SURA'S

Mathematics

VI - Standard

TERM I

Salient Features :

- Term-wise Guide as per the latest Textbook for 2019- 20, for Term - I

- Complete Solutions to Textbook Exercises.

- Exhaustive Additional Questions in all Units.

- Chapter-wise Unit Tests with Answers.

- Summative Question Paper with Answers for Term I - 2018-19.

SURA PUBLICATIONS
Chennai

2019 - 20 Edition
© *Reserved with Publishers*

Author :

S.P. Rajini, M.Sc., M.Com., B.Ed., M.Phil., Chennai.

NOTE FROM PUBLISHER

It gives me great pride and pleasure in bringing to you SURA'S Mathematics Guide for **Term I** for 6th Standard. It is prepared as per the latest Textbooks, for the year 2019.

This guide encompasses all the requirements of the tudents to comprehend the text and the evaluation of the textbook.

✦   Addtional questions have been provided exhaustively for clear understanding of the units under study.

✦   Chapter-wise Unit Texts with Answers.

In order to learn effectively, I advise students to learn the subject section-wise and practice the exercises given. It will be a teaching companion to teachers and a learning companion to students.

Though these salient features are available in this Guide, I cannot negate the indispensable role of the teachers in assisting the tudent to understand the subject thoroughly.

I sincerely believe this guide satisfies the needs of the students and bolsters the teaching methodologies of the teachers.

I pray the almighty to bless the students for consummate successin their examinations.

Subash Raj, B.E., M.S.

- **Publisher**
Sura Publications

All the Best

Our Guides for Std. VI to IX

TERMWISE GUIDES (for each Term)	**FULL YEAR GUIDES for 3 Terms together**
⬥ Sura's Tamil Guide	⬥ Sura's Tamil Guide
⬥ Sura's English Guide	⬥ Sura's English Guide
⬥ Sura's Maths Guide (EM & TM)	⬥ Sura's Maths Guide (EM & TM)
⬥ Sura's Science Guide (EM & TM)	⬥ Sura's Science Guide (EM &TM)
⬥ Sura's Social Science Guide (EM & TM)	⬥ Sura's Social Science Guide (EM & TM)
⬥ Sura's 5-in-1 with all 5 subjects in one guide (EM & TM)	⬥ Sura's Map Workbook (EM & TM)

Our Guides for Std. X

GUIDES

✦ சுராவின் தமிழ் உரைநூல்
✦ Sura's Will to Win English Guide
✦ Sura's Science Guide (EM & TM)
✦ Sura's Social Science Guide (EM & TM)
✦ Sura's English Guide
✦ Sura's Mathematics Guide (EM & TM)

QUESTION BANKS

✦ Sura's PTA Solution Book & Exam Refresher (EM & TM)
✦ Sura's 5-in-1 Question Bank (EM & TM)
✦ Sura's Sigaram Thoduvom 5-in-1 One Mark (EM & TM)
✦ Sura's Sigaram Thoduvom (EM & TM) for each subject
✦ Sura's Will to Win 1 Mark Q & A - English Paper I & II
✦ Sura's Map Workbook (EM & TM)

For More Information - Contact

Doubts in Our Guides	:	enquiry@surabooks.com
For Order	:	orders@surabooks.com
Contact	:	96001 75757 / 8124301000
Whatsapp	:	8124201000 / 9840926027
Online Site	:	**www.surabooks.com**

For Free Study Materials Visit **http://tnkalvi.in**

TO ORDER WITH US

SCHOOLS and TEACHERS:

We are grateful for your support and patronage to **'SURA PUBLICATIONS'**

Kindly prepare your order in your School letterhead and send it to us.

For Orders contact: 81242 01000 / 81243 01000

DIRECT DEPOSIT

A/c Name : **Sura Publications** Our A/c No. : **36550290536** Bank Name : **STATE BANK OF INDIA** Bank Branch : PADI IFSC : SBIN0005083	A/c Name : **Sura Publications** Our A/c No. : **21000210001240** Bank Name : **UCO BANK** Bank Branch : Anna Nagar West IFSC : UCBA0002100
A/c Name : **Sura Publications** Our A/c No. : **6502699356** Bank Name : **INDIAN BANK** Bank Branch : ASIAD COLONY IFSC : IDIB000A098	A/c Name : **Sura Publications** Our A/c No. : **1154135000017684** Bank Name : **KVB BANK** Bank Branch : Anna Nagar IFSC : KVBL0001154

After Deposit, please send challan and order to our address.

email : orders@surabooks.com / Whatsapp : 81242 01000.

DEMAND DRAFT / CHEQUE

Please send Demand Draft / cheque in favour of **'SURA PUBLICATIONS'** payable at **Chennai**.

The Demand Draft / cheque should be sent with your order in School letterhead.

STUDENTS :

Order via Money Order (M/O) to

SURA PUBLICATIONS

1620, 'J' Block, 16th Main Road, Anna Nagar,
Chennai - 600 040.
Phones : 044-26162173, 26161099.
Mobile : 96001 75757/ 81242 01000/81243 01000.
email : orders@surabooks.com   Website : www.surabooks.com

(iii)

CONTENTS

TERM - I

CHAPTER
01

NUMBERS

NUMBERS HELP US TO COUNT CONCRETE OBJECTS.

Formation of Smallest and Greatest Numbers:
Ascending Order:

1. It means, arrangement from the smallest to the greatest numbers.
2. For the smallest number, we arrange the given digits in ascending order.

    (e.g.) The smallest four digit number using the digits 5, 7, 8, 3 is 3578.
3. Suppose the digits given may be 5, 7, 8, 0 then arranging the digits in ascending order we get the smallest number as 0578. But leftmost zero has no value and it becomes the three digit number.
4. In this case we have to interchange the leftmost two digits to get the number

    ∴ The smallest four digit number is 5078.

Descending Order:

1. It means arrangement from the greatest to the smallest number.
2. For the greatest number we arrange the digits in descending order.

    (E.g.) The greatest four digit number using the digits 2, 0, 9, 7 is 9720.

Place Value:

When a number consists of more than one digit each digit has a value depending upon its position.

(E.g.) The place value of each digit in 5432 is 5 thousands, 4 hundreds, 3 tens and 2 ones

The expanded form of 5432 is $5 \times 1000 + 4 \times 100 + 3 \times 10 + 2 \times 1$.

Place Value Chart

Indian Number System

Periods	Arab		Crores		Lakhs		Thousands		Ones		
	TA	A	TC	C	TL	L	T TH	TH	H	T	O
Indian Number System	Ten Arab	Arab	Ten Crores	Crores	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones

[1]

1. The Place value increases from right to left.

2. Every digit of a number has a place value which gives the value of the digit.

3. From the right, first comma comes after 3 digits, and subsequent commas comes after every 2 digits

International Number System

Periods	Billions			Millions			Thousands			Ones		
International Number System	Hundred Billion	Ten Billion	Billion	Hundred Million	Ten Million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One

In International System, commas comes after every 3 digits from the right.

TRY THESE   (Text book Page No.2)

✦ The Successor of 4576 is _____.   **[Ans: 4577]**

✦ The Predecessor of 8970 is _____.   **[Ans: 8969]**

✦ 999 + 1 equals _____.   **[Ans: 1000]**

✦ 10000 – 1 equals _____.   **[Ans: 9999]**

✦ The Predecessor of the smallest 5 digit number is_____.

[Ans: Greatest 4 digit number (9999)]

TRY THESE   (Text book Page No.4)

1. Give 3 examples where the number of things counted by you would be a 5 digit number or more.

Sol: 1. Number of stars in the sky.

2. Number of people living in Tamilnadu.

3. Number of accidents in India in the year 2017.

2. There are ten lakh people in a district. What would be the population of 10 such districts?

Sol. Number of people in the district = 10,00,000

∴ Population of 10 such districts = 10,00,000 × 10 = 1,00,00,000

∴ Total population of 10 districts would be one crore.

∴ 10 lakh = 10,000 Hundreds

3. The Government spends rupees 2 crores for education in a particular district every month. What would be its expenditure over 10 months?

Sol. Expenditure for one month   = 2 crores.

∴ Expenditure for ten months = 2,00,00,000 × 10 = 20,00,00,000

Expenditure for 10 months = twenty crores.

TRY THESE

Complete the table

Table 1.3

Number	TC	C	TL	L	T TH	TH	H	T	O	Number Name
1670						1	6	7	0	Thousand Six Hundred and Seventy
47684					4	7	6	8	4	Forty Seven Thousand Six Hundred and Eighty Four
120001				1	2	0	0	0	1	One Lakh Twenty thousand one
7800500			7	8	0	0	5	0	0	Seventy Eight Lakhs Five Hundred
53409098		5	3	4	0	9	0	9	8	Five crore Thirty Four Lakhs Nine Thousand Ninety Eight
198765912	1	9	8	7	6	5	9	1	2	Nineteen crore Eighty Seven Lakhs Sixty Five Thousand Nine Hundred and twelve

TRY THESE

1. **Read and expand the following numbers:**

i. **2304567**

Sol: Number : 23,04,567

Expanded form : $2 \times 1000000 + 3 \times 100000 + 0 \times 10000 + 4 \times 1000 + 5 \times 100 + 6 \times 10 + 7 \times 1$

Read as : Twenty Three Lakh Four Thousand Five Hundred and Sixty Seven

ii. **4509888**

Sol: Number : 45,09,888

Expanded form : $4 \times 1000000 + 5 \times 100000 + 0 \times 10000 + 9 \times 1000 + 8 \times 100 + 8 \times 10 + 8 \times 1$

Read as : Forty Five Lakh Nine Thousand Eight Hundred and Eighty Eight

iii. **9553556**

Sol: Number : 95,53,556

Expanded form : $9 \times 1000000 + 5 \times 100000 + 5 \times 10000 + 3 \times 1000 + 5 \times 100 + 5 \times 10 + 6 \times 1$

Read as : Ninety Five Lakh Fifty Three Thousand Five Hundred and Fifty Six

2. **How many hundreds are there in 10 lakh?**

Sol:

1	0	0	0	0	0	0
TL	L	TTH	TH	H	T	O
				1	0	0

There are four places to the left of Hundred.

3. **10 lakh candidates write the Public Exam this year. If each exam centre is allotted with 1000 candidates. How many exam centres would be needed?**

Sol. Candidate for one centre = 1000

∴ For 10 lakh people

Ten lakh contains $\dfrac{10,00,000}{1000}$ = 1000 Thousands

∴ For 10 lakh people 1000 centres are needed

TRY THESE   (Text book Page No.7)

1. **Find the place value of underlined digits**

(i) **3841567**

Sol: Place value of 8 is 8 × 1,00,000 = 8,00,000 (Eight Lakh)

(ii) **94,43,810**

Sol: Place value of 4 is 4 × 10,000 = 40,000 (Forty Thousand)

2. **Write down the numerals and place value of 5 in the numbers represented by the following number names.**

(i) **Forty Seven Lakh Thirty Eight Thousand Five Hundred Sixty One.**
(ii) **Nine Crore Eighty Two lakh Fifty Thousand Two Hundred Forty One**
(iii) **Nineteen Crore Fifty Seven Lakh Sixty Thousand Three Hundred Seventy**

Sol: (i) 47,38,561

Place value of 5 is 5 × 100 = 500 (Five Hundred)

(iii) 9,82,50,241

Place value of 5 is 5 × 10000 = 50,000 (Fifty Thousand)

(iv) 19,57,60,370

Place value of 5 is 5 × 10,00,000 = 50,00,000 (Fifty Lakhs)

TRY THESE   (Text book Page No.9)

1. **Identify the incorrect places of comma and rewrite correctly.**

Indian System :   **56,12,34,0,1,5;**   **9,90,03,2245**
International System : **7,5613,4534;**   **30,30,304,040**

Sol: Indian System: 56,12,34,015;   99,00,32,245

International System: 756,134,534   3,030,304,040

Activity   (Text book Page No.9)

Take a white chart and cut into 9 equal pieces. Write different numbers on each piece. Arrange the pieces, as many times, horizontally which form different numbers. Write any five different numbers and express them in the Indian and the International System.

Sol: Activity to be done by the students themselves

EXERCISE 1.1

1. Fill in the blanks.

(i)   The smallest 7 digit number is _____   ⊗ **[Ans: 10,00,000]**

(ii)   The largest 8 digit number is _____   **[Ans: 9,99,99,999]**

(iii) The place value of 5 in 7005380 is _____   **[Ans: 5 × 1000 = 5000]**

(iv) The expanded form of the number 76,70,905 is _____

[Ans: 7× 10,00,000 + 6 × 1,00,000 + 7 × 10,000 + 0 + 9 × 100 + 0 + 5 × 1 (or)
70,00,000 + 6,00,000 + 70,000 + 900+5]

2. Say True or False.

(i)   In the Indian System of Numeration the number 67999037 is written as 6,79,99,037.

[Ans: True]

(ii)   Successor of a one digit number is always a one digit number

Hint :   9 + 1 = 10   **[Ans: False]**

(iii) Predecessor of a 3-digit number is always a 3 or 4 digit number

Hint :   100 – 1 = 99   **[Ans: False]**

(iv) 88888 = 8 × 10000 + 8 × 100 + 8 × 10 + 8 × 1   **[Ans: False]**

3. Complete the given order

Ten crore, crore, ten lakh, _____, _____, _____, _____, _____.

Sol: Ten crore, Crore, Ten lakh, <u>Lakh</u>, <u>Ten Thousand</u>, <u>Thousand</u>, <u>Hundred</u>, <u>Ten</u>, <u>One</u>

4. How many ten thousands are there in the smallest 6 digit number?

Sol: Smallest six digit number is 1,00,000

1 lakh	1	0	0	0	0	0	One lakh
	L	TTH	TH	H	T	O	$\dfrac{\text{One lakh}}{\text{Ten Thousand}} = \dfrac{1,00,000}{10,000} = 10$
Ten Thousand		1	0	0	0	0	

1 lakh = **10** Ten Thousands

Another Method

Lakh is only one place to the left of Ten thousand

∴   1 lakh is 10 times ten thousand

1 lakh = **10** Ten Thousands

5. Using the digits 5, 2, 0, 7, 3 form the largest 5 digit number and the smallest 5 digit number.

Sol: We know that the place value increases from right to left.

[∴ Arranging the digits in ascending order from right to left we get the largest number]

Largest number is 75320

Smallest number is 20357

[∵ Reverse order of 75320 is 02357. It becomes four digit number 2357)

6. **Observe the commas and write down the place value of 7.**

(i) 56,74,56,345   **(ii) 567,456,345**

Sol: **(i)**   56,74,56,345

Place value of 7 is $7 \times 10,00,000 = 70,00,000$ = Seventy Lakhs.

(ii)   567,456,345

Place value of 7 is $7 \times 1,000,000 = 7,000,000$ = Seven Million.

7. **Write the following numbers in the International system by using commas.**

(i)   347056   **(ii) 7345671**   **(iii) 634567105**   **(iv) 1234567890**

Sol.

