PREFACE

Precise Mathematics is a series of text books specially prepared to meet the requirements of Primary School pupils as per the latest Mathematics curriculum prescribed by the Council for the ISC Examinations, New Delhi.

This series has adopted a learner-centred and lively approach to the teaching of Mathematics. All basic concepts have been clearly explained with the help of examples to lay a strong foundation for the subject. Numerous illustrations are given in each chapter to enhance the students' understanding of the mathematical concepts. Stimulating questions and fun activities of the lessons challenge the pupils to think critically and creatively. The series endeavours to nurture the mathematical thinking and systematic reasoning of pupils and to arouse a child's interest and curiosity in the subject.

'Precise Mathematics' is a departure from conventional text books in as much as it attempts to develop in the student a fondness for the subject through a refreshing style of presentation of the fundamental concepts and their applications.

This is a text-cum-workbook. It will help the child to master Mathematical skills through continuous practice. It encourages the students to learn rather than to be taught; to think; to reason and to use simple mathematical language and symbols; and to understand, with the aid of extensive illustrations, the relationship that exists between the subject and everyday life.

We are grateful to Mr. Y. Upadhyaya, Ingraham Institute Ghaziabad, Mr. Anil Kumar, St. Mary's School Ghaziabad and Ms. Sweta Upadhayaya for their inputs and suggestions for the preparation of this series.

Feedback from teachers for the further improvement of this series will be highly appreciated.

Editor

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REVISION

EXERCISE 1

1 Read each number. Give it in expanded notation :

(a) 9433 = ☐ Thousands ☐ hundreds ☐ tens ☐ ones

(b) 7047 = ☐ Thousands ☐ hundreds ☐ tens ☐ ones

(c) 21,254 = ☐ Ten thousands ☐ thousand ☐ hundreds ☐ tens ☐ ones

(d) 27,808 = ☐ Ten thousands ☐ thousands ☐ hundreds ☐ tens ☐ ones

(e) 48,193 = ☐ Ten thousands ☐ thousands ☐ hundred ☐ tens ☐ ones

(f) 51,732 = ☐ Ten thousands ☐ thousand ☐ hundreds ☐ tens ☐ ones

2 Give the place value of the underlined digits in the following numbers :

	Number	*Place Value*		*Number*	*Place Value*
(a)	2̲86		(b)	3̲143	
(c)	72̲48		(d)	90̲47	
(e)	1̲2,178		(f)	84̲,526	
(g)	6̲2,008		(h)	45,40̲9	
(i)	69,5̲57		(j)	7̲8,210	

3 Give the expanded form of the following numbers :

(a) 52,083 = ____

(b) 71,775 = ____

(c) 10,040 = ____

(d) 86,009 = ____

(e) 94,915 = ____

4 Give the compact form :

(a) 40,000 + 0 + 600 + 0 + 5 = ____

(b) 70,000 + 7000 + 800 + 0 + 0 = ____

(c) 10,000 + 4000 + 100 + 20 + 3 = ____

(d) 20,000 + 2000 + 400 + 40 + 7 = ____

(e) 60,000 + 5000 + 300 + 10 + 0 = ____

5 Write in figures :

(a) Seven thousand four hundred eighty three ____

(b) Nine thousand three hundred four ____

(c) Forty three thousand six hundred forty two ____

(d) Seventy five thousand nine hundred twenty ____

(e) Eighty thousand one hundred seven ____

6 Write in words :

(a) 6,178 = Six thousand one hundred seventy eight

(b) 8,043 = _____

(c) 21,249 = _____

(d) 35,720 = _____

(e) 50,750 = _____

(f) 81,048 = _____

(g) 90,990 = _____

(h) 92,040 = _____

7 Put the correct sign > or < :

(a) 6,148 ◯ 6,137 (b) 8,043 ◯ 8,132

(c) 9,143 ◯ 9,206 (d) 9,499 ◯ 9,500

(e) 12,108 ◯ 12,007 (f) 27,312 ◯ 27,132

(g) 40,406 ◯ 40,604 (h) 75,210 ◯ 75,201

(i) 82,178 ◯ 82,718 (j) 91,909 ◯ 90,999

8 Rewrite the following in ascending order :

(a) 7145, 745, 7054, 5074 (b) 25218, 5218, 28215, 8215

_____ _____

(c) 810, 86845, 68548, 86848 (d) 5175, 57575, 55775, 775

_____ _____

(e) 37,894, 53,891, 93,216, 13,456 (f) 45,678, 98,321, 41,321, 53,432

_____ _____

9 Rewrite the following in descending order :

(a) 9140, 9410, 910, 9014 (b) 11171, 17111, 1888, 81828

_____ _____

(c) 67900, 96700, 9900, 97760 (d) 81756, 18657, 86156, 86656

_____ _____

(e) 94,567, 84,132, 34,567, 42,102 (f) 45,412, 94,351, 74,567, 21,032

_____ _____

10 Write the successors of each of the following :

(a) 35,399 _____ (b) 49,999 _____

(c) 50,099 _____ (d) 62,600 _____

(e) 74,999 _____ (f) 86,899 _____

(g) 91,009 _____ (h) 45,089 _____

11 Write the predecessors of each of the following numbers :

(a) 25,500 _____ (b) 38,290 _____

(c) 44,410 _____ (d) 68,700 _____

(e) 70,666 _____ (f) 82,001 _____

(g) 94,000 _____ (h) 85,010 _____

12 Write the smallest number using the following digits only once :

(a) 2, 5, 8, 7 _____ (b) 3, 2, 8, 4 _____

(c) 2, 0, 8, 1, 3 _____ (d) 3, 5, 1, 7, 4 _____

(e) 9, 0, 3, 5, 8 _____ (f) 1, 0, 5, 3, 8 _____

(g) 4, 1, 6, 7, 2 _____ (h) 2, 1, 5, 4, 0 _____

13 Write the greatest number using the following digits only once :

(a) 7, 9, 5, 2 _____ (b) 6, 5, 1, 9 _____

(c) 5, 3, 5, 0, 3 _____ (d) 9, 2, 3, 8, 4 _____

(e) 5, 1, 7, 4, 8 _____ (f) 6, 1, 7, 3, 5 _____

(g) 8, 5, 4, 1, 2 _____ (h) 4, 5, 1, 0, 3 _____

2 NUMBERS

We have already learnt that :

10 ones = 1 Ten

10 tens = 1 Hundred

10 hundreds = 1 Thousand

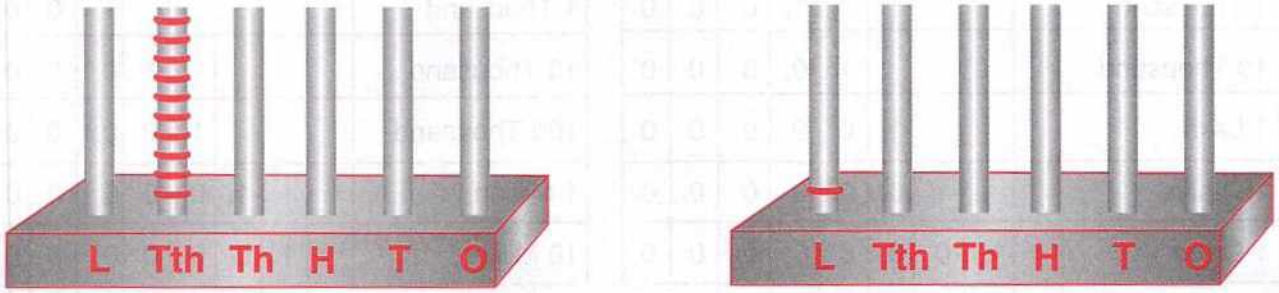
10 thousands = 1 Ten thousand

What is 10 ten thousands equal to ?

10 ten thousands = 1 **Lakh**. We write 1 lakh as 100000.

100000 is the smallest 6-digit number.

We get one lakh by adding 1 to 99999
99999 + 1 = 100000



10 ten thousands = 1 Lakh

Can you tell what is the largest 6-digit number ? Yes, it is 999999.

Similarly, the number one more than 999999 is 1000000.

We read 1000000 as **Ten Lakh**. This is the smallest 7-digit number. The largest 7-digit number is 99,99,999. Similarly, the number one more than 99,99,999 is 1,00,00,000. It is read as **One Crore**.

Numbers are infinite.

2.1 INDIAN NUMBER SYSTEM

To read large numbers with ease, we follow the **Indian number system**. Here, places are grouped in periods. While writing, we separate the periods and insert commas between them.

Ones, tens and hundreds places are grouped as **ONES PERIOD**.

Thousands and ten thousands places are grouped as **THOUSANDS PERIOD**.

Lakhs and ten lakhs places are grouped as **LAKHS PERIOD**.

Crores and ten crores places are grouped as **CRORES PERIOD**.

INDIAN SYSTEM

Periods	Crores		Lakhs		Thousands		Ones		
Place Value	Ten Crores	Crores	Ten Lakhs	Lakhs	Ten Thousands	Thousands	Hundreds	Tens	Ones
Numbers									
One									1
Ten								1	0
1 Hundred							1	0	0
1 Thousand						1,	0	0	0
10 Thousand					1	0,	0	0	0
1 Lakh				1,	0	0,	0	0	0
10 Lakh			1	0,	0	0,	0	0	0
1 Crore		1,	0	0,	0	0,	0	0	0
10 Crore	1	0,	0	0,	0	0,	0	0	0

Indian Place Value Chart

INTERNATIONAL SYSTEM

Periods	Millions			Thousands			Ones		
Place Value	Hundred millions	Ten Millions	Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
Numbers									
One									1
Ten								1	0
1 Hundred							1	0	0
1 Thousand						1,	0	0	0
10 Thousand					1	0,	0	0	0
100 Thousand				1	0	0,	0	0	0
1 Million			1,	0	0	0,	0	0	0
10 Million		1	0,	0	0	0,	0	0	0
100 Million	1	0	0,	0	0	0,	0	0	0

International Place-Value Chart

To separate the periods, we insert commas between them.

INDIAN SYSTEM

One's period – First 3 digits
Thousand's period – Next 2 digits
Lakh's period – Next 2 digits
Crore's period – Digits after lakhs

INTERNATIONAL SYSTEM

One's period – First 3 digits
Thousand's period – Next 3 digits
Million's period – Next 3 digits

Remember, according to the International Place Value Chart

10 lakh = 1 million
1 crore = 10 million
10 crore = 100 million

EXAMPLE 1 Write the period and place of 4 in the following numbers according to the Indian Number System..

(i) 26,478 (ii) 47,581 (iii) 2,549

Solution : (i)

Thousands		*Ones*		
TTh	**Th**	**H**	**T**	**O**
2	6	4	7	8

Clearly, place of the digit 4 is hundreds and the period of the digit 4 is ones.

(ii)

Thousands		*Ones*		
TTh	**Th**	**H**	**T**	**O**
4	7	5	8	1

Clearly, place of the digit 4 is ten thousands and the period of the digit 4 is thousands.

(iii)

Thousands	*Ones*		
Th	**H**	**T**	**O**
2	5	4	9

Clearly, place of the digit 4 is tens. Period of the digit 4 is ones.

EXAMPLE 2 Separate the periods of the following numbers by putting commas according to the Indian Number System.

(i) 472586 (ii) 254761 (iii) 23637

Solution : (i)

Lakhs	*Thousands*		*Ones*		
L	**TTh**	**Th**	**H**	**T**	**O**
4	7	2	5	8	6

Ans. 4,72,586

(ii)

Lakhs	*Thousands*		*Ones*		
L	**TTh**	**Th**	**H**	**T**	**O**
2	5	4	7	6	1

Ans. 2,54,761

(iii)

Thousands		*Ones*		
TTh	**Th**	**H**	**T**	**O**
2	3	6	3	7

Ans. 23,637

EXAMPLE 3 Separate the periods of the following numbers by putting commas according to the International Number System.

(i) 5621586 (ii) 3147602

Solution : (i)

Millions	*Thousands*			*Ones*		
M	**HTh**	**TTh**	**Th**	**H**	**T**	**O**
5	6	2	1	5	8	6

Ans. 5,621,586

(ii)

Millions	*Thousands*			*Ones*		
M	**HTh**	**TTh**	**Th**	**H**	**T**	**O**
3	1	4	7	6	0	2

Ans. 3,147,602

EXAMPLE 4 Write the following numbers in figures.

(i) Four lakh twenty seven thousand six hundred twenty four.

(ii) Sixty two thousand five hundred thirty one.

Solution : (i)

Lakhs	*Thousands*		*Ones*		
L	**TTh**	**Th**	**H**	**T**	**O**
4	2	7	6	2	4

Ans. 4,27,624

(ii)

Thousands		*Ones*		
TTh	**Th**	**H**	**T**	**O**
6	2	5	3	1

Ans. 62,531

2.2 BIGGER NUMBERS ON ABACUS

To read a given number, we first put the commas marking the periods, then

- For a 6-digit and a 7-digit number, first count the lakhs period, then the thousands period followed by the hundreds and the number formed by the last two digits.

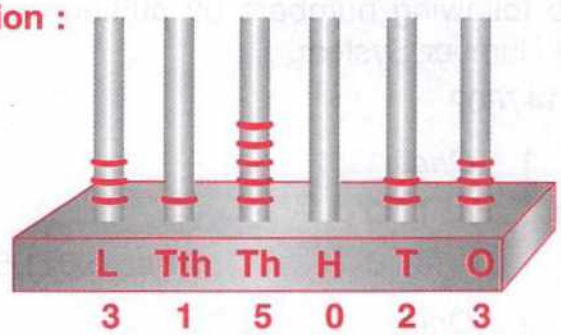
TL	**L**	**TTh**	**Th**	**H**	**T**	**O**
2	6	9	0	7	0	6
Twenty six lakh		Ninety thousand		Seven hundred		Six

- For an 8-digit number or more, count the crores period, then the lakhs period followed by the thousands period, hundreds and the number formed by the last two digits.

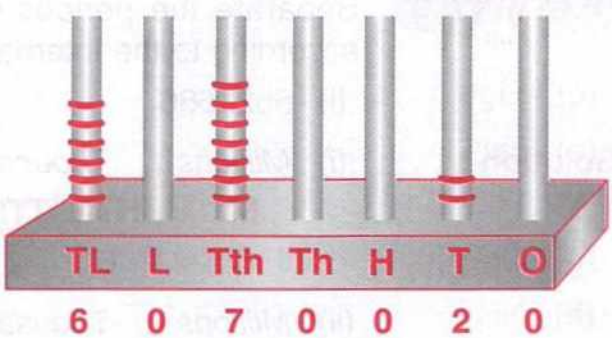
C	**TL**	**L**	**TTh**	**Th**	**H**	**T**	**O**
3	5	4	0	4	0	5	6
Three crore	Fifty four lakh		Four thousand		Fifty six		

EXAMPLE Read and write the numeral and the number name corresponding to the numbers shown on each abacus.

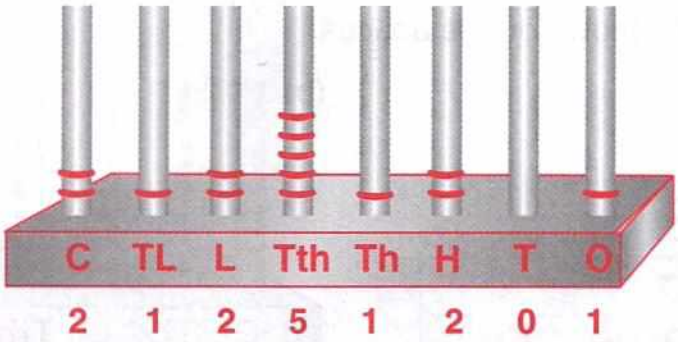
Solution :



(i) Three lakh fifteen thousand twenty three.



(ii) Sixty lakh seventy thousand twenty.



(iii) Two crore twelve lakh fifty one thousand two hundred one.

