\ &= 268 \text{ hundreds} \\ &= 26800\end{aligned}$$



Example 2 : Multiply 5 by 300

$$\begin{aligned}\text{Solution : } 5 \times 300 &= 5 \times 3 \text{ hundreds} \\ &= 15 \text{ hundreds} \\ &= 1500\end{aligned}$$

Example 3 : Multiply 8 by 700

$$\begin{aligned}\text{Solution : } 8 \times 700 &= 8 \times 7 \text{ hundreds} \\ &= 56 \text{ hundreds} \\ &= 5600\end{aligned}$$

Example 4 : Multiply 15 by 900

$$\begin{aligned}\text{Solution : } 15 \times 900 &= 15 \times 9 \text{ hundreds} \\ &= 135 \text{ hundreds} \\ &= 13500\end{aligned}$$



Exercise 6.5

Find the products:

(a) $15 \times 10 =$

(b) $63 \times 20 =$

(c) $72 \times 30 =$

(d) $8 \times 800 =$

(e) $11 \times 900 =$

(f) $12 \times 600 =$





Multiplication By 2-digit Numbers



Solved Examples

Example 1 : Multiply 65 by 26.

Solution :

Step 1 : Arrange the numbers in correct column.

	T	O
	6	5
×	2	6

Step 2 : Multiply 65 by 6 ones

$$65 \times 6 = 390 \text{ ones}$$

	T	O
	6	5
×	2	6
	3	9

Step 3 : Multiply 65 by 2 tens

$$65 \times 2 = 130 \text{ tens}$$

$$= 1300$$

	T	O
	6	5
×	2	6
	3	9
+	1	3
	1	6

Step 4 : Add both the products.

$$390 + 1300 = 1690$$

So,

$$65 \times 26 = 1690$$

Example 2 : Multiply 245 by 74.

Solution :

	H	T	O
	2	4	5
×		7	4
	9	8	0
+	1	7	1
	1	8	1

Product of ones

Product of tens

Sum of two products

$$\text{So, } 245 \times 74 = 18130$$



Exercise 6.6

1. Multiply:

(a)
$$\begin{array}{r} 56 \\ \times 17 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 29 \\ \times 53 \\ \hline \end{array}$$

(c)
$$\begin{array}{r} 72 \\ \times 89 \\ \hline \end{array}$$

(d)
$$\begin{array}{r} 308 \\ \times 56 \\ \hline \end{array}$$

(e)
$$\begin{array}{r} 456 \\ \times 73 \\ \hline \end{array}$$

(f)
$$\begin{array}{r} 521 \\ \times 34 \\ \hline \end{array}$$

2. Find the product:

(a) 73×56

(b) 24×96

(c) 94×14

(d) 129×72

(e) 682×44

(f) 345×15



Word Problems



Solved Examples

Example 1 : There are 96 pages in a book. How many pages are there in 5 such books?

Solution : Number of pages in one book = 96
 Number of pages in 5 books = 96×5
 = 480

$$\begin{array}{r} 96 \\ \times 5 \\ \hline 480 \end{array}$$

Hence, there are 480 pages in 5 such books.

Example 2 : A bag of wheat weighs 58 kg. What is the total weight of 725 bags of wheat?

Solution : Weight of 1 bag of wheat = 58 kg
 Weight of 725 bags of wheat = 725×58 kg
 = 42050 kg

$$\begin{array}{r} 725 \\ \times 58 \\ \hline 5800 \\ + 36250 \\ \hline 42050 \end{array}$$

Hence, the total weight of 725 bags is 42050 kg.



Exercise 6.7

1. There are 80 beads in one necklace. How many beads are needed to make 5 such necklaces?



2. The cost of one chocolate is ₹ 6. Find the cost of 15 such chocolates.



3. 67 people can travel in a bus at one time. How many people can travel in this bus in 4 rounds?



4. There are 500 sheets in a pack of papers. How many sheets are there in 20 such packs?



5. A chalk box contains 28 chalk sticks. How many chalk sticks are there in 92 such chalk boxes?



Mental Maths

Fill in the blanks.

1. $60 \times \underline{\hspace{2cm}} = 60$
2. $\underline{\hspace{2cm}} \times 1 = 40$
3. $2 \times \underline{\hspace{2cm}} = 4 \times 2$
4. $\underline{\hspace{2cm}} \times 25 = 0$
5. $8 \times \underline{\hspace{2cm}} = 32$

Maths Lab Activity

Materials required: $\frac{1}{2}$ sheet of chart paper per child, crayons and a set of numbers 2 to 10 written on pieces of paper and folded.

Steps:

1. The teacher gives an example of the table of 9 and the pattern of forms.
2. Each child picks a slip with a digit written on it.
3. With a crayon, the table of the numbers is written.
4. The pattern formed by the products is discovered.
5. Children share the patterns they have discovered.
6. The tables and the patterns formed by them are displayed in the class.

Table of 9

Sum of the digits of the product

9	x	1	=	9	=	9	9
9	x	2	=	18	=	1 + 8	9
9	x	3	=	27	=	2 + 7	9
9	x	4	=	36	=	3 + 6	9
9	x	5	=	45	=	4 + 5	9
9	x	6	=	54	=	5 + 4	9
9	x	7	=	63	=	6 + 3	9
9	x	8	=	72	=	7 + 2	9
9	x	9	=	81	=	8 + 1	9
9	x	10	=	90	=	9 + 0	9



Learning Objectives

At the end of this lesson, students will be able to:

- Divide with and without remainder.
- Learn the long division method.
- Apply the skill of division to solve story sums.



Warm-Up

There are 27 sugarcane. Ollie wants to divide them equally among Tingu, Pingu and Pollie. How many Sugarcane will each elephant get?

I have 27 sugarcane.



Ollie



Pollie

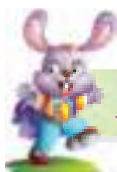


Tingu



Pingu





Let's Revise



'Division' means 'equal sharing'

Exercise 7.1

1. Fill in the blanks:

(a) $20 \div 4 =$

(b) $80 \div 8 =$

(c) $18 \div 3 =$

(d) $21 \div 7 =$

(e) $16 \div 2 =$

(f) $24 \div 4 =$

2. Divide:

(a) $9 \overline{)81}$

(b) $7 \overline{)49}$

(c) $8 \overline{)48}$

(d) $5 \overline{)35}$



Relationship between Multiplication and Division

$$\begin{array}{r} \text{Quotient} \\ \text{Divisor} \overline{) \text{Dividend}} \end{array}$$

$\text{Dividend} \div \text{Divisor} = \text{Quotient}$

Also, $\text{Dividend} = \text{Quotient} \times \text{Divisor}$



For example,

$$\begin{array}{r} 7 \\ 4 \overline{) 28} \\ \underline{- 28} \\ 0 \end{array}$$

$$28 \div 4 = 7$$

$$28 = 4 \times 7$$

Also,

$$28 \div 7 = 4$$

$$28 = 7 \times 4$$

Thus,

Multiplication Facts

Division facts

$$4 \times 7 = 28$$

$$28 \div 4 = 7$$

$$7 \times 4 = 28$$

$$28 \div 7 = 4$$



Exercise 7.2

1. Find the two division facts for the following:

(a) $4 \times 9 = 36$,

,

(b) $3 \times 4 = 12$,

,

(c) $8 \times 9 = 72$,

,

(d) $8 \times 4 = 32$,

,

(e) $7 \times 5 = 35$,

,



2. Find the dividend using,

Dividend = Divisor $\times$ Quotient

(a) $\div 9 = 9$

(b) $\div 8 = 6$

(c) $\div 2 = 8$

(d) $\div 4 = 3$

(e) $\div 7 = 6$

(f) $\div 5 = 9$





Division Facts (Properties of Division):

1. **Divide by 1:** When a non-zero number is divided by 1, then we get the same number as quotient.

Examples, $5 \div 1 = 5$

$$7 \div 1 = 7$$



2. **Divide by Itself:** When a non-zero number is divided by itself, then we get 1 as the quotient.

Examples, $4 \div 4 = 1$

$$6 \div 6 = 1$$



3. **Divide by 0:** We cannot divide any number by zero.

Examples, $5 \div 0 = ?$

$$6 \div 0 = ?$$



4. **Zero Divide by Any number**

When we divide 0 by any number, then we get 0 as quotient.

Examples, $0 \div 2 = 0$

$$0 \div 3 = 0$$



Exercise 7.3

Fill in the blanks:

(a) $2 \div 2 = \dots\dots\dots$

(c) $5 \div 1 = \dots\dots\dots$

(e) $6 \div 6 = \dots\dots\dots$

(g) $0 \div 9 = \dots\dots\dots$



(b) $5 \div \dots\dots\dots = 1$

(d) $\dots\dots\dots \div 2 = 0$

(f) $9 \div \dots\dots\dots = 1$

(h) $8 \div \dots\dots\dots = 8$





Long Division Method



Division Without Remainder

Solved Examples

Example 1 : Divide 84 by 2.

Solution :

Step 1 : Write the numbers in correct format.

Step 2 : Divide 8 tens by 2.

$$8 \text{ tens} \div 2 = 4 \text{ tens}$$

Write 4 in the tens place in the quotient.

$$\text{Now, } 2 \times 4 \text{ tens} = 8 \text{ tens}$$

Write 8 in the tens place below the dividend.

Step 3 : Subtract: 8 tens - 8 tens = 0 tens

Write 0 tens as shown and write down 4 ones as shown.

Step 4 : Divide 4 ones by 2

$$4 \text{ ones} \div 2 = 2 \text{ ones}$$

Write 2 in the ones place in the quotient.

Write 2×2 ones = 4 ones below the dividend in ones place.

Step 5 : Subtract: 4 ones - 4 ones = 0

$\therefore$ We get 0 as remainder.

So, Dividend = 84,

Divisor = 2,

Quotient = 42,

Remainder = 0.

Also, Check: Divisor $\times$ Quotient = Dividend

$$2 \times 42 = 84$$

$\therefore$ Answer is correct.

Step 1 T O

$$2 \overline{) 84}$$

T O

$$\begin{array}{r} 4 \\ 2 \overline{) 84} \\ - 8 \\ \hline \end{array}$$

Step 2

Step 3 T O

$$\begin{array}{r} 4 \\ 2 \overline{) 84} \\ - 8 \\ \hline 04 \end{array}$$

T O

$$\begin{array}{r} 42 \\ 2 \overline{) 84} \\ - 8 \\ \hline 04 \\ - 4 \\ \hline \end{array}$$

Step 4

Step 5 T O

$$\begin{array}{r} 42 \\ 2 \overline{) 84} \\ - 8 \\ \hline 04 \\ - 4 \\ \hline 0 \end{array}$$



Teacher's Note:

Inform the students that the remainder is always smaller than the divisor.

Example 2 : Divide 48 by 2.

Solution :

Step 1 : Divide 4 tens by 2

$$4 \div 2 = 2$$

Step 2 : Divide 8 ones by 2

$$8 \div 2 = 4$$

So, Dividend = 48

Divisor = 2

Quotient = 24

Remainder = 0



	T	O
	2	4
2	4	8
-	4	
	0	8
-		8
		0

Example 3 : Divide 903 by 3.

Solution :

Step 1 : Divide 9 hundreds by 3.

$$9 \div 3 = 3$$

Write 3 in the hundreds place of the quotient.

Step 2 : Divide 0 tens by 3

$$0 \div 3 = 0$$

Write 0 in the tens place in the quotient.

Step 3 : Divide 3 ones by 3

$$3 \div 3 = 1$$

Write 1 in the ones place in the quotient.

So, Dividend = 903

Divisor = 3

Quotient = 301

Remainder = 0



	H	T	O
	3	0	1
3	9	0	3
-	9		
	0	0	
-		0	
		0	3
-			3
			0

Example 4 : Divide 246 by 2.

Solution :

Step 1 : Divide 2 hundreds by 2

$$2 \div 2 = 1$$

Step 2 : Divide 4 tens by 2

$$4 \div 2 = 2$$

Step 3 : Divide 6 ones by 2

$$6 \div 2 = 3$$

So, Dividend = 246

Divisor = 2

Quotient = 123

Remainder = 0

	1	2	3
2	2	4	6
-	2		
	0	4	
-		4	
		0	6
-			6
			0



Example 5 :

Divide 3069 by 3.

Solution :

Step 1 : Divide 3 thousands by 3

$$3 \div 3 = 1$$

Step 2 : Divide 0 hundred by 3

$$0 \div 3 = 0$$

Step 3 : Divide 6 tens by 3

$$6 \div 3 = 2$$

Step 4 : Divide 9 ones by 3

$$9 \div 3 = 3$$

So, Dividend = 3069

Divisor = 3

Quotient = 1023

Remainder = 0

$$\begin{array}{r} 1023 \\ 3 \overline{) 3069} \\ \underline{- 3} \\ 00 \\ \underline{- 0} \\ 06 \\ \underline{- 6} \\ 09 \\ \underline{- 9} \\ 0 \end{array}$$



Think Wisely

Find the largest 4 digit number exactly divisible by 8.

Example 6 :

Divide 8246 by 2.

Solution :

Step 1 : Divide 8 thousand by 2

$$8 \div 2 = 4$$

Step 2 : Divide 2 hundred by 2

$$2 \div 2 = 1$$

Step 3 : Divide 4 tens by 2

$$4 \div 2 = 2$$

Step 4 : Divide 6 ones by 2

$$6 \div 2 = 3$$

So, Dividend = 8246

Divisor = 2

Quotient = 4123

Remainder = 0



$$\begin{array}{r} 4123 \\ 2 \overline{) 8246} \\ \underline{- 8} \\ 02 \\ \underline{- 2} \\ 04 \\ \underline{- 4} \\ 06 \\ \underline{- 6} \\ 0 \end{array}$$



Exercise 7.4

Divide and find the quotient. Also, verify the answers.

(a) $46 \div 2$

(b) $39 \div 3$

(c) $48 \div 4$

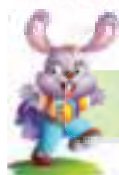
(d) $66 \div 6$

(e) $505 \div 5$

(f) $5050 \div 5$

(g) $8000 \div 4$

(h) $7777 \div 7$



Division With Remainder

When the number does not divide exactly, then we write remainder at the end.

Now, $\text{Dividend} = (\text{Divisor} \times \text{Quotient}) + \text{Remainder}$

Solved Examples

Example 1 : Divide 47 by 2

Solution :

$$\begin{array}{r} 23 \\ 2 \overline{) 47} \\ \underline{- 4} \\ 07 \\ \underline{- 6} \\ 1 \end{array}$$

← Quotient

← Remainder

So, Dividend = 47

Divisor = 2

Quotient = 23

Remainder = 1.

Check: $(\text{Divisor} \times \text{Quotient}) + \text{Remainder} = \text{Dividend}$

$$(2 \times 23) + 1 = 47$$

∴ Answer is correct.



Example 2 : Divide 847 by 4

Solution :

$$\begin{array}{r}
 211 \\
 4 \overline{) 847} \\
 \underline{- 8} \\
 04 \\
 \underline{- 4} \\
 07 \\
 \underline{- 4} \\
 3
 \end{array}$$

So, Quotient = 211

Remainder = 3

Example 3 :

Divide 6395 by 3

Solution :

$$\begin{array}{r}
 2131 \\
 3 \overline{) 6395} \\
 \underline{- 6} \\
 03 \\
 \underline{- 3} \\
 09 \\
 \underline{- 9} \\
 05 \\
 \underline{- 3} \\
 2
 \end{array}$$

So, Quotient = 2131

Remainder = 2



Facts to Know

The Division was introduced by the Swiss mathematician Johann Heinrich Rahn in his work Teutsche Algebra (1659).

Exercise 7.5

Find the quotient and remainder. Also, verify the answers.

(a) $3 \overline{) 67}$

(b) $4 \overline{) 87}$

(c) $5 \overline{) 508}$

(d) $6 \overline{) 669}$

(e) $3 \overline{) 6938}$

(f) $4 \overline{) 8049}$



Division With Regrouping

Example 1 : Divide 98 by 2

Solution :

Step 1 : Divide 9 tens by 2



$$2 \times 4 = 8 \text{ tens}$$

$$2 \times 5 = 10 \text{ tens}$$

(10 tens is bigger than 9 tens)

So, we take $2 \times 4 = 8$

Step 2 : Write 4 in the quotient.

Step 3 : Subtract 8 from 9. So, we get 1 as remainder.

Step 4 : Now write 8 ones to the right of 1. 18 is new dividend.

Step 5 : Divide, 18 by 2.
 $18 \div 2 = 9$.

Step 6 : Write 9 in the quotient.
So, Quotient = 49
Remainder = 0

$$\begin{array}{r} 49 \\ 2 \overline{) 98} \\ \underline{- 8} \\ 18 \\ \underline{- 18} \\ 0 \end{array}$$



Example 2 : Divide 586 by 4

Solution :

Step 1 : Divide 5 hundreds by 4.
 $4 \times 1 = 4$ hundreds
 $4 \times 2 = 8$ hundreds
(8 hundreds is greater than 5 hundreds)
So, we take $4 \times 1 = 4$.