		Billion	Hundred Million	Ten Million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One	The Number in International System
(i)	347056					3	4	7	0	5	6	347,056
(ii)	7345671				7	3	4	5	6	7	1	7,345,671
(iii)	634567105		6	3	4	5	6	7	1	0	5	634,567,105
(iv)	1234567890	1	2	3	4	5	6	7	8	9	0	1,234,567,890

8. **Write the largest six digit number and put commas in the Indian and the International Systems.**

Sol. The largest six digit number is 999999

Indian System

Lakh	Ten Thousand	Thousand	Hundred	Ten	One	The Number
9	9	9	9	9	9	9,99,999

International System

Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One	The Number
9	9	9	9	9	9	9,99,999

9. **Write the number names of the following numerals in the Indian System.**

(i)   75,32,105   **(ii)   9,75,63,453**

Sol: (i)   75,32,105

TL	L	TTH	TH	H	T	O
7	5	3	2	1	0	5

Seventy Five Lakhs Thirty Two Thousand One Hundred and Five

(ii)   9,75,63,453

C	TL	L	TTH	TH	H	T	O
9	7	5	6	3	4	5	3

Nine crores Seventy Five Lakhs Sixty Three Thousand Four Hundred and Fifty Three.

10. **Write the number names in words using the International System**

(i) **345,678** (ii) **8,343,710** (iii) **103,456,789**

Sol: (i) 345,678

Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One
3	4	5	6	7	8

Three Hundred and Forty Five Thousand Six Hundred and Seventy Eight

(ii) 8,343,710

Million	Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One
8	3	4	3	7	1	0

Eight Million Three Hundred and Forty Three Thousand Seven Hundred and Ten.

(iii) 103,456,789

Hundred Million	Ten Million	Million	Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One
1	0	3	4	5	6	7	8	9

One Hundred Three Million Four Hundred Fifty Six Thousand Seven Hundred and Eighty Nine.

11. **Write the number name in numerals.**

(i) **Two crore thirty lakh fifty one thousand nine hundred eighty.**

Sol: 2,30,51,980

(ii) **Sixty six million three hundred forty five thousand twenty seven.**

Sol: 66,345,027

(iii) **Seven hundred eighty nine million, two hundred thirteen thousand four hundred fifty six.**

Sol: 789,213,456

12. **Tamil Nadu has about twenty six thousand three hundred forty five square kilometre of Forest land. Write the number mentioned in the statement in the Indian System.**

Sol: 26,345 Sq km.

13. **The number of employee in the Indian Railways is about 10 lakh. Write this in the International System of numeration.**

Sol: 1,000,000 (One Million)

OBJECTIVE TYPE QUESTIONS

14.   1 billion is equal to
(a)   100 crore   (b)   100 million   (c)   100 lakh   (d)   10000 lakh
[Ans: (a) 100 crore]

15.   The successor of 10 million is
(a)   1000001   (b)   10000001   (c)   9999999   (d)   100001
[Ans: (b) 10000001]

16.   The difference between successor and predecessor of 99999 is
(a)   90000   (b)   1   (c)   2   (d)   99001
[Ans: (c) 2]

17.   The expanded form of the number 6,70,905 is
(a) $6 \times 10000 + 7 \times 1000 + 9 \times 100 + 5 \times 1$
(b) $6 \times 10000 + 7 \times 1000 + 0 \times 100 + 9 \times 100 + 0 \times 10 + 5 \times 1$
(c) $6 \times 1000000 + 7 \times 10000 + 0 \times 1000 + 9 \times 100 + 0 \times 10 + 5 \times 1$
(d) $6 \times 100000 + 7 \times 10000 + 0 \times 1000 + 9 \times 100 + 0 \times 10 + 5 \times 1$
[Ans: (d) $6 \times 100000 + 7 \times 10000 + 0 \times 1000 + 9 \times 100 + 0 \times 10 + 5 \times 1$]

ADDITIONAL QUESTIONS - PROBLEMS

Answer the following questions.

1.   How many thousand are there in 1 lakhs?

Sol: $\dfrac{1,00,0000}{1000}$ = 100 Thousands

2.   The difference between successor and predecessor of any number is 2. Is it true? Justify your Answer.

Sol: It is true that the difference between successor and predecessor of any number is 2.

Because the difference between any number and its predecessor is 1.

Also the difference between the number and its successor is 1.

∴   The total difference is 2.

3.   The expanded form of the number 6,00,001 is given as $6 \times 100000 + 1 \times 1$. Can you write like this Comment.

Sol: Yes. We can write the expansion of the number 600001 as $6 \times 100000 + 1 \times 1$.

Because $6 \times 100000 + 1 \times 1 = 600000 + 1 = 600001$

4.   Write the greatest five digit number using the digits 2, 3, 4, 0 and 7.

Sol: Greatest five digit number = 74320

5.   Can you write the least five digit number using the digits 2, 3, 4, 0 and 7 as 02347. Why? What will be the correct number?

Sol: No, we cannot write the least five digit number using the digits 2, 3, 4, 0 and 7 as 02347.

If it is 02347, the left most zero has no value. It becomes 4 digit number 2347.

The correct number will be 20347.

6. **Write the relation between Largest two digit number and Smallest three digit number.**

Sol: Largest two digit number + 1   = Smallest three digit number.

$$99 + 1 = 100$$

7. **Name the property being illustrated in each of the cases.**

   i) $(30 + 20) + 10 = 30 + (20 + 10)$ **ii)** $10 \times 35 = (10 \times 30) + (10 \times 5)$

Sol: (i) Associativity   (ii) Distribution of multiplication over addition.

1.7. COMPARISON OF NUMBERS

✦ Let two or more numbers be given, then a number having greater number of digits will be greatest and a number having smaller number of digits will be smallest

✦ If the number of digits in two or more numbers are the same, then that number will be larger which has a greater left most digit.

✦ If this digit also happens to be the same, we look at the next digit and so on.

TRY THESE

(Text book Page No.13)

1. **Write the numbers in ascending order : 688, 9, 23005, 50, 7500.**

Sol: Ascending order : 9, 50, 688,7500, 23005

$9 < 50 < 688 < 7500 < 23005$

2. **Find the least and greatest among the numbers : 478, 98, 6348, 3, 6007, 50935**

Sol: The lease number is 3.

The greatest number is 50935

TRY THESE

(Text book Page No.14)

Compare the two numbers and put <, > and = using place value chart.

15475	3214
73204	973561
8975430	8975430
1899799	1899799

Sol: (i)   15475,   3214

Comparing the place value using place value chart.

Place Value	TTH	TH	H	T	O
First Number	–	3	2	1	4
Second Number	1	5	4	7	5

Comparing the place values from left we have **15475 > 3214**

(ii)   73204, 973561

Place value chart

Place Value	L	TTH	TH	H	T	O
First Number	–	7	3	2	0	4
Second Number	9	7	3	5	6	1

Comparing the digits of two numbers **73204 < 973561**

(iii) 8975430, 8975430

Place Value	TL	L	TTH	TH	H	T	O
First Number	8	9	7	5	4	3	0
Second Number	8	9	7	5	4	3	0

From the place value chart comparing the digits from left $8 = 8, 9 = 9, 7 = 7, 5 = 5$
$4 = 4, 3 = 3, 0 = 0$

∴ **8975430 = 8975430**

(iv) 1899799, 1899799.

Place Value	TL	L	TTH	TH	H	T	O
First Number	1	8	9	9	7	9	9
Second Number	1	8	9	9	7	9	9

From the place value chart comparing the digits of the two numbers from the highest place value we have $1 = 1, 8 = 8, 9 = 9, 9 = 9, 7 = 7, 9 = 9, 9 = 9$

∴ **1899799 = 1899799**

Note :

The number 10^{100} is called googol.

The number $10^{googol} = 10^{(10^{100})}$ is called googolplex.

TRY THESE

The area in sq.km of 4 Indian states are given below

States	Area (Sq.Km)
TamilNadu	1,30,058
Kerala	38,863
Karnataka	1,91,791
Andhra Pradesh	1,62,968

List the areas of the above 4 Indian States in the ascending and the descending order.

Sol: We can prepare place value chart

States / Place value		L	TTH	TH	H	T	O
Tamilnadu		1	3	0	0	5	8
Kerala		–	3	8	8	6	3
Karnataka		1	9	1	7	9	1
Andhra Pradesh		1	6	2	9	6	8

5 digit number 38,863 is the least value.

Comparing digits of other 6 digit numbers from left.

$1 = 1 = 1,$ $3 < 6 < 9$

Ascending order = $38,863 < 1,30,058 < 1,62,968 < 1,91,791$

Kerala < Tamilnadu < Andhra Pradesh < Karnataka

Descending order = $1,91,791 > 1,62,968 > 1,30,058 > 38,863$

Karnataka > Andhra Pradesh > Tamilnadu > Kerala

www.Padasalai.Net
This is only for Sample Materials
www.TrbTnpsc.com
for full Book Order Online or Available at all Leading Bookstores

Sura's ○ **Mathematics** - **6th Std** ○ **Term I** ○ **01** ○ NUMBERS

11

TRY THESE

1. In the same way try placing the digit 4 in thousandth place and get six different 4-digit numbers. Also make different 4-digit numbers by fixing 8 and 5 in the thousandth place.

Sol: (i)

TH	H	T	O
4	8	5	9
4	5	8	9
4	8	9	5
4	5	9	8
4	9	5	8
4	9	8	5

(ii)

TH	H	T	O
8	9	4	5
8	4	9	5
8	0	5	4
8	9	5	4
8	5	4	9
8	4	5	9

(iii)

TH	H	T	O
5	4	9	8
5	4	8	9
5	9	8	4
5	8	9	4
5	9	4	8
5	8	4	9

2. In the same way make different 4 digit numbers by exchanging the digits and check every time whether the number made is small or big.

Sol:

TH	H	T	O
1	4	3	2
4	3	2	1
3	2	1	4
2	1	4	3

$1432 < 4321$

$4321 > 3214$

$3214 > 2143$

3. Pedometer used in walking practice contains 5 digit number. What could be the largest measure?

Sol: 99,999

Activity

Divide a chart paper into eight equal parts. Write different 1-digit numbers on it. List out the possible 8 digit numbers and also find the largest and the smallest numbers among them.

Sol: Activity to be done by the students themselves

EXERCISE 1.2

1. Fill in the blanks with > or < or =

Ans: (i) $48792 \leq 48972$

    Hint : $7 < 9$ [Hint: Open side can hold large number]

(ii) $1248654 \geq 1246854$

    Hint : $8 > 6$

(iii) $658794 \underline{=} 658794$

2. Say True or False.

(i) The difference between the smallest number of seven digits and the largest number of six digits is 10.

    Hint : $1000000 - 999999 = 1$ **[Ans: False]**

(ii) The largest 4 digit number formed by the digits 8, 6, 0, 9 using each digit only once is 9086

       Hint :   9999 – 999 = 9000   **[Ans: False]**

(iii) The total number of 4 digit number is 9000   **[Ans: True]**

3.   Of the numbers 1386787215, 137698890, 86720560, which one is the largest? Which one is the smallest?

Sol: We know that the number with more digits is greater.
        ∴ Greatest number is 1386787215
        Smallest number is 86720560

4.   Arrange the following numbers in the descending order:
        128435, 10835, 21354, 6348, 25840

Sol: Place value chart is given by

Qn. No.	Given Number	L	T TH	TH	H	T	O
(i)	128435	1	2	8	4	3	5
(ii)	10835		1	0	8	3	5
(iii)	21354		2	1	3	5	4
(iv)	6348			6	3	4	8
(v)	25840		2	5	8	4	0

⇒ The number with more digits is the greater number

Step 1: ∴ 128435 is the larger number and 6348 is the least number

Step 2: For the remaining 5 digit numbers we can compare the left most digits and find
            25840 > 21354 > 10835

∴ The descending order:

128435 > 25840 > 21354 > 10835 > 6348

5.   Write any eight digit number with 6 in ten lakhs place and 9 in ten thousandth place.

Sol: **Step (i):** Preparing place value chart with 8 digits 6 in ten lakh place and 9 in Ten thousand place

        Step (ii): Fill the other places with any of the numbers

C	TL	L	T TH	TH	H	T	O
5	6	8	9	7	4	3	2

        ∴ The number may be 56897432. Similarly we can write many numbers.

6.   Rajan writes a 3-digit number, using the digits 4, 7 and 9. What are the possible numbers he can write?

Sol: The given digits are 4, 7 and 9.

H	T	O
9	7	4
9	4	7
7	9	4
7	4	9
4	7	9
4	9	7

Rajan can write 974, 947, 794, 749, 479, 497

7. **The password to access my ATM card includes the digits 9, 4, 6 and 8. It is the smallest 4 digit even number. Find the password of my ATM card.**

Sol: Given digits are 9, 4, 6 and 8.

Smallest number with these digits is 4689

Given that it is an even number.

∴ It may be 4698.

So password of ATM card is 4698.

8. **Postal Index Number consists of six digits The first three digits are 6, 3 and 1. Make the largest and the smallest Postal Index Number by using the digits 0, 3 and 6 each only once.**

Sol: Given PIN consists of six digits. First three digits are 6, 3, and 1.

The digits 0, 3 and 6 to be used only once, in the remaining places.

	L	T TH	TH	H	T	O
Largest No.	6	3	1	06	03	0
Smallest No.	6	3	1	0	03	06

Largest Postal Index Number: 631630

Smallest Postal Index Number: 631036

9. **The height (in metres) of the mountains in Tamil Nadu as follows:**

Sl. No	Mountains	Height (in metres)
1	Doddabetta	2637
2	Mahendragiri	1647
3	Anaimudi	2695
4	Velliangiri	1778

(i) **Which is the highest mountain listed above?**

(ii) **Order the mountains from the highest to lowest.**

(iii) **What is the difference between the heights of the mountains Anaimudi and Mahendragiri?**

Sol: Arranging the numbers in place value chart.

Mountains	TH	H	T	O
Doddabetta	2	6	3	7
Mahendragiri	1	6	4	7
Anaimudi	2	6	9	5
Velliangiri	1	7	7	8

(i) Highest mountain is Anaimudi [Comparing left most digits]

(ii) From the above chart

In thousands place, Doddabetta and Anaimudi have greater value 2.

Comparing digits of 2637 and 2695

$2 = 2, 6 = 6, 3 < 9.$

∴ $2637 < 2695$

Again comparing the digits of 1647 and 1778

$1 = 1, 6 < 7$

∴ 1647 < 1778.

∴ The required order is 2695 > 2637 > 1778 > 1647.

∴ Anaimudi > Doddabetta > Veliangiri > Mahendragiri

(iii) The height of Anaimudi mountain   = 2695 m

The height of Mahendragiri mountain = 1647 m

∴   The Difference = 1048 m

OBJECTIVE TYPE QUESTIONS

10. **Which list of numbers is in order from the smallest to the largest?**

(a)   1468, 1486, 1484   (b)   2345, 2435, 2235

(c)   134205, 134208, 154203   (d)   383553, 383548, 383642

[Ans: (c) 134205, 134208, 154203]

11. **The Arabian sea has an area of 1491000 square miles. This area lies between which numbers?**

(a)   1489000 and 1492540   (b)   1489000 and 1490540

(c)   1490000 and 1490100   (c)   1480000 and 1490000

Hint :   1489000 < 1491000 < 1492540   **[Ans: (a) 1489000 and 1492540]**

12. **The chart at below shows the number of newspapers sold as per Indian Readership Survey in 2018. Which could be the missing number in the table?**

Name of the News Paper	Ranking	Sold (in Lakh)
A	1	70
B	2	50
C	3	?
D	4	10

(a)   8   (b) 52   (c) 77   (d) 26

Hint :   50 > 26 > 10   **[Ans: (d) 26]**

ADDITIONAL QUESTIONS - PROBLEMS

Fill in the blanks.