EXERCISE 2(A)

1 Write the number names.

(a) 2,04,157 = _____

(b) 3,70,025 = _____

(c) 5,63,007 = _____

(d) 5,26,047 = _____

(e) 54,00,983 = _____

(f) 97,34,080 = _____

(g) 49,15,545 = _____

(h) 86,79,004 = _____

(i) 9,49,268 = _____

2 Write the following numbers in figures.

(a) Two lakh fifty one thousand four hundred thirty seven. _____

(b) Fifty four thousand twenty four. _____

(c) Six lakh seventy two thousand three. _____

(d) Eight thousand eight. _____

(e) Five lakh twenty thousand six hundred sixteen. _____

(f) Four lakh two thousand sixty nine. _____

(g) One lakh five thousand two. _____

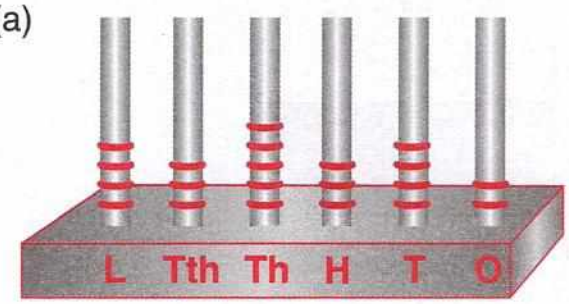
(h) Nine lakh eleven thousand six hundred. _____

(i) Thirty thousand two hundred five. _____

(j) Four lakh twenty thousand thirty. _____

3 Write the numbers shown on the abacus.

(a)



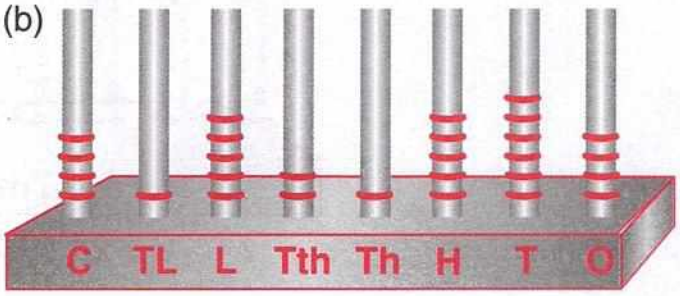
Numeral _____

Number name _____

_____

_____

(b)



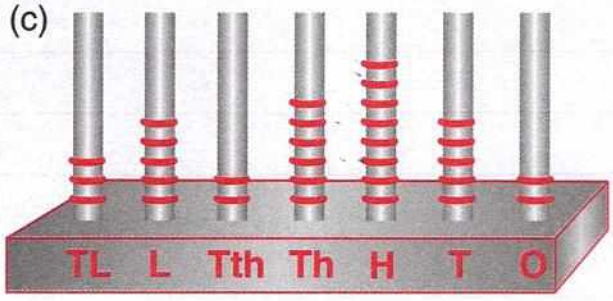
Numeral _____

Number name _____

_____

_____

(c)



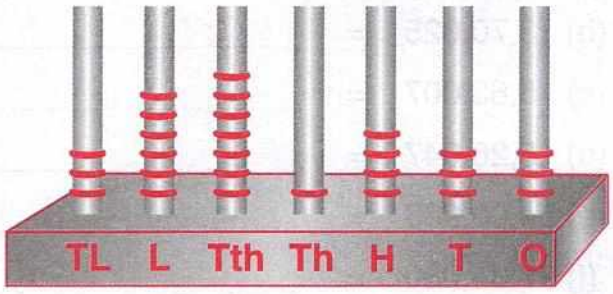
Numeral _____

Number name _____

_____

_____

(d)



Numeral _____

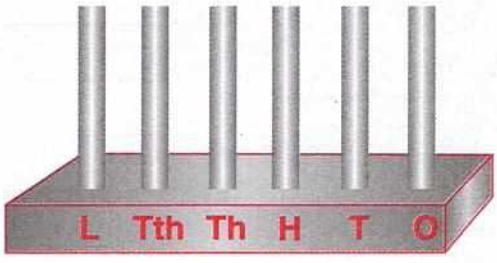
Number name _____

_____

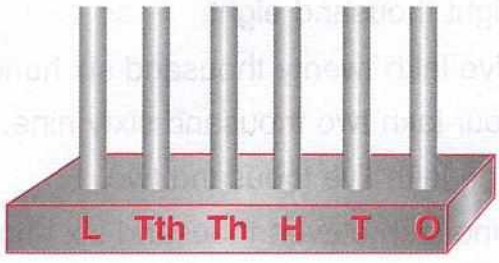
_____

4 Represent the following numbers on the abacus.

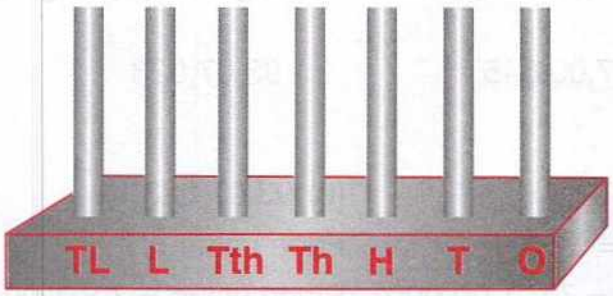
(a) 4,35,342



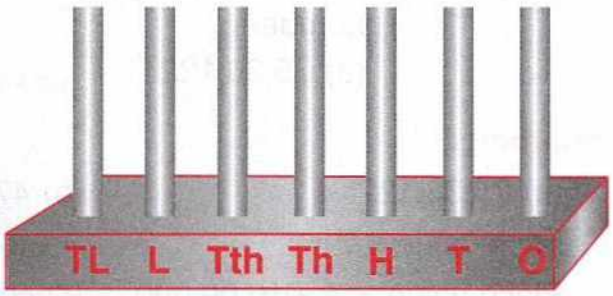
(b) 5,21,564



(c) 97,31,026



(d) 65,62,134



5 Write the next five numbers in each case.

(a) 5,38,536 _____ _____ _____ _____ _____

(b) 7,69,498 _____ _____ _____ _____ _____

(c) 19,34,628 _____ _____ _____ _____ _____

(d) 58,28,797 _____ _____ _____ _____ _____

(e) 72,00,809 _____ _____ _____ _____ _____

(f) 47,05,618 _____ _____ _____ _____ _____

(g) 75,84,005 _____ _____ _____ _____ _____

(h) 47,76,608 _____ _____ _____ _____ _____

2.3 PLACE VALUE AND FACE VALUE

Face value of a digit is the digit itself. It does not depend on the position of the digit.

Place value of a digit is obtained by multiplying its face value by the value of the place in which the digit is kept.

EXAMPLE 1 Write the face value and place value of all the digits in the number 648203.

L	TH	Th	H	T	O
6	4	8	2	0	3

Solution :

Digit	Face value	Place value
6	6	6 × 1,00,000 = 6,00,000
4	4	4 × 10,000 = 40,000
8	8	8 × 1,000 = 8,000
2	2	2 × 100 = 200
0	0	0 × 10 = 00
3	3	3 × 1 = 3

Remember :
Place value of 0 is always 0.

EXAMPLE 2 Write the face value and the place value of the digit 7 in the given numbers.

(a) 75,36,122 (b) 47,00,645 (c) 93,07,023

Solution :

(a) 75,36,122
Face value = 7
Place value = 7 × 10,00,000
= **70,00,000**

(b) 47,00,645
Face value = 7
Place value = 7 × 1,00,000
= **7,00,000**

(c) 93,07,023
Face value = 7
Place value = 7 × 1,000
= **7,000**

EXERCISE 2(B)

1 Write the face value of 2 in the following numbers.

(a) 43,256 (b) 2,48,076 (c) 6,25,407

_____ _____ _____

2 Write the place value of the underlined digits in each case.

	Number	Place Value		Number	Place Value
(a)	54,780	_____	(b)	2,39,463	_____
(c)	3,75,861	_____	(d)	6,72,831	_____
(e)	9,86,357	_____	(f)	32,581	_____
(g)	7,10,392	_____	(h)	54,137	_____
(i)	1,37,580	_____	(j)	75,261	_____

3 Write the place value of each digit of the following numbers.

(a) 5,63,081 (b) 2,75,409 (c) 60,315

4 Find the difference between the place value and the face value of 6 in the following numbers.

(a) 6,34,075 (b) 5,16,804 (c) 3,41,867

5 Find the sum of the place values of 4 in the following pairs of numbers.

(a) 6,71,428 and 7,41,082

(b) 84,082 and 7,42,351

(c) 48,617 and 8,23,417

2.4 EXPANDED FORM AND SHORT FORM

In expanded form, a number is written as the sum of the place values of each of its digits.

The form in which we generally write the numbers is called the short form.

EXAMPLE 1 Write 571038 in the expanded form.

Solution : 571038 = 5 lakhs + 7 ten thousands + 1 thousand + 0 hundreds + 3 tens + 8 ones

$= 5 \times 1,00,000 + 7 \times 10,000 + 1 \times 1,000 + 0 \times 100 + 3 \times 10 + 8 \times 1$

$= 5,00,000 + 70,000 + 1,000 + 0 + 30 + 8$

L	TTh	Th	H	T	O
5	7	1	0	3	8

EXAMPLE 2 Write the following in the short form.

(i) 60,000 + 8,000 + 100 + 40 + 9 (ii) 8,00,000 + 20,000 + 700 + 3

(iii) 2,00,000 + 400 + 8

Solution : (i) 60,000 + 8,000 + 100 + 40 + 9 = **68,149**

(ii) 8,00,000 + 20,000 + 700 + 3

Since, there are '0' thousands and '0' tens in the above number, its short form will be

8,00,000 + 20,000 + 700 + 3 = **8,20,703**

(iii) 2,00,000 + 400 + 8

In the above number, there are '0' ten thousands and '0' thousands and '0' tens.

So, 2,00,000 + 400 + 8 = **2,00,408**

EXERCISE 2(C)

1 Write the following numbers in the expanded form.

(a) 52,743 _____

_____

(b) 2,72,631 _____

_____

(c) 33,40,239 _____

_____

(d) 1,43,681 _____

_____

(e) 74,02,078 _____

_____

(f) 5,00,201 _____

_____

2 Write the following in the short form.

(a) 2,00,000 + 60,000 + 3,000 + 900 + 2 _____

(b) 5,00,000 + 3,000 + 20 + 7 _____

(c) 3,00,000 + 80,000 + 70 + 5 _____

(d) 90,00,000 + 5,000 + 600 + 3 _____

(e) 40,00,000 + 8,00,000 + 70,000 + 500 + 9 _____

(f) 80,00,000 + 9,000 + 300 + 50 _____

(g) 20,00,000 + 5,000 + 7 _____

(h) 3,00,000 + 200 _____

(i) 4,00,000 + 30 _____

(j) 60,00,000 + 9 _____

3 Fill in the blanks.

(a) 87,560 = 80,000 + _____ + 500 + _____

(b) 3,08,654 = 3,00,000 + _____ + 600 + 50 + 4

(c) 7,60,581 = 7,00,000 + 60,000 + _____ + 80 + 1

(d) 1,54,786 = 1,00,000 + _____ + 4,000 + _____ + 80 + 6

(e) 2,08,067 = 2,00,000 + _____ + 60 + 7

(f) 4,70,856 = _____ + 70,000 + _____ + 50 + 6

(g) 66,00,606 = _____ + 6,00,000 + _____ + 6

(h) 94,03,002 = 90,00,000 + _____ + 3,000 + _____

(i) 57,64,031 = _____ + _____ + 60,000 + _____ + 30 + 1

(j) 40,00,008 = _____ + _____

2.5 SUCCESSOR AND PREDECESSOR

The number which is one more than the given number is called its **successor**.

Number	Successor
11,239	11,239 + 1 = 11,240
2,03,793	2,03,793 + 1 = 2,03,794

The number which is one less than the given number is called its **predecessor**.

Number	Predecessor
7,46,598	7,46,598 – 1 = 7,46,597
31,98,426	31,98,426 – 1 = 31,98,425

EXERCISE 2(D)

1 Write the successors of the following numbers.

(a) 4,89,399 _____ (b) 9,86,999 _____

(c) 63,47,309 _____ (d) 3,93,099 _____

(e) 29,32,500 _____ (f) 49,87,532 _____

2 Write the predecessors of the following numbers.

(a) 8,80,000 _____ (b) 52,35,700 _____

(c) 3,72,100 _____ (d) 73,50,367 _____

(e) 7,39,000 _____ (f) 93,75,287 _____

3 Write the successor of the largest 5-digit number. Is the number obtained the smallest 6-digit number ?

4 Write the predeccessor of the smallest 7-digit number. Is the number obtained the largest 6-digit number ?

2.6 COMPARISON OF NUMBERS

We follow the two rules given below to compare the given numbers.

Rule 1 : If the given numbers have different numbers of digits, then the number having more number of digits is bigger.

For example : 11,000 > 9,999 because 11,000 has five digits and 9,999 has 4-digits.

Rule 2 : If the given numbers have the same number of digits, then start from the left and compare the digits in the corresponding places, till you find a pair having different digits. The number having bigger digit is bigger.

EXAMPLE Compare the following numbers.

(i) 6,32,683 and 6,32,983 (ii) 24,58,761 and 24,71,502

Solution : (i) Both the numbers have equal number of digits

L	TTh	Th	H	T	O
6	3	2	(6)	8	3
6	3	2	(9)	8	3

Digits in the hundreds place are different.

Since 9 > 6, 6,32,983 > 6,32,683

(ii) Both the numbers have equal number of digits.

TL	L	TTh	Th	H	T	O
2	4	(5)	8	7	6	1
2	4	(7)	1	5	0	2

We start comparing digits from the left.

Digits in the ten thousands place are different.

Since, 7 > 5, therefore, 24,71,502 > 24,58,761

2.7 ASCENDING AND DESCENDING ORDERS

Arranging numbers in order from the smallest to the largest number is called **ascending order**.

Arranging numbers in order from the largest to the smallest is called **descending order**.

EXAMPLE 1 Arrange 5,12,716, 3,24,500, 5,12,710, 3,24,280 in ascending order.

Solution : 3,24,280 < 3,24,500 < 5,12,710 < 5,12,716.

EXAMPLE 2 Arrange 3,02,504, 4,78,025, 22,76,182, 3,49,847, 32,57,600 in descending order.

Solution : 32,57,600 > 22,76,182 > 4,78,025 > 3,49,847 > 3,02,504.

EXERCISE 2(E)

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

(a) 32,578 ◯ 9,623 (b) 2,32,850 ◯ 2,73,812

(c) 9,85,742 ◯ 9,85,931 (d) 62,43,287 ◯ 62,43,287

(e) 7,05,030 ◯ 7,06,030 (f) 1,52,467 ◯ 1,35,002

(g) 29,85,781 ◯ 29,82,154 (h) 1,71,528 ◯ 1,71,528

(i) 5,24,789 ◯ 5,24,389 (j) 8,73,410 ◯ 8,73,417

(k) 6,93,581 ◯ 6,93,529 (l) 9,57,852 ◯ 95,31,475

2 Find the greatest and smallest number in each of the following :

	Greatest	Smallest
(a) 7,56,890, 7,93,250, 7,58,320, 7,56,100	_____	_____
(b) 5,08,365, 20,14,612, 90,147, 5,83,560	_____	_____
(c) 83,617, 92,754, 13,51,721, 3,58,206	_____	_____
(d) 45,76,825, 57,591, 4,83,217, 4,85,617	_____	_____
(e) 27,148, 62,434, 3,62,514, 62,83,100	_____	_____

3 Arrange the following numbers in ascending order.

(a) 8,25,699, 7,05,981, 1,02,356, 82,24,532

_____

(b) 24,98,471, 9,35,813, 2,83,174, 9,43,210

_____

(c) 1,35,747, 2,85,834, 1,32,769, 2,85,715

_____

(d) 68,15,267, 73,23,586, 9,70,855, 68,10,780

_____

(e) 3,07,256, 3,27,256, 37,26,378, 37,24,930

_____

4 Arrange the following numbers in descending order.

(a) 6,27,541, 32,58,495, 3,27,320, 65,43,298

_____

(b) 24,52,781, 3,51,472, 24,92,415, 24,52,738

_____

(c) 22,49,582, 32,36,175, 44,49,615, 40,49,497

(d) 94,28,752, 90,43,157, 49,43,418, 40,28,781

(e) 60,54,831, 1,28,123, 60,58,413, 6,11,25,413

2.8 FORMATION OF NUMBERS USING GIVEN DIGITS

1. To form the largest number using the given digits only once (without repetition), arrange the given digits in descending order.
   Examples :
   (a) The greatest 6-digit number formed by using 2, 0, 5, 7, 3, 9 is 9,75,320.
   (b) The greatest 7-digit number formed by using 1, 2, 8, 9, 4, 3, 0 is 98,43,210.
2. To form the smallest number using the given digits only once.
   (a) Arrange the digits in ascending order when none of the given digits is zero.
   Examples :
   (i) Smallest number of 6-digit using 2, 1, 3, 5, 8, 9 is 1,23,589.
   (ii) Smallest 7-digit number using 7, 4, 3, 2, 8, 1, 9 is 12,34,789.
   (b) When one of the digits is zero, put zero at the second place from the left and arrange the remaining digits in ascending order.
   Examples :
   (i) Smallest 6-digit number using 7, 0, 8, 2, 4, 5 is 2,04,578.
   (ii) Smallest 7-digit number using 8, 5, 1, 0, 7, 4, 2 is 10,24,578.
3. To form the largest number by repeating the digits, first write the digits in descending order. Since, the digits can be repeated, the greatest number is formed by repeating the greatest digit (*i.e.* the first number) in all the places.
   Example : Largest 6-digit number using 6, 8, 3, 5 : $8 > 6 > 5 > 3$

L	TTh	Th	H	T	O
8	8	8	8	8	8

4. To form the largest number using **all given digits** and with repetition proceed as follows : Write the smallest digit in ones place, next greater digit in tens place and so on till all the given digits are arranged. Repeat the greatest digit at all the remaining places.