Step 2 : Write 1 in the quotient.

Step 3 : $5 - 4 = 1$

We get 1 as remainder.

Step 4 : Now write 8 tens to the right of 1. 18 is new dividend.

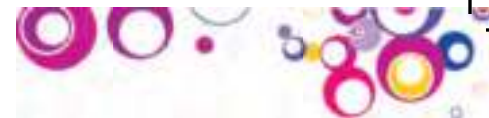
Step 5 : Divide 18 by 4.
 $18 \div 4$

$$4 \times 4 = 16 \text{ tens}$$

$$4 \times 5 = 20 \text{ tens}$$

$$\begin{array}{r} 146 \\ 4 \overline{) 586} \\ \underline{- 4} \\ 18 \\ \underline{- 16} \\ 026 \\ \underline{24} \\ 02 \end{array}$$





(20 tens is greater than 18 tens)

So, we take $4 \times 4 = 16$.

Write 4 in the quotient.

Remainder = 2.

Step 6 : Bring down 6 to the right of 2.

Now, 26 is new dividend

$4 \times 7 = 28$

$28 > 26$, so we take $4 \times 6 = 24$.

Write 6 as quotient and 2 as remainder.

So, Quotient = 146

Remainder = 2



Example 3 : Divide 6792 by 8

Solution :

Step 1 : We start with thousands, 6 thousands is less than the divisor 8.

So, we take thousands and hundreds together.

Step 2 : 67 is dividend.

$67 \div 8$ ($8 \times 8 = 64$)

So, (Quotient = 8)

and (Remainder = 3).

Step 3 : Now write 9 to the right of 3

39 is new dividend.

$39 \div 8$ ($8 \times 4 = 32$)

(Quotient = 4)

(Remainder = 7).

Step 4 : Now write 2 to the right of 7

New dividend is 72

$72 \div 8$ ($8 \times 9 = 72$)

(Quotient = 9)

(Remainder = 0)

So, Quotient = 849

Remainder = 0

$$\begin{array}{r}
 849 \\
 8 \overline{) 6792} \\
 \underline{- 64} \\
 39 \\
 \underline{- 32} \\
 72 \\
 \underline{- 72} \\
 0
 \end{array}$$



Exercise 7.6

Find the quotient and remainder. Also, verify the answers.

(a) $7642 \div 6$

(b) $5393 \div 3$

(c) $6429 \div 2$

(d) $1765 \div 4$

(e) $76 \div 7$

(f) $674 \div 5$



Division by 10



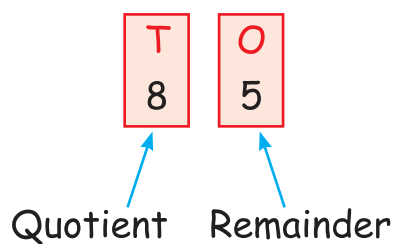
Quick Tip

When we divide any number by 10, the digit in ones place is always the remainder. Other digits of the dividend makes the quotient.

Solved Examples

Example 1 : Divide 85 by 10

Solution :



Let's see:



$$\begin{array}{r} 8 \\ 10 \overline{) 85} \\ \underline{- 80} \\ 5 \end{array}$$

Quotient = 8





Remainder = 5

Example 2 : Divide 126 by 10

Solution :

Dividend = 12 6
 ↑ ↑
 Quotient Remainder

$$\begin{array}{r} 12 \\ 10 \overline{) 126} \\ \underline{- 10} \\ 26 \\ \underline{- 20} \\ 6 \end{array}$$



Quotient = 12

Remainder = 6

Example 3 : Divide 2895 by 10

Solution :

Dividend = 289 5
 ↑ ↑
 Quotient Remainder

$$\begin{array}{r} 289 \\ 10 \overline{) 2895} \\ \underline{- 20} \\ 89 \\ \underline{- 80} \\ 95 \\ \underline{- 90} \\ 5 \end{array}$$



Quotient = 289

Remainder = 5

exercise 7.7

Find the quotient and remainder:

(a) $28 \div 10$

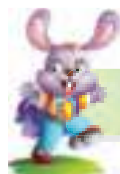
(b) $56 \div 10$

(c) $825 \div 10$

(d) $543 \div 10$

(e) $3962 \div 10$

(f) $4865 \div 10$



Word Problems



Solved Examples

Example 1 : A teacher distributes 30 pencils among 5 children. How many pencils does each child get?

Solution : Total number of pencils = 30
Total number of children = 5



Now, we have to divide 30 pencils among 5 children.

So, number of pencils each child

will get $= 30 \div 5$

$$= 6$$

Hence, each child will get 6 pencils.



Example 2 :

A chocolate costs ₹ 5. How many such chocolates can be purchased for ₹ 60?

Solution :

Total cost of chocolates purchased $= ₹ 60$

Cost of one chocolate $= ₹ 5$

Number of chocolates purchased for ₹ 60 $= 60 \div 5$
 $= 12$

$$\begin{array}{r} 12 \\ 5 \overline{) 60} \\ \underline{- 5} \\ 10 \\ \underline{- 10} \\ 0 \end{array}$$

Hence, 12 chocolates can be purchased for ₹ 60.

Example 3 :

The product of two numbers is 750. If one of them is 6, find the other number.

Solution :

Product of two numbers $= 750$

One number $= 6$

The other number $= 750 \div 6$
 $= 125$

$$\begin{array}{r} 125 \\ 6 \overline{) 750} \\ \underline{- 6} \\ 15 \\ \underline{- 12} \\ 30 \\ \underline{- 30} \\ 0 \end{array}$$

Hence, the other number is 125.

Example 4 :

A man is walking at the rate of 3 km per hour.

How long does he take to cover 135 km?

Solution :

Total distance to be covered by man $= 135 \text{ km}$

Distance covered in 1 hour $= 3 \text{ km}$

Time taken to cover the whole distance
 $= 135 \div 3$
 $= 45 \text{ hours.}$

$$\begin{array}{r} 45 \\ 3 \overline{) 135} \\ \underline{- 12} \\ 15 \\ \underline{- 15} \\ 0 \end{array}$$

Hence, the man will take 45 hours to cover 135 km.



Example 5 :

829 students are divided into 5 teams equally. How many students are there in each team? How many extra students are left over?

Solution :

Total number of students = 829
Number of teams = 5
Students in each team = $829 \div 5$
On dividing, we get
Quotient = 165
Remainder = 4

$$\begin{array}{r} 165 \\ 5 \overline{) 829} \\ \underline{- 5} \\ 32 \\ \underline{- 30} \\ 29 \\ \underline{- 25} \\ 4 \end{array}$$

Hence, there are 165 students in each team and 4 extra students left over.

Exercise 7.8

1. Priya has 84 dolls. She put them equally in 4 boxes. How many dolls are there in each box?



2. If 269 biscuits to be put in 3 packets equally, how many biscuits will be packed in one packet? How many biscuits remain unpacked?



3. How many weeks are there in 420 days?



4. How many bundles of 9 candles each can be made from 9065 candles? How many candles are left over?



5. 3046 burgers are to be packed equally in 8 cartons. How many burgers are there in each carton? How many burgers are left?





Mental Maths

A. Tick (✓) the correct answer:

1. What is the dividend in the expression $850 \div 17 = 50$?

i. 17

ii. 850

iii. 50

2. What do we have as a remainder if 96 is divided by 7?

i. 5

ii. 4

iii. 3

3. $0 \div 12$ equals

i. 1

ii. 12

iii. 0

4. How many groups of 8 are there in 96 ?

i. 14

ii. 12

iii. 13



Maths Lab Activity

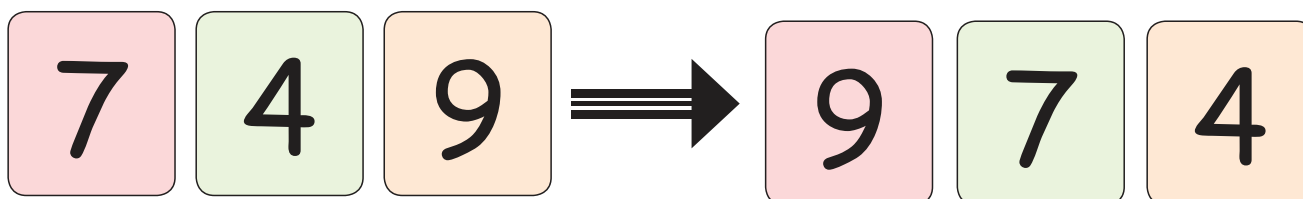
Materials required: Paper and pencil , chits with digits 0 to 9 written on them, playing cards with numbers 2 to 9 only.

Steps:

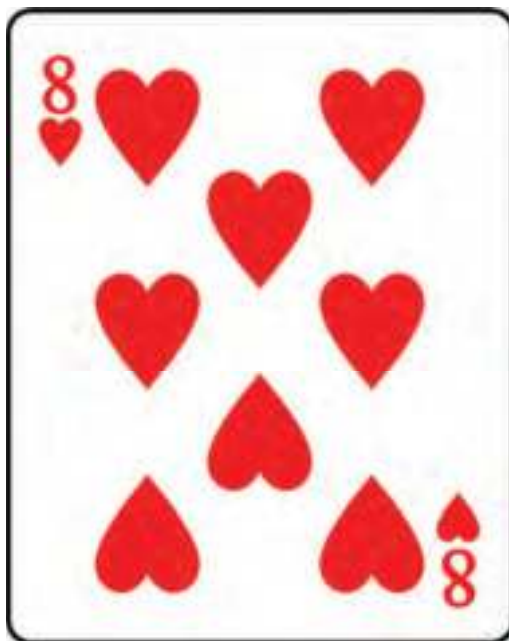
1. This activity will be done by dividing the class into two teams.
2. Each team has a bowl of chits (0 to 9) and playing cards (2 to 9 only).
3. Three chits will be picked up by the students with digits, say 7, 4 and 9 written on them.



4. They will make the biggest possible number with these digits.



5. Another student will draw cards from the playing cards. Suppose he draws a card numbered 8.



6. The number created with the chits will be divided by 8 from the card and the result will be noted as quotient and remainder.
7. The other team will repeat the activity with different numbers .
8. Quotients of the two teams will be compared, and the team with the higher value will be awarded points.
9. A total of 10 problems will be worked out.
10. Total number of points will be added and the team with the highest score will be declared the winner.

	1	2	1
	9	7	4
8	-8		
	1	7	
	-1	6	
		1	4
		-	8
			6



8



Measurement of Length



Learning Objectives

At the end of this lesson, students will be able to:

- Name the standard units of length.
- Convert the units into another.
- Add, subtract, multiply and divide the lengths.



Warm-Up

Tinnu wants to buy a red ribbon. She goes to a shop.

Can you give me 5 handspans of ribbon?

Shopkeeper - Here is 5 handspans of ribbon.

But this is 9 handspans long. I want only 5 handspans.



In the above picture, we can see that 5 handspans of a shopkeeper = 9 handspans of Tinnu.

Can you tell why there is such a difference in measurement? _____



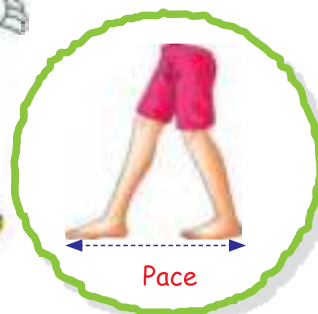
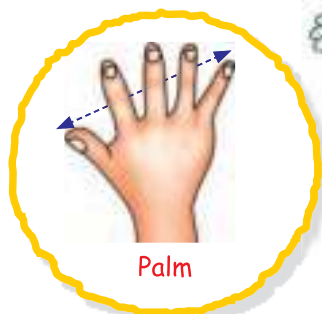
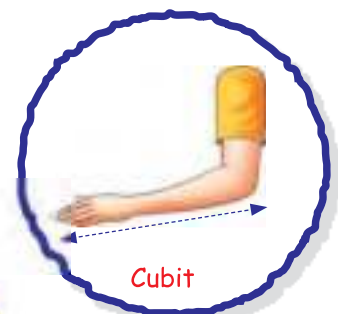
Teacher's Note:

Apprise the students that measuring length using body parts of the same object by different people results in different measurements.



Length of an object tells us how long it is.

Sometimes, we measure the length of objects using non-standard units like:



But, these units are not accurate and uniform because the length of body parts (or objects) can be different from person to person.



Facts to Know

Units of length based on the human body have been used for thousands of years. This continued until a major change occurred about 200 years ago.



Standard Units of Length

Standard units of length gives an accurate and uniform result.





Millimetre (mm)

Millimetre is the smallest unit used for measuring length. It is used when we need exact measurement.

Look at the ruler given below:



The small lines between the two digits on the ruler shows the millimetres. In short, millimetre is written as *mm*.



Centimetre (cm)

Centimetre is the most smallest unit of length.

For example, length of 7 pencils, length of line segments, a small piece of cloth, etc. In short, centimetre is written as *cm*.

$$1 \text{ cm} = 10 \text{ mm}$$



Metre (m)

Metre is the standard unit used for measuring long lengths.

For example, length of a wall, length of cloth, height of a pole, depth of a well, etc.

In short, metre is written as *m*.

$$1 \text{ m} = 100 \text{ cm}$$



Kilometre (km)

Kilometre is the biggest unit of length, used for measuring long distances.

For example length of a road, distance between two cities, etc.

In short, kilometre is written as *km*.

$$1 \text{ km} = 1000 \text{ m}$$



Exercise 8.1

Write the suitable unit (m , cm , km) to measure the following :

(a) The length of a river

.....



(b) The height of a wall

.....



(c) The length of a ice cream

.....



(d) Distance from your home to school

.....



(e) Length of a saree

.....



(f) Length of a pen

.....





Conversion

We can convert one unit into another.



To Convert Metre into Centimetre and Vice-Versa

$$1 \text{ m} = 100 \text{ cm}$$

or,

$$1 \text{ cm} = \frac{1}{100} \text{ m} = (1 \div 100) \text{ m}$$



Solved Examples

Example 1 : Convert 15 m into cm.

Solution :
15 m
= $(15 \times 100) \text{ cm}$
= 1500 cm

Example 2 : Convert 7 m 80 cm in cm.

Solution :
7 m 80 cm
= $(7 \times 100) \text{ cm} + 80 \text{ cm}$
= 700 cm + 80 cm
= 780 cm

Example 3 : Convert 500 cm into m.

Solution : 500 cm = $(500 \div 100) \text{ m} = 5 \text{ m}$.

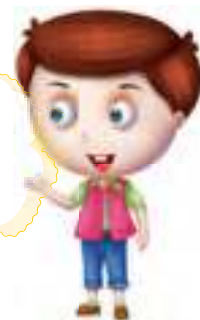
Example 4 : Convert 625 cm into m and cm.

Solution :
625 cm
= $(625 \div 100) \text{ m}$
Quotient = 6 m
Remainder = 25 cm
= 6 m 25 cm

Another method:

$$\begin{aligned} 625 \text{ cm} &= (6 \times 100) \text{ m} + 25 \text{ cm} \\ &= 6 \text{ m} + 25 \text{ cm} \\ &= 6 \text{ m } 25 \text{ cm} \end{aligned}$$

To convert m into cm, simply multiply by 100.



To convert cm into m, divide by 100. Write quotient in m and remainder in cm, if any.



$$\begin{array}{r} 6 \\ 100 \overline{) 625} \\ \underline{- 600} \\ 25 \end{array}$$



To Convert Kilometre into Metre and Vice-Versa

$$1 \text{ km} = 1000 \text{ m}$$

or,

$$1 \text{ m} = \frac{1}{1000} \text{ km} = (1 \div 1000) \text{ km}$$



Solved Examples

Example 1 : Convert 6 km into m.

Solution :
 6 km
 $= (6 \times 1000) \text{ m}$
 $= 6000 \text{ m}$



Quick Tip

To convert km into m, put there zeroes or 000 to that number.

Example 2 : Convert 5 km 860 m into m.

Solution :
 $5 \text{ km } 860 \text{ m} = (5 \times 1000) \text{ m} + 860 \text{ m}$
 $= 5000 \text{ m} + 860 \text{ m}$
 $= 5860 \text{ m}$

To convert m into km, divide by 1000. Write quotient in km and remainder in m, if any.

Example 3 : Convert 5000 m into km.

Solution :
 $5000 \text{ m} = (5000 \div 1000) \text{ km}$
 $= 5 \text{ km}$

Example 4 : Convert 7352 m into km and m.