1.   10 crore _____   ⊗ **[Ans: 100 million]**

Answer the following question.

1.   The heights of five boys in class VI are 135, 141, 129, 132, 145 (in centimeters) in height. Arrange their heights as how they stand in the assembly?

Sol: 129 cm < 132 cm < 135 cm < 141 cm < 145 cm

2.   The number lock has the password number with 3 digits. The number is least even number and less than 200. Middle digit has no value separately. Find the password. The digits are used only once.

Sol: 102

3.   Arrange in ascending order.

123456, 123546, 123623, 123511

Sol: 123456 < 123511 < 123546 < 123623

4. Arrange in descending order.

8461, 7535, 2943, 6214

Sol: $8461 > 7535 > 6214 > 2943$

5. Find the numbers between 572634 and 562634 which is approximated to ten thousands place.

Sol: $562634, < \underline{570000}, < 572634$

1.12 ORDER OF OPERATION

If more than one operations are given in the problem, the rule of order of operations called BIDMAS is used to avoid common arithmetic mistakes.

Expansion of BIDMAS

B	Bracket ( )
I	Indices
D	Division ÷ or /
M	Multiplication ×
A	Addition +
S	Subtraction –

If more than one brackets are given, the innermost bracket should be completed first.

EXERCISE 1.3

1. Fill in the blanks

(i)   If Arulmozhi saves ₹12 per day then she saves ₹ _____ in 30 days.

   Hint : $12 \times 30 = ₹360$ **[Ans: ₹ 360]**

(ii)   If a person 'A' earns ₹ 1800 in 12 days, then he earns ₹ _____ in a day.

   Hint : $\dfrac{1800}{12} = 150$ **[Ans: ₹ 150]**

(iii) $45 \div (7 + 8) - 2 = $ _____.

   Hint : $45 \div 15 - 2 = 3 - 2 = 1$ **[Ans: 1]**

2. Say True or False

(i) $3 + 9 \times 8 = 96$

   Hint : $3 + 72 = 75$ **[Ans: False]**

(ii) $7 \times 20 - 4 = 136$

   Hint : $140 - 4 = 136$ **[Ans: True]**

(iii) $40 + (56 - 6) \div 2 = 45$

   Hint : $40 + 50 \div 2 = 40 + 25 = 65$ **[Ans: False]**

3. The number of people who visited the Public Library for the past 5 months were 1200, 2000, 2450, 3060 and 3200 respectively. How many people visited the library in the last 5 months.

Sol: People visited the library for past 5 months = 1200 + 2000 + 2450 + 3060 + 3200

∴ Total people visited = 11910

www.Padasalai.Net   www.TrbTnpsc.com
This is only for Sample Materials
for full Book Order Online or Available at all Leading Bookstores

16   Sura's ○ **Mathematics** - **6th Std** ○**Term I** ○ **01** ○ NUMBERS

4. Cheran had a bank savings of ₹ 7,50,250. He withdrew ₹ 5,34,500 for educational purpose. Find the balance amount in his account.

Sol: Bank Savings of Cheran = ₹ 7,50,250
                Withdrew Amount = ₹ 5,34,500
            ∴Balance Amount = ₹ 2,15,750

5. In a cycle factory, 1560 bicycles were manufactured every day. Find the number of bicycles manufactured in 25 days.

Sol: Number of bicycles manufactured in one day   = 1560

∴   Number of bicycles manufactured in 25 days   = 1560 × 25

                        = 39,000

        Number of bicycles manufactured in 25 days   = 39,000

$$\begin{array}{r} 1560 \\ \times\ \ 25 \\ \hline 7800 \\ 3120 \\ \hline 39,000 \end{array}$$

6. ₹ 62,500 was equally distributed as a New Year bonus for 25 employees of a company. How much did each receive?

Sol: Total amount distributed = ₹ 62500

        Number of employees received bonus = 25

        ∴Amount received by one employee = 62500 ÷ 25 = 2,500.

        Each employee received ₹ 2,500

7. Simplify the following numerical expression:

   (i) $(10 + 17) ÷ 3$ ⊗

   (ii) $12 – [3 – \{6 – (5 – 1)\}]$

   (iii) $100 + 8 ÷ 2 + \{(3 × 2) – 6 ÷ 2\}$

Sol: (i) $(10 + 17) ÷ 3$ (Given)

            $= 27 ÷ 3$ (Bracket completed first)

            $= 9$ (÷ completed)

   ∴ $(10 + 17) ÷ 3 = 9$

   (ii) $12 – [3 – \{6 – (5 – 1)\}]$ (Given)

            $= 12 – [3 – \{6 – 4\}]$ (Innermost bracket completed first)

            $= 12 – [3 – 2]$ [Again Inner bracket completed second]

            $= 12 – 1$ (Bracket completed third)

            $= 11$ (– completed)

        $12 – [3 – \{6 – (5 – 1)\}] = 11$

   (iii) $100 + 8 ÷ 2 + \{(3 × 2) – 6 ÷ 2\}$ (Given)

            $= 100 + 8 ÷ 2 + \{6 – 6 ÷ 2\}$ (Innermost bracket completed first)

            $= 100 + 8 ÷ 2 + \{6 – 3\}$ (To remove the next bracket ÷ within the bar completed second)

            $= 100 + 8 ÷ 2 + 3$ (bar completed third)

            $= 100 + 4 + 3$ (÷ completed fourth)

            $= 107$ (+ completed)

        $100 + 8 ÷ 2 + \{(3 × 2) – 6 ÷ 2\} = 107$

OBJECTIVE TYPE QUESTIONS

8. The value of $3 + 5 - 7 \times 1$ is _____.

(a) 5   (b) 7   (c) 8   (d) 1.

Hint : $3 + 5 - 7 \times 1 = 3 + 5 - 7 = 8 - 7 = 1$ **[Ans: (d) 1]**

9. The value of $24 \div \{8 - (3 \times 2)\}$ is

(a) 0   (b) 12   (c) 3   (d) 4

Hint : $24 \div \{8 - 3 \times 2\} = 24 \div \{8 - 6\} = 24 \div 2 = 12$ **[Ans: (b) 12]**

10. Use BIDMAS and put the correct operator in the box.

$2 \boxed{} 6 - 12 \div (4 + 2) = 10$

(a) +   (b) −   (c) ×   (d) ÷   **[Ans: (c) ×]**

Hint : $2 \boxed{} 6 - 12 \div 6 = 10$

$\Rightarrow$ $2 \boxed{} 6 - 2 = 10$

$\Rightarrow$ $2 \times 6 - 2 = 10$

Activity

(Text book Page No.24)

1. Fill up the jar with some items like Tamarind seeds. Let each student give an estimate of the number of items. Make a table of the result by finding the difference of the estimate and the actual amount.

Sol: Activity to be done by the students themselves

2. Get a large jar and a bag of Tamarind seeds and put 30 seeds in the jar. Observing the contents, estimate how many seeds roughly will fill the whole jar. Continue to fill the jar to check your estimate.

Sol: Activity to be done by the students themselves

ADDITIONAL QUESTIONS - PROBLEMS

1. Evaluate the following :

(a) $44 \div 2 + (7 + 80 \div 10) - 14 + 23$

(b) $17 \times 6 - 4 - 2 + 20 - (22 + 18)$

(c) $16 \times 144 \div 16 \div 9 + 16 + 15 - 20$

(d) $12 \times 36 \div 12 \div 3 + 5 + 6 - 2$

(e) $15 - [17 + 30 \div 6 - (6 + 6) + 7]$

Sol: (a) $44 \div 2 + (7 + 80 \div 10) - 14 + 23$ (Given)

$= 44 \div 2 + (7 + 8) - 14 + 23$ (To complete the bracket $\div$ done first)

$= 44 \div 2 + 15 - 14 + 23$ (Bracket completed second)

$= 22 + 15 - 14 + 23$ ($\div$ completed third)

$= 37 - 37$ (+ completed fourth)

$= 0$ (− completed last)

$\therefore$ $44 \div 2 + (7 + 80 \div 10) - 14 + 23 = 0.$

www.Padasalai.Net   www.TrbTnpsc.com
This is only for Sample Materials
for full Book Order Online or Available at all Leading Bookstores

18   **Sura's** ○ **Mathematics** - **6th Std** ○**Term I** ○   **01** ○ NUMBERS

(b) $17 \times 6 - 4 - 2 + 20 - (22 + 18)$ (Given)

$= 17 \times 6 - 4 - 2 + 20 - 40$ (Bracket completed first)

$= 102 - 4 - 2 + 20 - 40$ ($\times$ completed second)

$= 102 - 4 - 22 - 40$ (+ completed third)

$= 98 - 22 - 40$ ($\div$ completed one by one)

$= 76 - 40$

$= 36$

$\therefore \; 17 \times 6 - 4 - 2 + 20 - (22 + 18) = 36$

(c) $16 \times 144 \div 16 \div 9 + 16 + 15 - 20$ (Given)

$= 16 \times 9 \div 9 + 16 + 15 - 20$ ($\div$ completed first)

$= 16 \times 1 + 16 + 15 - 20$ ($\div$ completed second)

$= 16 + 16 + 15 - 20$ ($\times$ completed third)

$= 32 + 15 - 20$ (+ completed fourth)

$= 47 - 20$ (+ completed fifth)

$= 27$ (– completed last)

$\therefore 16 \times 144 \div 16 \div 9 + 16 + 15 - 20 = 27$

(d) $12 \times 36 \div 12 \div 3 + 5 + 6 - 2$ (Given)

$= 12 \times 3 \div 3 + 5 + 6 - 2$ ($\div$ completed first)

$= 12 \times 1 + 5 + 6 - 2$ ($\div$ completed second)

$= 12 + 5 + 6 - 2$ ($\times$ completed third)

$= 17 + 6 - 2$ (+ completed forth)

$= 23 - 2$ (+ completed fifth)

$= 21$ (– completed last)

$\therefore \; 12 \times 36 \div 12 \div 3 + 5 + 6 - 2 = 21$

(e) $15 - [17 + 30 \div 6 - (6 + 6) + 7]$ (Given)

$= 15 - [17 + 30 \div 6 - 12 + 7]$ (Inner bracket completed first)

$= 15 - [17 + 5 - 12 + 7]$ ($\div$ completed second)

$= 15 - [22 - 19]$ (+ completed third)

$= 15 - 3$ (bracket completed forth)

$= 12$ (– completed last)

$\therefore \; 15 - [17 + 30 \div 6 - (6 + 6) + 7] = 12.$

2.   **An export company produced 235219 shirts, 158342 trousers and 11704 jackets in a year. What is the total production of all the three items in that year?**

Sol: Number of shirts produced   = 235219

Number of trousers produced   = 158342

Number of jackets produced   = <u>11704</u>

Total production of all items   = <u>405265</u>

Total production of all items in that year = 4,05,265

3.   **India's population has been steadily increasing from 439 millions in 1961 to 1028 millions in 2001. Find the total increase in population from 1961 to 2001. Write the increase in population in Indian system of Numeration using commas suitably.**

Sol: Population of India in 1961   = 439 millions

= 439,000,000

Population of India in 2001   = 1028 millions

= 1,028,000,000

Increase in population from 1961 to 2001 = Population in 2001– Population in 1961

= 1028000000 – 439000000

= 589000000 = 589 million.

Increase in population in Indian System = 58,90,00,000

4. **A person had ₹ 10,00,000 with him. He purchased a flat for ₹ 8,70,000. With the remaining money he has to buy a T.V. for 1 lakh. How much money was left with him to buy a T.V?**

₹

Sol: Total money the person had = 10,00,000

Cost of flat = 8,70,000

Remaining money = 1,30,000

Now he has ₹ 1,30,000. So it is enough to buy a TV for ₹1,00,000.

5. **A box contains 50 packets of biscuits, each weighing 120g. How many such boxes can be loaded in a van, which cannot carry more than 900 kg?**

Sol: **Given :** Total number of packets = 50.

Weight of each packet = 120 g

Weight of a box = 50 × 120 g = 6000 g   [∵1000 g = 1 kg]

= 6 kg

Required number of boxes = $\dfrac{900}{6}$ = 150.

150 boxes are required.

6. **How much money was collected from 5342 students for a charity show, if each student contributed ₹ 670.**

Sol: Total number of students = 5342

Contribution of each student = ₹ 670

∴ Total money collected = 5342 × 670 = 35,79,140

Total money collected = ₹ 35,79,140

1.13 ESTIMATION OF NUMBERS

Rounding off is one way to find a number for estimation that is quite convenient. It gives us the closest suitable number according to a given place value.

Rounding off a Number to the Nearest Tens:

(i) For rounding off a number to the nearest tens, we examine the digit at ones place. If the digit at ones place is less than 5, then replace the ones digit by 0 and keep the other digits as they are (E.g.) we rounding off 64 as 60.

(ii) If the digit at ones place is 5 or more, then replace the ones digit by 0 and increase tens digit by 1.

(eg) We rounding off 67 as 70.

Example 1: **Round off these numbers to the nearest thousands. (a) 5647 (b) 6575**

Sol: **(a)** **Given number is 5647**

Place value to be round off is thousand.

Digit in thousands place is 5

www.Padasalai.Net
This is only for Sample Materials
www.TrbTnpsc.com
for full Book Order Online or Available at all Leading Bookstores

20

Sura's ○ **Mathematics - 6th Std** ○**Term I** ○ **01** ○ NUMBERS

The digit in Hundred place is $6 > 5$

Adding 1 to $5 \Rightarrow 1 + 5 = 6$

Changing the digits to the right of 6 to zeroes $\Rightarrow 6000$

∴ The required rounded number $5647 = 6000$

(b) 6575

Here the place value to round off is Thousand,

∴ The digit in the Hundreds place is $5 \geq 5$

∴ Adding 1 to $6 \Rightarrow 1 + 6 = 7$

Changing the digits to the right of 7 to zeroes $\Rightarrow 7000$

∴ The required rounded number $6575 = 7000$

Estimation of Sum and Difference

Generally to estimate the sum or difference, we round off each number to its greatest place and then calculate the sum or difference of the rounded off numbers

For multiplication and division also we follow the same way.

TRY THESE

1. Round off the following numbers to the nearest ten

(i) 57 (ii) 189 (iii) 3,956 (iv) 57,312

Sol: (i) 57

Given number 57

Place value to be rounded off is ten.

Digit in tens place is 5.

Digit to the right is $7 > 5$

∴ Adding 1 to $5 \Rightarrow 1 + 5 = 6$

changing the digits to the right of 6 to zero $\Rightarrow 60$

∴ rounded off number is 60.
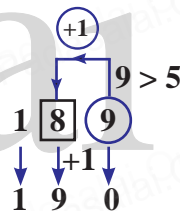
(ii) 189

Place value to be rounded off is ten

Digit is ten place is 8

Digit to the right is $9 > 5$

∴ Adding 1 to $8 \Rightarrow 1 + 8 = 9$.

changing the digits to the right of 19 to zero $\Rightarrow 190$

Required rounded off number is 190
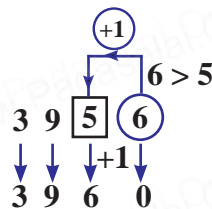
(iii) 3956

Place value to be rounded off is ten.