Example : Largest 6-digit number using 2, 5, 0 is

TL	L	TTh	Th	H	T	O
5	5	5	5	5	2	0

5. To form the smallest number by repeating the digits, first write the digits in ascending order. Since, the digits can be repeated, the smallest number is formed by repeating the smallest digit (*i.e.* the first number) in all the places.
Example : The smallest 6-digit number using 7, 9, 5, 8, 2 : $2 < 5 < 7 < 8 < 9$

L	TTh	Th	H	T	O
2	2	2	2	2	2

6. To form the smallest number using **all given digits** and with repetition proceed as follows : Write the largest digit in ones place, next smaller digit in tens place and so on till all the given digits are arranged. Repeat the smallest digit at all the remaining places.
Example : The smallest 7-digit number using 2, 5, 8, 1 is

TL	L	TTh	Th	H	T	O
1	1	1	1	2	5	8

EXERCISE 2(F)

1 Write the smallest 6-digit number using the following digits only once.

(a) 3, 7, 5, 2, 9, 0 _____ (b) 8, 0, 4, 1, 6, 3 _____ (c) 9, 2, 4, 6, 5, 0 _____

2 Write the largest 7-digit number using the following digits any number of times.

(a) 5, 8, 4, 1 _____ (b) 9, 0, 3 _____ (c) 5, 8 _____

3 Write the largest 6-digit number using the following digits with repetition.

(a) 7, 5, 6, 4 _____ (b) 7, 8, 0, 1 _____ (c) 9, 3, 1 _____

4 Write the smallest 7-digit number using the following digits with repetition.

(a) 3, 4, 8, 2, 0 _____ (b) 1, 9, 6, 4 _____ (c) 3, 4, 7 _____

ROMAN NUMERALS

The Roman numeral system is the most ancient and a popular form of writing numbers. It was developed by the Romans thousands of years ago.

In this system, 7 letters of the alphabet are used to represent the numbers. The 7 letters along with their corresponding numeric value are given in the table below.

Letter	Numeric value
I	1
V	5
X	10
L	50
C	100
D	500
M	1000

Remember :
There is no letter to represent **'zero'** in the Roman number system.

Nowadays, Roman numbers are used to number the faces of clocks, to list important topics in outlines, etc.

All the numbers are written using either a single letter or a combination of different letters.

Let us now learn how to represent numbers 1 to 50 using the Roman numeral system. You will learn more about the Roman numeral system and its use in higher classes.

Rules for reading Roman numerals

Rule 1 : If a symbol is repeated more than one time, then we add its numeric value that many times.

EXAMPLES

II = 1 + 1 = 2
III = 1 + 1 + 1 = 3
XX = 10 + 10 = 20
XXX = 10 + 10 + 10 = 30

- Only letters I, X, C and M can be repeated. Letters V, L and D are never repeated. 10 is not written as VV. To represent 10, we write X.

- A symbol cannot be repeated more than 3 times in a row.

  For representing 3, III is acceptable. But for writng 4, we will not use IIII. Similarly, 40 cannot be written as XXXX.

Rule 2 : When a letter having smaller value is written to the right of letter having greater value, add the numeric value of the smaller letter to the numeric value of the greater letter.

EXAMPLES

VI = V + I = 5 + 1 = 6
XI = X + I = 10 + 1 = 11
LI = L + I = 50 + 1 = 51
CI = C + I = 100 + 1 = 101
XV = X + V = 10 + 5 = 15
XXV = X + X + V = 10 + 10 + 5 = 25
XXXV = X + X + X + V = 10 + 10 + 10 + 5 = 35
LX = L + X = 50 + 10 = 60
LXV = L + X + V = 50 + 10 + 5 = 65

Rule 3 : When a letter having smaller value is written to the left of a letter having greater value, subtract the numeric value of the smaller letter from that of the greater letter.

EXAMPLES

IV = 5 – 1 = 4
IX = 10 – 1 = 9
XL = 50 – 10 = 40

Numbers 1 to 50

1 I	2 II	3 III	4 IV	5 V	6 VI	7 VII	8 VIII	9 IX	10 X
11 XI	12 XII	13 XIII	14 XIV	15 XV	16 XVI	17 XVII	18 XVIII	19 XIX	20 XX
21 XXI	22 XXII	23 XXIII	24 XXIV	25 XXV	26 XXVI	27 XXVII	28 XXVIII	29 XXIX	30 XXX
31 XXXI	32 XXXII	33 XXXIII	34 XXXIV	35 XXXV	36 XXXVI	37 XXXVII	38 XXXVIII	39 XXXIX	40 XL
41 XLI	42 XLII	43 XLIII	44 XLIV	45 XLV	46 XLVI	47 XLVII	48 XLVIII	49 XLIX	50 L

Writing of Roman numerals may seem difficult, but with little practice with the numbers and the rules to be followed, it is easier to write numbers in Roman numerals.

EXERCISE 3

1 Write the Roman numerals from 20 to 35.

2 Write Roman numerals from 40 to 50.

3 Fill in the blanks.

(a)	VII	=	5	+	2	=	7	
(b)	XIX	=		+		=		
(c)	XII	=		+		=		
(d)	VIII	=		+		=		
(e)	IX	=		−		=		
(f)	VI	=		+		=		
(g)	XXI	=		+		=		
(h)	XL	=		−		=		
(i)	XXV	=		+		=		
(j)	XLVIII	=		+		=		
(k)	XXXVII	=		+		=		
(l)	XXIX	=		+		=		
(m)	XLIII	=		+		=		
(n)	XX	=		+		=		
(o)	XLII	=		+		=		

4 Write in Roman numerals :

(a) 7 _____ (b) 11 _____ (c) 8 _____ (d) 31 _____ (e) 46 _____

(f) 9 _____ (g) 50 _____ (h) 19 _____ (i) 22 _____ (j) 29 _____

(k) 40 _____ (l) 5 _____ (m) 38 _____ (n) 26 _____ (o) 10 _____

(p) 37 _____ (q) 14 _____ (r) 42 _____ (s) 15 _____ (t) 48 _____

5 Write the numbers for the following Roman numerals.

(a) XXXVI _____ (b) XX _____ (c) XIV _____ (d) VIII _____

(e) XXIX _____ (f) IV _____ (g) XL _____ (h) XXI _____

(i) XIX _____ (j) XLIX _____ (k) V _____ (l) XXV _____

(m) L _____ (n) XXIV _____ (o) XXXVII _____ (p) XLIII _____

(q) XLV _____ (r) VII _____ (s) X _____

6 Fill in the blanks with Roman numerals.

(a) 5 to 10 _____ _____ _____ _____ _____ _____

(b) 20 to 25 _____ _____ _____ _____ _____ _____

(c) 45 to 50 _____ _____ _____ _____ _____ _____

(d) 30 to 35 _____ _____ _____ _____ _____ _____

(e) 15 to 20 _____ _____ _____ _____ _____ _____

7 Match the following :

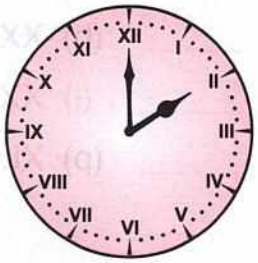
(a) 35	(i) X
(b) 10	(ii) XLVII
(c) 15	(iii) VIII
(d) 18	(iv) XXVIII
(e) 47	(v) XXXIII
(f) 28	(vi) V
(g) 21	(vii) XVIII
(h) 33	(viii) XV
(i) 5	(ix) XXI
(j) 8	(x) XXXV

8 Fill in the blanks with <, > or =.

(a)	XXVI	_____	26	(b) VII	_____ 7
(c)	L	_____	30	(d) IX	_____ 40
(e)	XXXI	_____	49	(f) LX	_____ 11
(g)	XXII	_____	28	(h) XXX	_____ 45
(i)	VIII	_____	5	(j) X	_____ 5

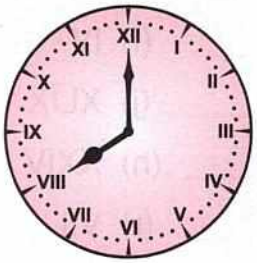
9 Read the hour hand and the minute hand and write the time shown in the clocks below.

(a)



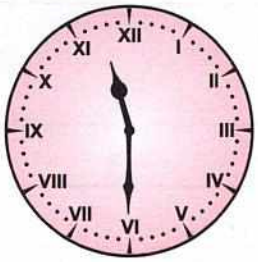
_____

(b)



_____

(c)



_____

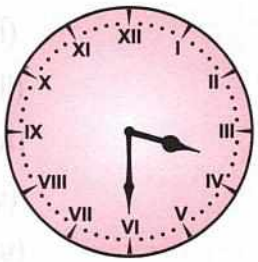
(d)

_____

(e)

_____

(f)



_____

4 ADDITION

4.1 REVISION

EXERCISE 4(A)

1 Add the following :

(a) 25218 + 17782

(b) 42453 + 18618

(c) 55583 + 19926

(d) 28217 + 8798

(e) 51502 + 29796

(f) 10040 + 7285

2 Recall the properties of addition and fill in the blanks :

(a) 415 + 28215 = 28215 + _____

(b) 21218 + 37406 + 782 = 782 + 21218 + _____

(c) 49000 + 7550 + 22681 = 22681 + _____ + 7550

(d) _____ + 8188 + 21257 = 8188 + 34642 + 21257

(e) 8,448 + _____ + 92948 = 84 + 8448 + 92948

(f) 41442 + 0 = _____

3 Arrange in ascending order and then add (Do these in your note book) :

(a) 2275 + 24567 + 875

(b) 24233 + 8944 + 12286

(c) 28218 + 7448 + 9215

(d) 98236 + 3908 + 70090

(e) 40428 + 6628 + 25240 + 88

(f) 56065 + 70009 + 65008

4.2 PROPERTIES OF ADDITION

1. **Order property or commutative property :** Sum of two numbers remain the same even if the order, in which they are added, is changed.

   Example :

   $384475 + 29580 = 414055$

   Also, $29580 + 384475 = 414055$

   Thus, $384475 + 29580 = 29580 + 384475$

2. **Addition of zero :** If '0' is added to a number, we get the number itself.

   Examples :

   (i) $893247 + 0 = 893247$

   (ii) $3754093 + 0 = 3754093$

3. **Grouping property or associative property :** In whatever order three or more numbers are grouped for the purpose of addition, their sum remains the same.

   Example :

   $(532492 + 2600781) + 48900 = 532492 + (2600781 + 48900)$

   $(532492 + 2600781) + 48900 = 3133273 + 48900$

   Also, $532492 + (2600781 + 48900) = 532492 + 2649681 = 3182173$

4.3 ADDITION OF LARGE NUMBERS

We have already learnt to add numbers less than one lakh. Adding large numbers is quite similar. We follow the following steps.

EXAMPLE 1 Add 6,26,405, 1,08,842 and 2,15,456

The numbers being added are called addends.

Solution :

```
    2 1 1 1
    6, 2 6, 4 0 5
    1, 0 8, 8 4 2
+   2, 1 5, 4 5 6
  ---------------
    9, 5 0, 7 0 3   Ans.
  ---------------
```

Step 1 : Arrange the numbers in columns. Ones under ones, tens under tens and so on.

Step 2 : Add the digits in each column. (Always start with ones). Take the carry over (if any) to the next column and add it with the digits in that column. Continue till the last column.

The result of addition is called the sum.

EXAMPLE 2 Add 24,35,716, 38,818 and 4,51,766

Solution :

```
  1  1  2  1  2
 24, 3 5, 7 1 6
     3 8, 8 1 8
+    4, 5 1, 7 6 6
-------------------
 29, 2 6, 3 0 0   Ans.
```

[Arrange the given numbers in columns. Follow the same steps as above.]

EXERCISE 4(B)

1 Add the following :

(a) 2, 3 5, 8 1 6 + 3, 2 8, 9 8 4

(b) 3, 3 8, 9 2 6 + 5, 4 8, 1 8 5

(c) 1, 8 6, 2 5 7 + 3, 2 4, 6 8 2

(d) 2, 1 7, 3 5 5 + 5, 0 0, 8 0 8

(e) 8 8, 7 0 7 + 2, 5 5, 8 1 4

(f) 8, 2 5, 2 8 8 + 3 8, 8 3 4

(g) 7 7, 4 8 5 + 1, 2 8, 2 8 3 + 5, 4 5, 4 5 8

(h) 2, 6 5, 5 7 5 + 8 6, 2 5 8 + 8 6

(i) 5, 5 8, 6 1 6 + 7, 8 0 6 + 1, 2 5, 7 5 6

2 Arrange in columns and add (Do these in your note book) :

(a) 2,38,657 + 48,527 + 61,26,715

(b) 73,05,209 + 7,708 + 18,945 + 718

(c) 3,27,215 + 88 + 66,20,200 + 786

(d) 5,42,100 + 42,22,255 + 11,89,008 + 55,500

(e) 67,548 + 84,25,750 + 2,72,583 + 857

(f) 2,61,605 + 55,15,655 + 1,00,000 + 25,000

3 Write the numerals for the following number names and then add.

(a) One lakh four thousand two; and fifty-eight thousand two hundred one.

(b) Seventy-one thousand four; one lakh seven hundred; and two lakh sixty-one thousand four hundred nine.

4.4 WORD PROBLEMS

EXAMPLE 1 In a village there are 54,326 men, 63,125 women and 13,462 children. What is the total population of the village ?

Solution :

Number of men	=	54,326
Number of women	=	63,125
Number of children	=	+ 13,462
Total population	=	**1,30,913**

Thus, the total population of the village is 1,30,913.

EXAMPLE 2 There are 2,32,156 bags of wheat and 1,23,415 bags of rice in a godown. What is the total number of bags in the godown ?

Solution :

Number of wheat bags	=	2,32,156
Number of rice bags	=	+ 1,23,415
Total number of bags	=	**3,55,571**

Thus, the total number of bags in the godown is 3,55,571 bags.

EXERCISE 4(C)

1. Company A has 26,751 workers and company B has 25,421 workers. What is the total number of workers in the two companies ?
2. A cafe sold 3,63,581 pastries and 3,57,460 burgers in a year. Altogether how many of these 2 items did the cafe sell ?
3. A factory produced 2,37,121 washing machines in the first year and 3,52,631 washing machines in the second year. How many washing machines were produced in these two years together ?
4. A publisher sells 3,43,851 books of Hindi, 8,26,551 books of English and 7,32,151 books of Mathematics. Find the total number of books sold by the publisher.
5. 1,26,844 people saw a magic show on Saturday and 3,52,188 people saw it on Sunday. Find the total number of people who saw the magic show on these two days.
6. Ramesh bought a painting worth ₹ 1,45,006 and a bicycle worth ₹ 15,280. How much money did Ramesh spend ?
7. A shopkeeper sold 8,43,567 bags of sugar and 1,52,889 bags of flour. Find the number of bags that he sold in all.
8. Find the sum of the largest 5-digit number and the smallest 7-digit number.
9. There are 8,46,817 cows, 6,32,381 buffaloes and 3,26,781 other cattle in a village. What is the total number of cattle in the village ?

SUBTRACTION

5.1 REVISION

EXERCISE 5(A)

1 Subtract the following :

(a) 7,438 − 4,849

(b) 8,207 − 5,814

(c) 9,048 − 782

(d) 8,007 − 2,184

(e) 12,343 − 1,264

(f) 21,484 − 17,826

(g) 25,262 − 21,748

(h) 34,083 − 25,948

(i) 30,743 − 18,654

(j) 46,007 − 23,248

(k) 51,453 − 37,648

(l) 70,004 − 29,776

2 Solve in your note book :

(a) Subtract 27,247 from 32,304.

(b) Subtract 19,437 from 30,040.

(c) Subtract 8,494 from 12,083.

(d) Take away 15,718 from 22,222.

(e) Take away 28,766 from 43,414.