Solution :
 $7352 \text{ m} = (7352 \div 1000) \text{ km}$
 Quotient = 7
 Remainder = 352
 $= 7 \text{ km } 352 \text{ m}$

$$\begin{array}{r} 7 \\ 1000 \overline{) 7352} \\ \underline{- 7000} \\ 352 \end{array}$$



Another method:

$$\begin{aligned} 7352 \text{ m} \\ = (7 \times 1000) \text{ km} + 352 \text{ m} \\ = 7 \text{ km} + 352 \text{ m} \\ = 7 \text{ km } 352 \text{ m} \end{aligned}$$



Exercise 8.2

1. Convert the following into centimetres:

- | | |
|---------------|---------------|
| (a) 50 m | (b) 26 m |
| (c) 85 m | (d) 7 m |
| (e) 6 m 82 cm | (f) 5 m 96 cm |



2. Convert the following into 'metres and centimetres':

- | | |
|-------------|-------------|
| (a) 800 cm | (b) 485 cm |
| (c) 320 cm | (d) 986 cm |
| (e) 7029 cm | (f) 9865 cm |

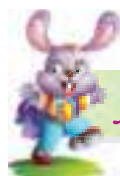
3. Convert the following into metres:

- | | |
|----------------|----------------|
| (a) 4 km | (b) 80 km |
| (c) 5 km 220 m | (d) 3 km 860 m |
| (e) 9 km 895 m | (f) 7 km 780 m |



4. Convert the following into 'kilometres and metres':

- | | |
|------------|------------|
| (a) 2095 m | (b) 1109 m |
| (c) 8000 m | (d) 9829 m |
| (e) 5462 m | (f) 1052 m |



Addition of Lengths

Addition of lengths is exactly similar to the ordinary addition.

Example 1 : Add 29 m 53 cm and 46 m 20 cm

Solution :

Step 1 : Arrange in m and cm columns respectively.

Step 2 : Add figures in cm column

$$53 \text{ cm} + 20 \text{ cm} \\ = 73 \text{ cm}$$

	m	cm
1	29	53
+	46	20
	75	73



Step 3 : Add figures in *m* column

$$29\text{ m} + 46\text{ m}$$

$$= 75\text{ m}$$

$$\therefore 29\text{ m } 53\text{ cm} + 46\text{ m } 20\text{ cm} = 75\text{ m } 73\text{ cm}$$

Example 2 : Add $36\text{ m } 82\text{ cm}$, $29\text{ m } 50\text{ cm}$ and $42\text{ m } 93\text{ cm}$.

Solution : Sum

$$= 109\text{ m } 25\text{ cm}$$

<i>m</i>	<i>cm</i>
12	
36	82
29	50
42	93
109	25

Example 3 : Add $16\text{ km } 329\text{ m}$ and $12\text{ km } 186\text{ m}$.

Solution :

Step 1 : Arrange in *km* and *m* columns, respectively.

Step 2 : Add *m*

$$329\text{ m} + 186\text{ m} = 515\text{ m}$$

Step 3 : Add *km*

$$16\text{ km} + 12\text{ km} = 28\text{ km}$$

$$\therefore \text{Sum} = 28\text{ km } 515\text{ m}$$

<i>km</i>	<i>m</i>
	11
16	329
+ 12	186
28	515

Example 4 : Add $2\text{ km } 986\text{ m}$, $5\text{ km } 289\text{ m}$ and $7\text{ km } 180\text{ m}$.

Solution : = $15\text{ km } 455\text{ m}$

<i>km</i>	<i>m</i>
1	21
2	986
5	289
+ 7	180
15	455

Exercise 8.3

1. Add the following:

(a)

<i>m</i>	<i>cm</i>
29	52
+ 63	98



(b)

<i>m</i>	<i>cm</i>
60	42
+ 20	89



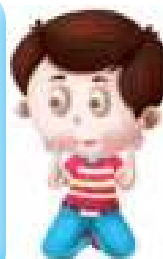
(c)

<i>km</i>	<i>m</i>
29	52
8	205
+ 63	98



(d)

<i>km</i>	<i>m</i>
36	252
34	298
+ 62	910



2. Arrange in columns and then add the following:

- (a) 92 m 26 cm and 28 m 56 cm
 (b) 28 m 56 cm, 59 m 20 cm and 60 m 6 cm
 (c) 30 km 25 m and 26 km 309 m
 (d) 12 km 102 m, 3 km 986 m and 25 km 118 m
 (e) 19 m 20 cm, 23 m 15 cm, 58 m 60 cm and 83 cm



Subtraction of Lengths

Subtraction of lengths is exactly similar to the ordinary subtraction.

Example 1 : Subtract 26 m 29 cm from 38 m 40 cm.

Solution :

Step 1 : Arrange in m and cm columns, respectively.

Step 2 : Subtract cm

$$40 \text{ cm} - 29 \text{ cm} = 11 \text{ cm}$$

Step 3 : Subtract m

$$38 \text{ m} - 26 \text{ m} = 12 \text{ m}$$

$$\therefore \text{Difference} = 12 \text{ m } 11 \text{ cm}$$

<i>m</i>	<i>cm</i>
38	40
- 26	29
12	11

Example 2 : Subtract 48 m 26 cm from 50 m 22 cm.

Solution : Difference = 1 m 96 cm

Example 3 : Subtract 32 km 223 m from 46 km 232 m.

Solution :

Step 1 : Arrange in km and m columns, respectively.

Step 2 : Subtract m

$$232 \text{ m} - 223 \text{ m} = 009 \text{ m}$$

Step 3 : Subtract km

$$46 \text{ km} - 32 \text{ km} = 14 \text{ km}$$

$$\therefore \text{Difference} = 14 \text{ km } 9 \text{ m}$$

<i>m</i>	<i>cm</i>
50	22
- 48	26
2	96

<i>km</i>	<i>m</i>
46	232
- 32	223
14	009



Example 4 : Subtract $39 \text{ km } 20 \text{ m}$ from $50 \text{ km } 289 \text{ m}$

Solution :

km	m
50 4 10	289
- 39	020
11	269

$\therefore$ Difference
= $11 \text{ km } 269 \text{ m}$

Exercise 8.4

1. Subtract the following:

(a)

m	cm
29	34
- 19	39

(b)

m	cm
27	56
- 18	68

(c)

km	m
200	569
- 182	296

(d)

km	m
502	280
- 499	342



2. Arrange in columns and then find the difference:

- (a) 60 m and $5 \text{ m } 29 \text{ cm}$
- (b) $59 \text{ m } 62 \text{ cm}$ and $48 \text{ m } 89 \text{ cm}$
- (c) $260 \text{ km } 50 \text{ m}$ and $129 \text{ km } 656 \text{ m}$
- (d) $500 \text{ km } 129 \text{ m}$ and $386 \text{ km } 60 \text{ m}$
- (e) $235 \text{ km } 123 \text{ m}$ and $186 \text{ km } 945 \text{ m}$



Think Wisely

From a 70 m long roll of wire, a piece of length $25 \text{ m } 4 \text{ cm}$ is cut off. How much wire is left on the roll?



Multiplication of Lengths

Multiplication of lengths is exactly similar to the ordinary multiplication.



Example 1 : Multiply 236 *m* 15 *cm* by 3.

Solution :

<i>m</i>			<i>cm</i>	
1	1		1	
2	3	6	1	5
			×	3
7	0	8	4	5

Product = 708 *m* 45 *cm*

Example 2 : Multiply 46 *km* 705 *m* by 5.

Solution :

<i>km</i>			<i>m</i>	
3	3		2	
4	6	7	0	5
			×	5
2	3	3	5	2

Product = 233 *km* 525 *m*



Exercise 8.5

Multiply:

(a)

<i>m</i>		<i>cm</i>
4	6	5
		2
		×
		3

(b)

<i>m</i>		<i>cm</i>
2	9	5
		0
		×
		4

(c)

<i>km</i>		<i>m</i>
8	3	2
		0
		9
		×
		7

(d)

<i>km</i>		<i>m</i>
1	5	2
		1
		0
		2
		×
		2



Division of Lengths

Division of lengths is exactly similar to the ordinary division.

Example 1 : Divide 225 m 80 cm by 5.

Solution :

$$\begin{array}{r}
 \begin{array}{r}
 \text{m} \qquad \text{cm} \\
 5 \overline{) 225 \quad 80} \quad 45 \text{ m} \\
 \underline{- 20} \quad \downarrow \\
 25 \quad \downarrow \downarrow \\
 \underline{- 25} \quad \text{cm} \\
 00 \quad 5 \overline{) 80} \quad 16 \text{ cm} \\
 \underline{5} \\
 30 \\
 \underline{- 30} \\
 00
 \end{array}
 \end{array}$$

Quotient = 45 m 16 cm

Remainder = 0

Example 2 : Divide 306 km 39 m by 3

Solution :

$$\begin{array}{r}
 \begin{array}{r}
 \text{km} \qquad \text{m} \\
 3 \overline{) 306 \quad 39} \quad 102 \text{ km} \\
 \underline{- 3} \quad \downarrow \\
 006 \quad \downarrow \downarrow \\
 \underline{- 6} \quad \text{m} \\
 0 \quad 3 \overline{) 39} \quad 13 \text{ m} \\
 \underline{3} \quad \downarrow \\
 09 \\
 \underline{- 9} \\
 0
 \end{array}
 \end{array}$$

Quotient = 102 km 13 m

Remainder = 0

Exercise 8.6

Divide:

- (a) $366 \text{ km } 108 \text{ m}$ by 3
- (b) $286 \text{ km } 60 \text{ m}$ by 2
- (c) $497 \text{ m } 70 \text{ cm}$ by 7
- (d) $51 \text{ m } 39 \text{ cm}$ by 3
- (e) $648 \text{ km } 72 \text{ m}$ by 8



Word Problems

Solved Examples

Example 1 : Mrs. Radha bought $3 \text{ m } 25 \text{ cm}$ red ribbon, $2 \text{ m } 50 \text{ cm}$ green ribbon and 5 m yellow ribbon. How much ribbon did she buy?

Solution :

		<i>m</i>	<i>cm</i>
Length of red ribbon	=	3	25
Length of green ribbon	=	2	50
Length of yellow ribbon	=	+ 5	00
Total length of ribbon	=	10	75



Hence, Mrs. Radha bought $10 \text{ m } 75 \text{ cm}$ ribbon.

Example 2 : A roll of thread contains $96 \text{ m } 25 \text{ cm}$ of thread. If $50 \text{ m } 20 \text{ cm}$ of the thread is cut off, then what is the length of the remaining thread?

Solution:

		<i>m</i>	<i>cm</i>
Length of the thread	=	96	25
Length of the thread used	=	- 50	20
Length of the thread left	=	46	05



Hence, length of the remaining thread is $46 \text{ m } 5 \text{ cm}$.



Example 3 :

Sarthak's school is 15 km away from his house. He covers 12 km 525 m distance. How much more distance he has to cover?



Solution :

		km		m
Total distance to be covered	=	1	5	
Distance he has covered	= -	1	2	5
Distance to be covered	=	2	4	7

Hence, Sarthak has to cover 2 km 475 m more.

Example 4 :

There is a cloth of 45 m long. Two pieces of length 20 m 15 cm and 12 m 32 cm are cut off. What is the length of the remaining cloth?



Solution :

		m		cm
Length of first piece of cloth	=	2	0	1
Length of second piece of cloth	= +	1	2	3
Total length of cloth cut	=	3	2	4

		m		cm
Length of cloth	=	4	5	
Length of cloth cut	= -	3	2	4
Length of cloth left	=	1	2	5

Hence, length of the remaining cloth is 12 m 53 cm.



Example 5 :

Sarthak walks 5 km 265 m in a day. How far will he walk in a week?

Solution :

Sarthak walks in a day	=	5	2	5	6	
Days in a week	=	×			7	
Sarthak walks in a week	=	3	6	7	9	2

Hence, Sarthak walks 36 km 792 m in a week.

Example 6 :

An electrical wire is 428 m 48 cm long. It is cut into 4 equal pieces. What is the length of each piece?

Solution :

Length of electrical wire = 428 m 48 cm
No. of pieces = 4
Length of each piece of electrical wire = (428 m 48 cm) $\div$ 4

	m	cm		
4	4	2	8	
-	4			
	0	2	8	
-		2	8	
		0		
		4	8	
		-	4	
			0	
			8	
			-	8
				0

107 m 12 cm

Hence, length of each piece of electrical wire = 107 m 12 cm .





Exercise 8.7

1. Mr. Raghav travelled 256 km by train, $59 \text{ km } 290 \text{ m}$ by bus and $20 \text{ km } 360 \text{ m}$ by bike. What was the total distance covered by him?

2. Sona jumped 98 cm high and Shreya jumped $1 \text{ m } 15 \text{ cm}$ high. Who jumped higher and by how much?

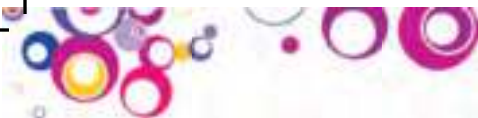
3. A curtain is cut into two pieces of length $2 \text{ m } 53 \text{ cm}$ and $3 \text{ m } 20 \text{ cm}$ respectively. What was the original length of the curtain?

4. A tree is 20 m long. It is broken into three parts. The length of two parts is $5 \text{ m } 15 \text{ cm}$ and $7 \text{ m } 20 \text{ cm}$ respectively. Find the length of the third part.

5. Rajat bought $4 \text{ m } 15 \text{ cm}$ of cloth for a dress. How much cloth will he buy for 5 such dresses?

6. Deepti bought a ribbon which is $86 \text{ m } 20 \text{ cm}$ long. If she cut it into two equal pieces, what is the length of each piece?





Mental Maths

Fill in the blanks

1. What is the smallest unit for measuring length that you know?
2. What is the greatest unit for measuring length that you know?
3. Which is longer: 11 cm or 1 m?.....
4. Which standard unit will you use to measure the distance from Rajkot to Ahmedabad?
5. You draw a line 10 cm long . Then you draw another line below it which is 15 cm long. How much longer is the second line?



Maths Lab Activity

Write the letter for the correct symbol and decode the message.

1. 1 m 80 cm		2 m	>	=	<
2. 6 km 4000 m		10 km	P	Q	I
3. 5 m		400 cm	E	L	T
4. 2 km 200m		3km	O	R	T
5. 2 m		200 cm	M	N	V
6. 5 km 6000 m		10 km	Z	E	W
7. 4 km		4000 m	M	C	O
8. 9 m 900 cm		9 m	S	A	E
9. 300 cm		4 m	T	X	P
10. 8 cm		8 cm	Z	O	H
			P	S	W

Write the message in the box



9



Measurement of Weight



Learning Objectives

At the end of this lesson, students will be able to:

- Use standard units to measure weight.
- Recognise the devices used to measure weight.
- Convert one unit into another.



Warm-Up

Observe the following pictures carefully:



Weighing balance



Beam balance



Electronic weighing machine

List the places where have you seen the following:

Beam balance

1.
2.

Weighing balance

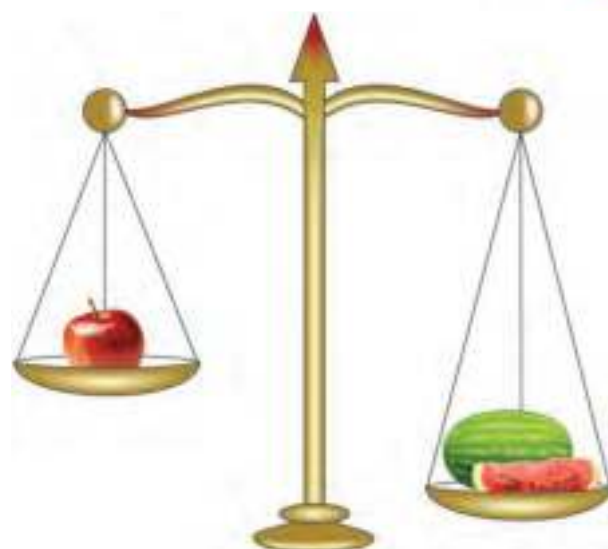
1.
2.

Electronic weighing machine

1.
2.



Weight of an object tells us how heavy it is.



Standard Units Of Weight

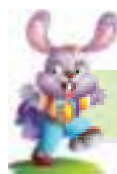


Milligram (mg)

Milligram is the smallest unit of weight. It is used to measure **very small quantities** of things.

For example, weight of gold, medicine, etc.

In short, milligram is written as **mg**.



Gram (g)

Gram is used to measure smaller quantities or **light weights**.

For example, weight of one or two mangoes, a book, a newspaper, an egg, etc.

In short, gram is written as **g**.



Teacher's Note:

Elucidate students that if you measure something on another planet, its weight will be different. Weight depends on gravity, and gravity is different on other planets!





Kilogram (kg)

Kilogram is used to measure bigger quantities or **heavy weights**.

For example,

weight of a man, a bag of fruits or vegetables, weight of car, etc.

In short, kilogram is written as **kg**.

$$1 \text{ kg} = 1000 \text{ g}$$



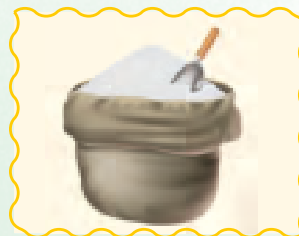
Facts to Know

As originally defined, the kilogram was represented in the late 18th century by a solid cylinder of platinum.