Digit in tens place is 5

Digit to the right is $6 > 5$

∴ Adding 1 to $5 \Rightarrow 1 + 5 = 6$

Changing the right digits of 396 to zero $\Rightarrow 3960$

Required rounded off number is 3960.
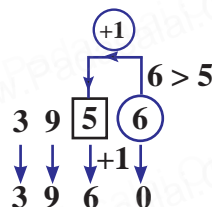
(iv) 57312

Place value to be rounded off is ten.

Digit in tens place is 1

Digit to the right is $2 < 5$

∴ Leaving the number 2 as it is changing the digits to the right of 5731 to zero
$\Rightarrow$ 57310.

The rounded of number is 57310

2. Round off the following numbers to the nearest ten, hundred and thousand.

(i) 9,34,678   (ii) 73,43,489   (iii) 17,98,45,673

Sol: (i) 9,34,678

Nearest Tens: 9,34,680

Nearest Hundreds: 9,34,700

Nearest Thousands: 9,35,000

(ii) 73,43,489

Nearest Tens: 73,43,490

Nearest Hundreds: 73,43,500

Nearest Thousands: 73,43,000

(iii) 17,98,45,673

Nearest Tens: 17,98,45,670

Nearest Hundreds: 17,98,45,700

Nearest Thousands: 17,98,46,000

3. The tallest mountain in the world Mount Everest, located in Nepal is 8,848 m high. Its height can be rounded off to the nearest thousands as _____

[Ans: 9000 m.]

�**TRY THESE**

1. Estimate the sum and difference:

8457 and 4573

Sol: (a)   Sum $8457 \Rightarrow$ 8000

                    $4573 \Rightarrow$ 5000

                    Sum =   13,000

(b)   Difference

                    $8457 \Rightarrow$ 8000

                    $4573 \Rightarrow$ 5000

            Difference =   3,000

2. Estimate the product 39 × 53

Sol: $39 \Rightarrow 40$

$53 \Rightarrow 50$

Product $40 \times 50 = 2000$

3. Estimate the quotient 5546 ÷ 524

Sol: 5546 ⇒ 5500

524 ⇒ 500

Quotient is 11

$$\begin{array}{r} 11 \\ 500\overline{)5500} \\ \underline{500} \\ 500 \\ \underline{500} \\ 0 \end{array}$$

EXERCISE 1.4

1. Fill in the blanks.

(i) The nearest 100 of 843 is _____.

Hint : The digit in tens place is 4 < 5.   **[Ans: 800]**

(ii) The nearest 1000 of 756 is _____.

Hint : The digit in hundred place is 7 ≥ 5   **[Ans: 1000]**

(iii) The nearest 10,000 of 85654 is _____.

Hint : The digit in thousand place is 5 ≥ 5.   **[Ans: 90,000]**

2. Say True or False

(i) 8567 is rounded off as 8600 to the nearest 10.

Hint : In ones place the digit is 7 ≥ 5. So 8580   **[Ans: False]**

(ii) 139 is rounded off as 100 to the nearest 100.

Hint : In tens place we have 3 < 5. So 100   **[Ans: True]**

(iii) 1,70,51,972 is rounded off as 1,70,00,000 to the nearest lakh.

Hint : In ten thousand place the digit is 5 ≥ 5. So 1,71,000,000   **[Ans: False]**

3. Round off the following to the given nearest place.

(i) 4065; hundred

Sol: We have to round off 4065 to hundreds

The place value is hundred

The digit in hundreds place is 0

The digit to the right is 6 > 5

Adding 1 to 0 ⇒ 0 + 1 = 1

Changing the digits to the right of 41 to zeros

4065 ≃ 4100 ⇒ 4100

$$\begin{array}{c} \boxed{+1} \\ 6 > 5 \\ 4 \ \boxed{0} \ \textcircled{6} \ 5 \\ +1 \\ 4 \ 1 \ 0 \ 0 \end{array}$$

(ii) 44,555; thousand

To round off 44555 to thousands

The digit in the thousands place is 4

digit to the right is 5 = 5.

∴ Adding 1 to the thousand place value digit 4

4 + 1 = 5

Changing the digits to the right of 45 to zeros we get 45000

44555 ≃ 45000

$$\begin{array}{c} \boxed{+1} \\ 5 \geq 5 \\ 4 \ \boxed{4} \ \textcircled{5} \ 5 \ 5 \\ +1 \\ 4 \ 5 \ 0 \ 0 \ 0 \end{array}$$
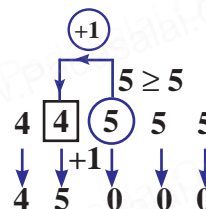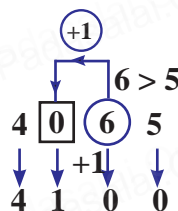
(iii) 86943; ten thousand

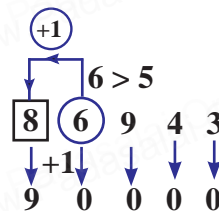To round off 86,943 to ten thousand

The digit in ten thousands place is 8

The digit to the right is $6 > 5$

Adding 1 to $8 \Rightarrow 8 + 1 = 9$.

Changing the digits to the right of 9 to zeroes we get 90,000

∴ $86943 \simeq 90,000$

(iv) 50,81,739; lakh

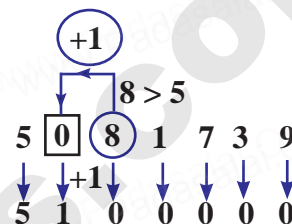To round off 5081739 to lakhs

The digit in the lakhs place is 0

The digit to the right is $8 > 5$

∴ Adding 1 to $0 \Rightarrow 1 + 0 = 1$

Changing the digits right off 51 to zeros

We get 51,00,000

∴ $5081739 \simeq 51,00,000$

(v) 33,75,98,482; Ten crore

To round off 337598482 to ten crore

The digit in the ten crores place is 3

The digit to the right is $3 < 0$

∴ The digit in ten crore place remains the same 3.

Changing the digit to the right of 3 zeros we get 30,00,00,000

∴ $33,75,98,482 \simeq 30,00,00,000$
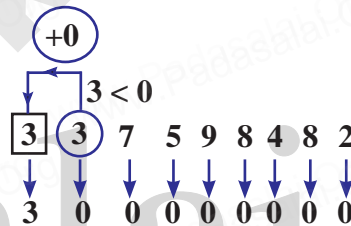
4.   Estimate the sum of 157826 and 32469 rounded off to the nearest ten thousand.

Sol:

157,826	$\Rightarrow$	1,60,000
32,469	$\Rightarrow$	30,000
1,90,295	$\Rightarrow$	1,90,000

5.   Estimate by rounding off each number to the nearest hundred.

(i)   8074 + 4178

Sol:

8074	$\Rightarrow$	8100
4178	$\Rightarrow$	4200
		12,300

(ii)   1768977 + 130589

17,68,977	$\Rightarrow$	1769000
1,30,589	$\Rightarrow$	130600
		18,99,600

6.   The population of a city was 43,43,645 in the year 2001 and 46,81,087 in the year 2011. Estimate the increase in population by rounding off to the nearest thousands.

Sol: Population in the year 2011 is $46,81,087 \Rightarrow 46,81,000$

Population in the year 2011 is $43,43,645 \Rightarrow 43,44,000$

∴   Increase in Population = 3,37,000

OBJECTIVE TYPE QUESTIONS

7. **The number which on rounding off to nearest thousands given 11000 is**

(a) 10345 (b) 10855 (c) 11799 (d) 10056

Hint : In 10855, the digit in hundred place is $8 \geq 5$. So 11000 **[Ans: (b)] 10855**

8. **The estimation to the nearest hundred of 76812 is**

(a) 77000 (b) 76000 (c) 76800 (d) 76900

Hint : In tens place the digit is $1 < 5$, So 76800 **[Ans: (c) 76800]**

9. **The number 9785764 is rounded off to nearest lakh as**

(a) 9800000 (b) 9786000 (c) 9795600 (d) 9795000

Hint : In ten thousand place, the digit is 8 5. So 9800000 **[Ans: (a) 9800000]**

10. **The estimated difference of 167826 and 2765 rounded off to the nearest thousand is**

(a) 180000 (b) 165000 (c) 140000 (d) 155000

Hint : 167826 = 168000, 2765 = 3000 **[Ans: (b) 165000]**

ADDITIONAL QUESTIONS - PROBLEMS

1. **Estimate the following to the nearest hundreds**

(a) **439 + 334 + 4317** (b) **1,08,734 – 47,599**

(c) **8325 – 491** (d) **4,89,348 – 48,365**

Sol: **(a)** **439 + 334 + 4317**

439 $\Rightarrow$ 400
334 $\Rightarrow$ 300
4317 $\Rightarrow$ 4300
Sum 5,000

(b) **1,08,734 – 47,599**

1,08,734 $\Rightarrow$ 1,08,700
47,599 $\Rightarrow$ 47,600
Difference = 61,100

(c) **8325 – 491**

8325 $\Rightarrow$ 8300
491 $\Rightarrow$ 500
Difference $\Rightarrow$ 7,800

(d) **4,89,348 – 48,365**

4,89,348 $\Rightarrow$ 4,89,300
48,365 $\Rightarrow$ 48,400
Difference = 4,40,900

2. **Estimate the following products**

(a) **578 × 161** (b) **5281 × 3491**

(c) **1291 × 592** (d) **9250 × 29**

Sol: **(a)** **578 × 161**

578 $\Rightarrow$ 600
161 $\Rightarrow$ 200
∴ Estimated product is $600 \times 200 = 1,20,000$

(b) **5281 × 3491**

$5281 \Rightarrow 5000$

$3491 \Rightarrow 3500$

Estimated Product $= 5000 \times 3500 = 1,75,00,000$

(c) **1291 × 592**

$1291 \Rightarrow 1300$

$592 \Rightarrow 600$

Estimated Product is $= 1300 \times 600 = 7,80,000$

(d) **9250 × 29**

$9250 \Rightarrow 9000$

$29 \Rightarrow 30$

Estimated Product is $9000 \times 30 = 2,70,000$

1.14 WHOLE NUMBERS

1. The collection of counting numbers {1, 2, 3, ...} is called the **Set of Natural Numbers** and it is denoted by $\mathbb{N}$.
2. When the collection include zero as well, {0, 1, 2, 3, ...}, it is called the **Set of Whole Numbers** that is denoted by $\mathbb{W}$.
3. Every whole number has a predecessor, except zero.
4. In $\mathbb{N}$, the smallest number is 1.
5. In $\mathbb{W}$, the smallest number is 0.
6. The number 1 has a predecessor in $\mathbb{W}$, namely 0, but it has no predecessor in $\mathbb{N}$.

1.15 PROPERTIES OF WHOLE NUMBERS

1. Whole numbers can be added or multiplied in any order and hence commutative.
2. Subtraction and division are **not commutative**
3. When we need to add or multiply several numbers, the order in which we do the addition or multiplication does not matter. This is called **associativity** of addition and multiplication.
4. Subtraction and division are **NOT associative**
5. When we multiplying a sum, we can rewrite it as a sum of two products. This is called **distributivity** of multiplication over addition.
6. Whole numbers also distributive of multiplication over subtraction.
7. Addition does not distribute over multiplication.
8. Any number multiplied by zero gives zero
9. Division by zero is **not defined.**
10. When zero is added to any number, we get the same number. Therefore zero is called the **additive identity**
11. When we multiply any number by 1, we get the same number. Therefore 1 is the **Multiplicative identity**.
12. When we add any two natural numbers, we get a **natural number**.
13. When we multiply any two numbers, we get a **natural number**.

www.Padasalai.Net   www.TrbTnpsc.com
This is only for Sample Materials
for full Book Order Online or Available at all Leading Bookstores

26   Sura's ○ **Mathematics** - **6th Std** ○**Term I** ○ **01** ○ NUMBERS

14. When we add any two whole numbers, we get a **whole number**.

15. When we multiply any two whole numbers, we get a **whole number**.

16. When we add a natural number to a whole number, we get a **natural number**.

17. When we multiply a natural number by a whole number, we get a **whole number**.

TRY THESE   (Text book Page No.29)

✦ **Find the value of $6 + 3 + 8$ and $3 + 6 + 8$**

   (i)   Are they same?

   (ii) Is there any other way of arranging these three numbers?

Sol: $6 + 3 + 8 = 3 + 6 + 8 = 17$

   (i)   Yes, $6 + 3 + 8 = 3 + 6 + 8 = 17$, Both are same

   (ii) Yes, we can arrange these numbers as
         $3 + 8 + 6 = 8 + 6 + 3 = 8 + 3 + 6 = 6 + 8 + 3$

✦ **Find the value of $5 \times 2 \times 6$ and $2 \times 5 \times 6$**

   (i)   Are they same?

   (ii) Is there any other way of arranging these three numbers?

Sol: $5 \times 2 \times 6 = 2 \times 5 \times 6 = 60$

   (i)   Yes, they are the same

   (ii) They can be arranged as $2 \times 6 \times 5 = 6 \times 5 \times 2 = 5 \times 6 \times 2 = 6 \times 2 \times 5$.

✦ **Is $7 - 5$ the same as $5 - 7$? Why**

Sol: $7 - 5 \neq 5 - 7$.

   Because subtraction is not commutative $[\because 7 - 5 = 2; \ 5 - 7 = -2]$

✦ **What is the value of $(15 - 8) - 6$? Is it the same as $15 - (8 - 6)$? Why?**

Sol: $(15 - 8) - 6 = 7 - 6 = 1$

   $\therefore \quad (15 - 8) - 6 = 1$

   It is not same as $15 - (8 - 6)$.

   $\because 15 - (8 - 6) = 15 - 2 \ = 13$.

   $\therefore \quad (15 - 8) - 6 \neq 15 - (8 - 6)$

✦ **What is $15 \div 5$? Is it the same as $5 \div 15$? Why?**

Sol: (i) $15 \div 5 = 3$

   (ii) $15 \div 5 \neq 5 \div 15$

   (iii) Division is not commutative for whole numbers.

✦ **What is the value of $(100 \div 10) \div 5$? Is it the same as $100 \div (10 \div 5)$? Why?**

Sol: (i) $(100 \div 10) \div 5 = 10 \div 5 = 2$

   (ii) $100 \div (10 \div 5) \neq (100 \div 10) \div 5$

   (iii) Because division of whole numbers are not associative.

         Also $100 \div (10 \div 5) \ = \ 100 \div 2 = 50$

         But $(100 \div 10) \div 5 \ = \ 10 \div 5 = 2 = 50 \neq 2$

         (i. e) $(100 \div 10) \div 5 \ \neq \ 100 \div (10 \div 5)$

⛹ TRY THESE

✦ **Use at least three different pairs of whole numbers to verify that subtraction is not commutative**

Sol: **(a)** **7 and 20**

$20 - 7 \neq 7 - 20$

(b) **300 and 100**

$300 - 100 \neq 100 - 300$

(c) **60 and 5**

$60 - 5 \neq 5 - 60$

✦ **Is $10 \div 5$ the same as $5 \div 10$? Justify it by taking two more combinations of numbers**

Sol: $10 \div 5 \neq 5 \div 10$

Example: (a) $20 \div 10 \neq 10 \div 20$ ie. $2 \neq \dfrac{1}{2}$; (b) $100 \div 50 \neq 50 \div 100$ ie. $2 \neq \dfrac{1}{2}$

Complete the following tables.