3 Simplify (Do these in your note book) :

(a) 2424 − 1783 + 7128 − 863 − 64

(b) 17,040 − 11,714 + 8,948 − 20,374 + 11,440

(c) 41,448 + 8724 − 21,288 − 17,448 − 547

5.2 PROPERTIES OF SUBTRACTION

1. When we subtract '0' from a number, the difference is the number itself.

Examples :

9,04,238 − 0 = 9,04,238

57,16,349 − 0 = 57,16,349

2. When we subtract a number from itself, the difference obtained is '0'.

   Examples :

   7,37,150 – 7,37,150 = 0

   21,09,909 – 21,09,909 = 0

3. We cannot change the order of numbers in subtraction. If we change the order, the answer we get will be different.

5.3 SUBTRACTION OF LARGE NUMBERS

We always subtract a smaller number from a greater number.

Minuend : The number from which we subtract the other number is called minuend.

Subtrahend : The number which is subtracted is called the subtrahend.

Difference : The result obtained on subtraction is called the difference.

EXAMPLE 1 Subtract 2,28,583 from 4,17,818.

Solution : Write the greater number on top and the smaller number, below it.

```
    10
  3 11 17  7  11
   4, 1 7, 8 1 8   ← Minuend
 – 2, 2 8, 5 8 3   ← Subtrahend
 ------------------
   1, 8 9, 2 3 5   ← Difference
 ------------------
```

Step 1 : Arrange the numbers in columns. Ones under ones, tens under tens and so on.

Step 2 : Go on subtracting column-wise beginning with the ones (borrow if necessary).

EXAMPLE 2 By how much is 4,25,128 greater than 2,15,089 ?

Solution : To find out by how much is 4,25,128 greater than 2,15,089, we subtract 2,15,089 from 4,25,128.

```
      11
   0 12 18
   4, 2 5, 1 2 8
 – 2, 1 5, 0 8 9
 ---------------
   2, 1 0, 0 3 9
 ---------------
```

To subtract follow the steps given in Example 1.

Ans. Therefore, 4,25,128 is greater than 2,15,089 by 2,10,039.

EXERCISE 5(B)

1 Subtract the following :

(a) 3 3 5, 1 2 8 − 1, 6 8, 0 7 5

(b) 4, 4 8, 2 1 5 − 2, 3 9, 3 6 4

(c) 5, 1 5, 5 7 5 − 3, 2 8, 6 8 6

(d) 5, 0 8, 0 7 8 − 3, 1 7, 6 8 9

(e) 6 8 0, 3 5 6 − 4, 9 6, 6 8 8

(f) 7, 1 5, 5 8 0 − 6, 6 8, 8 9 4

(g) 4, 0 0, 7 1 8 − 3, 2 5, 2 8 9

(h) 5, 2 6, 0 0 8 − 3, 2 8, 2 7 6

(i) 6, 2 0, 0 7 0 − 4, 3 8, 3 8 6

2 Solve in your notebook and answer the following questions.

(a) Subtract 88,125 from 21,15,518.

(b) Subtract 27,894 from 5,08,884.

(c) Which is greater and by how much? 7,08,153 or 7,28,263

(d) Which is greater and by how much? 1,28,215 or 2,00,000

(e) By how much is 84,846 less than 1,42,404 ?

(f) How much should be added to 3,22,218 to get 5,16,102 ?

(g) How much should be added to 75,757 to get 41,24,204 ?

3 Two-step problems : (Solve in your notebook).

(a) How much should be added to the sum of 66,415 and 3,25,218 to get 10,00,000?

(b) By how much is the sum of 12,25,216 and 4,54,786 greater than the sum of 10,16,748 and 49,575?

(c) By how much is the sum of 24,718 and 3,75,718 less than the sum of 22,215 and 5,95,244?

(d) Which is greater : the sum of 1,81,086 and 46,46,480 or the sum of 1,75,718 and 44,81,004 and by how much?

4 Simplify the following :

(a) 2,28,275 − 1,14,178 − 75,818 + 84,179

(b) 82,095 − 1,42,045 + 3,29,928 − 66,618 − 845

(c) 8,806 + 2,36,648 − 4,40,725 − 2,756 + 3,00,216

(d) 6,24,000 − 2,25,284 − 1,42,047 − 44,635

5.4 WORD PROBLEMS

EXAMPLE There are 14603 hens in a poultry farm. Due to some disease 12625 hens died. How many hens are left ?

Solution :

Total hens	=	14,603
Hens died	=	− 12,625
Remaining hens	=	**01,978**

Thus, 1,978 hens were left.

EXERCISE 5(C)

1. 3,43,008 cakes were purchased for distribution on Children's day. If 3,23,886 cakes were distributed, how many cakes were left ?
2. Meghna chose a dress costing ₹ 12,650. She was short of the required money by ₹ 1,285. How much money she had with her ?
3. Ashish deposited ₹ 8,62,001 in the bank and then withdrew ₹ 3,55,008. How much of his money was left in the bank ?
4. How much should be added to 3,22,648 to get 4,37,089 ?
5. What should be subtracted from 7,50,001 to get 3,47,589 ?
6. What should be subtracted from 4,87,548 to get 2,88,067 ?
7. The sum of two numbers is 8,53,648. If one of them is 5,37,481, find the other number.
8. The cost of an oven is ₹ 14,315 and the cost of a machine is ₹ 29,800. What costs less ? By how much ?
9. Ramesh won ₹ 5,00,000 in a lottery. Out of this money, he bought a car for ₹ 1,75,000, a house for ₹ 2,28,000, gave ₹ 50,000 for charity and he deposited the remaining money in the bank. How much money did he deposit in the bank?
10. The population of a town is 2,75,800 of which 1,25,780 are men and 1,10,575 are women. How many children are there?

MULTIPLICATION

6.1 LET US REVISE MULTIPLICATION BY 2-DIGIT NUMBERS

EXAMPLE 1 98 by 98.

Th	H	T	O	
		9	8	
	×	9	8	
	7	8	4	→ 98 × 8
+ 8	8	2	0	→ 98 × 90
9	6	0	4	

Ans. 9,604

EXAMPLE 2 425 by 32.

TTh	Th	H	T	O	
		4	2	5	
		×	3	2	
		8	5	0	→ 425 × 2
+ 1	2	7	5	0	→ 425 × 30
1	3	6	0	0	

Ans. 13,600

EXERCISE 6(A)

Multiply in your notebook.

(a) 64 × 45 (b) 58 × 72 (c) 49 × 36 (d) 82 × 27

(e) 94 × 89 (f) 634 × 92 (g) 754 × 58 (h) 643 × 23

(i) 682 × 76 (j) 921 × 74 (k) 392 × 54 (l) 493 × 42

6.2 PROPERTIES OF MULTIPLICATION

1. When a number is multiplied by 1, then the product is always the number itself.

EXAMPLE

9,784 × 1 = 9,784

24,623 × 1 = 24,623

2. When a number is multiplied by 0, then the product is always 0.

EXAMPLE

867 × 0 = 0

98,999 × 0 = 0

3. **Commutative property of multiplication :** When two numbers are multiplied, the product of these numbers will not change even when the order of the numbers is changed.

EXAMPLE

$3{,}113 \times 26 = 80{,}938$

$26 \times 3113 = 80{,}938$

$\therefore \quad 3{,}113 \times 26 = 26 \times 3{,}113$

4. **Associative property of multiplication :** When two or more numbers are grouped and multiplied, the product does not change even if we change the groupings.

EXAMPLE

$(15 \times 321) \times 27 = 4{,}815 \times 27$

$15 \times (321 \times 27) = 15 \times 8{,}667$

$\therefore \quad (15 \times 321) \times 27 = 15 \times (321 \times 27) = 1{,}30{,}005$

5. **Distributive property of multiplication :** When multiplying a sum of two or more numbers by a number, we can first add the numbers and then multiply or we can multiply each addend first with the number and then add the products. The answer remains the same.

EXAMPLE

(i) $(15 + 11 + 3) \times 100$

$= 29 \times 100$

$= 2{,}900$

$(15 + 11 + 3) \times 100$

$= (15 \times 100) + (11 \times 100) + (3 \times 100)$

$= 1{,}500 + 1{,}100 + 300$

$= 2{,}900$

(ii) $(470 + 94 + 25) \times 11$

$= 589 \times 11$

$= 6{,}479$

$(470 + 94 + 25) \times 11$

$= (470 \times 11) + (94 \times 11) + (25 \times 11)$

$= 5{,}170 + 1{,}034 + 275$

$= 6{,}479$

6.3 MULTIPLYING A NUMBER BY 10, 100, 1000, etc.

This method explains the shortcuts for multiplying any number by 10, 100 or 1000.

1. If we multiply any number by 10, then add one zero at the right side of the number.

EXAMPLE

$251 \times 10 = 2510$ Here, 0 is added on the right side of 251.

$4{,}389 \times 10 = 43{,}890$

2. If we multiply any number by 100, then add two zeroes at the end of the number.

EXAMPLE

$364 \times 100 = 36{,}400$

$93{,}201 \times 100 = 93{,}20{,}100$

3. If we multiply any number by 1000, then add three zeroes at the end of the number.

EXAMPLE

$212 \times 1000 = 2{,}12{,}000$

$7{,}646 \times 1000 = 76{,}46{,}000$

EXERCISE 6(B)

1 Multiply each given number by 10.

(a) 408 (b) 128 (c) 89 (d) 930

(e) 1898 (f) 2493 (g) 56095 (h) 78220

2 Multiply each given number by 100.

(a) 47 (b) 708 (c) 568 (d) 7540

(e) 8922 (f) 63091 (g) 98201 (h) 99999

3 Multiply the given numbers by 1000.

(a) 64 (b) 2310 (c) 464 (d) 625

(e) 4001 (f) 987 (g) 8349 (h) 5466

4 Multiply.

(a) 28×100 (b) 243×10 (c) 1720×100 (d) 8401×10

(e) 403×1000 (f) 893×1000 (g) 55×1000 (h) 4005×1000

6.4 MULTIPLYING LARGER NUMBERS BY A 2-DIGIT NUMBER

EXAMPLE 1 Multiply 6,748 by 27.

		6	7	4	8
			×	2	7
	4	7	2	3	6
+ 1	3	4	9	6	**0**
1	**8**	**2**	**1**	**9**	**6**

Step 1 : Multiply 6,748 by 7 and write the product as shown.

Step 2 : Before multiplying with the tens digit of the multiplier, write 0 in the ones place as shown.

Step 3 : Multiply 6,748 by 2 and write the product as shown.

Step 4 : Add the products to get the final answer.

EXAMPLE 2 Multiply 82,509 by 88.

	8	2	5	0	9	
				×	8	8
	6	6	0	0	7	2 → 82,509 × 8
6	6	0	0	7	2	0 → 82,509 × 80
7	2	6	0	7	9	2

Step 1 : Multiply 82,509 by 8 and write the product as shown.

Step 2 : Before multiplying with the tens digit of the multiplier, write 0 in the ones place as shown.

Step 3 : Multiply 82,509 by 8 and write the product as shown.

Step 4 : Add the products to get the final answer.

EXERCISE 6(C)

Multiply in your notebook.

(a) 4,142 × 16 (b) 8,148 × 19 (c) 3,163 × 98 (d) 9,076 × 63

(e) 7,805 × 82 (f) 67,368 × 12 (g) 50,515 × 29 (h) 31,789 × 59

(i) 89,022 × 43 (j) 29,885 × 99

6.5 MULTIPLYING BIGGER NUMBERS BY A 3-DIGIT NUMBER

EXAMPLE 1 Multiply 742 by 132.

	7	4	2
×	1	3	2
1	4	8	4 → 742 × 2 = 1,484

Step 1 : Multiply 742 by 2 and write the product below as shown.

Step 2 : Put a 0 at ones' place and then multiply 742 by 3 as usual. Write the product as shown.

		7	4	2
	×	1	3	2
	1	4	8	4
2	2	2	6	0
7	4	2	0	0 → 742 × 100 = 74200

		7	4	2
	×	1	3	2
	1	4	8	4
2	2	2	6	0 → 742 × 30 = 22,260

Step 3 : Put two zeroes at the ones' and tens' place before multiplying 742 by 1. Write the product as shown.

$$\begin{array}{r} 7\ 4\ 2 \\ \times\ 1\ 3\ 2 \\ \hline 1\ 4\ 8\ 4 \\ 2\ 2\ 2\ 6\ 0 \\ +\ 7\ 4\ 2\ 0\ 0 \\ \hline \mathbf{9\ 7\ 9\ 4\ 4} \\ \hline \end{array}$$

Step 4 : Add the three products and write the answer below as shown.

EXAMPLE 2 Multiply 6,378 by 315.

Multiply 6378 × 5 | Multiply 6378 × 10 | Multiply 6378 × 300 | Add the products.

$$\begin{array}{r} {\scriptstyle 1\ 3\ 4} \\ 6\ 3\ 7\ 8 \\ \times\ 3\ 1\ 5 \\ \hline 3\ 1\ 8\ 9\ 0 \end{array} \rightarrow \begin{array}{r} 6\ 3\ 7\ 8 \\ \times\ 3\ 1\ 5 \\ \hline 3\ 1\ 8\ 9\ 0 \\ 6\ 3\ 7\ 8\ \mathbf{0} \\ \hline \end{array} \rightarrow \begin{array}{r} {\scriptstyle 1\ 2\ 2} \\ 6\ 3\ 7\ 8 \\ \times\ 3\ 1\ 5 \\ \hline 3\ 1\ 8\ 9\ 0 \\ 6\ 3\ 7\ 8\ 0 \\ \hline 1\ 9\ 1\ 3\ 4\ \mathbf{0}\ \mathbf{0} \\ \hline \end{array} \rightarrow \begin{array}{r} 6\ 3\ 7\ 8 \\ \times\ 3\ 1\ 5 \\ \hline 3\ 1\ 8\ 9\ 0 \\ 6\ 3\ 7\ 8\ 0 \\ +1\ 9\ 1\ 3\ 4\ 0\ 0 \\ \hline \mathbf{2\ 0\ 0\ 9\ 0\ 7\ 0} \\ \hline \end{array}$$

Ans. 20,09,070

EXAMPLE 2 Multiply 45,321 by 175.

$$\begin{array}{r} 4\ 5\ 3\ 2\ 1 \\ \times\ 1\ 7\ 5 \\ \hline 2\ 2\ 6\ 6\ 0\ 5 \\ 3\ 1\ 7\ 2\ 4\ 7\ 0 \\ +\ 4\ 5\ 3\ 2\ 1\ 0\ 0 \\ \hline \mathbf{7\ 9\ 3\ 1\ 1\ 7\ 5} \\ \hline \end{array} \begin{array}{l} \\ \\ \rightarrow 45{,}321 \times 5 \\ \rightarrow 45{,}321 \times 70 \\ \rightarrow 45{,}321 \times 100 \\ \\ \\ \end{array}$$

Ans. 79,31,175

EXERCISE 6(D)

1 Multiply.

(a) Four hundred ninety six by two hundred sixty two.

(b) Seven thousand eighteen by one hundred twenty.

(c) Nine thousand two hundred fifty five by three hundred ten.

(d) Eight hundred twenty five by four hundred eighty six.

(e) Seventy thousand five hundred sixteen by one hundred eighteen.

2 Find the product.

(a) 729×341	(b) 565×525	(c) 902×436	(d) 783×298
(e) 524×421	(f) $9,307 \times 678$	(g) $2,892 \times 209$	(h) $8,098 \times 789$
(i) $5,793 \times 423$	(j) $6,974 \times 542$	(k) $63,174 \times 109$	(l) $31,489 \times 213$
(m) $27,899 \times 326$	(n) $51,623 \times 163$	(o) $19,876 \times 452$	

WORD PROBLEMS

1 The cost of a toaster is ₹ 1,750. A shop keeper bought 50 toasters for selling. How much did he pay for 50 toasters ?

2 A man bought 120 bags of apples. Each bag contains 2,121 apples. How many apples are there in all ?

3 A shopkeeper sells 16,520 packets of milk. Each packet costs ₹ 25. How much money did he get at the end ?

4 Mohan distributed toffees on his birthday. There were 8,552 students and 25 teachers whom he distributed 4 toffees each. How many toffees did he distribute ?

5 A society has 19 floors. If there are 32,701 people on each floor, how many people are there in the society ?

6 A train has 18 compartments and each compartment consists of 3,178 passengers at peak hours. How many passengers travel in the train during peak hours ?

7 In a park there are 31,250 flower plants and 78,178 trees in a row. Calculate the total number of trees and plants in 15 such rows.