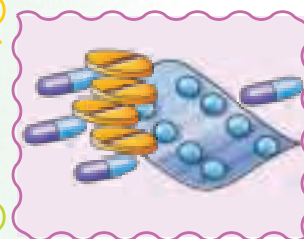
Exercise 9.1

Write the suitable unit (*mg*, *g*, *kg*) to measure the following:

(a) Bag of a sugar



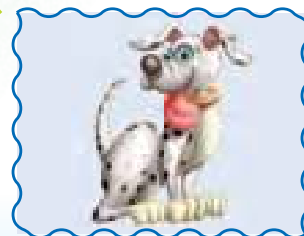
(b) A medicine



(c) A toffee

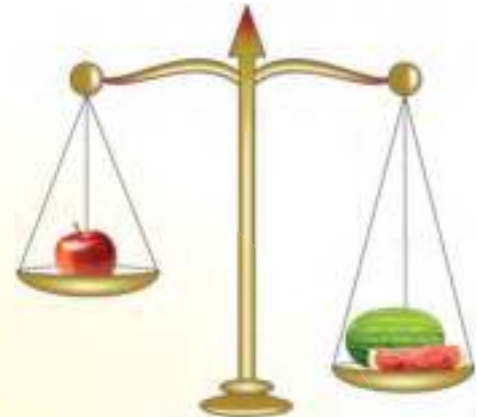


(d) Weight of a dog

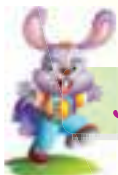




Devices Used To Measure Weight



Generally, physical balance is used to measure weights. It has two pans. We put objects in one pan and standard weights in other pan, in order to get both the pans at the same level.



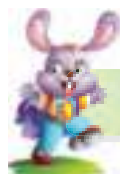
Standard Weights





Conversion

We can convert one unit into another.



To Convert Kilogram Into Gram And Vice-Versa

$$1 \text{ kg} = 1000 \text{ g}$$

or,

$$1 \text{ g} = \frac{1}{1000} \text{ kg} = (1 \div 1000) \text{ kg}$$

Solved Examples

Example 1 : Convert 9 kg in g.

Solution :

$$\begin{aligned} 9 \text{ kg} &= (9 \times 1000) \text{ g} \\ &= 9000 \text{ g} \end{aligned}$$



Quick Tip

To convert kg into g, simply multiply by 1000.

Example 2 : Convert 7 kg 82 g into g.

Solution :

$$\begin{aligned} 7 \text{ kg } 82 \text{ g} &= (7 \times 1000) \text{ g} + 82 \text{ g} \\ &= 7000 \text{ g} + 82 \text{ g} \\ &= 7082 \text{ g} \end{aligned}$$



Quick Tip

To convert g into kg, divide by 1000. Write quotient in kg and remainder in g, if any.

Example 3 : Convert 5000 g into kg.

Solution :

$$\begin{aligned} 5000 \text{ g} &= (5000 \div 1000) \text{ kg} \\ &= 5 \text{ kg} \end{aligned}$$

Example 4 : Convert 3265 g into kg and g.

Solution:

$$\begin{aligned} 3265 \text{ g} &= (3265 \div 1000) \text{ kg} \\ &= 3 \text{ kg } 265 \text{ g} \end{aligned}$$

Another method:

$$\begin{aligned} 3265 \text{ g} &= (3 \times 1000) \text{ kg} + 265 \text{ g} \\ &= 3 \text{ kg} + 265 \text{ g} \\ &= 3 \text{ kg } 265 \text{ g} \end{aligned}$$



Exercise 9.2

1. Convert the following into grams:

- (a) 2 kg (b) 3 kg
(c) 9 kg 265 g (d) 1 kg 5 g

2. Convert the following into 'kilograms and grams':

- (a) 7000 g (b) 2000 g
(c) 3062 g (d) 1028 g



Addition, Subtraction, Multiplication And Division Of Weights

Addition, subtraction, multiplication and division of weights is exactly similar to the ordinary operations.

Example 1 : Add 25 kg 325 g and 46 kg 18 g.

Solution :

Step 1 : Arrange in kg and g columns respectively.

Step 2 : Add g.
 $325\text{ g} + 018\text{ g} = 343\text{ g}$

Step 3 : Add kg.
 $25\text{ kg} + 46\text{ kg} = 71\text{ kg}$
 $\therefore$ Sum = 71 kg 343 g

kg	g
1 25	1 325
+ 46	018
71	343

Example 2 : Add 39 kg 250 g, 7 kg 18 g and 23 kg 846 g.

Solution :

$\therefore$ Sum = 70 kg 114 g

kg	g
21 39	11 250
07	018
+ 23	846
70	114

Example 3 : Subtract 36 kg 246 g from 50 kg 596 g

Solution :

Step 1 : Arrange in kg and g columns respectively.

Step 2 : Subtract g.
 $596\text{ g} - 246\text{ g} = 350\text{ g}$

Step 3 : Subtract kg.
 $50\text{ kg} - 36\text{ kg} = 14\text{ kg}$
 $\therefore$ Difference = 14 kg 350 g

kg	g
410 50	596
- 36	246
14	350



Example 4 : Multiply 632 kg 50 g by 3.

Solution :

kg	g
632	50
×	3
1897	50

∴ Product = 1897 kg 50 g.

Example 5 : Divide 848 kg 24 g by 4.

Solution :

kg	g
848	24
÷ 4	
212	6

∴ Quotient = 212 kg 6 g

Remainder = 0.

Exercise 9.3

1. Add:

(a)

kg	g
239	46
+	299
538	46

(b)

kg	g
946	290
+	389
1335	290

(c)

<i>kg</i>	<i>g</i>
14	290
62	405
+ 98	018

(d)

<i>kg</i>	<i>g</i>
129	40
269	05
+ 986	12

2. Subtract:

(a)

<i>kg</i>	<i>g</i>
40	050
- 36	932

(b)

<i>kg</i>	<i>g</i>
349	925
- 197	846

(c)

<i>kg</i>	<i>g</i>
380	080
- 096	692

(d)

<i>kg</i>	<i>g</i>
1059	460
- 0820	102

3. Multiply:

(a)

<i>kg</i>	<i>g</i>
19	020
×	5

(b)

<i>kg</i>	<i>g</i>
360	029
×	3

(c)

<i>kg</i>	<i>g</i>
129	700
×	6

(d)

<i>kg</i>	<i>g</i>
363	029
×	8

4. Divide:

(a) 246 *kg* 50 *g* by 2

(b) 390 *kg* 21 *g* by 3

(c) 742 *kg* 35 *g* by 7

(d) 8181 *kg* 27 *g* by 9

Word Problems

Example 1 : Mrs. Bansal bought 5 kg mangoes, 8 kg 250 g apples and 3 kg 350 g guavas. What is the total weight of fruits she buy?

Solution :

	kg	g
		①
Weight of mangoes	=	5 0 0 0
Weight of apples	=	8 2 5 0
Weight of guavas	=	+ 3 3 5 0
Total weight of fruits	=	1 6 6 0 0

Hence, Mrs. Bansal bought 16 kg 600 g of fruits.

Examples 2: Sagar purchased 10 kg 250 g of sugar. He used 7 kg 325 g of sugar in making sweets. How much sugar is left?

Solution :

	kg	g
Weight of sugar purchased =	1 0 2 5 0	
Weight of sugar used =	- 7 3 2 5	
Weight of sugar left =	2 9 2 5	

Hence, 2 kg 925 g sugar is left.

Example 3 : Ragini bought 12 kg 205 g of salt. She used 2 kg 125 g of it and 4 kg 942 g of salt fell down on the floor. How much salt is left with her?

Solution :

	kg	g
Weight of salt used by Ragini	=	2 1 2 5
Weight of salt fell down on the floor	= +	4 9 4 2
Total weight of salt used	=	7 0 6 7
Total amount of salt bought	=	1 2 2 0 5
Total weight of salt used	= -	7 0 6 7
Weight of salt left	=	5 1 3 8

Hence, 5 kg 138 g salt is left.

Example 4 : Mr. Sharma bought a box of chips weighing 4 kg 986 g. What is the total weight of 6 such boxes of chips?

Solution :

		kg		g
Weight of 1 box of chips	=	4	986	
Weight of 6 boxes of chips	= ×			6
Total weight of chips	=	29	916	

Hence, total weight of chips is 29 kg 916 g.

Example 5 : The total quantity of flour in 8 bags is 848 kg 240 g. Each bag has equal quantity of flour. Find the quantity of flour in one bag.

Solution : Quantity of flour in 8 bags
 = 848 kg 240 g
 Quantity of flour in 1 bag
 = (848 kg 240 g) ÷ 8
 Quotient = 106 kg 30 g
 Remainder = 0

$$\begin{array}{r}
 \text{kg} \quad \text{g} \\
 8 \overline{) 848 \quad 240} \quad 106 \text{ kg} \\
 \underline{- 8} \\
 048 \\
 \underline{- 48} \\
 0
 \end{array}$$

↓ ↓ ↓
g

$$\begin{array}{r}
 8 \overline{) 240} \quad 30 \text{ g} \\
 \underline{- 24} \\
 00
 \end{array}$$

Hence, each bag contains 106 kg 30 g of flour.

Exercise 9.4

- Mr. Raj bought 18 kg 250 g of flour, 79 kg 786 g of wheat and 62 kg 142 g of rice. What was the total weight of all the items he bought?

- Sheela weighs 100 kg 900 g. She lost her 10 kg 185 g weight due to lazyness. What is her total weight now?

3. Mrs. Goyal purchased $80\text{ kg } 500\text{ g}$ of potatoes. She used $50\text{ kg } 289\text{ g}$ for making papads and $23\text{ kg } 540\text{ g}$ for making chips. What is the amount of potatoes left?

4. A bag contains $46\text{ kg } 250\text{ g}$ of cement. What is the total weight of 9 such cement bags?

5. A tin of ghee weighs $240\text{ kg } 500\text{ g}$. It is to be distributed equally among 5 persons. What amount does each person get?



Think Wisely

1. Here are a few weights that add up to 1 kilogram, or 1000 g. For each of the following, jot down the missing weights.

- a. $1\text{ kg} = 1000\text{ g}$



500 g

+



200 g

+



200 g

+ _____

- b. $1\text{ kg} = 1000\text{ g}$



500 g

+



200 g



+ 100 g

+ _____



Mental Maths

Tick (✓) the correct answer

- 3 kg 60 g = g.
(a) 360 (b) 3060 (c) 3360
- Which of the following units would you see to measure the weight of a papaya?
(a) cm (b) kilogram (c) milligram
- 6800 g = Kg 800g.
(a) 6 (b) 7 (c) 8

Maths Lab Activity

Material required: Atleast 18 pieces of small stones, marker.

Steps:

- Mark 6 stones as 2 kg, 6 as 4 kg and 6 as 6 kg.
- Tell students there was a stone weighing 12 kg. One day the stone fell and broke into three pieces of respective weights 2 kg, 4 kg and 6 kg.
- Form the different combination of three pieces of stone to make it equal to 12 kg.

Example

$$12 \text{ kg} = 2 \text{ kg} + 4 \text{ kg} + 6 \text{ kg}$$





Measurement of Capacity



Learning Objectives

At the end of this lesson, students will be able to:

- Use standard units to measure capacity.
- Convert the litre into millilitre and vice versa.
- Add, subtract, multiply and divide the capacity.



Warm-Up

Saumya is celebrating her birthday party with friends. She serves a glass of lemonade to all of her friends.



How many glasses are there in the above picture? _____

How many glasses are filled and how many are not? _____





Capacity or **volume** is the quantity of a liquid that a container (or vessel) can hold.



Standard Units Of Capacity



Millilitre (ml)

Millilitre is used to measure **small quantities** of liquids.

For example, sachet of a shampoos, perfumes, syrup, eye drops, etc.

In short, millilitre is written as **ml**.



Litre (l)



Litre is used to measure **large quantities** of liquids.

For example, petrol, milk, oil, kerosene, water, etc.

In short, litre is written as **l**.



$$1 \text{ l} = 1000 \text{ ml}$$



Facts to Know

The litre was introduced in France in 1795 as one of the new "Republican units of measurement."



Liquids like **oil** and **kerosene** can be measured with the help of standard sized containers or vessels, as shown below:



Liquids like **milk** and **water** can be measured with the help of standard sized containers or vessels, as shown below:



Teacher's Note:

Apprise the students that capacity is the maximum amount that something can contain; volume is the amount of space a substance or object occupies. The two terms are interchangeable and can refer to the same calculation or measurement.

Exercise 10.1

Write the suitable unit (ml or l) to measure the following:

- (a) Petrol filled in a car



(b) A sachet of a shampoo



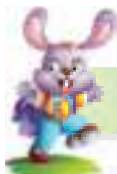
(c) A bucket full of water



(d) Medicine in a syringe



Conversion



To Convert Litre Into Millilitre And Vice-Versa

$$1 \text{ l} = 1000 \text{ ml}$$

or,

$$1 \text{ ml} = \frac{1}{1000} \text{ l} = (1 \div 1000) \text{ l}$$



Solved Examples

Example 1 : Convert 7 l into ml.

$$\begin{aligned} \text{Solution : } 7 \text{ l} &= (7 \times 1000) \text{ ml} \\ &= 7000 \text{ ml} \end{aligned}$$

Example 2 : Convert 5 l 66 ml into ml.

$$\begin{aligned} \text{Solution : } 5 \text{ l } 66 \text{ ml} &= (5 \times 1000) \text{ ml} + 66 \text{ ml} \\ &= 5000 \text{ ml} + 66 \text{ ml} \\ &= 5066 \text{ ml} \end{aligned}$$



Quick Tip

To convert l into ml, simply multiply by 1000.



Example 3 : Convert 4000 mL into L.

Solution :

$$4000 \text{ mL} = (4000 \div 1000) \text{ L}$$

$$= 4 \text{ L}$$

Example 4 : Convert 9762 mL in L into mL.

Solution :

$$9762 \text{ mL} = (9762 \div 1000) \text{ L}$$

$$= 9 \text{ L } 762 \text{ mL}$$

Another method:

$$9762 \text{ mL} = (9 \times 1000) \text{ L} + 762 \text{ mL}$$

$$= 9 \text{ L } 762 \text{ mL}$$



Quick Tip

To convert mL into L, divide by 1000. Write quotient in L and remainder in mL, if any.

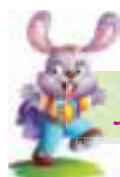
Exercise 10.2

1. Convert the following into millilitres:

- (a) 3 L (b) 9 L (c) 2 L 365 mL (d) 4 L 295 mL

2. Convert the following into 'litres and millilitres':

- (a) 6000 mL (b) 8000 mL
(c) 3269 mL (d) 5342 mL



Addition, Subtraction, Multiplication And Division of Capacity

Example 1 : Add 25 L 360 mL and 83 L 280 mL

Solution :

Step 1 : Arrange in L and mL columns respectively.

Step 2 : Add mL:

$$360 \text{ mL} + 280 \text{ mL} = 640 \text{ mL}$$

Step 3 : Add L:

$$25 \text{ L} + 83 \text{ L} = 108 \text{ L}$$

$$\therefore \text{Sum} = 108 \text{ L } 640 \text{ mL}$$

Example 2: Add 14 L 390 mL, 85 L and 32 L 462 mL.

Solution : Sum = 131 L 852 mL

L	mL
	①
25	360
+ 83	280
108	640

L	mL
①	①
14	390
85	000
+ 32	462
131	852



Example 3 : Subtract 32 ℓ 862 ml from 40 ℓ 980 ml.

Solution :

Step 1 : Arrange in ℓ and ml columns, respectively.

Step 2 : Subtract ml,

$$980 \text{ ml} - 862 \text{ ml} = 118 \text{ ml}.$$

Step 3 : Subtract ℓ

$$40 \text{ ℓ} - 32 \text{ ℓ} = 8 \text{ ℓ}$$

$$\therefore \text{Difference} = 8 \text{ ℓ } 118 \text{ ml}.$$

ℓ		ml		
3	10	7	10	
4	0	9	8	0
- 3	2	8	6	2
0 8		1 1 8		

Example 4 : Multiply 42 ℓ 128 ml by 3.

Solution :

$$\text{Product} = 126 \text{ ℓ } 384 \text{ ml}$$

ℓ		ml		
4	2	1	2	8
×		3		
1 2 6		3 8 4		

Example 5 : Divide 368 ℓ 64 ml by 4.

Solution :

ℓ		ml		
4	3	6	8	92 ℓ
- 3 6				
0 8				
- 8				
0				
		6	4	
		16 ml		
		- 4		
		2 4		
		2 4		
		0		



$$\text{Quotient} = 92 \text{ ℓ } 16 \text{ ml}$$

$$\text{Remainder} = 0$$

Exercise 10.3

1. Add:

(a)

ℓ		ml		
2	9	4	3	0
+ 5	3	1	2	9

(b)

ℓ		ml		
6	3	2	0	9
+ 8	2	1	1	7

(c)

ℓ		ml		
2	2	3	4	5
6	4	9	7	5
+ 0	8	0	0	9



2. Subtract:

(a)

₹	ml
96	379
- 42	089

(b)

₹	ml
38	400
- 29	685

(c)

₹	ml
25	080
- 18	290

(d)

₹	ml
86	422
- 63	083



3. Multiply:

(a)

₹	ml
3169	
x	4

(b)

₹	ml
18208	
x	9

(c)

₹	ml
296125	
x	7

(d)

₹	ml
67986	
x	5

4. Divide:

(a) 420 ₹ 33 ml by 3

(b) 248 ₹ 986 ml by 2

(c) 260 ₹ 720 ml by 5

(d) 360 ₹ 66 ml by 6



Word Problems

Solved Examples

Example 1 : Ranvir adds 2 ₹ 125 ml of red paint to 1 ₹ 500 ml of yellow paint. How much paint he will get now?