(i)

9	+	0	=	9
7	+	0	=	**7**
0	+	17	=	17
0	+	**37**	=	37
0	+	Any Number	=	The same Number

(ii)

11	×	1	=	11
1	×	55	=	55
1	×	12	=	**12**
1	×	**100**	=	100
1	×	Any Number	=	The same Number

Complete the Table.

6	+	8	=	14, a Natural Number
4	+	5	=	9, a Natural Number
4	×	5	=	20, a Natural Number
6	×	8	=	48, a Natural Number
100	+	10	=	110, a Natural Number
20	+	30	=	50, a Natural Number
20	×	30	=	600, a Natural Number
100	×	10	=	1000, a Natural Number
6	+	8	=	14, a Whole Number
4	+	5	=	9, a Whole Number
15	×	0	=	0, a Whole Number
11	×	2	=	22, a Whole Number
100	+	10	=	110, a Whole Number
20	+	30	=	50, a Whole Number
75	×	0	=	0, a Whole Number
80	×	1	=	80, a Whole Number

www.Padasalai.Net   www.TrbTnpsc.com
This is only for Sample Materials
for full Book Order Online or Available at all Leading Bookstores

28   Sura's ○ **Mathematics** - **6th Std** ○**Term I** ○ **01** ○ NUMBERS

EXERCISE 1.5

1. **Fill in the blanks.**

(i)   The difference between the smallest natural number and the smallest whole number is _____

 Hint : $1 - 0 = 1$ **[Ans: 1]**

(ii) $17 \times$ _____ $= 34 \times 17$ **[Ans: 34]**

(iii) When _____ is added to a number, it remains the same.   **[Ans: 0]**

(iv) Division by _____ is not defined.   **[Ans: 0]**

(v)   Multiplication by _____ leaves a number unchanged.   **[Ans: 1]**

2. **Say True or False**

(i)   0 is the identity for multiplication of whole numbers.

 Hint :   1 is the identity for multiplication   **[Ans: False]**

(ii)   Sum of two whole numbers is always less than their product.

 Hint : $1 + 1 = 2 > 1 \times 1 = 1$ **[Ans: False]**

(iii) Both addition and multiplication are associative for whole numbers.**[Ans: True]**

(iv) Both addition and multiplication are commutative for whole numbers.**[Ans: True]**

(v)   Multiplication is distributive over addition for whole numbers.   **[Ans: True]**

3. **Name the property being illustrated in each of the cases given below**

(i) $75 + 34 = 34 + 75$

   Ans: Addition is commutative

(ii) $(12 \times 4) \times 8 = 12 \times (4 \times 8)$

   Ans: Multiplication is associative

(iii) $50 + 0 = 50$

   Ans: 0 is the additive identity

(iv) $50 \times 1 = 50$

   Ans: 1 is the multiplicative identity.

(v) $50 \times 42 = 50 \times 40 + 50 \times 2$

   Ans: Distributivity of multiplication over addition

4. **Use the properties of whole numbers and simplify.**

(i) 50×102

Sol: Using distributive property of multiplication over addition.

      $50 \times 102 = 50 \times 10 + 50 \times 2 = 5000 + 100 = 5100$

      $50 \times 102 = 5100$

(ii) $500 \times 689 - 500 \times 89$

Sol: Using distributivity of multiplication over subtraction $500 \times 689 - 500 \times 89$

      $= 500 \times (689 - 89) = 500 \times 600 = 300000$

      $500 \times 689 - 500 \times 89 = 3,00,000$

(iii) $4 \times 132 \times 25$

Sol: We know that multiplication is associative

∴ $4 \times 132 \times 25 = 4 \times 25 \times 132 = 100 \times 132 = 13200$

      $4 \times 132 \times 25 = 13200$

(iv) $196 + 34 + 104$

Sol: $196 + 34 + 104 = 196 + 104 + 34 = 300 + 34 = 334$ [∵ Addition is associative]

      $196 + 34 + 104 = 334$

OBJECTIVE TYPE QUESTIONS

5. $(53 + 49) \times 0$ is

(a) 102   (b) 0   (c) 1   (d) $53 + 49 + 0$

Hint : $53 \times 0 + 49 \times 0 = 0 + 0 = 0$ **[Ans: (b) 0]**

6. $\dfrac{59}{1}$ is

(a) 1   (b) 0   (c) $\dfrac{1}{59}$ (d) 59 **[Ans: (d) 59]**

7. **The product of a non-zero whole number and its successor is always**

(a) an even number   (b) an odd number   (c) zero   (d) none of these

[Ans: (a) an even number]

8. **The whole number that does not have a predecessor is**

(a) 10   (b) 0   (c) 1   (d) none of these

Hint : 0 is the smallest whole number   **[Ans: (b) 0]**

9. **Which of the following expressions is not zero?**

(a) 0×0 (b) $0 + 0$ (c) $\dfrac{2}{0}$ (d) $\dfrac{0}{2}$

Hint : Dividing by 0 is not defined.   **[Ans: (c) $\dfrac{2}{0}$]**

10. **Which of the following is not true?**

(a) $(4237 + 5498) + 3439 = 4237 + (5498 + 3439)$

(b) $(4237 \times 5498) \times 3439 = 4237 \times (5498 \times 3439)$

(c) $4237 + 5498 \times 3439 = (4237 + 5498) \times 3439$

(d) $4237 \times (5498 + 3439) = (4237 \times 5498) + (4237 \times 3439)$

Hint : $4237 + 5498 \times 3439 = 4237 + (5498 \times 3439)$

[Ans: (c) $4237 + 5498 \times 3439 = (4237 + 5498) \times 3439$]

ADDITIONAL QUESTIONS - PROBLEMS

1. **Are all whole numbers are natural numbers? Justify your answer?**

Sol: No, all whole numbers are not natural numbers.

Because '0' belongs to whole number system. But it is not in natural number system.

∴ All whole numbers except '0' are natural numbers.

2. **Use associative property of addition to add $847 + 306 + 453$**

Sol: $847 + 306 + 453 = (847 + 453) + 306 = 1300 + 306 = 1606$

$847 + 306 + 453 = 1606$

3. **Find the value of $(1063 \times 127) - (1063 \times 27)$**

Sol: $(1063 \times 127) - (1063 \times 27) = 1063 (127 - 27)$ [Taking 1063 as common]

$= 1063 \times 100 = 106300.$

i.e $(1063 \times 127) - (1063 \times 27) = 106300$

4. **Find the product using suitable properties**

(a) 738×103   **(b) 1005×168**

Sol: (a) We have $738 \times 103 = 738 \times (100 + 3)$

$= 738 \times 100 + 738 \times 3$ [By distributive property of multiplication over addition)

$= 73800 + 2214 = 76014$

(b) $1005 \times 168 = (1000 + 5) \times 168$

$= (168 \times (1000 + 5)$ (By commutative property)

$= (168 \times 1000) + (168 \times 5)$

$= 1,68,000 + 840 = 1,68,840$

5. Write the largest six digit number and write the number names in words using the Indian and International system.

Sol: The largest six digit number is 999999

Number names is nine lakh ninety nine thousand nine hundred and ninety nine

Indian System

Lakh	Ten Thousand	Thousand	Hundred	Ten	One	The Number
9	9	9	9	9	9	9,99,999

International System

Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One	The Number
9	9	9	9	9	9	9,99,999

6. In a mobile store, the number of mobiles sold during a month is 1250, Assuming that the same number of mobiles are sold every month, find the number of mobiles sold in 2 years. ⊗

Sol: Number of mobiles sold in 1 month = 1250

1 year = 12 months

2 years = $2 \times 12 = 24$ months

Number of mobiles sold in 24 months = $1250 \times 24 = 30,000$

Number of mobiles sold in 2 years = 30,000

7. Simplify $24 + 2 \times 8 \div 2 - 1$ ⊗

Sol:
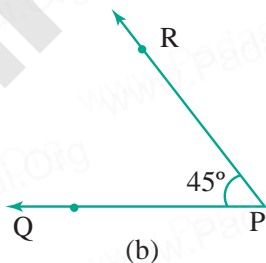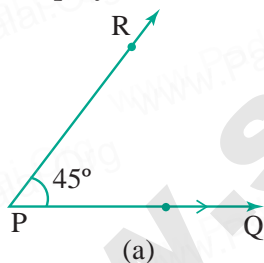
(a)   (b)

Construction :

✦ Drawn the base ray PQ.

✦ Placed the centre of the protractor at the vertex P. Lined up the ray $\overrightarrow{PQ}$ with the 0° line. Then drawn and labelled a pointed (R) at the 45° mark on the inner scale (a) anticlockwise and (b) outer scale (clockwise)

✦ Removed the protractor and drawn at $\overrightarrow{PR}$ to complete the angle.

Now $\angle P = \angle QPR = \angle RPQ = 45$

EXERCISE 1.6

Miscellaneous Practice Problems

1. **Try to open my locked suitcase which has the biggest 5 digit odd number as the password comprising the digits 7, 5, 4, 3 and 8. Find the password.**

Sol: Using place value chart

The number should be the biggest odd

TTH	TH	H	T	O
8	7	5	4	3

The password is 87543

2. **As per the census of 2001, population of four states are given below. Arrange the states in ascending and descending order of their population.**

State	Population
Tamil Nadu	72147030
Rajasthan	68548437
Madhya Pradesh	72626809
West Bengal	91276115

Sol: All the four values have 8 digits

∴ Comparing the left most digits we have 91276115, 72626809, 72147030, 68548437

Descending order: 91276115 > 72626809 > 72147030 > 68548437

Ascending order: 68548437 < 72147030 < 72626809 < 91276115

Ascending order: Rajasthan < Tamil Nadu < Madhy Pradesh < West Bengal

Descending order: West Bengal > Madhya Pradesh > TamilNadu > Rajasthan

3. **Study the following table and answer the questions.**

Year	No. of Tigers
1990	3500
2008	1400
2011	1706
2014	2226

(i) **How many tigers were there in 2011?**

(ii) **How many tigers were less in 2008 than in 1990?**

(iii) **Did the number of tigers increase or decrease between 2011 and 2014? If yes, by how much?**

Sol: (i) There are 1706 tigers in 2011

(ii) No. of tigers in 2008 = 1400

No. of tigers in 1990 = 3500

There were 2100 lesser tigers

3500
1400
2100

(iii) No. of tigers in 2014 = 2226

No. of tigers in 2011 = 1706

= 520 ∴ 2226 > 1706

∴ The number of tigers increased from 2011 to 2014.

Yes, the number of tigers increased, 520 more tigers are there in 2014.

4. **Mullaikodi has 25 bags of apples. In each bag there are 9 apples. She shares them equally amongst her 6 friends. How many apples do each get? Are there any apples left over?**

Sol: Number of bags of apples = 25

Number of apples in each bag = 9

www.Padasalai.Net   www.TrbTnpsc.com
This is only for Sample Materials
for full Book Order Online or Available at all Leading Bookstores

32   Sura's ○ **Mathematics** - **6th Std** ○**Term I** ○ **01** ○ NUMBERS

$$\therefore \text{Total apples} = 25 \times 9 = 225$$
$$\text{Number of friends} = 6$$
$$\text{Number of apples each friend get} = 225 \div 6 = 37$$
$$\text{Number of apples each get} = 37$$
$$\text{Remaining apples} = 3$$

5. **A Poultary has produced 15472 eggs and fits 30 eggs in a tray. How many trays do they need?**

Sol:
$$\text{Total eggs} = 15472$$
$$\text{No. of eggs in 1 tray} = 30$$
$$\therefore \text{No. of trays needed} = 15472 \div 30 = 516$$
$$\text{No. of trays needed} = 516$$

[515 + 1 for remaining 22 eggs]

```
       515
  30 )15472
      150
      ___
       47
       30
      ___
      172
      150
      ___
       22
```

Challenging Problem   (Text book Page No.36 & 37)

6. **Read the table and answer the following questions.**

Name of the Star	Diameter (in miles)
Sun	864730
Sirius	1556500
Canopus	25941900
Alpha Centauri	1037700
Arcturus	19888800
Vega	2594200

Sol: (i) **Write the Canopus star's diameter in words in the Indian and the International System.**

Canopus star's diameter is 25941900 miles

Indian System: Two crore Fifty Nine Lakh Forty one thousand Nine Hundred

International System: Twenty Five Million Nine Hundred Forty One Thousand Nine Hundred.

(ii) **Write the sum of the place values of 5 in Sirius star's diameter in Indian System.**

Sirus star's diameter = 1556500 miles

Sum of place values of 5 is $5 \times 100000 + 5 \times 10000 + 5 \times 100$

$$= 500000 + 50000 + 500 = 5,50,500$$

(iii) **Eight hundred sixty four million seven hundred thirty. Write in Indian System**

Given value is 864,000,730

In Indian System 86,40,00,730

Eighty six crore forty lakhs seven hundred and thirty.

(iv) **Write the diameter in words of Arcturus star in International System.**

Diameter of Arcturus Star is 19,888,800 miles Nineteen Million Eight Hundred and Eighty Eight Thousand Eight Hundred.

(v) **Write the difference of the diameters of Canopus and Arcturus star in the Indian and the International Systems.**

Diameter of Canopus	=	25941900
Diameter of Arcturus	=	19888800
Difference	=	6053100

In Indian System 60,53,100

Sixty lakh fifty three thousand one hundred.

In International System 6,053,100

Six Million fifty three thousand one hundred.

7. **Anbu asks Arivu Selvi to guess a five digit odd number. He gives the following hints.**

✦ **The digit in the 1000s place is less than 5**

✦ **The digit in the 100s place is greater than 6**

✦ **The digit in the 10s place is 8.**

What is Arivu Selvi answer? Does she give more than one answer?

Sol: There are more than one answers.

One of them is **54781**

Some of the other numbers may be 64783, 74785, 84787 and so on.

8. **A Music concert is taking place in a stadium, A total of 7,689 chairs are to be put in rows of 90.**

(i) **How many rows will there be?**

(ii) **Will there be any chairs left over?**

Sol: (i) There will be 85 rows

(ii) Yes, There are 39 chairs left over.

```
        85
    90 ) 7689
         720
         ____
         489
         450
         ____
          39
```

9. **Round off the seven digit number 29,75,842 to the nearest lakhs and ten lakhs. Are they the same?**

Sol:

TL	L	TTH	TH	H	T	O
2	9	7	5	8	4	2

To the nearest lakhs ⟹ 30,00,000

To the nearest ten lakhs ⟹ 30,00,000

Yes, they are the same.

10. **Find the 5 or 6 or 7 digit numbers from a newspaper or a magazine to get a rounded number to the nearest ten thousand.**

(i) A rounded number.

(ii) A rounded amount of money.

(iii) An exact number.

Sol: (i) Nearly 3,00,000 students are going to appear for the Public Examination this year.