8 What will be the cost of 25 cars if one car costs ₹ 3,24,230 ?

9 A man has 10 notes of ₹ 2,000 and 19 notes of ₹ 500. How much money did he have ?

10 A factory produces 3,500 boxes a day. How many boxes will be produced in the months of March and April (March = 31 days, April = 30 days) ?

7 DIVISION

7.1 REVISION

EXERCISE 7(A)

Divide in your notebook.

(a) $3264 \div 4 =$ _____

(b) $5663 \div 7 =$ _____

(c) $4128 \div 6 =$ _____

(d) $7776 \div 6 =$ _____

(e) $6708 \div 9 =$ _____

(f) $2464 \div 5 =$ _____

(g) $7857 \div 9 =$ _____

(h) $8992 \div 8 =$ _____

(i) $7101 \div 7 =$ _____

(j) $8000 \div 6 =$ _____

(k) $5140 \div 16 =$ _____

(l) $4362 \div 18 =$ _____

(m) $3132 \div 35 =$ _____

(n) $6080 \div 95 =$ _____

(o) $9467 \div 81 =$ _____

(p) $3006 \div 14 =$ _____

(q) $8724 \div 18 =$ _____

(r) $8846 \div 21 =$ _____

(s) $4268 \div 58 =$ _____

(t) $9876 \div 63 =$ _____

7.2 DIVISION BY 10, 100 AND 1000

Consider the following examples and observe carefully.

EXAMPLE 1 Divide by 10.

(a) 65

$$\begin{array}{r} 10 \overline{)\,65\,(\,6} \\ -\,60 \\ \hline 5 \end{array}$$

Quotient = 6
Remainder = 5

(b) 378

$$\begin{array}{r} 10 \overline{)\,378\,(\,37} \\ -\,30 \\ \hline 78 \\ -\,70 \\ \hline 8 \end{array}$$

Quotient = 37
Remainder = 8

We observe that when we divide any number by the divisor 10, the last digit of the dividend is always the remainder and the number formed by the remaining digits is the quotient.

EXAMPLE 2 Divide by 100.

(a) 235

$$\begin{array}{r} 100 \overline{)\,235\,(2} \\ -\,200 \\ \hline 35 \end{array}$$

Quotient = 2
Remainder = 35

(b) 4351

$$\begin{array}{r} 100 \overline{)\,4351\,(43} \\ -\,400 \\ \hline 351 \\ -\,300 \\ \hline 51 \end{array}$$

Quotient = 43
Remainder = 51

We observe that when we divide any number by the divisor 100, then the last 2 digits of the dividend will be the remainder and the number formed by the remaining digits is the quotient.

EXAMPLE 3 Divide by 1000.

(a) 8367

$$\begin{array}{r} 1000 \overline{)\,8367\,(8} \\ 8000 \\ \hline 367 \end{array}$$

Quotient = 8
Remainder = 367

(b) 68792

$$\begin{array}{r} 1000 \overline{)\,68792\,(\,68} \\ 6000 \\ \hline 8792 \\ 8000 \\ \hline 792 \end{array}$$

Quotient = 68
Remainder = 792

From the above examples, it is clear that if we divide any number by the divisor 1000, then the last three digits of the dividend is the remainder and the number formed by the remaining digits is the quotient.

EXERCISE 7(B)

Fill in the blanks :

(a) 5120 ÷ 10 Quotient _____ Remainder _____

(b) 4650 ÷ 1000 Quotient _____ Remainder _____

(c) 9570 ÷ 100 Quotient _____ Remainder _____

(d) 1900 ÷ 100 Quotient _____ Remainder _____

(e) 5455 ÷ 10 Quotient _____ Remainder _____

(f) 4679921 ÷ 1000 Quotient _____ Remainder _____

(g) 6443 ÷ 100 Quotient _____ Remainder _____

(h) 8470 ÷ 1000 Quotient _____ Remainder _____

(i) 3300 ÷ 1000 Quotient _____ Remainder _____

(j) 4488 ÷ 10 Quotient _____ Remainder _____

(k) 56810 ÷ 100 Quotient _____ Remainder _____

(l) 323655 ÷ 100 Quotient _____ Remainder _____

(m) 76587 ÷ 100 Quotient _____ Remainder _____

(n) 96660 ÷ 100 Quotient _____ Remainder _____

(o) 6436379 ÷ 1000 Quotient _____ Remainder _____

(p) 487506 ÷ 100 Quotient _____ Remainder _____

(q) 4008493 ÷ 1000 Quotient _____ Remainder _____

(r) 657605 ÷ 10 Quotient _____ Remainder _____

(s) 464478 ÷ 100 Quotient _____ Remainder _____

(t) 787878 ÷ 1000 Quotient _____ Remainder _____

(u) 187007 ÷ 100 Quotient _____ Remainder _____

(v) 89000 ÷ 100 Quotient _____ Remainder _____

7.3 DIVISION WITH 5-DIGIT NUMBERS

EXAMPLE 1 Divide 38,695 by 8.

```
 8 )38695(
```

Step 1 : Consider the first digit from the left *i.e.* 3. Since 3 < 8, consider 2-digits from the left together *i.e.* 38.

```
    4
 8 )38695(
   - 32
   ----
     6
```

Step 2 : Divide 38 by 8.
8 × 4 = 32, write 4 in the quotient.
38 – 32 = 6.

```
    48
 8 )38695(
   -32↓
   ----
     66
   - 64
   ----
      2
```

Step 3 : Bring down the next digit *i.e.* 6.
Divide 66 by 8.
8 × 8 = 64, write 8 in the quotient.
66 – 64 = 2.

```
    483
 8 )38695(
   - 32
   ----
     66
   - 64↓
   ----
     29
   - 24
   ----
      5
```

Step 4 : Bring down the next digit *i.e.* 9.
Divide 29 by 8.
8 × 3 = 24, write 3 in the quotient.
29 – 24 = 5.

```
    4836
 8 )38695(
   - 32
   ----
     66
   - 64
   ----
     29
   - 24↓
   ----
     55
   - 48
   ----
      7
```

Step 5 : Bring down the next digit *i.e.* 5.
Divide 55 by 8.
8 × 6 = 48, write 6 in the quotient.
55 – 48 = 7.

Step 6 : Since 7 < 8, it is indivisible by 8.

∴ Quotient = 4836; Remainder = 7

EXAMPLE 2

Divide 24,648 by 32.

```
      770
32 ) 24648 (
   - 224↓
     224
   - 224↓
       08
```

Step 1 : The divisor contains 2-digits. So, consider the first 2-digits of the dividend *i.e.* 24. But 24 < 32, hence consider the first 3-digits of the dividend *i.e.* 246.

Step 2 : Divide 246 by 32.

To get the trial quotient, divide 24 by 3. The trial quotient is 8 as $8 \times 3 = 24$.

Since, $32 \times 8 = 256$ and $256 > 246$, take 7 as the quotient.

$32 \times 7 = 224$.

$246 - 224 = 22$.

Step 3 : Bring down the next digit *i.e.* 4

Divide 224 by 32. To get the trial quotient, divide 22 by 3. The trial quotient is 7 as $7 \times 3 = 21$.

$32 \times 7 = 224$; $224 - 224 = 0$

Step 4 : Bring down the next digit *i.e.* 8.

Since, 8 < 32, it is indivisible by 32 and we write 0 in the quotient.

$\therefore$ Quotient = 770; Remainder = 8

EXAMPLE 3

Divide 96899 by 909.

```
      319
303 ) 96899 (
   - 909↓
     599
   - 303↓
      2969
    - 2727
      242
```

Step 1 : The divisor contains 3-digits. So, consider the first three digits of the dividend *i.e.* 968.

Step 2 : Divide 968 by 303.

To get the trial quotient, divide 9 by 3. The trial quotient is 3.

$303 \times 3 = 909$; $968 - 909 = 59$

Step 3 : Bring down the next digit *i.e.* 9.

Divide 599 by 303.

To get the trial quotient, divide 5 by 3. The trial quotient is 1.

$303 \times 1 = 303$; $599 - 303 = 296$.

Step 4 : Bring down the next digit *i.e.* 9.

Divide 2969 by 303.

To get the trial quotient, divide 29 by 3. The trial quotient is 9 as $9 \times 3 = 27$.

$303 \times 9 = 2727$; $2969 - 2727 = 242$. We write 9 in the quotient.

Step 5 : Since 242 < 303.

242 is the remainder.

$\therefore$ Quotient = 319; Remainder = 242

EXERCISE 7(C)

Divide in your notebook.

(a) $75923 \div 3$ = _____ (b) $51648 \div 4$ = _____

(c) $61464 \div 6$ = _____ (d) $97335 \div 7$ = _____

(e) $37840 \div 8$ = _____ (f) $94675 \div 15$ = _____

(g) $62517 \div 27$ = _____ (h) $23645 \div 77$ = _____

(i) $7505 \div 61$ = _____ (j) $63114 \div 82$ = _____

(k) $98113 \div 131$ = _____ (l) $64921 \div 900$ = _____

(m) $68737 \div 162$ = _____ (n) $48769 \div 219$ = _____

(o) $57705 \div 321$ = _____ (p) $75437 \div 319$ = _____

7.4 WORD PROBLEMS

EXAMPLE A school has 25,928 students. The students are divided equally into 8 groups. How many students are there in each group ?

Solution : Total number of students in school = 25,928.

Number of groups in which the students are divided = 8

$$
\begin{array}{r|l}
8 & 25928 \\
-24 & 3241 \\
\hline
19 & \\
-16 & \\
\hline
32 & \\
-32 & \\
\hline
08 & \\
-8 & \\
\hline
0 &
\end{array}
$$

Number of students in each group = $25928 \div 8$.

$\therefore$ The number of students in each group = **3,241** **Ans.**

EXERCISE 7(D)

1. If 2584 books are placed equally is 8 shelves, how many books are there in each shelf ?

2. On Republic day, 8289 flags were equally hoisted in 10 different cities. How many flags were hoisted in each city ? Also calculate how many flags were left over ?

3 Monica purchased a gold chain costing ₹ 33,832 and paid the total amount in 4 equal installments. How much did she pay each time ?

4 A factory produces 19,998 thumb pins in a day and these pins are packed in 22 boxes having equal number of pins. How many pins are packed in each box ?

5 Mr. Sanjay withdrew ₹ 27500 from his account in the bank. He asked for the money in ₹ 100 notes. How many ₹ 100 notes did the bank give him ?

6 Mr. Gandhi withdraws ₹ 12,400 from his account. He kept ₹ 4,200 aside and divided the remaining money equally among 5 family members. How much money did each member get ?

7 Arushi paid ₹ 25,245 for the purchase of watches at a cost of ₹ 935 per watch. How many watches did she purchase ?

8 In a library there are 80,770 books. The books are kept in almirahs. Each almirah has a capacity to hold 985 books. How many almirahs are needed to keep all the books ?

9 A company manufactures 99,831 scooters in 311 days. How many scooters are manufactured in one day ?

10 In a stadium, 83,974 people can be seated. If 242 people can sit in a row of chairs, find out the total number of rows in the stadium.

UNITARY METHOD

In mathematics, one (1) is called **unit** and the technique using unit to solve a problem is called **unitary method**. In this method, we first find the value of a unit item by division and then we calculate the required value by multiplication of the unit item by the number of items given.

Suppose we know that the cost of 10 pencils is ₹ 40 and we are asked to find the cost of 1 pencil.

We will divide the total amount by the number of pencils.

The cost of 10 pencils = ₹ 40

Therefore, the cost of 1 pencil = 40 ÷ 10 = ₹ 4

Suppose, we know that the cost of 1 pencil is ₹ 4 and we are asked to find the cost of 3 pencils.

We will multiply the cost of 1 pencil by 3.

The cost of 1 pencil = ₹ 4

Therefore, the cost of 3 pencils = 4 × 3 = ₹ 12

If the above two examples are combined together, the problem will be as follows :

If the cost of 10 pencils is ₹ 40, find the cost of 3 pencils.

To solve it, find the cost of 1 pencil. Then using the cost of 1 pencil, find the cost of 3 pencils.

The cost of 10 pencils = ₹ 40

Therefore, the cost of 1 pencil = ₹ 40 ÷ 10 = ₹ 4

∴ The cost of 3 pencils = ₹ 4 × 3 = ₹ 12

Note :

- Less quantity will cost less. So, to get the value of less quantity, we divide.
- More quantity will cost more. So, to get the value of more quantity, we multiply.

EXAMPLE 1 What will be the price of 7 shirts if the price of 3 such shirts is ₹ 1665.

Solution :

Cost of 3 shirts = ₹ 1665

Cost of 1 shirt = ₹ 1665 ÷ 3

= ₹ 555

Cost of 7 shirts = ₹ 555 × 7

= ₹ 3885

So, the cost of 7 shirts is ₹ 3885.

EXAMPLE 2 Shivam bought 2 books for ₹ 386. How much money is required to buy 3 books.

Solution :

Cost of 2 books = ₹ 386

Cost of 1 book = ₹ 386 ÷ 2

= ₹ 193

Cost of 3 books = ₹ 193 × 3

= ₹ 579

So, the cost of 3 books is ₹ 579.

EXERCISE 8

1. What will be the price of 8 pens if the price of 5 pens is ₹ 125 ?
2. Rajat bought 3 packets of biscuits for ₹ 24. How much money is required to buy 7 such packets ?
3. A worker earns ₹ 852 in 4 days. How much does he earn in 7 days ?
4. The price of 5 kg potatoes is ₹ 65. Find the cost of 12 kg potatoes.
5. 4 breads cost ₹ 88. Find the cost of 7 such breads.
6. A train covers 272 km in 4 hours. What distance will it cover in 7 hours ?
7. A bus covers 72 km on 6 litres of petrol. How many kilometres can it cover on 16 litres of petrol ?
8. 12 kg rice costs ₹ 5400. Find the cost of 23 kg rice.
9. The price of 6 cakes is ₹ 960. Find the price of 34 such cakes.
10. A factory produces 34300 locks in 7 days. How many locks will it produce in 14 days ?

9 TESTS OF DIVISIBILITY

9.1 EVEN AND ODD NUMBERS

Even Number : Numbers having 2, 4, 6, 8 and 0 as their one's digit are known as even numbers. e.g. 2, 4, 6, 12, 78, 438, 1744, 1800, etc.

Odd Number : Numbers having 1, 3, 5, 7 and 9 as their one's digit are known as odd numbers. e.g. 3, 9, 47, 139, 665, 2481, etc.

EXERCISE 9(A)

1 Write down all the even numbers between

(a) 1 to 20 _____

(b) 38 to 60 _____

2 Write down all the odd numbers between

(a) 1 to 20 _____

(b) 45 to 65 _____

3 Circle ◯ the even numbers and tick (√) the odd numbers :

68	75	83	94	100
217	440	777	941	980
2140	3666	7845	9949	8000
24,215	36,882	47,440	82,819	92,944
2,26,041	8,80,819	9,44,482	6,60,000	3,16,615

4 Write down in your note book all the even numbers between

(a) 400 to 450 (b) 1,728 to 1,800

(c) 20,218 to 20,300 (d) 3,25,320 to 3,25,400

9.2 TESTS OF DIVISIBILITY

Divisibility by 2 : A number is divisible by 2 if its last digit is an even number or zero; e.g. 24, 92, 178, 778, 2480, 9000, etc.

Divisibility by 4 : A number is divisible by 4 if the number formed by its last two digits is divisible by 4 or if the last two digits are both zeroes, e.g. 116, 300, 2148, 6100, etc.

Divisibility by 3 : A number is divisible by 3 if the sum of its digits is divisible by 3.

e.g.

Number	Sum of the digits
18	1 + 8 = 9 (divisible by 3)
243	2 + 4 + 3 = 9 (divisible by 3)
2463	2 + 4 + 6 + 3 = 15 (divisible by 3)
6472	6 + 4 + 7 + 2 = 19 (not divisible by 3)
	So, 6472 is not divisible by 3

Divisibility by 6 : A number is divisible by 6 if it is divisible by 2 and 3 i.e. its last digit (one's digit) must be an even number and the sum of its digits must be divisible by 3. (e.g. 84, 264, 2142, etc.)

Divisibility by 5 : A number is divisible by 5 if its last digit (one's digit) is either zero or 5. (e.g.) 60, 200, 775, 1045.

Divisibility by 9 : A number is divisible by 9 if the sum of its digits is divisible by 9 (just like 3).

e.g.