Solution :

Amount of red paint added =

Amount of yellow paint added =

Amount of total paint =

Hence, he will get 3 ₹ 625 ml paint.

₹	ml
2	125
+ 1	500
3	625



Example 2 : The capacity of petrol tank in a car is 28 ℓ 500 ml. It contains 12 ℓ 725 ml of petrol. How much more petrol it can have?

Solution :

Capacity of petrol tank in a car



=

ℓ ml

28 500

Quantity of petrol contained in the car

=

- 12 725

Quantity of petrol that can be added in the car =

15 775

Hence, 15 ℓ 775 ml of more petrol can be added to the petrol tank of a car.

Example 3 : Anamika bought 27 ℓ 250 ml of oil from the market. She consumed 8 ℓ 500 ml of oil and 1 ℓ 925 ml of oil get spoiled. How much oil is left with her now?

Solution :

Quantity of oil consumed =

ℓ ml

8 500

Quantity of oil spoiled =

+ 1 925

Total quantity of oil spend =

10 425

Quantity of oil purchased =

ℓ ml

27 250

Quantity of oil spend =

- 10 425

Quantity of oil left =

16 825

Hence, 16 ℓ 825 ml of oil is left with Anamika.



Example 4 : A man drink 8 glasses of water. The capacity of each glass is 500 ml. How much water did he drink?

Solution :

Capacity of each glass

=

ℓ ml

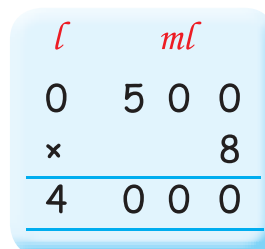
0 500

Number of glasses of water

=

4 000

Hence, a man drink 4 ℓ 0 ml of water or 4 ℓ water.



Example 5 :

8 ℓ 808 ml of juice is shared equally among 8 girls. How much juice does each girl get to drink?

Solution :

$$\begin{array}{lcl} \text{Quantity of juice to be shared} & = & 8 \text{ ℓ } 808 \text{ ml} \\ \text{Number of girls} & = & 8 \\ \text{Share of each girl} & = & (8 \text{ ℓ } 808 \text{ ml} \div 8) \end{array}$$



$$\begin{array}{r} \text{ℓ} \quad \text{ml} \\ 8 \overline{) 8 \text{ ℓ } 808 \text{ ml}} \quad 1 \text{ ℓ} \\ \underline{- 8} \\ 0 \end{array}$$

$$\begin{array}{r} \text{ml} \\ 8 \overline{) 808} \quad 101 \text{ ml} \\ \underline{- 8} \\ 00 \\ \underline{00} \\ 08 \\ \underline{- 8} \\ 0 \end{array}$$



∴ Quotient = 1 ℓ 101 ml
Remainder = 0
Hence, each girl will get 1 ℓ 101 ml of juice.



Exercise 10.4

1. Sona made 5 ℓ 500 ml of orange squash, 12 ℓ 275 ml of mango squash and 7 ℓ 296 ml of lemon squash. What is the total quantity of squash made by her?
2. Khushi can drink 2 ℓ 500 ml of water at one go, but Kriti can drink only 725 ml of water at one go. How much more water Khushi can drink from Kriti?
3. Mrs. Bansal bought 9 ℓ 250 ml of milk. Out of it, she used 2 ℓ 595 ml of milk in making curd and 5 ℓ 296 ml of milk in making paneer. How much milk is left with her?



4. Five taxi drivers fill their taxi each with $12\text{ l } 545\text{ ml}$ of petrol. How much petrol do they all fill together?
5. Mrs. Garg uses $1\text{ l } 925\text{ ml}$ of cooking oil everyday. How much oil does she uses in one week?
6. A bucket contains $12\text{ l } 500\text{ ml}$ of water. It is to be poured equally in 4 mugs. What is the quantity of water in each mug?



Think Wisely

The capacity of a vessel is $15\text{ l } 700\text{ ml}$. It contains $9\text{ l } 600\text{ ml}$ of water. How much more water can be added to the vessel?



Mental Maths

A. Tick (✓) the correct answer

1. $1500\text{ ml} = \dots\dots\dots$

- i. $1\text{ l } 500\text{ ml}$ ☐ ii. 150 l ☐ iii. 115 ml ☐

2. $250\text{ ml} + 750\text{ ml} = \dots\dots\dots$

- i. 900 ml ☐ ii. 1 l ☐ iii. 1 ml ☐

B. Fill in the boxes

1. $400\text{ ml} + 200\text{ ml} + \dots\dots\dots\text{ ml} = 1\text{ l}$

2. $7\text{ l } 560\text{ ml} + 2\text{ l } 440\text{ ml} = \dots\dots\dots\text{ l}$

3. $5\text{ l } 500\text{ ml} = \dots\dots\dots\text{ ml}$



Maths Lab Activity

Materials required: A paper and pencil.

Steps:

1. Ask children to find out the capacity of the water tanks at their houses.
2. Now, a group of two students each will be made.
3. Each member has to write the water tank capacity at their house and capacity of the water tank at another group member's house.
4. Now, the member having a greater water tank capacity than the other will be the winner.



Your water tank
capacity



Your friend's water
tank capacity

5. Note the capacity of two buckets and find which bucket has more capacity and how much?



A bucket of 10 l 860 ml



A bucket of 1800 ml

Which bucket has more capacity? _____



Learning Objectives

At the end of this lesson, students will be able to:

- Recognise the Indian currency.
- Add, subtract, divide and multiply rupees and paise.
- Convert rupees into paise and vice-versa.



Warm-Up

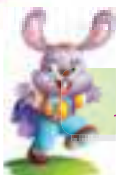
We use money to buy or sell things in our daily life. Money can be a combination of rupees and paise. Count the amount and write. _____



Teacher's Note:

Ask the students for what purpose do they use the money?





Let's Revise

Money is used to purchase goods from the market.

In exchange, we give money to the shopkeeper when we buy any product.

The word used to denote money is called 'currency'.



Indian Currency

The currency of our country, India, is Rupee.

It is in the form of coins and notes.

Money is expressed in terms of rupees and paise.

'₹' is used to denote rupee (or rupees)
'p' is used to denote paise.



Indian Coins



5 Paise



10 Paise



20 Paise



25 Paise



50 Paise



1 Rupee



2 Rupees



5 Rupees



10 Rupees



20 Rupees



Facts to Know

The word 'rupee' has been derived from the Sanskrit word Rupyakam, meaning a silver coin.





Indian Notes



5 Rupees



10 Rupees



20 Rupees



50 Rupees



100 Rupees



200 Rupees



500 Rupees



Introduction of A Point

A point (.) is used to separate rupees and paise.

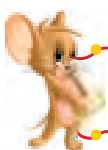
For example: ₹ 25 and 50 p is written as

₹ 25. 50



Quick Tip

The number on the left side of point shows rupees and on right side of the point shows paise.



Remember

Always write the numeral of paise as a 2-digit number.
So, we write 5 paise as 05 paise,
7 paise as 07 paise, etc.



Solved Examples

Example 1 : Write the following amounts of money in figures:

- (a) 23 rupees 75 paise
- (b) 83 rupees 9 paise
- (c) 78 rupees 50 paise
- (d) 83 paise



- Solution :**
- (a) 23 rupees 75 paise = ₹ 23.75
 - (b) 83 rupees 9 paise = ₹ 83.09
 - (c) 78 rupees 50 paise = ₹ 78.50
 - (d) 83 paise = ₹ 0.83

Example 2 : Write the following amounts of money in words:

- (a) ₹ 29.69
- (b) ₹ 506.50
- (c) ₹ 20.06
- (d) ₹ 0.96

- Solution :**
- (a) ₹ 29.69 = Rupees twenty nine sixty-nine paise.
 - (b) ₹ 506.50 = Rupees five hundred six fifty paise.
 - (c) ₹ 20.06 = Rupees twenty six paise.
 - (d) ₹ 0.96 = Ninety-six paise.



Exercise 11.1

1. Write the following amounts of money in figures:

- (a) 89 rupees 60 paise
- (b) 99 rupees 73 paise
- (c) 101 rupees 5 paise
- (d) 83 rupees
- (e) 96 paise

2. Write the following amounts of money in words:

- (a) ₹ 85.72
- (b) ₹ 106.89
- (c) ₹ 80.05
- (d) ₹ 0.98
- (e) ₹ 0.09



Conversion

1 Rupee = 100 paise



Solved Examples



Conversion of Rupees Into Paise:

Example 1 : Convert the following rupees into paise:

- (a) 7 Rupees
- (b) 19 Rupees

Solution :

- (a) ₹ 7 = (7×100) paise
= 700 paise
- (b) ₹ 19 = (19×100) paise
= 1900 paise

To convert
₹ into p, simply
multiply by 100.



Conversion of 'Rupees And Paise' Into Paise

Example 2 : Convert the following 'Rupees and Paise' into paise:

- (a) 12 Rupees 83 Paise
- (b) 95 Rupees 7 Paise

- Solution :**
- (a) 12 Rupees 83 Paise = ₹ 12.83
= $(12 \times 100)p + 83 p$
= $1200 p + 83 p$
= 1283 P

Shortcut method, ₹ 12.83 = 1283 p

- (b) 95 Rupees 7 Paise = ₹ 95.07
= $(95 \times 100)p + 07p$
= $9500p + 07p$
= 9507p

Shortcut method, ₹ 95.07 = 9507 p





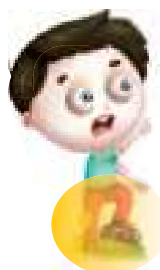
Conversion of Paise Into 'Rupees And Paise'

Example 3 : Convert the following paise into 'Rupees and Paise':

- (a) 7312 paise
- (b) 6402 paise
- (c) 80 paise

Solution :

- (a) 7312 p = ₹ 73.12
- (b) 6402 p = ₹ 64.02
- (c) 80 p = ₹ 0.80



Quick Tip

To convert paise into rupee and paise, simply put point (.) after 2 digits from the right of the number.

Exercise 11.2

1. Convert the following rupees into paise:

- (a) 63 rupees
- (b) 43 rupees
- (c) 109 rupees
- (d) 789 rupees
- (e) 3562 rupees
- (f) 3462 rupees

2. Convert the following 'rupees and paise' into paise:

- (a) 18 rupees 65 paise
- (b) 73 rupees 90 paise
- (c) 96 rupees 7 paise
- (d) 119 rupees 86 paise
- (e) 1065 rupees 9 paise
- (f) 2145 rupees 83 paise

3. Convert the following paise into 'rupees and paise':

- (a) 10 paise
- (b) 762 paise
- (c) 8162 paise
- (d) 7395 paise
- (e) 5 paise
- (f) 8 paise





Addition, Subtraction, Multiplication And Division of Money

Solved Examples

Example 1 : Add 63 rupees 25 paise and 98 rupees 70 paise.

Solution :

Step 1 : Arrange in ₹ and p in columns respectively.

Step 2 : Add p

$$25 \text{ p} + 70 \text{ p} = 95 \text{ p}$$

Step 3 : Add ₹

$$₹ 63 + ₹ 98 = ₹ 161$$

$$\therefore \text{Sum} = ₹ 161.95$$

₹		p
63	25	
+ 98	70	
161	95	



Example 2 : Subtract ₹ 89.76 from ₹ 99.83

Solution :

Step 1 : Arrange in ₹ and p in columns respectively.

Step 2 : Subtract p

$$83 \text{ p} - 76 \text{ p} = 07 \text{ p}$$

Step 3 : Subtract ₹

$$₹ 99 - ₹ 89 = ₹ 10$$

$$\therefore \text{Difference} = ₹ 10.07$$

₹		p
99	83	
- 89	76	
10	07	



Example 3 : Multiply ₹ 23.45 by 2

Solution :

Step 1 : Arrange in ₹ and p in columns respectively.

Step 2 : Multiply p

$$45 \times 2 = 90 \text{ p}$$

Step 3 : Multiply ₹

$$₹ 23 \times 2 = ₹ 46$$

$$\therefore \text{Product} = ₹ 46.90$$

₹		p
23	45	
×	2	
46	90	



Example 4 : Divide ₹ 644.48 by 4

Solution :

$$\begin{array}{r}
 \text{₹} \quad \text{p} \\
 4 \overline{) 644.48} \quad \text{₹ 161} \\
 \underline{- 4} \\
 24 \\
 \underline{24} \\
 04 \\
 \underline{- 4} \\
 0 \\
 4 \overline{) 48} \quad 12 \text{ p} \\
 \underline{- 4} \\
 08 \\
 \underline{8} \\
 0
 \end{array}$$

Quotient = ₹ 161 and 12 p
 = ₹ 161.12
 Remainder = 0

Exercise 11.3

1. Add:

(a)

₹	p
246	15
+ 398	20

(b)

₹	p
38	26
+ 59	42

(c)

₹	p
286	50
+ 429	15

2. Subtract:

(a)

₹	p
369	94
- 209	72

(b)

₹	p
582	00
- 269	04

(c)

₹	p
806	25
- 789	49

3. Multiply:

(a)
$$\begin{array}{r} \text{₹} \quad \text{p} \\ 36 \quad 42 \\ \times \quad 5 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} \text{₹} \quad \text{p} \\ 98 \quad 65 \\ \times \quad 8 \\ \hline \end{array}$$

(c)
$$\begin{array}{r} \text{₹} \quad \text{p} \\ 362 \quad 95 \\ \times \quad 7 \\ \hline \end{array}$$

4. Divide:

- (a) ₹ 295.80 by 5
- (b) ₹ 7611.15 by 3
- (c) ₹ 8142.18 by 2
- (d) ₹ 497.42 by 7

5. Find the sum:

- (a) ₹ 73.56, ₹ 86.02 and ₹ 90.58
- (b) ₹ 98.70, ₹ 17.80 and ₹ 54.00
- (c) ₹ 102.90, ₹ 198.72 and ₹ 789.56
- (d) ₹ 986.50, ₹ 723.25 and ₹ 354.75



6. Find the difference between:

- (a) ₹ 72.56 and ₹ 93.82
- (b) ₹ 98.00 and ₹ 73.86
- (c) ₹ 196.23 and ₹ 345.07
- (d) ₹ 792.68 and ₹ 996.57



Word Problems

Solved Examples

Example 1 : Rahul purchased a pen for ₹ 12.50, a sharpener for ₹ 5.50 and an eraser for ₹ 6.25. How much money did he spend in all?



Solution :

Cost of a pen	=	₹	p
		1	2 5 0
Cost of a sharpner	=		5 5 0
Cost of an eraser	=	+	6 2 5
Total money	=		2 4 2 5



Hence, Rahul spend ₹ 24.25.

Example 2 :

Mr. Shah have ₹ 56. He spent ₹ 33.50. How much did he have now?

Solution :

Amount with Mr. Shah	=	₹	p
		5	6 0 0
Amount spent by Mr. Shah	=	-	3 3 5 0
Money left	=		2 2 5 0



Hence, Mr. Shah have ₹ 22.50.

Example 3 :

A pen costs ₹ 8.50. What is the cost of 7 pens?

Solution :

Cost of 1 pen	=	₹	p
		8	5 0
Number of pens	=	×	7
Cost of 7 pens	=		5 9 5 0



Hence, cost of 7 pens is ₹ 59.50

Example 4 :

A set of 4 soaps cost ₹ 84.88. What is the cost of each soap?

Solution :

Cost of 4 soaps	=	₹ 84.88
Cost of 1 soap	=	₹ 84.88 ÷ 4






$$\begin{array}{r}
 \text{₹} \quad \text{p} \\
 4 \overline{) 84 \text{ ₹} 88 \text{ p}} \quad 21 \text{ ₹} \\
 \underline{- 8} \\
 04 \\
 \underline{- 4} \\
 4 \\
 4 \overline{) 88} \quad 22 \text{ p} \\
 \underline{- 8} \\
 08 \\
 \underline{- 8} \\
 0
 \end{array}$$

Hence, cost of each soap is ₹ 21.22.

Exercise 11.4

1. Ritu purchased a maths book for ₹ 180.50, an English book for ₹ 200.25, a computer book for ₹ 120.75 and a hindi book for ₹ 80.00. How much did she spend on all the books?
2. Mr. Garg purchase goods cost for ₹ 986.25 from a shopkeeper. He gave 1000 rupee note to the shopkeeper. How much money would the shopkeeper return to Mr. Garg?
3. Mrs. Bansal went to a restaurant with her family. She ordered pav bhaji, for ₹ 50.75, dosa for ₹ 180.75, pizza for ₹ 120.25 and a burger for ₹ 35.50. She gave ₹ 500. What balance will she get back?
4. A packet of sweets cost ₹ 100.50. What is the cost of 8 such packets?
5. A set of 6 knives cost ₹ 96.42. What is the cost of 1 knife?
6. The pack of 2 hand bags is ₹ 284.86. What is the cost of one handbag?