(ii) A discount of ₹ 1,00,00,000 will be allowed to the farmers

(iii) 4,62,790 students have benefited by scholarships.

UNIT TEST

Time : 45 Minutes   **CHAPTER - 1**   **Marks: 25**

I. **Fill in the blanks.**   **[5 × 1 = 5]**

1. In Indian System of numeration, the number 51732123 is written, using commas as _____.

2. The smallest four digit number with different digits is _____.

3. Rounded off value of 2538473 to the nearest thousands in _____.

4. 1 Crore = _____ millions

5 Place Value of 6 in 9643210 is _____.

II. **Say True or False.**   **[5 × 1 = 5]**

6. The numbers 4578, 4587, 5478, 5487 are in ascending order.

7. All whole numbers are natural numbers.

8. Predecessor of a 2 digit number is always a 2 digit number.

9. $716 \times 3 + 716 \times 7 = 7160$.

10. 1 has no predecessor in the whole numbers.

III. **Answer any three of the following questions :**   **[3 × 2 = 6]**

11. Write the smallest 8 digit number having four different digits.

12. What is the place value of 7 in 674321

13. Estimate the number 95623 to the nearest hundred.

14. Estimate the sum $(274 + 143)$ to the nearest hundred.

15. Find the product of the largest 3 digit number and the largest five digit number.

16. State the property used in each of the following
   (a) $12349 \times 0 = 0$.
   (b) $63 \times 136 + 63 \times 36 = 63 (136 + 36)$

17. Find the product $4 \times 12995 \times 250$.

18. Determine the sum using suitable rearrangements. $953 + 707 + 647$.

IV. **Answer any three of the following questions.**   **[3 × 3 = 9]**

19. The product of two numbers is 296784 one of them is 432. Find the other number.

20. If 28362 people were watching a TV show. Write the people to the nearest thousand.

21. A village consumes 40 litre of milk in morning and 50 litre of milk in the evening. If the cost of milk is ₹ 23 per litre. Find the total sell in rupees.

22. Write the natural number and whole number which has no predecessor.

23. Simplify $73 \times 10 \div 2 + (5 + 3 \times 0) \div 5$

24. If Amali saves ₹ 825 every month. How much she saves in 14 years?

25. Cost of a bench is ₹ 6280. Find the cost of 268 benches to the nearest hundreds.

26. If the total population of a city is 436926208 and the number of males is 80260204. Then find the number of females in the city?

27. Evaluate $60 \div [2 + 20 \div \{2 + 12 \div (2 + 4 \div 2)\}]$

28. Using properties of whole numbers. Find the value of the following:
   (i) $5712 \times 75 – 72 \times 5712$
   (ii) $2103 \times 68 – 32 \times 2103$

29. Find the value of the following : $207 \times 80 + 207 \times 20$.

30. Find the product of the smallest whole number with the largest three digit whole number.

31. There are two whole numbers, which when multiplied by itself gives the same number. What are they?

ANSWERS

I.   1.   5,17,32,123   2.   1023   3.   25,38,000   4.   10

     5.   6,00,000

II.   6.   True   7.   False   8.   False   9.   True

     10.   False

III.

11.   1,00,00,023

12.   Given 674321

     Place value of 7 is $7 \times 10000 = 70{,}000$

13.   Given number 95623.

     Estimated to the nearest hundred digit in 100 place is 6 digit right of 100 place is $2 < 5$

     ∴ Leaving the 100 place digit as it is and changing the digits to their right zero we get

     95600

14. $274 + 143$

     $274 \Rightarrow 300$

     $143 \Rightarrow \underline{100}$

     Sum $= \underline{400}$

15.   Largest five digit number is 99999

     Largest 3 digit number = 999

     Product $= 99999 \times 999 = 99999 \times (1000 - 1) = 99999 \times 1000 - 99999 \times 1$

             $= 99999000 - 99999$ [By distributive property of multiplication over

             $= 99899001$ subtractive)

     Product $= 99899001$

16.   (i)   Multiplication of any number with 0 gives the product 0.

     (ii)   Distributive law of multiplication over addition in whole numbers.

17. $4 \times 12995 \times 250 = 4 \times 250 \times 12995$ (associative law of multiplication)

                       $= 1000 \times 12995 = 12995 \times 1000$ (commutative law of

                       $= 1{,}29{,}95{,}000$ multiplication)

     $4 \times 12995 \times 250 = 1{,}29{,}95{,}000$

18. $953 + 707 + 647 = 953 + 647 + 707$ [Addition of whole numbers is associative]

           $= 1600 + 707 = 2307$ [Commutative property]

     $953 + 707 + 647 = 2307$

IV.

19.   Product of two numbers   = 296784

               One of them   = 432

          ∴ Other number   = $296784 \div 432 = 687$

          ∴ Other number   = 687

20.   Given that the people watching TV = 28362 Place value to be rounded off is thousand

     digit in 1000 place 8 Digit to right to 8 is $3 < 5$ **+0**

     ∴ Keep 8 as it is and changing the right digits zero   **3 < 5**

     We get 28,000   **2 8 ③ 6 2**

21.   Total Litres of milk in a day   = $(40 + 50)\ l.$ **2 8 0 0 0**

                 Cost per litre   = ₹ 23.
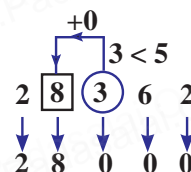
Total cost $= 23 \times (40 + 50)$ $= 23 \times (90)$
$= 2070$
$\therefore$ Total cost $=$ ₹ 2070

22. Natural Number which has no predecessor is 1
Whole Number which has no predecessor is 0

23. $73 \times 10 \div 2 + (5 + 3 \times 0) \div 5 = 73 \times 10 \div 2 + (5 + 0) \div 5$
$= 73 \times 10 \div 2 + 5 \div 5$ (Bracket completed first)
$= 73 \times 5 + 1$ ($\div$ completed second)
$= 365 + 1$ ($\times$ completed third)
$= 366$ (+ completed last)

24.   Savings of Amali for one month $=$ ₹ 825
$\therefore$ Savings for one year $=$ ₹ 825×12
$\therefore$ Savings for 14 years $=$ $825 \times 12 \times 14$
$=$ $9900 \times 14 =$ ₹ 1,38,600

Savings of Amali for 14 years
$=$ ₹ 1,38,600

25.   Cost of a bench $=$ $6280 \Rightarrow 6300$.
$\therefore$ Cost of 268 benches
$\Rightarrow$ 300 $=$ ₹ 6300×300
$=$ ₹ 18,90,000
Cost of benches $=$ 18,90,000

26.   Total population $=$ 436926208
Number of Males $=$ 80260204
Number of Females $=$ 35,66,66,004

27. $60 \div [2 + 20 \div \{2 + 12 \div (2 + 4 \div 2)\}] = 60 \div [2 + 20 \div \{2 + 12 \div (2 + 2)\}]$
$= 60 \div [2 + 20 \div \{2 + 12 \div 4\}]$ Innermost bracket completed first
$= 60 \div [2 + 20 \div \{2 + 3\}]$
$= 60 \div [2 + 20 \div 5]$ [Next Innermost bracket completed second]
$= 60 \div [2 + 4] = 60 \div 6 = 10$.

28. (i) $5712 \times 75 - 72 \times 5712$
$= 5712 \times (75 - 72)$ [distributive Law]
$= 5712 \times 3 = 17,136$
(ii) $2103 \times 68 - 32 \times 2103$
$=$ $2103 \times (68 - 32)$
$=$ $2103 \times 36 = 75708$

29. $207 \times 80 + 207 \times 20 = 207 \times (80 + 20)$ (distributivity)
$=$ $207 \times 100 = 20700$

30.   Smallest whole number $=$ 0.
Largest three digit number $=$ 999
Product $=$ $999 \times 0 = 0$

31. (i)   When the whole number 0 multiplied by itself gives $0 \times 0 = 0$
(ii) When the whole number 1 multiplied by itself gives $1 \times 1 = 1$
$\therefore$ The numbers are 0 and 1

❖❖❖❖

CHAPTER
02
INTRODUCTION TO ALGEBRA

2.1 INTRODUCTION

(Text book Page No.39)

Are you ready for a number game? Follow the steps below carefully:

Step 1	Step 2	Step 3	Step 4	Step 5
Think of any number	Multiply it by 2	Add 20	Divide by 2	Subtract the original number you had thought in step 1

Is your answer 10? Is it the same for all in the class? Verify it with your friend who might have started with a number other than your number. Surprised? What if you started with a fraction, say $\frac{1}{2}$ or $\frac{3}{4}$ or $\frac{4}{5}$? In this game, regardless of the number you started with, the answer will be 10.

Let us verify the game for two more numbers, say 4 and 9.
✦ If the initial number is 4,

Step 1	Step 2	Step 3	Step 4	Step 5
4	$4 \times 2 = 8$	$8 + 20 = 28$	$28 \div 2 = 14$	$14 - 4 = 10$

✦ If the initial number is 9,

Step 1	Step 2	Step 3	Step 4	Step 5
9	$9 \times 2 = 18$	$18 + 20 = 38$	$38 \div 2 = 19$	$19 - 9 = 10$

✦ So, we can say that the same will happen for other numbers too.

✦ You will find that Algebra is interesting and useful in solving problems in our daily life such as

✦ Finding the number of things to its cost.

✦ Expressing the distance covered, in terms of speed and time.

✦ Converting miles into kilometres, grams to kilograms etc.

✦ Finding the length of the barbed wire to fence a garden.

✦ Finding the area of a park.

✦ Finding the missing numbers in a sequence.

[37]

MATHEMATICS ALIVE – ALGEBRA IN REAL LIFE

4 sticks	8 sticks	12 sticks
4 sticks	2×4 sticks	3×4 sticks

2.2 PATTERNS

✦ We observe that 1 is odd, 2 is even, 3 is odd, 4 is even, 5 is odd and so on
Thus odd numbers and even numbers alternate with each other.

✦ Let us consider the shape 'L'

We need 2 ear buds to make 1 'L' shape	We need 4 ear buds to make 2 'L' shapes	We need 6 earbuds to make 3 'L' shapes
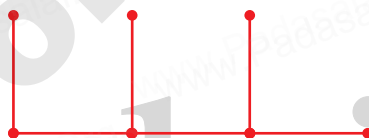
and so on. Tabulating the above facts.

Number of 'L' shapes formed	1	2	3	4	5	. . .
Number of earbuds required	2	4	6	8	10	. . .

So the number of ear buds required is twice the number of 'L' shapes formed, i.e.,
Number of ear buds required $= 2 \times$ Number of 'L' shapes formed.

So we can write Number of earbud required $= 2n$, where n is the number of 'L' shapes formed.

2.3 UNDERSTANDING OPERATIONS ON VARIABLES

'Variable' means something that can vary. The value of the variable is not fixed. It can take different values.

✦ **Ravi and Raja are brothers, Ravi is 3 years elder than Raja. Now Raja is 11 years old. Then Ravi's age will be 11 + 3 = 14 years. After every year their ages can be tabulated using the variable 'n'.**

Let Raja's age be 'n'.

Raja's age	Ravi's age ($n + 3$)
$n = 11$	14
$n = 12$	15
$n = 13$	16
$n = 14$	17
$n = 15$	18
⋮	⋮
$n = 20$	23
⋮	⋮

Then $n + 3$ gives Ravi's age.

TRY THESE

✦ **Observe the following patterns and complete them**

(i)   **5, 8, 11, 14, ___, ___, ___.**

Hint : $5 + 3 = 8, 8 + 3 = 11, 11 + 3 = 14$ **[Ans: 17, 20, 23]**

(ii)   **If 15873 × 7 = 111111 and 15873 × 14 = 222222 then, what is 15873 × 21 = ? and 15873 × 28 = ?**

Hint : $15873 \times 14 = 15873 \times 7 \times 2 = 111111 \times 2 = 222222$

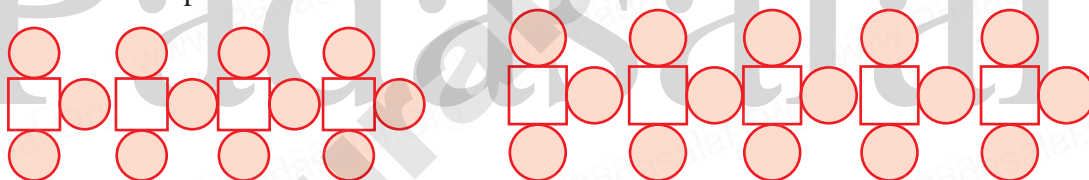**[Ans: 15873 × 21 = 333333; 15873 × 28 = 444444]**

✦ **Draw the next two patterns and complete the table.**
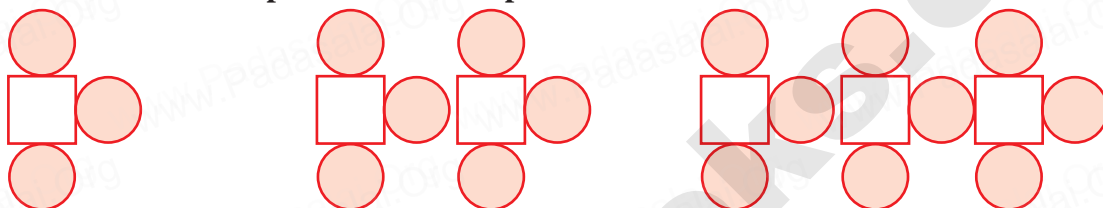
Pattern	1st	2nd	3rd	4th	5th
Squares	1	2	3		
Circles	3	6	9		

Sol: The next two patterns:

Pattern	1st	2nd	3rd	4th	5th
Squares	1	2	3	4	5
Circles	3	6	9	12	15

✦ Create your own patterns of shapes and prepare a table.