Number	Sum of the digits
4158	4 + 1 + 5 + 8 = 18 (divisible by 9)
9846	9 + 8 + 4 + 6 = 27 (divisible by 9)
8464	8 + 4 + 6 + 4 = 22 (not divisible by 9)
	So, 8464 is not divisible by 9

Divisibility by 10 : A number is divisible by 10 if its last digit (one's digit) is zero. e.g. 90, 180, 3700, 58120, etc.

EXAMPLE Check the divisiblity of the following numbers.

(a) 7122 by 3 (b) 51251 by 9 (c) 79684 by 4 (d) 2712 by 6

(a) **7122 :** To check its divisibility, we will add all the digits together.

7 + 1 + 2 + 2 = **12**

12 is divisible by 3.

∴ The number 7122 is divisible by 3.

(b) **51251 :** To check its divisibility, we will add all the digits together.

5 + 1 + 2 + 5 + 1 = **14**

14 is not divisible by 9.

∴ The number 51251 is not divisible by 9.

(c) **79684 :** 84 is divisible by 4. 4 × 21 = 84.

So, the number 79684 will be divisible by 4.

(d) **2712 :** To check its divisibility, we will first look at the last digit and then add all the digits together. Since the last digit is even, it is divisible by 2.

2 + 7 + 1 + 2 = **12**

12 is divisible by 3.

Since 2712 is divisible both by 2 and 3, therefore the number 2712 is divisible by 6.

EXERCISE 9(B)

1 Which of the following numbers are divisible by 2? Tick (√) them.

(a) 36 _____ (b) 45 _____ (c) 241 _____ (d) 918 _____

(e) 2140 _____ (f) 4309 _____ (g) 6100 _____ (h) 25,268 _____

(i) 18,025 _____ (j) 36,040 _____ (k) 91,273 _____ (l) 42,406 _____

2 What is the least number that must be added to the following numbers to get the numbers divisible by 2?

(a) 347 _____ (b) 859 _____ (c) 1105 _____ (d) 2841 _____ (e) 7043 _____

3 What is the least number that must be subtracted from the following numbers to get the numbers divisible by 2?

(a) 99 _____ (b) 433 _____ (c) 963 _____ (d) 2145 _____ (e) 22,243 _____

4 (a) Is 4122 divisible by 2? _____

(b) Is 3646 divisible by 2? _____

(c) Will their difference also be divisible by 2? _____

(d) Will their sum also be divisible by 2? _____

5 Find without actual division, which of the following numbers are divisible by 4. Tick (√) them.

(a) 72 _____ (b) 96 _____ (c) 124 _____ (d) 318 _____

(e) 814 _____ (f) 930 _____ (g) 1726 _____ (h) 2400 _____

(i) 3636 _____ (j) 12,416 _____ (k) 26,410 _____ (l) 66,048 _____

6 Write down ten numbers greater than 800 but less than 900 which are divisible by 4.

_____

_____

7 Write down ten numbers greater than 7420 but less than 8000 which are divisible by 4.

_____

_____

8 Find without actual division, which of the following numbers are divisible by 3.

(a) 87 _____ (b) 93 _____ (c) 426 _____ (d) 515 _____

(e) 710 _____ (f) 810 _____ (g) 1240 _____ (h) 2310 _____

(i) 7413 _____ (j) 15,582 _____ (k) 71,443 _____ (l) 91,002 _____

9 What can be the possible remainders on dividing a number by 3 and by 5?

_____ _____

10 Find without actual division which of the following numbers are divisible by 9.

(a) 813 _____ (b) 1747 _____ (c) 3006 _____ (d) 8180 _____

(e) 14,436 _____ (f) 27,243 _____ (g) 70,001 _____ (h) 24,200 _____

11 What is the smallest number that should be (i) added to and (ii) subtracted from the following numbers to get them divisible by 9.

(a) 80		(b) 277		(c) 4461		(d) 27,248	
+	−	+	−	+	−	+	−
(e) 21,248		(f) 45,400		(g) 2128		(h) 8140	
+	−	+	−	+	−	+	−

12 Tick (√) the numbers divisible by 5.

(a) 65 _____ (b) 110 _____ (c) 785 _____ (d) 413 _____

(e) 1155 _____ (f) 10,210 _____ (g) 24,268 _____ (h) 32,300 _____

13 What is the smallest number that should be (i) added to and (ii) subtracted from the following numbers to get them divisible by 5?

(a) 482		(b) 738		(c) 2,146		(d) 6,149	
+	−	+	−	+	−	+	−

14 What is the smallest number that should be (i) added to and (ii) subtracted from the following numbers to get them divisible by 6.

(a) 81		(b) 94		(c) 112		(d) 223	
+	−	+	−	+	−	+	−
(e) 1,816		(f) 1,052		(g) 3,146		(h) 31,921	
+	−	+	−	+	−	+	−

10 FACTORS AND MULTIPLES

10.1 FACTORS

Let us recall the table of 5

5	×	1	=	5
5	×	2	=	10
5	×	3	=	15
5	×	4	=	20
5	×	5	=	25
5	×	6	=	30
5	×	7	=	35
5	×	8	=	40
5	×	9	=	45
5	×	10	=	50

When we multiply 2 numbers, each of the numbers being multiplied is called a factor of the product.

Here, $5 \times 1 = 5$; $5 \times 4 = 20$; etc.

factor of 5, factor of 5 — factor of 20, factor of 20

Similarly, $8 \times 9 = 72$. So, 8 and 9 are factors of 72.

Note : 1. For a number to be a factor of any number, it has to completely divide that number without leaving any remainder.

2. Every number will have at least 2 factors, 1 and the number itself.

10.2 PROPERTIES OF FACTORS

1. 1 is a factor of every number. Every number can be written as a product of 1 and the number itself (e.g.) $15 = 1 \times 15$; $36 = 1 \times 36$; $17 = 1 \times 17$ etc.
2. 1 is the only number which has only one factor.
3. A factor of a number (other than zero) is either **less than or equal to** the number itself. For example : $12 = 1 \times 12$; 2×6; 3×4.

   So, factors of 12 are 1, 2 , 3, 4, 6 and 12.

   1 is the smallest factor and the number itself is the greatest factor *i.e.* 12.

   Therefore, a factor of a number is either less than or equal to itself.

EXAMPLE 1 Find all the factors of 30.

$1 \times 30 = 30$

$2 \times 15 = 30$

$3 \times 10 = 30$

$5 \times 6 = 30$

$\therefore$ Factors of 30 are 1, 2, 3, 5, 6, 10, 15 and 30 itself.

EXAMPLE 2 Is 9 a factor of 110 ? Let us divide 110 by 9. Since, 9 does not completely divide 110 and leaves 2 as a remainder, 9 is not a factor of 110.

$$\begin{array}{r} 12 \\ 9\overline{)110} \\ -\,9 \\ \hline 20 \\ -18 \\ \hline 2 \end{array}$$

EXERCISE 10(A)

1 Fill in the blanks.

(a) $5 \times 6 = 30$, _____ and _____ are factors of 30.

(b) $7 \times 4 = 28$, _____ and _____ are factors of 28.

(c) Factors of 15 are _____, _____, _____, _____ .

(d) Factors of 49 are _____ and _____, _____ .

(e) _____ is a factor of every number.

2 Tick (√) the first number if it is a factor of the second number :

(a) 7; 147 _____ (b) 4; 264 _____ (c) 4; 1728 _____ (d) 5; 1055 _____

(e) 5; 17560 _____ (f) 7; 2148 _____ (g) 7; 3507 _____ (h) 9; 216 _____

(i) 11; 10,825 _____ (j) 11; 572 _____ (k) 12; 847 _____ (l) 37; 71344 _____

3 List all the factors of the following numbers :

(a) 14 _____ (b) 15 _____ (c) 18 _____

(d) 27 _____ (e) 42 _____ (f) 50 _____

(g) 64 _____ (h) 13 _____ (i) 19 _____

(j) 96 _____ (k) 120 _____ (l) 72 _____

4 Write all the factors of 56. Is 5 a factor of 56 ? Why ?

10.3 COMPOSITE NUMBERS

Composite numbers are the numbers having more than two factors *i.e.* other than 1 and the number itself.

Prime numbers

A prime number is a number which has only two factors, namely 1 and the number itself.

These numbers are not completely divisible by any other number, except 1 and the number itself.

Note : • 1 is not a prime number since it has only one factor, that is itself.
• 2 is the only even prime number.

EXAMPLE Separate the prime numbers and composite numbers from the following numbers : 7, 15, 2, 24, 19.

Solution :

$7 = 1 \times 7$	Factors of 7 are 1 and 7.
$15 = 1 \times 15$ and 3×5.	Factors of 15 are 1, 3, 5 and 15.
$2 = 1 \times 2$	Factors of 2 are 1 and 2.
$19 = 1 \times 19$	Factors of 19 are 1 and 19.
$24 = 1 \times 24; 2 \times 12; 3 \times 8$ and 4×6	Factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24.

Therefore, the prime numbers are 7, 2 and 19 (have only two factors).

The composite numbers are 15 and 24 (have more than two factors).

EXERCISE 10(B)

1 Classify the following numbers as prime or composite numbers.

(a) 18 _____ (b) 19 _____

(c) 59 _____ (d) 60 _____

(e) 23 _____ (f) 25 _____

(g) 47 _____ (h) 35 _____

(i) 63 _____ (j) 31 _____

2 Colour the prime numbers in the following chart with your favourite colours.

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54
55	56	57	58	59	60	61	62	63
64	65	66	67	68	69	70	71	72

3 Tick (√) the prime number.

(a) 21 ☐ (b) 32 ☐ (c) 29 ☐ (d) 72 ☐

4 Tick (√) the composite numbers.

(a) 9 ☐ (b) 4 ☐ (c) 2 ☐ (d) 5 ☐

5 Tick (√) the greatest prime number.

(a) 87 ☐ (b) 29 ☐ (c) 67 ☐ (d) 51 ☐

6 Tick (√) the smallest composite number.

(a) 6 ☐ (b) 15 ☐ (c) 8 ☐ (d) 27 ☐

7 Which of the following numbers is not a prime number ?

(a) 63 ☐ (b) 17 ☐ (c) 29 ☐ (d) 47 ☐

8 Which of the following numbers is an even prime number ?

(a) 14 ☐ (b) 7 ☐ (c) 5 ☐ (d) 2 ☐

9 Which of the following numbers is a composite number ?

(a) 23 ☐ (b) 13 ☐ (c) 15 ☐ (d) 19 ☐

10 Which of the following numbers is a prime number ?

(a) 63 ☐ (b) 72 ☐ (c) 74 ☐ (d) 37 ☐

10.4 PRIME FACTORS

A prime factor of a given number is a prime number that completely divides the given number.

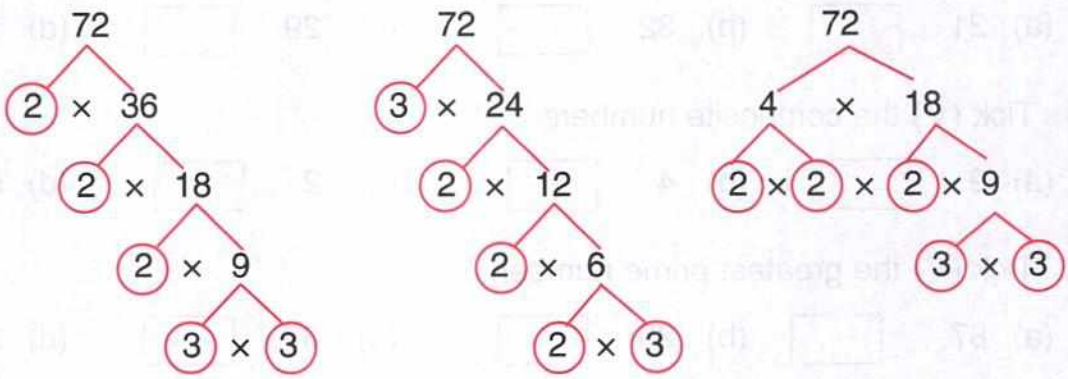
Prime factors can be obtained by using 2 methods :

(1) Factor tree method

(2) Prime factorization method

(1) Factor tree method : In factor tree method, we keep on breaking a number into factors until we get all prime factors. These prime factors are circled and written in the end to represent the number as their product.

EXAMPLE Find the prime factors of 72 using factor tree method.



Similarly, we can make factor trees of 96 by expressing 96 as a product of 6×12 and 8×9 but we will get the same prime factors.

So, 72 can be expressed as a product of its prime factors as follows :

$$72 = 2 \times 2 \times 2 \times 3 \times 3$$

(2) Prime factorization method : In this method we start dividing the number with its smallest prime factor and keep on dividing till we get 1 as a quotient. As it is difficult to make factor trees for larger numbers, this method is more useful and compact.

EXAMPLE Find the prime factors of 396 using prime factorization.

2	396
2	198
3	99
3	33
11	11
	1

$396 \div 2 = 198$
$198 \div 2 = 99$
$99 \div 3 = 33$
$33 \div 3 = 11$
$11 \div 11 = 1$ ← Quotient

$\therefore 396 = 2 \times 2 \times 3 \times 3 \times 11$

Note : Every composite number can be expressed as a product of all its prime factors.

10.5 MULTIPLES

$5 \times 1 = 5$
$5 \times 2 = 10$
$5 \times 3 = 15$
$5 \times 4 = 20$
$5 \times 5 = 25$
$5 \times 6 = 30$
$5 \times 7 = 35$
$5 \times 8 = 40$
$5 \times 9 = 45$
$5 \times 10 = 50$

Here, **5, 10, 15, 20, 25 and so on** are all multiples of 5.

When we multiply two given numbers, their product is a multiple of each of the numbers.

For example ,

Here, $5 \times 6 = 30$ — multiple of 5, multiple of 6

Similarly, $4 \times 7 = 28$. Here, 28 is a multiple of both 4 and 7.

10.6 PROPERTIES OF MULTIPLES

1. The smallest multiple of a number is the number itself.
2. Every number is a multiple of 1.
   Every number is a multiple of itself.
   (e.g.) $1 \times 15 = 15$. So, 15 is a multiple of 1 and 15.
3. 0 is a multiple of every number.
   $25 \times 0 = 0$; $36 \times 0 = 0$; $9 \times 0 = 0$.
   Thus, 0 is a multiple of every number.

4. Every (non-zero) multiple of a whole number is either greater than or equal to the number. (e.g.) multiples of 6 are 6, 12, 18, 24, ...
   The smallest multiple of 6 is 6 and the other multiples of 6 are greater than 6.
5. Multiples of a number are infinite (*i.e.*) they carry on and on.
   e.g. Multiples of 20 are 20, 40, 60, 80, ...

EXERCISE 10(C)

1 Fill in the blanks :

(a) The multiple of an even number is always _____

(b) The multiple of an _____ number may be odd or even.

(c) _____ is the whole number which is a multiple of every number.

(d) Every number is multiple of _____ and _____

(e) The multiples of any number are _____

(f) 18 is a multiple of 3 and _____.

(g) 14 is a multiple of 2 and _____.

(h) 15 is a multiple of 5 and _____.

(i) The next multiple of 4 after 20 is _____.

(j) The next multiple of 10 after 50 is _____.

2 Write the next six multiples of the following :

(a) 3, 6 _____, _____, _____, _____, _____, _____

(b) 4, 8 _____, _____, _____, _____, _____, _____

3 Find three common multiples of the following :

(a) 2 and 5 _____ (b) 3 and 4 _____

(c) 7 and 3 _____ (d) 10 and 4 _____

(e) 6 and 8 _____ (f) 5 and 7 _____

4 Circle the numbers which are multiples of 4 and cross (X) the multiples of 10. After that write the common multiples of 4 and 10.

4	8	10	12	16	20	24	28	30	32
36	40	44	48	52	56	60	64	68	72
76	80	84	88	92	96	100			

Common multiples of 4 amd 10 are : _____

5 Circle the multiples of the given numbers.

6	6,	10,	18,	30,	32,	36,	40,	48,	54,	60,	72
3	18,	19,	21,	24,	28,	30,	31,	34,	36,	42	
11	22,	24,	28,	33,	44,	46,	51,	55,	62,	66	
15	30,	45,	49,	50,	55,	60,	64,	70,	75,	80,	85

10.7 COMMON FACTORS AND MULTIPLES

(A) Common factors

Factors common to 2 or more numbers are said to be **common factors** for those numbers.

For example : 30 and 48 can both be divided by 2. So, 2 is a common factor of 30 and 48.

The largest factor that is common to all the given numbers is called the highest common factor (HCF) or greatest common factor (GCF) of the given numbers.

HCF of 2 or more numbers can be found out by 2 methods :

(1) Listing method : In this method, we list the factors of the given numbers separately. Then we circle the common factors of the numbers and find the greatest factor amongst the common factors.