Think Wisely

1. How much more is ₹ 560.40 than ₹ 325.75?
2. Radhika had ₹ 1000 in her purse. She spent ₹ 945.50.
How much money is left in her purse now?



Mental Maths

Tick (✓) the correct answer

1. How many ₹ 5 coins will you get for ₹ 50?

(a) 10

(b) 15

(c) 20

2. Which Indian currency note does not exist?

(a) ₹ 10

(b) ₹ 20

(c) ₹ 25

3. 8 rupees 75 paise = ₹

(a) 800

(b) 8.75

(c) 87.5

4. 450 paise = ₹

(a) 4

(b) 4.50

(c) 40





Maths Lab Activity

Materials required: A set of dummy currency notes (used in games) of ₹ 100, ₹ 200, ₹ 20, ₹ 10 and ₹ 50 for a group of 5 students.

Steps:

1. This activity will be done in a group of 5 students.
2. Each group will be given a set of notes as mentioned above.
3. Each student has to study the notes carefully.
4. The students will discuss the various features of the note.
5. The teacher will point out specific features they may miss.
6. After the discussion, the students will complete the table given below and answer the questions.



→ ↓ Feature	Colour of the note.	Whose signature is on the note?	Picture of animal on the note.	Number on the note.
₹ 100				
₹ 50				
₹ 20				
₹ 10				





Learning Objectives

At the end of this lesson, students will be able to:

- Read the clock and tell the time to the nearest 10 minutes.
- Write time using a.m. and p.m.
- Convert the minutes into seconds.



Warm-Up

Two cats named Cherry and Mishki are friends. They attend the same school and are in the same class. Both the cats are excited as they get ready for school. It is the first day after the winter break.

Hurry up Mishki, we will be late. It is already 7 o' clock.

Have your breakfast properly.

We still have some time. School starts at half past 7.



While the other way of writing: half past 7. _____



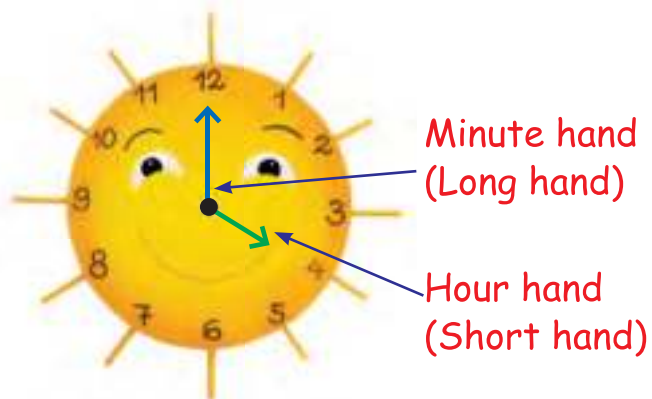


Clock Tells Us Time

The face of the clock is known as **dial**.

Clock has two hands:

1. Hour hand (Short hand)
2. Minute hand (Long hand)

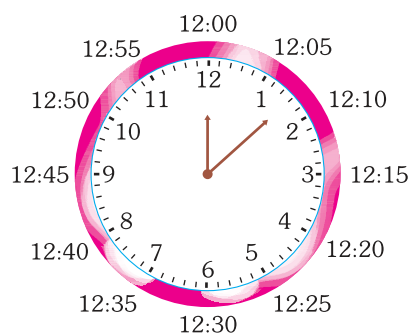


The face (or dial) of the clock is divided into 12 equal big divisions, marked as 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12.

The gap between every consecutive numbers is divided into 5 equal small divisions. Each small division shows 1 minute.



1 Hour = 60 Minutes



1 Day = 24 hours



Facts to Know

The measurement began with the sundial's invention in ancient Egypt sometime before 1500 BC.



When the minute hand is at

It shows



1

$1 \times 5 \text{ minutes} = 5 \text{ minutes}$

2

$2 \times 5 \text{ minutes} = 10 \text{ minutes}$

3

$3 \times 5 \text{ minutes} = 15 \text{ minutes}$

Quarter Past

4

$4 \times 5 \text{ minutes} = 20 \text{ minutes}$

5

$5 \times 5 \text{ minutes} = 25 \text{ minutes}$

6

$6 \times 5 \text{ minutes} = 30 \text{ minutes}$

Half Past

7

$7 \times 5 \text{ minutes} = 35 \text{ minutes}$

8

$8 \times 5 \text{ minutes} = 40 \text{ minutes}$

9

$9 \times 5 \text{ minutes} = 45 \text{ minutes}$

Quarter to

10

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

11

$11 \times 5 \text{ minutes} = 55 \text{ minutes}$

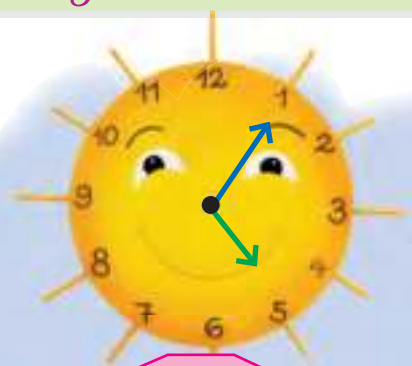
12

$12 \times 5 \text{ minutes} = 60 \text{ minutes}$

o'clock (the beginning of an hour)

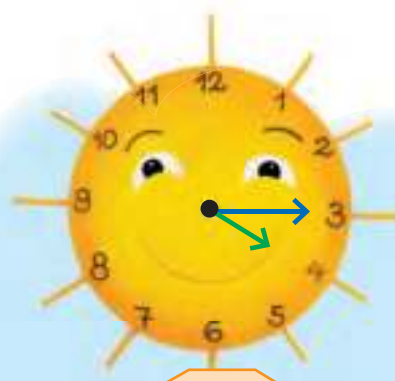


Reading Time From The Clock



5:05

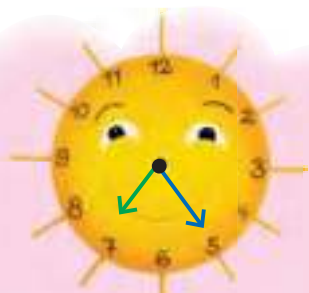
5 minutes past 5



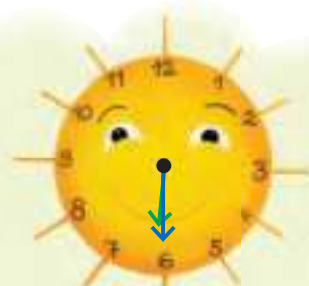
4:15

Quarter past 4
15 minutes past 4

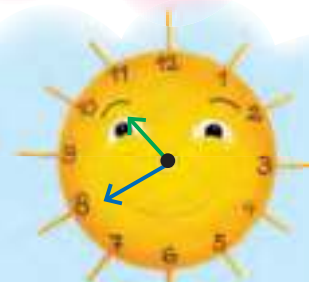




7:25
25 minutes past 7



6:30
Half past 6



10:40
20 minutes to 11

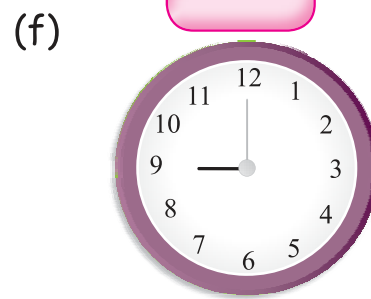
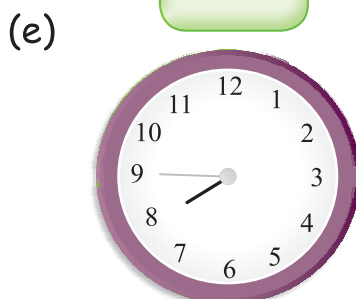
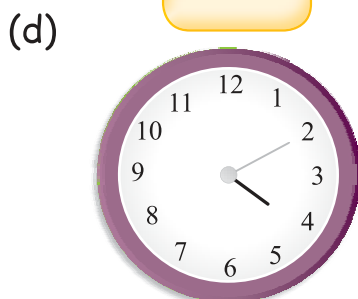
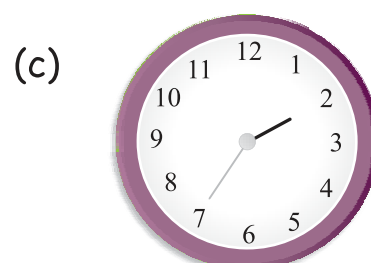
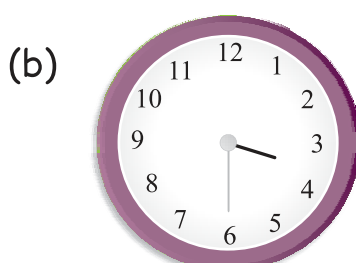
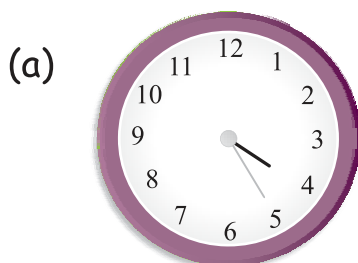


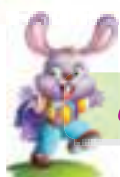
1:50
10 minutes to 2



Exercise 12.1

Read the time and write in both words and figures:





a.m. And p.m.

As we know,

1 day = 24 hours

A day is divided into 24 hours.

12 hours for the day and 12 hours for the night.

12 o' clock at night is called **midnight**.

12 o' clock in the day is called **noon**.

The time from 12 o' clock midnight to 12 o' clock noon is written as **a.m.**

a.m. or A.M. stands for Ante Meridian.

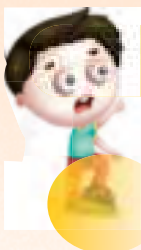
The time from 12 o'clock noon to 12 o'clock midnight is written as **p.m.**

p.m. or P.M. stands for Post Meridian.



Teacher's Note:

Tell students that morning is the period from sunrise to noon.



Quick Tip

NO a.m. or p.m. is written with 12 o' clock noon or 12 o' clock midnight.

Examples

- | | | | |
|----|---------------------------|---|------------|
| 1. | 5 o' clock in the morning | = | 5:00 a.m. |
| 2. | 3:20 after midnight | = | 3:20 a.m. |
| 3. | 12:55 in the afternoon | = | 12:55 p.m. |



Exercise 12.2

1. Write the time using a.m. or p.m. for the following:

- (a) 7 o'clock in the morning (b) 8 o'clock in the night
 (c) 4:15 in the morning (d) Quarter to 9 in the night
 (e) Half past 7 in the evening (f) 12:10 in the afternoon

2. What time will it be after 2 hours of these given times?

- (a) 3:15 p.m. (b) Noon
 (c) 6:30 a.m. (d) 11:45 p.m.
 (e) Mid-night (f) 10:30 a.m.



Conversion

1 Day = 24 hours

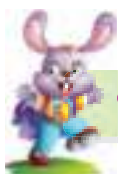
1 Hour = 60 minutes

1 Minute = 60 seconds

Time is measured in days, hours, minutes and seconds.



Solved Examples



To Convert Days Into Hours

Example 1 : Convert the following days into hours:

- (a) 6 days (b) 7 days 20 hours

Solution :

- (a) 6 days = (6×24) hours
 = 144 hours
 (b) 7 days 20 hours = (7×24) hours + 20 hours
 = 168 hours + 20 hours
 = 188 hours

Multiply by 24





Convert Hours Into Minutes

Example 2 : Convert the following hours into minutes:

Multiply by 60

- (a) 8 hours
- (b) 5 hours 12 minutes

Solution :

- (a) 8 hours = (8×60) minutes = 480 minutes
- (b) 5 hours 12 minutes
= (5×60) minutes + 12 minutes
= 300 minutes + 12 minutes
= 312 minutes



To Convert Minutes Into Seconds

Example 3 : Convert the following minutes into seconds:

- (a) 4 minutes
- (b) 3 minutes 23 seconds

Solution :

- (a) 4 minutes = (4×60) seconds
= 240 seconds
- (b) 3 minutes 23 seconds
= (3×60) seconds + 23 seconds
= 180 seconds + 23 seconds
= 203 seconds

Multiply by 60



Exercise 12.3

1. Convert the following days into hours:

- (a) 2 days
- (b) 4 days
- (c) 5 days 12 hours
- (d) 9 days 18 hours





2. Convert the following hours into minutes:

- | | |
|------------------------|-------------------------|
| (a) 6 hours | (b) 7 hours |
| (c) 11 hours 9 minutes | (d) 10 hours 56 minutes |

3. Convert the following minutes into seconds:

- | | |
|--------------------------|---------------------------|
| (a) 2 minutes | (b) 9 minutes |
| (c) 7 minutes 20 seconds | (d) 10 minutes 34 seconds |



Think Wisely

- The hour hand of a clock goes once around the face of the clock in 12 hours. How many times does it go around the face of the clock in one day?.....
- The date on the first Thursday of the month is 4. What will be the date on the third Thursday of the month?



Mental Maths

Fill in the blanks:

1. There are minutes in an hour.
2. 5: 25 can also be read as
3. 6:30 is same as past six.
4. 15 minutes to 5 can also be written as
5. Thirty-five past nine is same as





Maths Lab Activity

Materials required: Paper and pencils, and a stopwatch for the teacher.

Steps:

1. First, the teacher will ask the students to write the name of their school on a paper as many times as possible in a few minutes.
2. The students will start writing when the teacher announces to start.
3. At the end of 1 minute, the teacher will say stop, and the students will stop writing.
4. The students will put down their pencils and count the times they have written the name.
5. The student with the maximum number of names would be the winner.



Shruti Shruti Shruti Shruti Shruti
Shruti Shruti Shruti Shruti Shruti
Shruti Shruti Shruti Shruti Shruti

Naira Naira Naira Naira Naira
Naira Naira Naira Naira Naira
Naira Naira



Shubham Shubham Shubham Shubham
Shubham Shubham Shubham Shubham
Shubham Shubham Shubham Shubham
Shubham Shubham



**Learning Objectives**

At the end of this lesson, students will be able to:

- Show one-half and one-third in a fraction.
- Know numerator and denominator in a fraction.
- Compare fractions.

**Warm-Up**

Oreo, the baby rabbit, was celebrating his birthday. His mother had baked a lovely cake for him.

His father had put up colourful bunting, brought a dozen (12) balloons and tied 3 each to the legs of the table on which the cake was placed.

There are 4 members in the family, how will the cake be divided equally? _____

**Teacher's Note:**

Discuss with students about their birthday celebration.



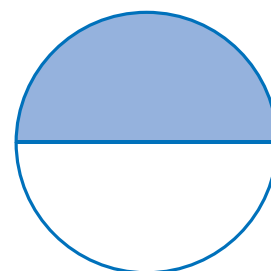


Fraction means 'part of a whole'



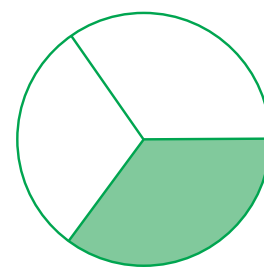
One-Half $\left(\frac{1}{2}\right)$

When an object is divided into two equal parts, then each part of an object is called one-half $\left(\frac{1}{2}\right)$ of the whole. It can be read as **one by two** or **one over two**.



One-Third $\left(\frac{1}{3}\right)$

When an object is divided into three equal parts, then each part of an object is called one third $\left(\frac{1}{3}\right)$ of the whole.



Shaded part is called one-third $\left(\frac{1}{3}\right)$ of the whole.

and unshaded part is called two-third $\left(\frac{2}{3}\right)$ of the whole.

$\frac{1}{3}$ can be read as **one by three** or **one over three**.

$\frac{2}{3}$ can be read as **two by three** or **two over three**.



Similarly, we study more about fractions.

Objects/Shapes	Total	Shaded Part	Unshaded Part
 1 2 3 4	4	$\frac{1}{4}$	$\frac{3}{4}$
 1 2 3 4 5	5	$\frac{2}{5}$	$\frac{3}{5}$
 1 2 3 4 5 6	6	$\frac{3}{6}$	$\frac{3}{6}$
 1 2 3 4 5 6 7	7	$\frac{4}{7}$	$\frac{3}{7}$
 1 2 3 4 5 6 7 8	8	$\frac{5}{8}$	$\frac{3}{8}$
 1 2 3 4 5 6 7 8 9	9	$\frac{6}{9}$	$\frac{3}{9}$
 1 2 3 4 5 6 7 8 9 10	10	$\frac{7}{10}$	$\frac{3}{10}$



Facts to Know

The word fraction comes from the Latin word "fractio."