Sol: (i)   Match stick pattern of triangles.
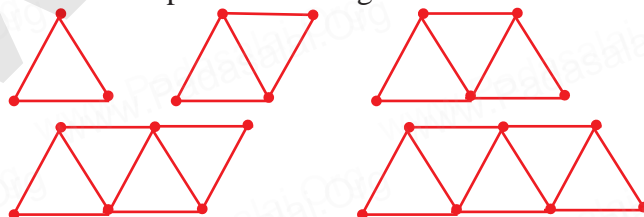
Pattern	1st	2nd	3rd	4th	5th
Triangles	1	2	3	4	5
Match sticks	3	5	7	9	11

(ii)　Pattern of squares and circles.
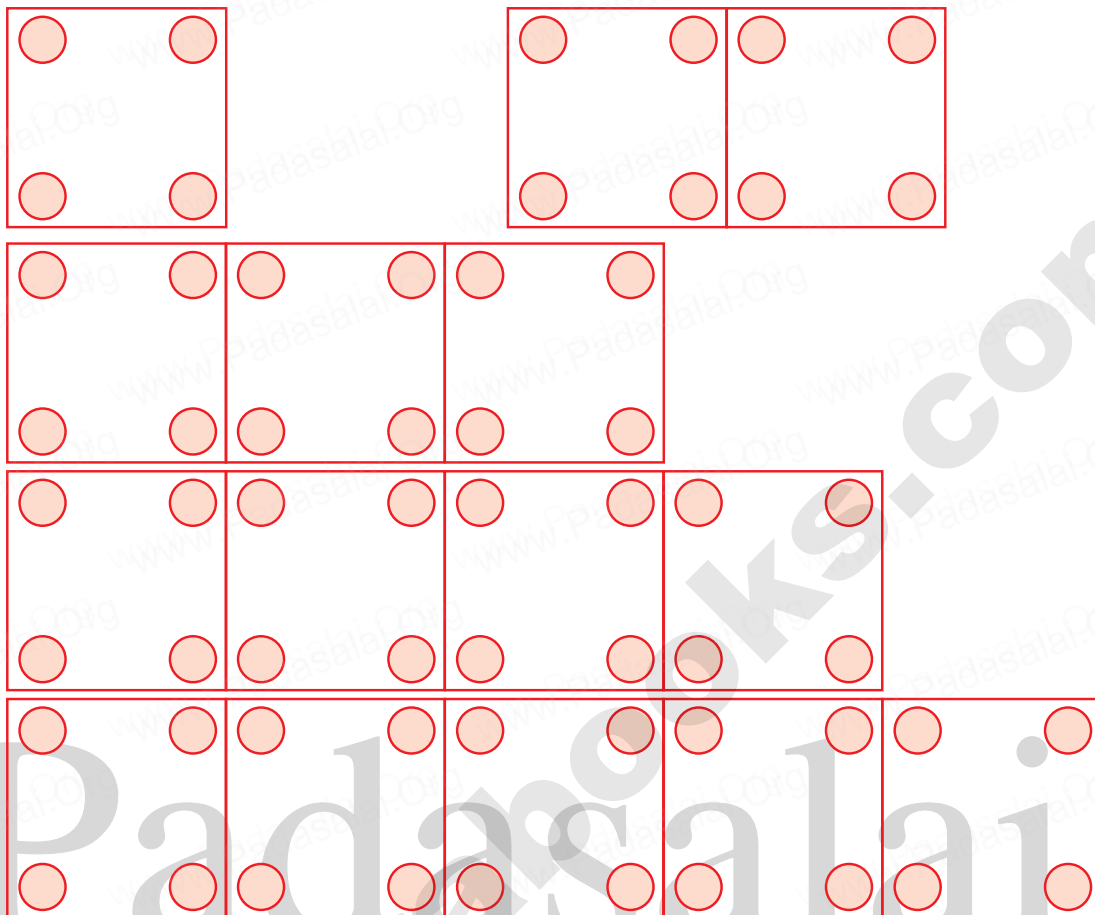
Pattern	1st	2nd	3rd	4th	5th
Squares	1	2	3	4	5
Circles	4	8	12	16	20

VARIABLES

✦ A variable is a quantity that can take any value and they are denoted by small alphabets a, b, c, . . ., x, y, z. But once we give it a value then it is the same on the left hand side as well as right hand side.

Eg:　(i)　Any number $\times$ 1 = The same number.　　$n \times 1 = n$.

　　(ii) Commutative property of addition can be written as $a + b = b + a$.

EXERCISE 2.1

1.　**Fill in the blanks:**

(i)　The letters a, b, c, . . ., x, y, z are used to represent _____ .**[Ans: Variables]**

(ii)　A quantity that takes _____ values is called a variable. **[Ans: different]**

(iii)　If there are 5 students in a bench, then the number of students in 'n' benches is '$5 \times n$'. Here _____ is a variable.　　　　　**[Ans: n]**

2. **Say True or False:**

(i) The length of part B in the pencil shown is '$a - 6$'.

Hint : Length of B is $6 - a$ **[Ans: False]**

(ii) If the cost of an 🍎 is 'x' and cost of 🍌 is ₹ 5, then the total cost of fruits is ₹ '$x + 5$'.   **[Ans: True]**

(iii) If there are 11 players in a team, then there will be '$11 + q$' players in 'q' teams.
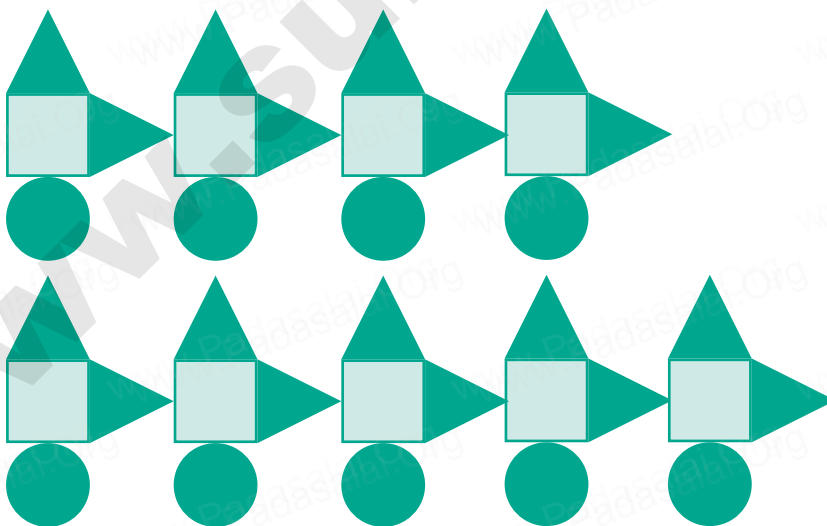
Hint : There will be $11q$ players.   **[Ans: False]**

3. **Draw the next two patterns and complete the table.**
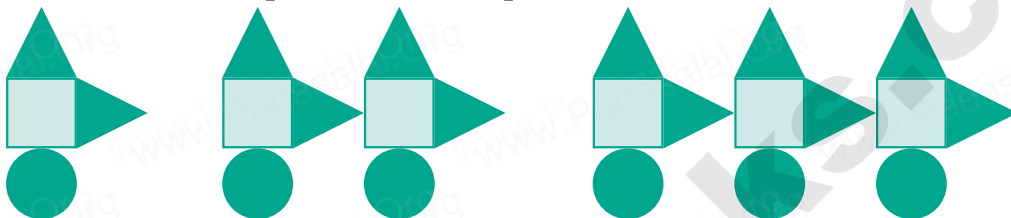
Shapes	1ˢᵗ pattern	2ⁿᵈ pattern	3ʳᵈ pattern	4ᵗʰ pattern	5ᵗʰ pattern
Squares	1	2	3		
Circles	1	2	3		
Triangles	2	4	6		

Sol:

Shapes	1ˢᵗ pattern	2ⁿᵈ pattern	3ʳᵈ pattern	4ᵗʰ pattern	5ᵗʰ pattern
Squares	1	2	3	**4**	**5**
Circles	1	2	3	**4**	**5**
Triangles	2	4	6	**8**	**10**

4. **Use a variable to write the rule, which gives the number of ice candy sticks required to make the following patterns.**

(a)   a pattern of letter C as ⌐   (b)   a pattern of letter M as M

Sol: **(a)** Number of sticks used for 1 '☐' is 3.

Number of ☐ formed	1	2	3	4	5	6	. . .
Number of ice candy sticks required	3	6	9	12	15	18	. . .
	1×3	2×3	3×3	4×3	5×3	6×3	. . .

If the number of ☐ formed is 'n' then

the number of ice candy sticks required $= 3 \times n = 3n$.

(b) Number of sticks used for one 'M' is 4.

Number of M's formed	1	2	3	4	5	6	. . .
Number of ice candy sticks required	4	8	12	16	20	24	. . .
	1×4	2×4	3×4	4×4	5×4	6×4	. . .

Number of ice candy sticks required $= 4n$.

5. **The teacher forms a group of five students in a class. How many students will be there in 'p' groups?**

Sol:

Number of groups	1	2	3	. . .	p	. . .
Number of students	5	10	15	. . .	$5p$	. . .
	1×5	2×5	3×5	. . .	$p \times 5$	. . .

$5p$ students will be there in groups.

6. **Arivazhagan is 30 years younger to his father. Write Arivazhagan's age in terms of his father's age.**

Sol: Given Arivazhagan is 30 years younger to his father.

Let Father's is age be n.

Arivazhagan's age is $(n - 30)$ years.

7. **If 'u' is an even number, how would you represent.**

  (i) **the next even number?**

  (ii) **the previous even number?**

Sol: **(i)** Difference between two even numbers $= 2$

   Given that 'u' is an even number. Next even number is $u + 2$.

  (ii) Previous even number is $u - 2$.

OBJECTIVE TYPE QUESTIONS

8. **Variable means that it**

  (a) can take only a few values

  (b) has a fixed value

  (c) can take different values

  (d) can take only 8 values

   [Ans: (c) can take different values]

9. **'$6y$' means.**

  (a) $6 + y$

  (b) $6 - y$

  (c) $6 \times y$

  (d) $\dfrac{6}{y}$

   [Ans: (c) $6 \times y$]

10. **Radha is ' *x* ' years of age now. 4 years ago, her age was**

(a) $x - 4$ (b) $4 - x$ (c) $4 + x$ (d) $4x$

[Ans: (a) *x* – 4]

11. **The number of days in '*w*' weeks is**

(a) $30 + w$ (b) $30w$ (c) $7 + w$ (d) $7w$
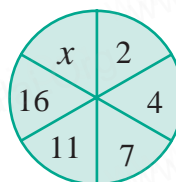
[Ans: (d) 7w]

12. **The value of '*x*' in the circle is**

(a) 6   (b) 8

(c) 21   (d) 22

Hint : $2 + 2 = 4, 4 + 3 = 7, 7 + 4 = 11, 11 + 5 = 16, 16 + 6 = 22$ [Ans: (d) 22]

ADDITIONAL QUESTIONS - PROBLEMS

Fill in the blanks.

1. Additive identity_____   [Ans: 0]

2. Multiplicative identity_____   [Ans: 1]

Answer the following question.

1. **Express to algebric statement.**

(i) **'*t*' is added to 100**   (ii) **4 less to 9 times of *y*.**

Sol: (i) $t + 100$ (ii) $9y - 4$

1. **Find the rule which gives the number of sticks in the following pattern.**

(a)   (b)

Sol: Let '*x*' be the no. of R's formed.

(a)

No. of ⊟ formed	1	2	3	4	5	. . .
No. of sticks	6	12	18	24	30	. . .
	1×6	2×6	3×6	4×6	5×6	. . .

∴ The rule is $6x$.

Let '*y*' be the no. of S's formed.

(b)

No. of ⊐ formed	1	2	3	4	5	6	. . .
No. of sticks	5	10	15	20	25	30	. . .
	1×5	2×5	3×5	4×5	5×5	6×5	. . .

∴ The rule is $5y$.

2. **How old was Suja 6 years from now?**

Sol: Let Suja's present age be '*a*' years.

6 years from now Suja will be $(a + 6)$ years old.

3. **Price of Apple per kg is ₹ 50 more than price of orange per kg. What is the cost of Apple per kg?**

Sol: Let the price of orange be ₹ 'b'

∴   Price of Apple will be ₹ $(b + 50)$

2.4. FRAMING ALGEBRAIC STATEMENTS

As we know variables can take different values as they have no fixed value. Then all the four basic operations of addition, subtraction, multiplication and division can be performed in the same way with variables as we do with numbers.

2.5 SOLVING UNKNOWNS THROUGH EXAMPLES

The value of the variable in an equation, which satisfies the equation is called a "solution of an equation."

👥 TRY THESE

(Text book Page No.46 to 48)

1.

Sl. No.	Algebraic Statement	Verbal Statement
1.	$a + 5$	**5 added to a.**
2.	$6z - 1$	**6 times z from which 1 is subtracted.**
3.	$12y$	**12 multiplied by y.**
4.	$\dfrac{x}{6}$	**x divided by 6.**

2.

Sl. No.	Verbal Statement	Algebraic Statement
1.	Seven times of 'n' minus 5	$7n - 5$
2.	The sum of 'x' and 4	$x + 4$
3.	3 times 'y' is divided by 8	$\dfrac{3y}{8}$
4.	11 is multiplied by 'm'	$11m$

3. **Find the unknown.**

✦ $37 + 43 = 43 + \boxed{37}$

✦ $(22 + 10) + 15 = \boxed{22} + (10 + 15)$

✦   If $7 \times 46 = 322$, then $46 \times 7 = \boxed{322}$

4. **Find the suitable value of 'm' to get a sum of 9?**

m	$m + 4$	Result	Is it 9? Yes/No
1.	$1 + 4$	5	No
2.	$2 + 4$	6	No
3.	$3 + 4$	7	No
4.	$4 + 4$	8	No
5.	$5 + 4$	9	Yes

EXERCISE 2.2

1.   Find in the blanks.

(i)   The algebraic statement of '*f*' decreased by 5 is _____ .   **[Ans: *f* – 5]**

(ii)   The algebraic statement of '*s*' divided by 5 is _____ .   **[Ans: $\dfrac{s}{5}$]**

(iii) The verbal statement of '2*m* – 10' is _____ .**[Ans: 10 less than 2 times *m***
(or) Take away 10 from the product of 2 and *m*]

(iv)   If A's age is '*n*' years now, 7 years ago A's age was _____ . **[Ans: *n* – 7]**

(v)   If '*p* – 5' gives 12 then '*p*' is _____ .

Hint : $p - 5 = 12 \Rightarrow p = 12 + 5 = 17$ **[Ans: 17]**

2.   Say True or False.

(i)   10 more to three times '*c*' is '3*c* + 13'.

Hint : $3c + 10$ **[Ans: False]**

(ii)   If the cost of 10 rice bags is '*t*' , then the cost of 1 rice bag is '$\dfrac{t}{10}$' **[Ans: True]**

(iii) The statements '*x*' divided by 3 and 3 divided by '*x*' are the same. **[Ans: False]**

(iv)   The product of '*q*' and 20 is '20*q*'.   **[Ans: True]**

(v)   7 less to 7 times '*y* ' is '7 – 7*y*'.

Hint : $7y - 7$ **[Ans: False]**

3.   Express the following verbal statement to algebraic statement.

(i)   '*t*' is added to 100   (ii)   4 times '*q*'

(iii) 8 is reduced by '*y*'.   (iv)   56 added to 2 times '*x*'.

(v)   4 less to 9 times of '*y*'

Sol: (i) $t + 100$ (ii) $4q$ (iii) $8 - y$

(iv) $2x + 56$ (v) $9y - 4$

4.   Express the following algebraic statement to verbal statement.

(i) $x \div 3$ (ii) $5n - 12$ (iii) $11 + 10x$

(iv) $70s$

Sol: (i)   *x* divided by 3.   (ii)   12 less to 5 times *n*.

(iii) 11 added to 10 times *x*   (iv)   7 times *s*.

5.   The teacher asked two students to write the algebraic statement for the verbal statement "8 more than a number" on the board. Vetri wrote '8 + *x*' but Maran wrote '8*x*'. Who gave the correct answer?

Sol: Let the number be *x*; 8 more than the number = 8 + *x*.

Vetri gave the correct answer as 8 + *x*.

6.   Answer the following questions:

(i)   If '*n*' takes the value 3 then find the value of '*n* + 10'

(ii)   If '*g*' is equal to 300. What is the value of '*g* – 1' and '*g* + 1'?

(iii) What is the value of *s*; if '2*s* – 6' gives 30?