EXAMPLE Find the HCF of 36 and 54 by listing method.

Step 1 : List all the factors of 36 and 54.

Factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36.

Factors of 54 = 1, 2, 3, 6, 9, 18, 27, 54.

Step 2 : Compare and circle the common factors of 36 and 54.

Factors of 36 = (1), (2), (3), 4, (6), (9), 12, (18), 36

Factors of 54 = (1), (2), (3), (6), (9), (18), 27, 54.

Step 3 : Identify the highest common factor among the circled numbers.

Here, 18 is the last common factor of 36 and 54.

So, the HCF of 36 and 54 is 18.

(2) Common division method : In this method, we find the HCF of the given numbers by dividing them together by their least common factor. Then we multiply the common factors to get the HCF of the given numbers.

EXAMPLE Find the HCF of 48 and 92 using common division method.

	48, 92

Step 1 : Write the numbers together separated by commas.

2	48, 92
	24, 46

Step 2 : Divide by the smallest common factor of the given numbers and write the quotients below thier respective number. Here, 2 is the smallest common factor of 48 and 92.

2	48, 92
2	24, 46
	12, 23

Step 3 : Divide the quotients obtained in the above step again by a common factor and write the quotients below. Repeat dividing by common factors till the 2 quotients obtained have no common factor anymore.

Here, 2 is again a common factor of 24 and 46. We get 12 and 23 respectively as quotients. Since, there are no common factors to divide 12 and 23, we will stop here.

Step 4 : Write the common factors on the left column and multiply them to get the HCF of 48 and 92. So, HCF of 48 and 92 = $2 \times 2 = 4$.

EXERCISE 10(D)

1 Find the HCF of the following.

(a) 8 and 16 (b) 12 and 24 (c) 24 and 36 (d) 5 and 10

(e) 15 and 30 (f) 4 and 6 (g) 54 and 72 (h) 56 and 70

(i) 23 and 25 (j) 42 and 56

2 Find the HCF of the following by prime factorization method.

(a) 8 and 12 (b) 124, 168 and 210 (c) 96, 112 and 108 (d) 7 and 98

(e) 108 and 144 (f) 40, 50 and 64 (g) 14, 56 and 98 (h) 16 and 48

(i) 15 and 20 (j) 112, 210 and 260

3 Find the HCF of the following by common division method.

(a) 40 and 60 (b) 45 and 225 (c) 21, 63 and 189 (d) 87 and 145

(e) 14 and 28 (f) 144, 252 and 228 (g) 125, 175 and 225 (h) 27 and 162

(i) 69 and 92 (j) 96, 144 and 168

(B) Common multiples

When a particular number is a multiple of 2 or more numbers, it is called a **common multiple**.

EXAMPLE Find the common multiples of 2 and 4.

Multiples of 2 – 2, 4, 6, 8, 10, 12, ...

Multiples of 4 – 4, 8, 12, 16, 20, 24, ...

Multiples that are common to both the numbers are 4, 8 and 12.

Least common multiple (LCM) is the smallest common multiple of the given numbers. In the example below, there is no common multiple of 5 and 6 which comes before 30. So, we say that 30 is the LCM of 5 and 6.

Multiples of 5 : 5, 10, 15, 20, 25, 30

Multiples of 6 : 6, 12, 18, 24, 30, 36

We can say that 30 is a common multiple of 5 and 6.

LCM of any given numbers can be found out by 2 methods :

(1) Listing method (2) Common division method

(1) Listing method : In this method, we list the first few multiples of the given numbers. Then we circle the common multiples and identify the least common multiple of the given numbers among the circled ones.

EXAMPLE Find the LCM of 12, 15 and 20.

Step 1 : List the multiples of each number.

Multiples of 12 = 12, 24, 36, 48, 60, 72, 84, 96, 108, 120

Multiples of 15 = 15, 30, 45, 60, 75, 90, 105, 120, 135

Multiples of 20 = 20, 40, 60, 80, 100, 120, 140, 160

Step 2 : Circle the common multiples of 12, 15 and 20.

Multiples of 12 = 12, 24, 36, 48, 60, 72, 84, 96, 108, 120

Multiples of 15 = 15, 30, 45, 60, 75, 90, 105, 120, 135

Multiples of 20 = 20, 40, 60, 80, 100, 120, 140, 160

Step 3 : Identify the least common multiple among the circled numbers.

Here, 60 is the first common multiple of 12, 15 and 20.

So, LCM of 12, 15 and 20 is 60.

(2) Common division method : In this method, we start by dividing atleast one of the given numbers by the smallest prime number. Bring down the numbers that are indivisible as it is. Keep on repeating the method till all the quotients are 1 in the last row. Then, multiply all the prime numbers to get the LCM of the given numbers.

EXAMPLE Find the LCM of 16, 24 and 30.

	16, 24, 30

Step 1 : Write all the numbers in a row, separated by commas.

2	16, 24, 30
	8, 12, 15

Step 2 : Choose the smallest prime number that divides any one of the given numbers.

2	16, 24, 30
2	8, 12, 15
2	4, 6, 15

Step 3 : Keep on dividing the numbers by the smallest prime numbers and bring the indivisible numbers down as it is.

2	16, 24, 30
2	8, 12, 15
2	4, 6, 15
	2, 3, 15

Step 4 : Repeat till you get all ones (1) in the last row.

Step 5 : Multiply all the prime numbers on the left to get the LCM of 16, 24 and 30.

So, LCM of 16, 24 and 30 is $2 \times 2 \times 2 \times 2 \times 3 \times 5 = 240$

2	16, 24, 30
2	8, 12, 15
2	4, 6, 15
2	2, 3, 15
	1, 3, 15

2	16, 24, 30
2	8, 12, 15
2	4, 6, 15
2	2, 3, 15
3	1, 3, 15
	1, 1, 5

2	16, 24, 30
2	8, 12, 15
2	4, 6, 15
2	2, 3, 15
3	1, 3, 15
5	1, 1, 5
	1, 1, 1

EXERCISE 10(E)

1 Find the LCM of the given numbers by listing method. (upto first three multiples).

(a) 2, 6 (b) 4, 12 (c) 5, 3 (d) 3, 9

(e) 10, 20 (f) 6, 4 (g) 4, 18 (h) 4, 6

(i) 16, 8 (j) 9, 12

2 Find the LCM of the given numbers by prime factorisation method.

(a) 16, 48 (b) 8, 12, 16 (c) 20, 25 (d) 40, 50

(e) 56, 64 (f) 96, 144 (g) 36, 42 (h) 21, 36

(i) 15, 45 (j) 10, 20, 30

3 Find the LCM of the following by common division method.

(a) 6, 36 (b) 25, 10 (c) 45, 27 (d) 42, 49

(e) 32, 64 (f) 18, 27 (g) 36, 42 (h) 15, 64

(i) 28, 32 (j) 27, 81

11 FRACTIONS

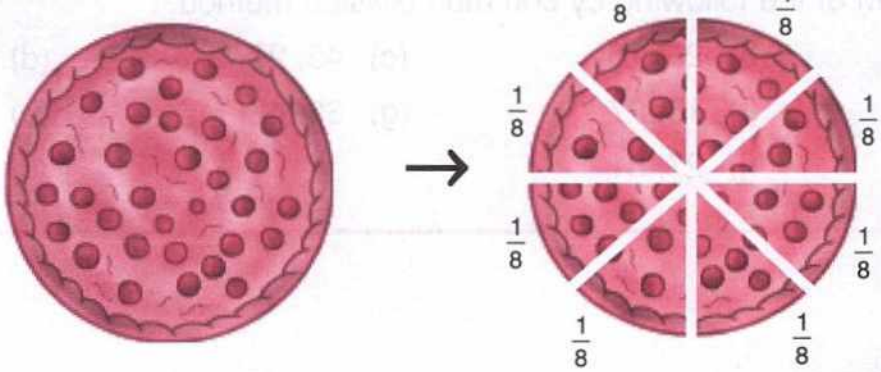
It is Raveena's birthday party. She has 8 cupcakes and a pizza which she wants to share with 7 of her friends.

Since there are 8 children and 8 cupcakes, each child will get a cupcake each.

But how will 1 pizza be divided among 8 children ?

Let us see how ?

We will divide the pizza in 8 equal parts.



1 whole pizza

Pizza with 8 slices

Now each child will get 1 slice of pizza.

When the pizza is divided into 8 equal parts, then each part is known as one-eighth of the whole pizza and is represented as $\frac{1}{8}$ *i.e.* one pizza divided into 8 equal parts.

Here, $\frac{1}{8}$ is known as a **fraction** and it is read as one by eight.

A fraction has two parts — **Denominator** and **Numerator**.

The number of equal parts one whole has been divided into, is called the **denominator** of the fraction. The number of parts of the whole that are under consideration, is called the **numerator** of the fraction.

In the above example, 1 whole pizza was divided into 8 equal parts. So, 8 will be the denominator and 1 will be the numerator since we are considering the portion of the pizza that each child will get.

While writing a fraction, the numerator and the denominator are separated by a horizontal line.

Numerator is written above the line while the denominator is written below the line.

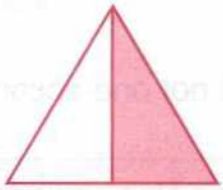
The fraction for the given example will be $\frac{1}{8}$.

Numerator

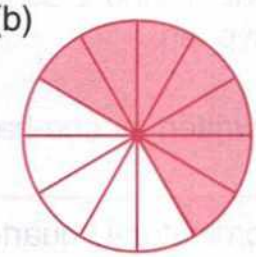
Denominator

EXAMPLE 1 Write the fraction as represented by the figures given below.

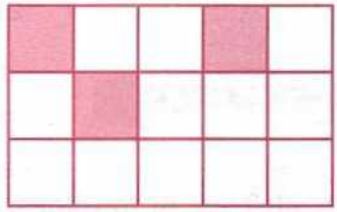
(a)



(b)



(c)



Solution : In Fig. (a), 1 out of 2 parts is under consideration.

So, the fraction is $\frac{1}{2}$.

Similarly in Fig. (b), 7 out of 12 parts are under consideration.

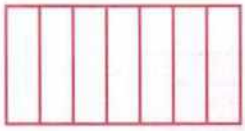
Fraction is $\frac{7}{12}$.

In Fig. (c), 3 out of 15 parts are under consideration.

Fraction is $\frac{3}{15}$.

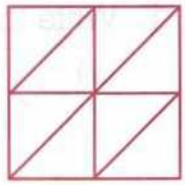
EXAMPLE 2 Represent the fractions given below by shading the respective figures.

(a) $\frac{3}{7}$



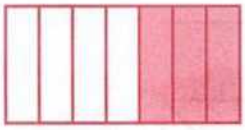
(b) $\frac{1}{3}$

(c) $\frac{4}{8}$

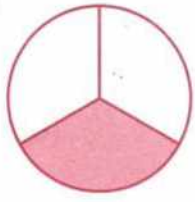


Solution :

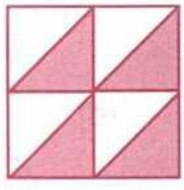
(a)



(b)



(c)



[***Note to the teacher :*** Please allow the students to colour the parts of figures in any order to indicate the given fraction].

11.1 WRITING FRACTIONS IN WORDS

The numerator of a fraction is simply written in words while the denominator is written in the ordinal, plural form except in cases where the denominator is 2. The numerator and denominator are separated by a hyphen (-).

EXAMPLE 1 $\frac{7}{8}$ will be written as seven-eighths.

For fractions having 2 as their denominators, the word half is used after the hyphen.

EXAMPLE 2 $\frac{1}{2}$ will be written as one-half and not one-seconds.

Note : For fractions with denominator 4, 'quarters' can also be used after the hyphen.

EXAMPLE 3 $\frac{3}{4}$ will be written as three-quarters or three-fourths.

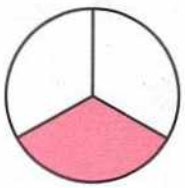
EXAMPLE 4 Write the following fractions in words.

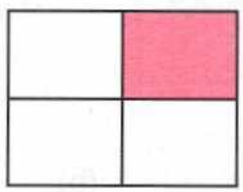
(a) $\frac{3}{4}$ (b) $\frac{5}{13}$ (c) $\frac{7}{12}$

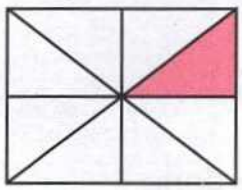
Ans. (a) Three-fourths (b) Five-thirteenths (c) Seven-twelfths

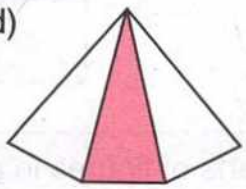
EXERCISE 11(A)

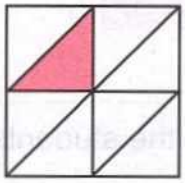
1 Write the fraction shaded in each set :

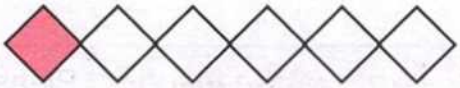
(a) 

(b) 

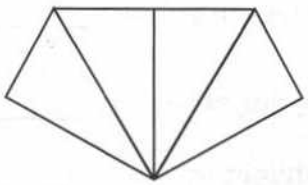
(c) 

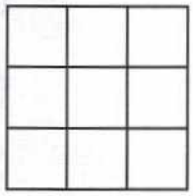
(d) 

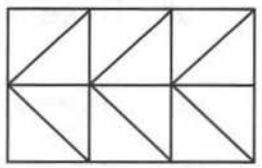
(e) 

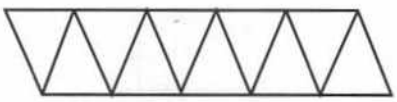
(f) 

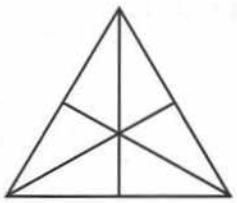
2 Represent the fractions in the given figures by colouring.

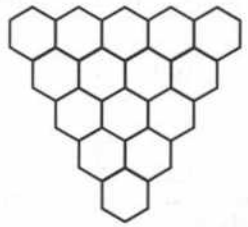
(a) $\frac{2}{4}$ 

(b) $\frac{5}{9}$ 

(c) $\frac{7}{12}$ 

(d) $\frac{3}{10}$ 

(e) $\frac{5}{6}$ 

(f) $\frac{9}{15}$ 

3 Write the fractions whose numerators (N) and denominators (D) are given below.

			Fractions
(a)	N = 5	D = 7	$\frac{5}{7}$
(b)	N = 2	D = 3	
(c)	N = 7	D = 9	
(d)	N = 11	D = 12	
(e)	N = 4	D = 5	
(f)	N = 5	D = 9	
(g)	N = 6	D = 11	
(h)	N = 8	D = 13	
(i)	N = 3	D = 4	
(j)	N = 9	D = 17	

4 Write the fractions in numeral form.

(a) Three-fifths $\frac{3}{5}$ (b) Nine-elevenths _____

(c) Three-fourteenths _____ (d) Nine-fourteenths _____

(e) Three-sevenths _____ (f) Eleven-twelfths _____

5 Write the given fractions in words.

(a) $\frac{2}{7}$ _____ (b) $\frac{3}{8}$ _____

(c) $\frac{7}{9}$ _____ (d) $\frac{11}{13}$ _____

(e) $\frac{4}{15}$ _____ (f) $\frac{1}{2}$ _____

11.2 UNIT FRACTIONS

Unit fractions are those fractions whose numerator is always 1.

EXAMPLE Consider fractions $\frac{1}{2}, \frac{1}{3}, \frac{1}{7}, \frac{1}{12}, \frac{1}{15}$, etc. They are all unit fractions.

Like fractions

Like fractions are those fractions which have the same denominator.

EXAMPLE Consider fractions $\frac{7}{15}, \frac{9}{15}, \frac{11}{15}, \frac{12}{15}$, etc. They are all like fractions as they have the same denominator *i.e.* 15.

Unlike fractions

Unlike fractions are those fractions which have different denominators.

EXAMPLE Consider fractions $\frac{3}{5}, \frac{2}{8}, \frac{4}{7}, \frac{9}{11}$, etc. They are unlike fractions as they have different denominators.

Equivalent fractions

Equivalent fractions are those fractions which can be simplified to the same fraction *i.e.* fractions that represent the same part of the whole.

We can simplify a fraction by dividing both the numerator and the denominator of the fraction by the same number.

EXAMPLE

Consider the fraction $\frac{8}{24}$. Here, the denominator *i.e.* 24 is divisible by the numerator 8.