Exercise 13.1

1. Tick the figures which are divided into equal parts:

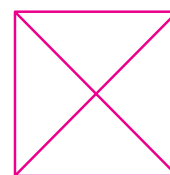
(a)



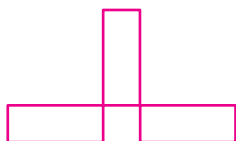
(b)



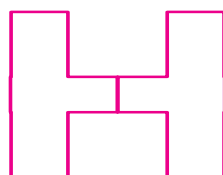
(c)



(d)



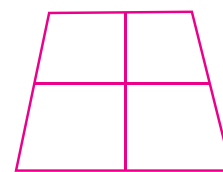
(e)



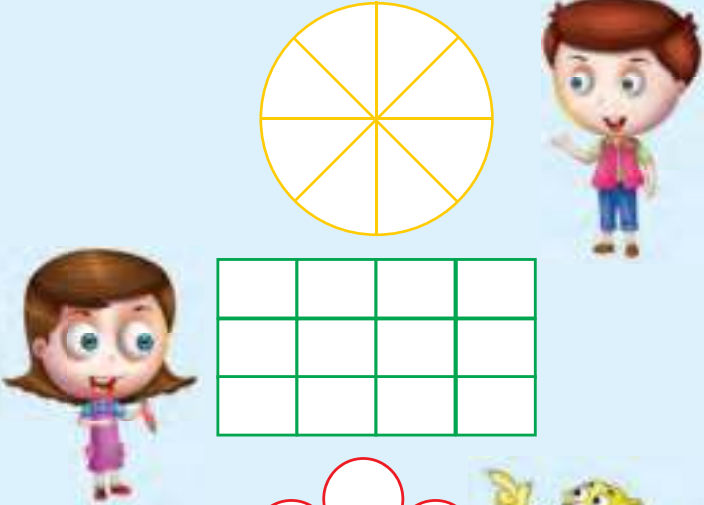
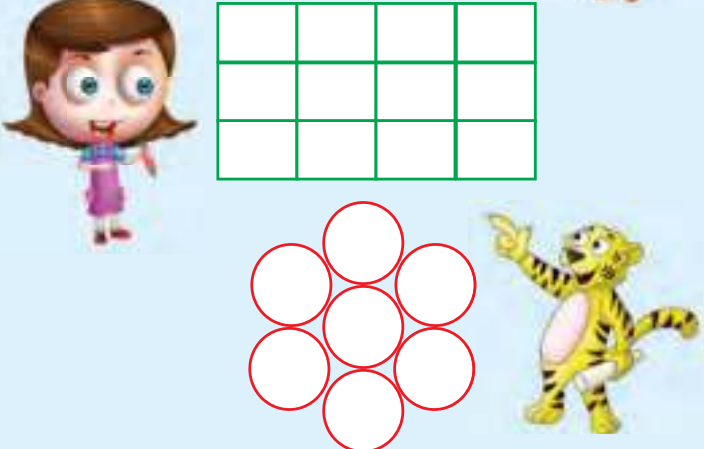
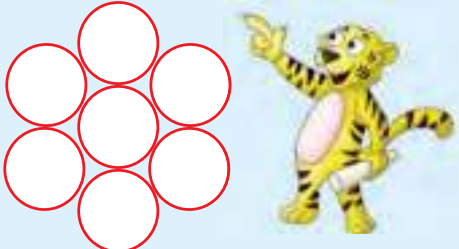
(f)



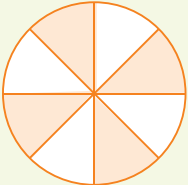
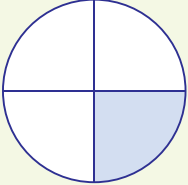
(g)



2. Shade the following figures with the help of a pencil, according to the fractions given:

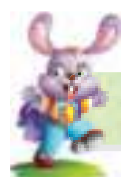
S. No.	Fractions	Figures
(a)	$\frac{2}{8}$	
(b)	$\frac{3}{12}$	
(c)	$\frac{5}{7}$	

3. Write the fraction for each of the following figures to show the shaded and unshaded parts:

S. No.	Figures	Shaded Part	Unshaded Part
(a)			
(b)			
(c)			

4. Write the fraction for each of the following fractional numbers:

Fractional Number	Fraction
(a) Three-eighth	$\frac{3}{8}$
(b) One-sixth	
(c) Seven-ninth	
(d) Two-fifth	
(e) Eleven-fifteenth	
(f) Two-seventh	



Numerator And Denominator

For example,

$\frac{5}{8}$, here 5 is the numerator.
8 is the denominator.

The numeral above the line is called the **numerator** and the numeral below the line is called the **denominator** of a fraction.

Exercise 13.2

1. Write the numerator and denominator for each of the following fractions:

S. No.	Fractions	Numerators	Denominators
(a)	$\frac{1}{5}$		
(b)	$\frac{3}{6}$		
(c)	$\frac{12}{30}$		
(d)	$\frac{27}{52}$		



2. Write the fractions for the following numerator and denominator:

S. No.	Numerators	Denominators	Fractions
(a)	2	5	
(b)	4	9	
(c)	1	7	
(d)	8	10	
(e)	12	42	



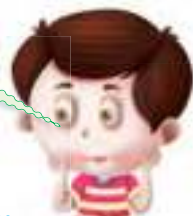
Comparison of Fractional Numbers



Let's see which fraction is greater.

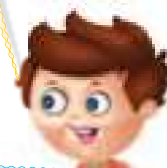
When the **numerator** is **same**, then the number with **smaller denominator** is greater.

$$\frac{1}{2} > \frac{1}{3} > \frac{1}{4} > \frac{1}{5}$$



When the **denominator** is **same**, then the number with **greater numerator** is **greater**.

$$\frac{6}{2} > \frac{5}{2} > \frac{4}{2} > \frac{3}{2}$$



Exercise 13.3



1. Write $>$ or $<$ in the placeholders given:

(a) $\frac{6}{2}$ $\frac{6}{5}$

(b) $\frac{2}{9}$ $\frac{5}{9}$

(c) $\frac{3}{7}$ $\frac{8}{7}$

(d) $\frac{12}{10}$ $\frac{12}{15}$

(e) $\frac{6}{5}$ $\frac{2}{5}$

(f) $\frac{1}{8}$ $\frac{1}{6}$



2. Arrange the following numbers in ascending order:

(a) $\frac{5}{8}, \frac{5}{12}, \frac{5}{7}, \frac{5}{19}, \frac{5}{3}$

(b) $\frac{6}{10}, \frac{5}{10}, \frac{8}{10}, \frac{7}{10}, \frac{2}{10}$

(c) $\frac{9}{17}, \frac{9}{23}, \frac{9}{10}, \frac{9}{65}, \frac{9}{42}$

(d) $\frac{2}{12}, \frac{5}{12}, \frac{1}{12}, \frac{3}{12}, \frac{15}{12}$



3. Arrange the following numbers in descending order:

(a) $\frac{2}{5}, \frac{2}{8}, \frac{2}{4}, \frac{2}{3}, \frac{2}{19}$

(b) $\frac{2}{16}, \frac{15}{16}, \frac{1}{16}, \frac{19}{16}, \frac{52}{16}$

(c) $\frac{3}{9}, \frac{3}{2}, \frac{3}{7}, \frac{3}{42}, \frac{3}{53}$

(d) $\frac{17}{19}, \frac{98}{19}, \frac{12}{19}, \frac{6}{19}, \frac{42}{19}$





Like And Unlike Fractions

Fractions that have the **same** denominator are called **like fractions**.

For example,

$\frac{1}{8}, \frac{2}{8}, \frac{5}{8}, \frac{10}{8}$, etc.

Fractions that have the **different** denominator are called **unlike fractions**.

For example,

$\frac{2}{7}, \frac{4}{9}, \frac{6}{14}, \frac{5}{59}$, etc.



Note: In this class, we will study addition and subtraction of like fractional numbers.



Addition and Subtraction of Like Fractional Numbers



Quick Tip

While adding or subtracting like fractional numbers, denominator remains the same.

Example 1 : Add the following fractional numbers:

(a) $\frac{2}{5}$ and $\frac{6}{5}$

(b) $\frac{1}{8}, \frac{3}{8}$ and $\frac{5}{8}$

We add only numerators.



Solution :

(a) $\frac{2}{5} + \frac{6}{5} = \frac{8}{5}$

(b) $\frac{1}{8} + \frac{3}{8} + \frac{5}{8} = \frac{9}{8}$



Example 2 : Subtract the following numbers:

(a) $\frac{1}{2}$ from $\frac{1}{2}$

(b) $\frac{5}{9}$ from $\frac{8}{9}$

Solution :

(a) $\frac{1}{2} - \frac{1}{2} = \frac{0}{2} = 0$

(b) $\frac{8}{9} - \frac{5}{9} = \frac{3}{9}$

We subtract only numerators.

Exercise 13.4

1. Add the following:

(a) $\frac{1}{5} + \frac{6}{5}$

(b) $\frac{4}{12} + \frac{16}{12}$

(c) $\frac{9}{42} + \frac{15}{42} + \frac{2}{42}$

(d) $\frac{7}{10} + \frac{6}{10} + \frac{12}{10}$

2. Add the following:

(a) $\frac{1}{2}$ and $\frac{5}{2}$

(b) $\frac{6}{9}$ and $\frac{12}{9}$

(c) $\frac{9}{15}$, $\frac{6}{15}$ and $\frac{2}{15}$

(d) $\frac{19}{26}$, $\frac{15}{26}$ and $\frac{11}{26}$

3. Subtract the following:

(a) $\frac{18}{9} - \frac{7}{9}$

(b) $\frac{10}{12} - \frac{5}{12}$

(c) $\frac{92}{6} - \frac{50}{6}$

(d) $\frac{23}{2} - \frac{17}{2}$

4. Find the difference between:

(a) $\frac{2}{9}$ and $\frac{5}{9}$

(b) $\frac{6}{42}$ and $\frac{9}{42}$

(c) $\frac{12}{56}$ and $\frac{17}{56}$

(d) $\frac{19}{196}$ and $\frac{26}{196}$



Think Wisely

- Punit was given a design to make. He completed $\frac{3}{5}$ of it. How much is left?

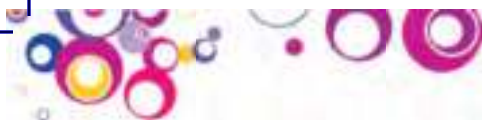


Mental Maths

Fill in the blanks:

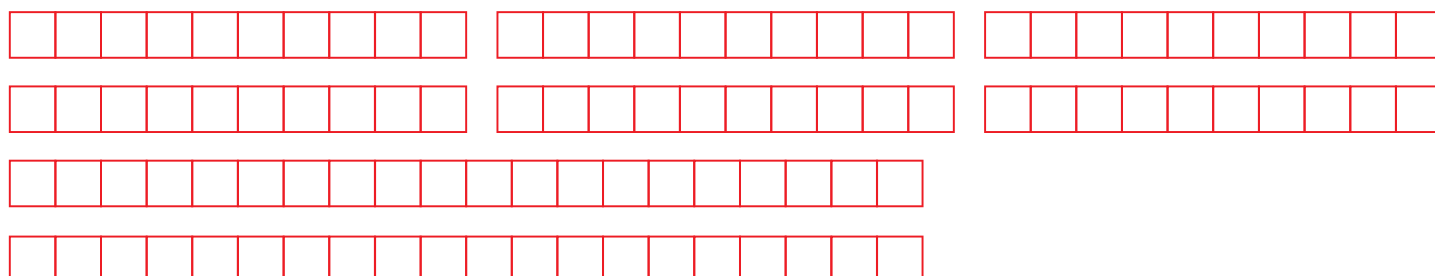
- What is the numerator of the fraction $\frac{2}{3}$?
- What is the denominator of the fraction $\frac{4}{9}$?
- Which is smaller, $\frac{2}{3}$ of a pizza or $\frac{1}{3}$ of a pizza?
- If I add $\frac{1}{5}$ to a number, I get $\frac{21}{5}$. Which fraction am I?
- Subtract: $\frac{12}{20} - \frac{8}{20} =$





Maths Lab Activity

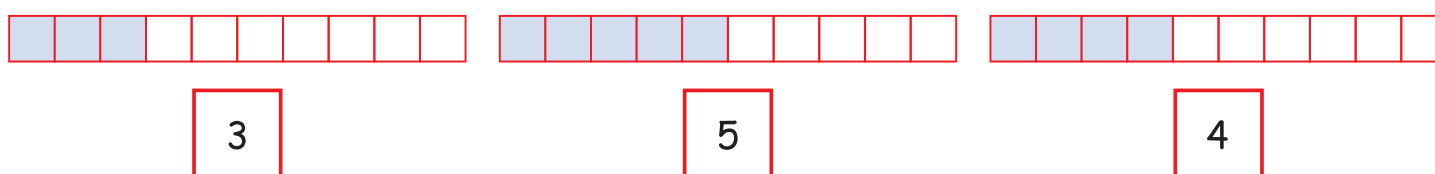
Material required: Square lined paper strips as given below.



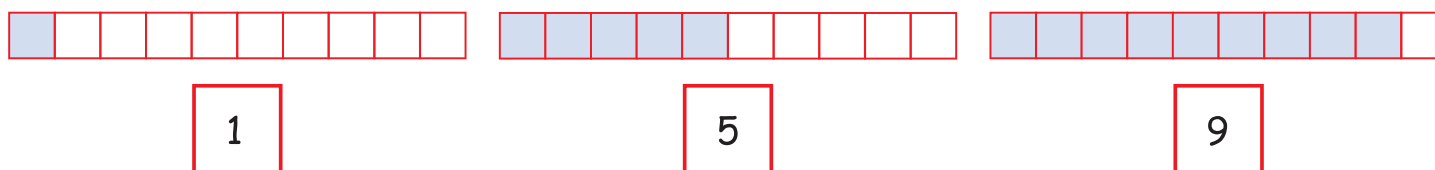
Chits with numbers 1 to 9 written on them are kept in a bowl - 1 bowl for 6 students.
Chits with numbers 1 to 19 written on them are kept in another bowl - 1 bowl for 6 students.

Steps:

1. This activity will be done in groups of 6 students each.
2. First, the students of each group will take the strips of (10×1)
3. Each student will pick up a chit from the first bowl .
4. They will shade the numbers of squares on their strips as per the number on the chit.



5. Each group will arrange the strips in ascending order (of shaded portion).



6. Then the same activity will be done with the other strips of (10×2) also.

Recommendation

1. The activity can also be done in strips with 15 squares or 25 squares.
2. The chits can also be arranged in descending order.



**Learning Objectives**

At the end of this lesson, students will be able to:

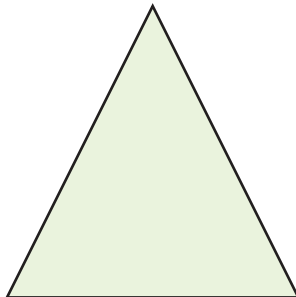
- Learn about the point and line segment.
- Measure and draw line segments.

**Warm-Up**

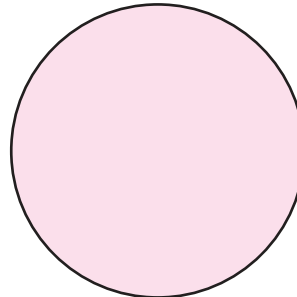
Look at the shapes and complete the sentences.



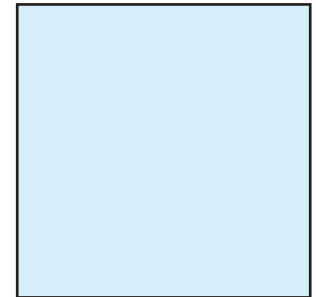
Rectangle



Triangle



Circle



Square

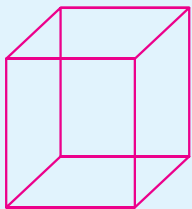
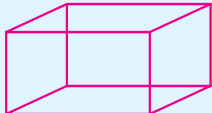
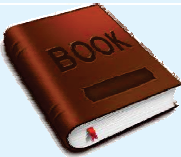
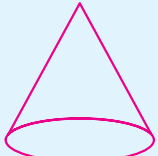
1. A rectangle has sides.
2. A rectangle has vertices.
3. A triangle has sides.
4. A triangle has vertices.
5. A square has sides.
6. A square has vertices.
7. A circle has sides.
8. A circle has vertices.





Let's Revise

Solids

Solid Shapes	Number of Faces	Number of Edges	Number of Vertices	Examples
 Cube	6	12	8	
 Cuboid	6	12	8	
 Cylinder	3	2	0	
 Cone	2	1	1	
 Sphere	1	0	0	



Facts to Know

The word 'geometry' comes from the Greek words 'geo', meaning earth, and 'metria', meaning measure.





Point And Line Segment

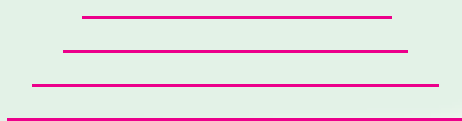
Point

A point is represented by a dot. It has no size. We name point by a capital letter.

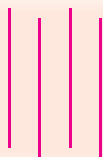
Line

There are different types of lines:

Horizontal
Lines



Vertical
Lines



Curved Lines



Slanting Lines



Line segment



A part of a line is known as **line segment**.

This line segment is denoted as $\overline{AB}$ or $\overline{BA}$.

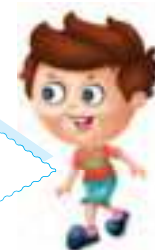
A line segment has a beginning and an end.