Sol: **(i)**   Given $n = 3$
then $n+10 = 3 + 10 = 13$
$n + 10 = 13$

(ii)   Given $g = 300$
$g - 1 = 300 - 1 = 299$
$g + 1 = 300 + 1 = 301$
$g - 1 = 299; g + 1 = 301$

(iii)   Given $2s - 6 = 30$
From the table:
$2 \times \boxed{18} - 6 = 30$
$s = 18$

Value of s	2S – 6	Result	Is it 30?
12	$2 \times 12 - 6$	18	No
13	$2 \times 13 - 6$	20	No
14	$2 \times 14 - 6$	22	No
15	$2 \times 15 - 6$	24	No
16	$2 \times 16 - 6$	26	No
17	$2 \times 17 - 6$	28	No
18	$2 \times 18 - 6$	30	Yes

7. **Complete the table and find the value of 'k' for which '$\dfrac{k}{3}$' gives 5.**

k	3	6	9	12	15	18

Sol:

k	3	6	9	12	15	18

Given : $k \div 3 = 5$ From the above table we find that
$\boxed{15} \div 3 = 5$ $\therefore k = 15$

OBJECTIVE TYPE QUESTIONS

8. **The value of 'y' in $y + 7 = 13$ is**
(a) $y = 5$ (b) $y = 6$ (c) $y = 7$ (d) $y = 8$

Hint : $y = 13 - 7 = 6$ **[Ans: (b) y = 6]**

9. **6 less to 'n' gives 8 is represented as**
(a) $n - 6 = 8$ (b) $6 - n = 8$ (c) $8 - n = 6$ (d) $n - 8 = 6$

[Ans: (a) n – 6 = 8]

10. **The value of 'c' for which $\dfrac{3c}{4}$ gives 18 is**

(a) $c = 15$ (b) $c = 21$ (c) $c = 24$ (d) $c = 27$

Hint : $\dfrac{3c}{4} \Rightarrow 3c = 18 \times 4 \Rightarrow c = \dfrac{18 \times 4}{3} = 24$ **[Ans: (c) c = 24]**

ADDITIONAL QUESTIONS - PROBLEMS

1. **Given 'n' students like ice cream. What may 2n show?**

Sol: $2n$ shows double the number of students who like ice cream.

2. **Price of oil per litre is ₹ 5 more than three times the price of cool drinks ₹ 'p' Express algebraically.**

Sol: Price of cool drinks per kg $= ₹ p$
Three times $= 3p$
5 Rs. more $= 3p + 5$
$\therefore$ Price of oil per kg $= ₹3p + 5$

3. Complete the table and by inspection of the table find the value of *m* when *m* + 10 = 16.

m	1	2	3	4	5	6	7	8	9	10
m + 10	–	–	–	–	–	–	–	–	–	

Sol:

m	1	2	3	4	5	6	7	8	9	10
m + 10	11	12	13	14	15	16	17	18	19	20

From the table *m* + 10 = 16 when *m* = 6.

4. Express algebraically (a) *y* divided by *r* (b) double times *x* is subtracted from 10

Sol: (a) $\dfrac{y}{r}$ (b) $10 - 2x$

5. Give verbal expression of (a) $7x + 18$ (b) $\dfrac{4x}{3}$

Sol: (a)   18 added to 7 times *x*   (b) 4 times *x* divided by 3.

6. Rajini's Father's age is 5 years more than 3 times Rajini's age. What is her father's age?

Sol: $3x + 5$

7.   .....Find the rule for the above pattern.

Sol: $2p$

8. Prepare a table for $3x + 10$. From the table find the value of *x* when $3x + 10 = 25$.

Sol: 5

9. Complete the table and find the solution of the equation $\dfrac{z}{3} = 4$ using the table.

z	8	9	10	11	12	13	14	15	16
$\dfrac{z}{3}$	$\dfrac{8}{3}$	3	$\dfrac{10}{3}$	$\dfrac{11}{3}$	4	–	–	–	–

Sol: $\dfrac{13}{3}, \dfrac{14}{3}, 5$ and $\dfrac{z}{3} = 4$ when $z = 12$.

10. Form the expression for which Ramu is 3 years younger than Mathu.

Sol: $m - 3$

11. A tap is to be pasted along the edges of a square shaped gift box. Its length is 4 cm. What is the length of tap needed for one side.

Sol: $\dfrac{4p}{4} = p$

12. The value of *y* in $7y - 20 = 99$.

Sol: $y = 17$

13. Nine added to two times *x* gives 301. Find the value of *x*.

Sol: $x = 146$

14. Aarthi is 3 years younger to Harini. If the sum of their ages is 23, how old is Harini?

Sol: Let Harini's age be *x* years
Aarthi's age is $x - 3$ years
Given sum of their ages is 23.   i.e., $x + (x - 3) = 23$

Harini's age (*x*)	Aarth's age *x* – 3	Sum *x* + (*x*– 3)	Result	Is sum = 23 Yes / No
10	7	10 + 7	17	No
11	8	11 + 8	19	No
12	9	12 + 9	21	No
13	10	13 + 10	23	23

EXERCISE 2.3

(MISCELLANEOUS PRACTICE PROBLEMS)

1. Complete the following pattern.

9 – 1 =	**Sol:**
98 – 21 =	
987 – 321 =	
9876 – 4321 =	
98765 – 54321 =	
What comes next?	

Sol:

$9 - 1 = 8$

$98 - 21 = 77$

$987 - 321 = 666$

$9876 - 4321 = 5555$

$98765 - 54321 = 44444$

Next will be $987654 - 654321 = 333333$

2. A piece of wire is '12 *s*' cm long. What will be length of the side if it is formed as

(i) an equilateral triangle. (ii) a square?

Sol: (i) An equilateral triangle has 3 equal sides.

Length of the wire = '12 *s*' cm

∴ Length of each side = $\dfrac{12s}{3}$ cm.

Length of each side of the triangle = 4*s* cm

(ii) A square has four equal sides.

∴ Length of each side $\dfrac{12s}{4}$ cm.

Length of each side of the square = 3*s* cm

3. Identify the value of the shapes and figures in the table given below the verify their addition horizontally and vertically.

Sol:

★	☺	☺	★	= 30
★	★	△	△	= 36
★	△	☺	☺	= 32
★	☺	△	☺	= 32
= 32	= 32	= 34	= 32	= 130

4. The table given below shows the results of the matches played by 8 teams in a Kabaddi championship tournament.

Teams	A	B	C	D	E	F	G	H
Total Matches played	8	7	*n*	*a*	9	10	8	*y*
Matches won	5	6	4	7	*b*	6	*x*	3
Matches lost	*k*	*m*	6	2	3	c	4	6

24. (i) Difference between two even numbers = 2

Given that 'u' is an even number. We know that odd and even numbers alternate with each other $u = 2n$. Next even number is $u + 2 = 2n + 2$.

(ii) Previous even number is $u - 2 = 2n - 2$.

25. (i) $t + 100$ (ii) $9y - 4$

26. $\dfrac{20}{5} = \dfrac{4}{1}$

$\therefore$ 4 : 1

27. 3 : 2

$\dfrac{3}{2} \times \dfrac{2}{2} = \dfrac{6}{4} = 6:4 \implies \dfrac{3}{2} \times \dfrac{3}{3} = \dfrac{9}{6} = 9:6$

6 : 4 and 9 : 6 are equivalent to 3 : 2

28. (i) True   (ii) True

29. We know that sum of complementary angles 90°

Given Angle = 2 × Complementary angle

Angle	Complementary angle (90 – Angle)	2 × Complementary angle	Is Angle = 2 × Complementary	Result Yes/No
10	80	160	10 = 160	No
20	70	140	20 = 140	No
30	60	120	30 = 120	No
40	50	100	40 = 100	No
50	40	80	50 = 80	No
60	30	60	60 = 60	Yes

By trial and error, we find that Angle = 2 × Complement for 60°

$\therefore$ The required angle = 60°

Another method

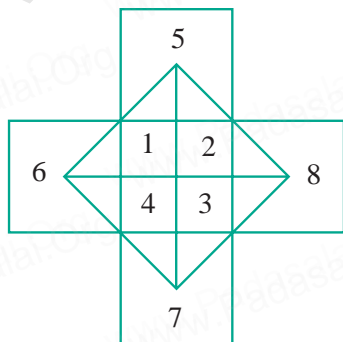Let the angle be x given

$$x = 2(90 - x)$$
$$x = 180 - 2x$$
$$x + 2x = 180°$$
$$3x = 180$$
$$x = \frac{180}{3} = 60$$

30. The data can be analyzed and interpreted. The pictures and symbols help us to understand better.

31.

As we see in the figure in the middle 1, 2, 3, and 4 are 4 small squares.

Also we have 9 and 10 $\implies$ 2 big squares. Outer squares 5, 6, 7, & 8 $\implies$ 4.

Total = 4 + 4 + 1 + 1 = 10 squares.

32. **(i)** **Parallel Lines:**

$\overleftrightarrow{CD}$ and $\overleftrightarrow{EF}$; $\overleftrightarrow{CD}$ and $\overleftrightarrow{IJ}$; $\overleftrightarrow{EF}$ and $\overleftrightarrow{IJ}$ are parallel lines.

(ii) **Intersecting lines**

(a) $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ (b) $\overleftrightarrow{AB}$ and $\overleftrightarrow{EF}$

(c) $\overleftrightarrow{AB}$ and $\overleftrightarrow{GH}$ (d) $\overleftrightarrow{AB}$ and $\overleftrightarrow{IJ}$

(e) $\overleftrightarrow{GH}$ and $\overleftrightarrow{IJ}$

(iii) **Points of Intersection:**

P, Q and R are the points of intersection.

33. Here the extremes are 3 and 20 and the means are 2 and 30.

Product of extremes, $ad = 3 \times 20 = 60$.

Product of means, $bc = 2 \times 30 = 60$.

Thus by proportionality law, we find $ad = bc$ and hence 3 : 2 and 30 : 20 are in proportion.

34. (i) Associativity   (ii) Distributivity

35. (a)   Run Rate   = Ratio of runs to over

Run rate of Aadisaran $= \dfrac{50}{10} = 5$

Run rate of Mohan $= \dfrac{42}{7} = 6$

∴ Mohan's run rate is better

b)   Sum of complementary angles   = 90°

∠ABC   = 90°

∠CBD   = 30°

∴ ∠ABD   = ∠ABC – ∠DBC

= 90° – 30° = 60°

∠ABD   = 60°

Complementary angle of 30°   = 60°

SECTION – C

V.

36. The largest six digit number is 999999

Number names is nine lakh ninety nine thousand nine hundred and ninety nine

Indian System

Lakh	Ten Thousand	Thousand	Hundred	Ten	One	The Number
9	9	9	9	9	9	9,99,999

International System

Hundred Thousand	Ten Thousand	Thousand	Hundred	Ten	One	The Number
9	9	9	9	9	9	9,99,999

37.   Number of mobiles sold in 1 month   = 1250

1 year   = 12 months

2 years   = 2 × 12 = 24 months

Number of mobiles sold in 24 months   = 1250 × 24= 30,000

Number of mobiles sold in 2 years   = 30,000

38. Let Harini's age be x years

Aarthi's age is $x - 3$ years

Given sum of their ages is 23.   i.e., $x + (x - 3) = 23$

Harini's age (x)	Aarth's age $x - 3$	Sum $x + (x-3)$	Result	Is sum = 23 Yes / No
10	7	10 + 7	17	No
11	8	11 + 8	19	No
12	9	12 + 9	21	No
13	10	13 + 10	23	23

For $x = 13$ (Harini's age) the sum = 23

∴ Harini's age = 13 years

39. Divide the whole money into $2 + 3 = 5$ equal parts then, Vimala gets 2 parts out of 5 parts and Yazhini gets 3 parts out of 5 parts.

Amount Vimala gets $= ₹\ 600 \times \dfrac{2}{5} = ₹\ 240$

Amount Yazhini gets $= ₹\ 600 \times \dfrac{3}{5} = ₹\ 360$

Vimala received ₹ 240 and Yazhini gets ₹ 360, which is ₹ 120 more than that of Vimala.

40. Cost of 15 chairs = ₹ 7500

Cost of 1 chair $= \dfrac{7500}{15} = 500$

For ₹ 500 number of chair purchases = 1

For ₹ 12,000 number of chair purchased $= \dfrac{12000}{500} = 24.$

∴ 24 Chairs can be purchased for ₹ 12,000.

41. Total of complementary angles $= 90°$. The angles are in the ratio 7:2

Dividing total angles to $7 + 2 = 9$ equal parts

∴ One angle $= \dfrac{7}{9} \times 90 = 70°$

∴ Another angle $= \dfrac{2}{9} \times 90 = 20°$

∴ Two angles are 70° and 20°

42. Given two angles are supplementary i.e. their sum $= 180°$.

Let the angle be x

Then another angle $= x + 20$ (given)

One angle x	Another angle $x + 20$	Total $x + (x + 20)$	Is total = 180°
20	40	60	No
40	60	100	No
60	80	140	No
80	100	180	Yes

∴ The two angles are 80° and 100°.

www.Padasalai.Net   www.TrbTnpsc.com
This is only for Sample Materials
for full Book Order Online or Available at all Leading Bookstores

172   Sura's ○ Mathematics (FY) - 6th Std ○ Term I - Summative Assessment 2018-19

43. (a)

Name	Savings Amount ▨ - ₹ 100
Kavin	
Deepika	
Kaviya	
Manoj	

(b)
$24 + 2 \times 8 \div 2 - 1$ (given question)
$= 24 + 2 \times 4 - 1$ (÷ operation, completed first)
$= 24 + 8 - 1$ (× operation, completed second)
$= 32 - 1$ (+ operation, completed third)
$= 31$ (− operation , completed last)
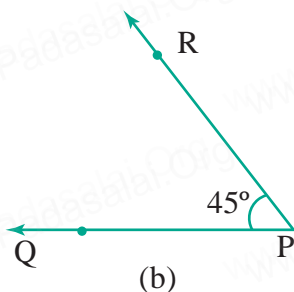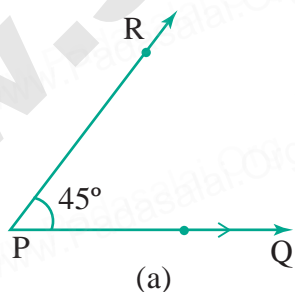
SECTION – D

VI.

44. (a)

A   **7.5 cm**   **B**   *l*

Construction:

Step 1 : Drawn a line *l* and marked the point A

Step 2 : Measured 7.5 cm using compass placing the pointer at '0' and pencil pointer at 7.5 cm

Step 3 : Placing compass pointer at A, drawn an arc on *l* with the pencil pointer. It cut '*l*' at B

Step 4 : AB is the required segment of length 7.5 cm

(b)

R   R

45°   45°

P   Q   Q   P
     (a)   (b)

Construction :

✦ Drawn the base ray PQ.

✦ Placed the centre of the protractor at the vertex P. Lined up the ray $\overrightarrow{PQ}$ with the 0° line. Then drawn and labeled a pointed (R) at the 45° mark on the inner scale (a) anticlockwise and (b) outer scale (clockwise)

✦ Removed the protractor and drawn at $\overrightarrow{PR}$ to complete the angle
Now ∠P = ∠QPR = ∠RPQ = 45

❀ ❀ ❀ ❀ ❀