Teacher's Note:

Tell students that curved lines are one that are not straight and are bent whereas slanting lines don't go straight across or straight up.

Line has no end or beginning.



Quick Tip

Line can be of any length.



Exercise 14.1

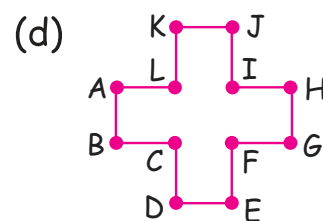
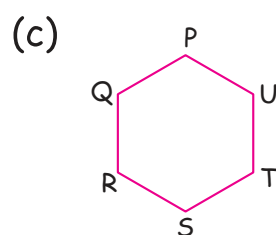
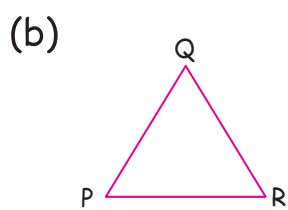
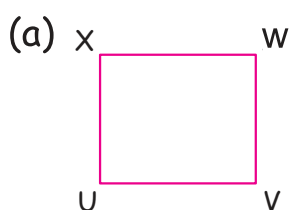
1. Name the points shown below:



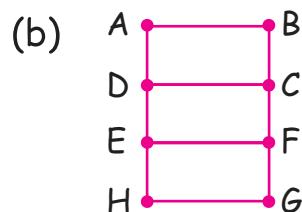
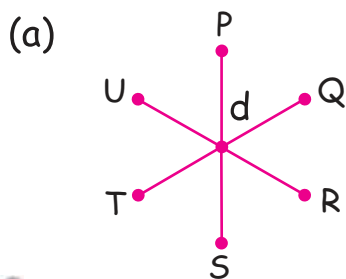
2. Name the points that are marked between the points X and Y on the line segment $\overline{XY}$.



3. Count the number of line segments in each of the following figures:



4. Name the line segments in the following figures:



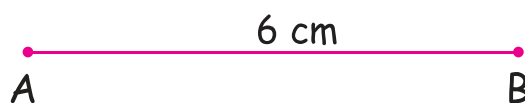
Measuring Line Segments



Let's learn how to measure the length of a line segment using a ruler.



Suppose we have to measure the length of line segment $\overline{AB}$, shown below:



Step 1 : Take a ruler.

Step 2 : Put the one end of ruler at point A which is marked with 0 cm.

Step 3 : Now, read the ruler at mark B.



The reading of the ruler at point B gives the length of line segment AB in cm.

$\therefore$ Length of $\overline{AB} = 6$ cm.



Drawing Line Segments of A Given Length



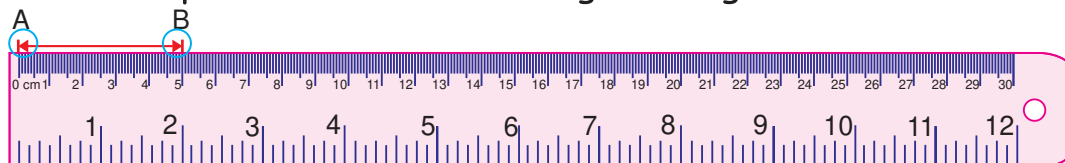
To draw the line segments of a 5 cm length, follow the steps given below:

Step 1 : Put a ruler on the paper and press it.

Step 2 : With the help of a sharp pencil, mark the points A and B against marks 0 and 5 respectively on the scale.



Step 3 : Move the pencil from A to B along the edge of the ruler.



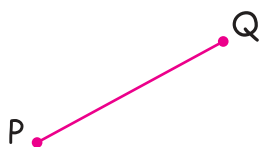
$\therefore$ Length of $\overline{AB} = 5$ cm



Exercise 14.2

1. Find the length of the following line segments using ruler:

(a)



(b)



(c)



(d)



2. Construct the following line segments of the given length:

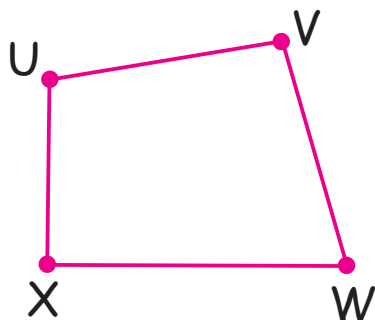
(a) $\overline{PQ} = 15 \text{ cm}$

(b) $\overline{RS} = 7 \text{ cm}$

(c) $\overline{XY} = 12 \text{ cm}$

(d) $\overline{EF} = 9 \text{ cm}$

3. Measure each side of the given figure:



$\overline{UV} = \dots\dots\dots \text{ cm}$

$\overline{VW} = \dots\dots\dots \text{ cm}$

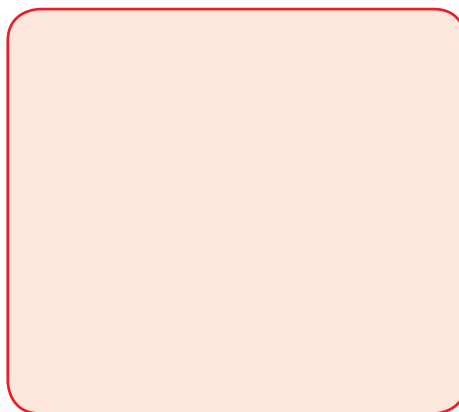
$\overline{WX} = \dots\dots\dots \text{ cm}$

$\overline{XU} = \dots\dots\dots \text{ cm}$



Think Wisely

Draw a square of 6 cm on a squared paper. Draw two diagonals, are they equal?





Mental Maths

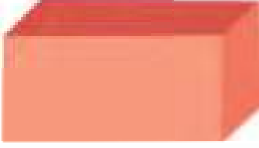
Fill in the blanks:

- (a) A line segment has a _____ and an _____.
- (b) A cuboid has _____ vertices.
- (c) A triangle has _____ sides.
- (d) A part of a _____ is known as a line segment.
- (e) A point is represented by a _____.



Maths Lab Activity

Complete the table:

Objects	Number of plane faces	Number of curved faces	Number of edges	Number of vertices
				
				
				
				





Fun with Patterns



Learning Objectives

At the end of this lesson, students will be able to:

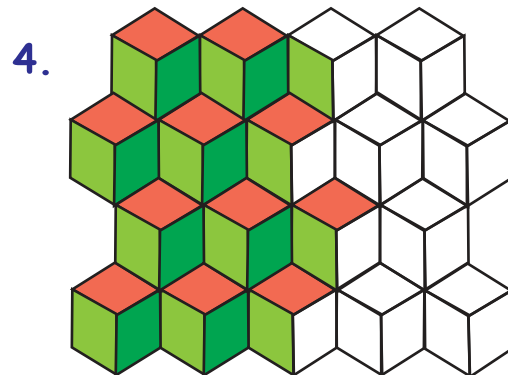
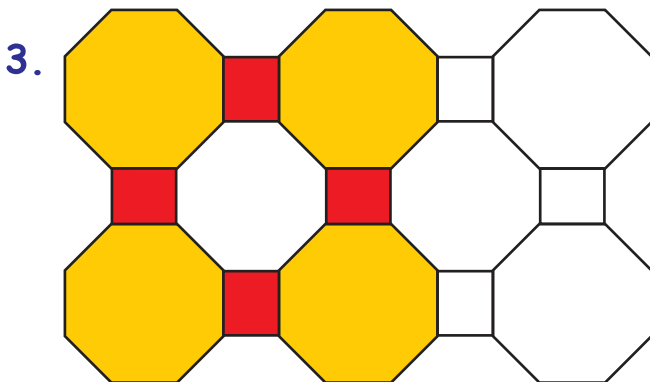
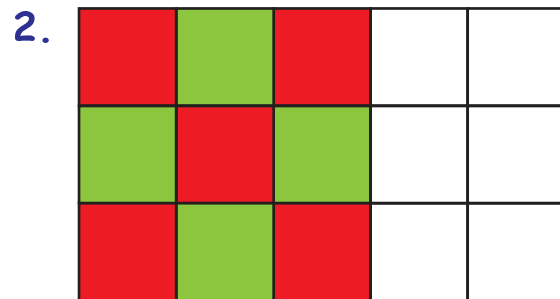
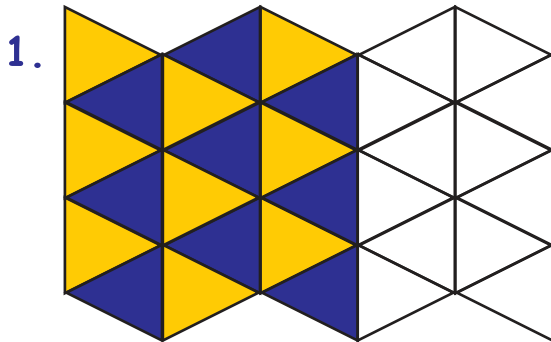
- Draw symmetrical shapes.
- Use the lines of symmetry.



Warm-Up

Observe the pattern and colour it to complete.

Colour to complete the patterns.



Teacher's Note:

Elucidate the students that some patterns are based on the fact that there are repetitions and a certain thing occurs over and over again. An example of a simple pattern can be the tiling of a floor.



Let's Have Fun

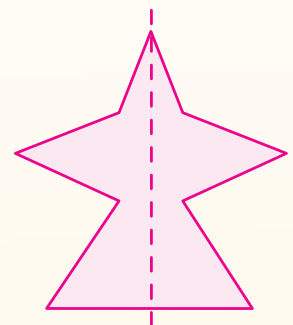
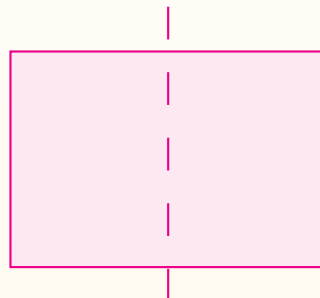
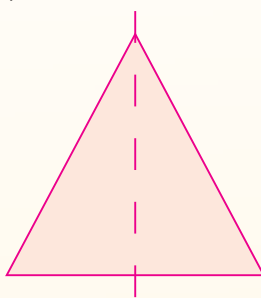
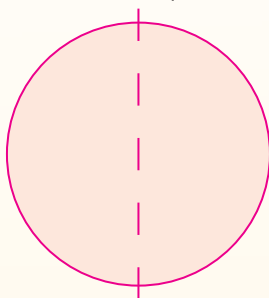
Objective: To draw symmetrical shapes.

Materials Required: Drawing sheet and mirror.

Steps to follow:

Step 1 : Take a paper and draw the following shapes on the paper:

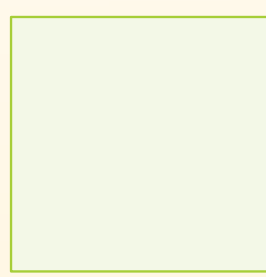
Line of Symmetry



Step 2 : Now cut these figures along the boundary.

Step 3 : Fold each figure along the dotted line.

Let's see what happens?



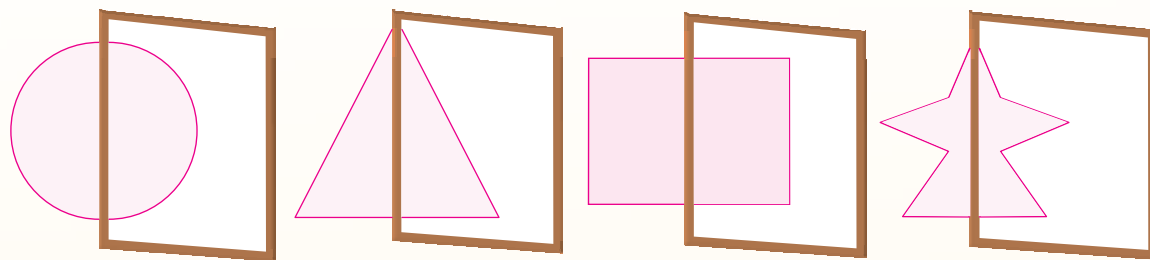
These dotted lines are known as **lines of symmetry**.

Quick Tip

When you fold any shape along the line of symmetry, its one-half fits exactly over the other half.

Such figures are known as **symmetrical figures**.

Step 4: Now place the mirror on a line of symmetry.



You will see that the shape looks like the original shape.

Symmetrical figures can be divided into two identical parts.

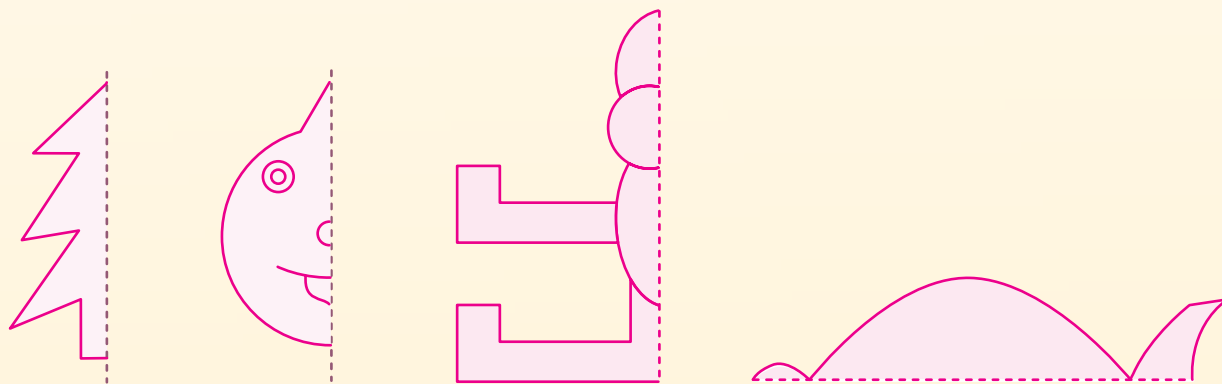


Facts to Know

The concept of symmetry originated in Italy at the beginning of the Renaissance.

Exercise 15.1

1. Draw the other halves to make the symmetrical shape:



2. Use the line of symmetry (dotted line) to divide the following shapes into two equal halves:

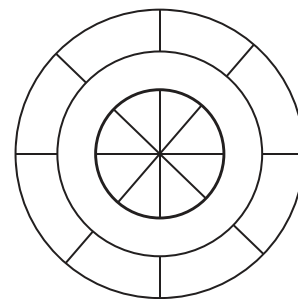


3. Guess the following alphabet by completing their equal halves:



Think Wisely

Colour the given figure using minimum numbers of colours so that no two adjacent regions have the same colour.



Mental Maths

Look for the pattern and write the next 3 terms of the series in each of the following.

(a) 10, 20, 30, 40,,,

(b) 5, 15, 25, 35,,,

(c) 20, 19, 18, 17,,,

(d) 2, 4, 6, 8, ,,,

(e) 12, 17, 22, 27,,,

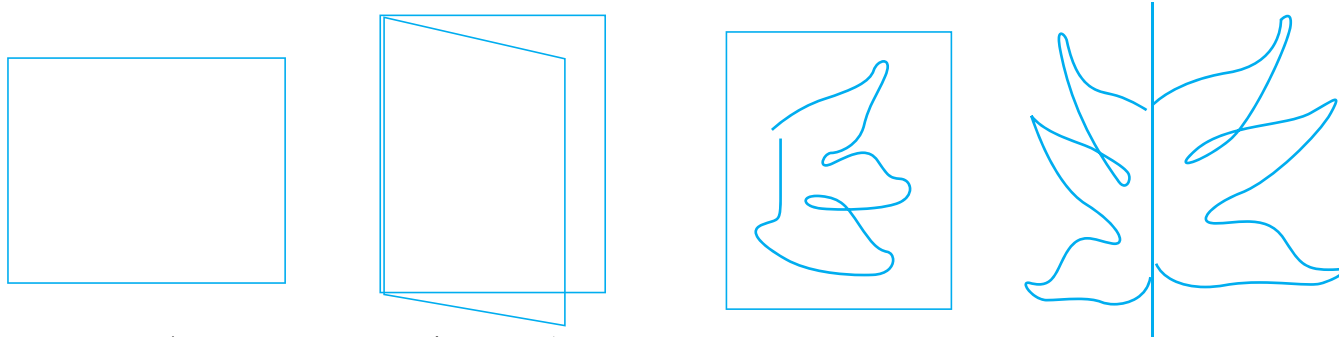


Maths Lab Activity

Materials required: Square pieces of coloured chart paper; at least 2 charts per student, pictures (which are symmetrical) cut from old magazines or newspapers, small hand mirrors - one for two students and a pair of scissors.

Steps:

1. This activity will be done in pairs.
2. Fold the given piece of paper into half.



3. Draw a design on it as shown above.
4. Cut along the design (Teacher will do). Now, open the paper and colour the symmetrical figure which has been formed.
5. Draw and cut out another design with your teacher's help.
6. Now, take the (cut out) pictures from the magazines and keep them on the desk.
7. One student will hold the picture flat.
8. The partner will keep the mirror on the picture to cover one half of the picture.
9. Move the mirror so the picture is half on the desk and the mirror completes the other half.
10. Mark the position of the mirror.
11. Remove the mirror and fold the picture on that line.
12. This is the line about which the picture is symmetrical.
13. Take more pictures.
14. Partners will take turns holding the mirror.