Therefore, upon dividing, we get —

$$\frac{\cancel{8}^{1}}{\cancel{24}_{3}} = \frac{1}{3}$$

Here, $\frac{1}{3}$ is the simplified form of $\frac{8}{24}$.

Now, consider two fractions $\frac{6}{20}$ and $\frac{15}{50}$.

Simplify both the fractions

$$\frac{6 \div 2}{20 \div 2} = \frac{\cancel{6}^{3}}{\cancel{20}_{10}} = \frac{3}{10} \qquad \text{[Dividing by 2]}$$

$$\frac{15 \div 5}{50 \div 5} = \frac{\cancel{15}^{3}}{\cancel{50}_{10}} = \frac{3}{10} \qquad \text{[Dividing by 5]}$$

Since both of these fractions can be simplified to $\frac{3}{10}$, they are equivalent fractions.

Another quick method to check whether two or more fractions are equivalent is to multiply the numerator of the first fraction by the denominator of the second fraction and to multiply the denominator of the first fraction by the numerator of the second fraction. If both the products are the same, then the fractions are equivalent.

Consider $\frac{6}{20}$ and $\frac{15}{50}$ again.

Multiply as shown by the arrows.

$$\frac{6}{20} \times \frac{15}{50}$$

$6 \times 50 = 300$ and $20 \times 15 = 300$.

Since, the answer is 300 in both the cases, $\frac{6}{20}$ and $\frac{15}{50}$ are equivalent fractions.

EXAMPLE

- Are $\frac{7}{15}$ and $\frac{9}{11}$ equivalent fractions ?

Multiply as shown $\frac{7}{15} \times \frac{9}{11}$

$7 \times 11 = 77$

$15 \times 9 = 135$

Since, the products are not equal, $\frac{7}{15}$ and $\frac{9}{11}$ are not equivalent fractions.

11.3 FINDING EQUIVALENT FRACTIONS

To find equivalent fractions of a given fraction, we multiply or divide the numerator and the denominator of the fraction by the same number other than zero or one.

EXAMPLE 1 Find equivalent fractions of $\frac{2}{13}$.

Equivalent fractions of $\frac{2}{13}$ are : $\frac{2\times2}{13\times2} = \frac{4}{26}$; $\frac{2\times3}{13\times3} = \frac{6}{39}$;

$\frac{2\times4}{13\times4} = \frac{8}{52}$; $\frac{2\times5}{13\times5} = \frac{10}{65}$; etc.

For more equivalent fractions of $\frac{2}{13}$, we can further multiply the numerator and denominator by 6, 7, 8, 9, 10, ... etc.

EXAMPLE 2 Find two equivalent fractions of $\frac{16}{20}$.

Equivalent fractions of $\frac{16}{20}$ will be $\frac{16\div2}{20\div2} = \frac{8}{10}$; $\frac{16\div4}{20\div4} = \frac{4}{5}$, etc.

$\therefore$ $\frac{16}{20}$, $\frac{8}{10}$ and $\frac{4}{5}$ are equivalent fractions.

EXERCISE 11(B)

1 Circle the unit fractions in the following fractions.

(a) $\frac{5}{23}, \frac{1}{2}, \frac{8}{11}, \frac{1}{4}$ (b) $\frac{6}{13}, \frac{1}{5}, \frac{8}{15}, \frac{9}{11}$ (c) $\frac{1}{2}, \frac{3}{4}, \frac{4}{5}, \frac{5}{7}$

(d) $\frac{6}{7}, \frac{8}{10}, \frac{1}{7}, \frac{9}{10}$ (e) $\frac{7}{13}, \frac{2}{3}, \frac{3}{4}, \frac{1}{9}$

2 Find out the unlike fractions from the given fractions.

(a) $\frac{2}{3}, \frac{7}{15}, \frac{4}{15}, \frac{2}{15}$

(b) $\frac{4}{11}, \frac{9}{11}, \frac{10}{11}, \frac{2}{5}$

(c) $\frac{2}{9}, \frac{7}{9}, \frac{8}{9}, \frac{3}{4}$

(d) $\frac{2}{3}, \frac{1}{8}, \frac{5}{8}, \frac{7}{8}$

(e) $\frac{6}{12}, \frac{1}{6}, \frac{2}{6}, \frac{5}{6}$

3 Circle the like fractions in the following fractions.

(a) $\frac{7}{13}, \frac{5}{13}, \frac{9}{13}, \frac{1}{7}, \frac{2}{9}, \frac{8}{13}$

(b) $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{6}{7}, \frac{5}{9}, \frac{8}{11}$

(c) $\frac{2}{5}, \frac{3}{5}, \frac{7}{9}, \frac{1}{5}, \frac{4}{5}$

(d) $\frac{1}{6}, \frac{3}{6}, \frac{4}{8}, \frac{9}{11}, \frac{4}{6}$,

(e) $\frac{1}{7}, \frac{1}{4}, \frac{2}{7}, \frac{2}{3}, \frac{4}{5}, \frac{3}{7}$

4 Write the next two equivalent fractions of each of the following fractions.

(a) $\frac{2}{3}$, ____, ____

(b) $\frac{5}{7}$ ____, ____

(c) $\frac{6}{11}$ ____, ____

(d) $\frac{5}{9}$, ____, ____

(e) $\frac{3}{10}$ ____, ____

5 Fill in the blanks.

(a) $\frac{5}{8} = \frac{25}{\square}$

(b) $\frac{3}{4} = \frac{15}{\square}$

(c) $\frac{\square}{9} = \frac{63}{81}$

(d) $\frac{4}{\square} = \frac{20}{25}$

(e) $\frac{15}{25} = \frac{3}{\square}$

6 Check whether the given fractions are equivalent or not.

(a) $\frac{3}{4}$ and $\frac{9}{12}$

(b) $\frac{9}{27}$ and $\frac{3}{9}$

(c) $\frac{2}{5}$ and $\frac{7}{6}$

(d) $\frac{5}{9}$ and $\frac{9}{12}$

(e) $\frac{9}{15}$ and $\frac{3}{5}$

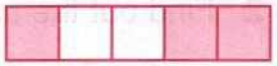
(f) $\frac{2}{4}$ and $\frac{9}{12}$

(g) $\frac{11}{12}$ and $\frac{7}{9}$

(h) $\frac{12}{24}$ and $\frac{5}{8}$

(i) $\frac{2}{3}$ and $\frac{12}{18}$

11.4 ADDITION OF LIKE FRACTIONS



Here, a strip of paper is divided into 5 equal parts.

One part on the left and 2 parts on the right of the paper strip are shown shaded. Observe that 1 shaded part on the left represents $\frac{1}{5}$ of the whole and 2 shaded parts on the right represent $\frac{2}{5}$ of the whole.

We know that 1 shaded part on the left taken together with 2 shaded parts on the right will give 3 shaded parts.

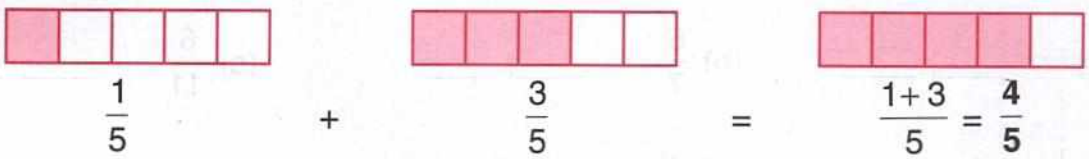
Thus, $\frac{1}{5} + \frac{2}{5} = \frac{1+2}{5}$ or $\frac{3}{5}$.

Similarly, the shaded parts of the circle, given alongside, gives

$$\frac{1}{6} + \frac{3}{6} = \frac{1+3}{6} \text{ or } \frac{4}{6}$$

> Like fractions can be added by simply adding the numerator of the given fractions and keeping the denominator same.

EXAMPLE Add $\frac{1}{5}$ and $\frac{3}{5}$.



EXERCISE 11(C)

1 Fill in the blanks.

(a) $\frac{1}{7} + \frac{5}{7} = \frac{\square}{7}$ (b) $\frac{\square}{5} + \frac{2}{5} = \frac{4}{5}$ (c) $\frac{\square}{8} + \frac{2}{\square} = \frac{7}{8}$

(d) $\frac{10}{16} + \frac{\square}{16} = \frac{12}{16}$ (e) $\frac{5}{19} + \frac{\square}{19} = \frac{18}{19}$ (f) $\frac{7}{10} + \frac{\square}{\square} = \frac{9}{10}$

(g) $\frac{13}{29} + \frac{\square}{29} = \frac{16}{\square}$ (h) $\frac{\square}{17} + \frac{2}{17} = \frac{5}{\square}$ (i) $\frac{\square}{11} + \frac{7}{11} = \frac{10}{11}$

(j) $\frac{\square}{25} + \frac{5}{\square} = \frac{20}{25}$

2 Add the following.

(a) $\frac{2}{3} + \frac{1}{3}$ (b) $\frac{2}{7} + \frac{2}{7}$ (c) $\frac{3}{8} + \frac{5}{8}$

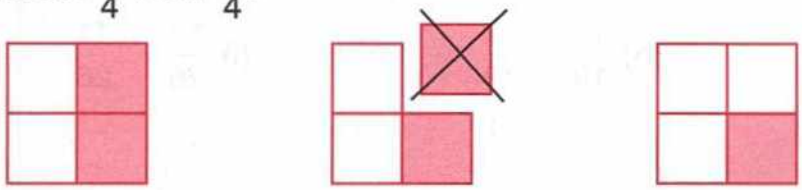
(d) $\frac{9}{11} + \frac{1}{11}$ (e) $\frac{6}{13} + \frac{2}{13}$ (f) $\frac{8}{12} + \frac{2}{12} + \frac{1}{12}$

(g) $\frac{5}{19} + \frac{3}{19} + \frac{7}{19}$ (h) $\frac{6}{23} + \frac{11}{23} + \frac{3}{23}$ (i) $\frac{7}{19} + \frac{4}{19} + \frac{3}{19}$

(j) $\frac{4}{15} + \frac{5}{15} + \frac{3}{15}$

11.5 SUBTRACTION OF FRACTIONS

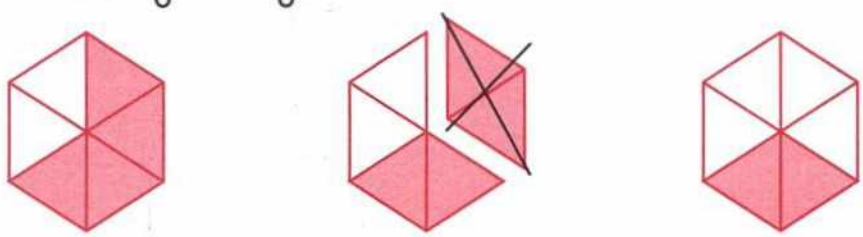
Let us subtract $\frac{1}{4}$ from $\frac{2}{4}$.



$\frac{2}{4}$ − $\frac{1}{4}$ = $\frac{1}{4}$

Two like fractions can be subtracted by simply subtracting the smaller numerator from the greater numerator, while keeping the denominator same.

EXAMPLE Subtract $\frac{2}{6}$ from $\frac{4}{6}$.



$\frac{4}{6}$ − $\frac{2}{6}$ = $\frac{4-2}{6} = \frac{2}{6}$

EXERCISE 11(D)

1 Fill in the blanks.

(a) $\frac{2}{3} - \frac{\square}{3} = \frac{1}{3}$ (b) $\frac{7}{11} - \frac{5}{11} = \frac{\square}{11}$ (c) $\frac{17}{25} - \frac{\square}{25} = \frac{9}{\square}$

(d) $\frac{8}{14} - \frac{\square}{14} = \frac{5}{\square}$ (e) $\frac{\square}{43} - \frac{11}{43} = \frac{23}{43}$ (f) $\frac{17}{18} - \frac{\square}{18} = \frac{13}{\square}$

(g) $\frac{\square}{15} - \frac{7}{15} = \frac{3}{15}$ (h) $\frac{10}{13} - \frac{9}{13} = \frac{\square}{\square}$ (i) $\frac{23}{42} - \frac{17}{42} = \frac{\square}{\square}$

(j) $\frac{87}{92} - \frac{57}{92} = \frac{\square}{\square}$

2 Subtraction.

(a) $\frac{4}{7} - \frac{3}{7}$ (b) $\frac{7}{11} - \frac{2}{11}$ (c) $\frac{11}{17} - \frac{5}{17}$

(d) $\frac{20}{31} - \frac{15}{31}$ (e) $\frac{4}{15} - \frac{2}{15}$ (f) $\frac{15}{25} - \frac{10}{25}$

(g) $\frac{17}{23} - \frac{11}{23}$ (h) $\frac{15}{19} - \frac{12}{19}$ (i) $\frac{12}{26} - \frac{11}{26}$

(j) $\frac{25}{43} - \frac{23}{43}$

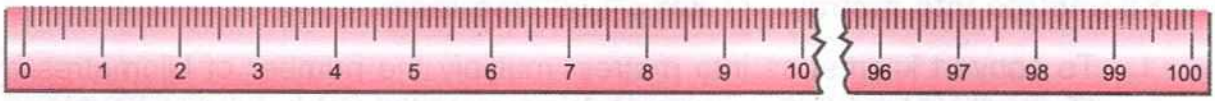
12 MEASUREMENT

12(A) LENGTH

Length is the measurement of something from its one end to the other, such as the length of a room, the length of a stick, etc.

The standard unit used for measuring length is called the **metre (m)**. Other units used for measuring lengths are millimetre, centimetre, kilometre, etc.

In a cloth shop you must have observed the shopkeeper using a **'metre scale'** to measure the length of cloth. This metre scale has **100** equal divisions. Each division is known as a **centimetre (cm)**.



Therefore, **1 metre = 100 centimetres**

For measuring smaller lengths, such as the length of a pencil, we use centimetre and millimetre. For measuring greater lengths, such as the distance between two cities or countries, we commonly use **kilometre**. The relation between different units of length is as follows :

1 cm = 10 mm
1 m = 100 cm
1 km = 1000 m

12.1 CONVERSION

A. Metres into centimetres **1m = 100 cm**

1. To convert metres into centimetres, multiply the number of metres by 100.
   (To multiply a number by 100, just put two zeroes to the right of the number).
2. To convert metres and centimetres into centimetres, multiply the number of metres by 100 and then add the number of centimetres to it.

EXAMPLES

1. Convert 35 metres into centimetres.
   $35 \times 100 = 3500$ cm.

2. Convert 225m 85cm into centimetres.
   225m 85cm = 225 × 100 cm + 85 cm = 22,585 cm.

B. Centimetres into metres **100 cm = 1 m**

To convert centimetres into metres, divide the number of centimetres by 100.

EXAMPLES

1. Convert 545 centimetres into metres.
   545 cm = 500 cm + 45 cm = 5 m 45 cm.
2. Convert 3758cm into metres and centimetres
   3758 cm = 3700 cm + 58 cm = 37 m 58 cm

When centimetres are converted into metres and centimetres, the number formed by the last two digits on the right gives the number of centimetres and the number formed by the remaining digit(s) give the number of metres.

Thus, 3,7**67** cm = 37 m 67 cm.
33,7**42** cm = 337 m 42 cm.

C. Kilometres into metres **1 km = 1,000 metres**

1. To convert kilometres into metres, multiply the number of kilometres by 1,000. (To multiply by 1,000, just insert 3 zeroes to the right of the number).
2. To convert kilometres and metres into metres, multiply the number of kilometres by 1,000 and then add the number of metres, to it.

EXAMPLE

Convert 9 km, 22 km, 2 km 375 m and 12 km 625 m into metres.

(a) 9 km = 9 × 1000 m = 9,000 m

(b) 22 km = 22 × 1000 m = 22,000 m

(c) 2 km 375 m = 1 km + 1 km + 375 m = 1,000 m + 1,000 m + 375 m
= 2,375 m

(d) 12 km 625 m = 12 × 1,000 m + 625 m = 12,000 m + 625 m
= 12,625 m

D. Metres into kilometres **1,000 m = 1 km**

To convert metres into kilometres, divide the number of metres by 1,000.

EXAMPLES

1. Convert 1,775 m into kilometres.
   1,775 m = 1,000 m + 775 m
   = 1 km 775 m

2. Convert 12,580 m into kilometres.

12,580 m = 12,000 m + 580 m

= 12 km 580 m

When metres are converted into kilometres and metres, the number formed by the last three digits on the right gives the metres and the remaining digit(s) gives the kilometres.

EXERCISE 12(A)

1 Convert into centimetres.

(a) 105m = ☐ cm (b) 4m 15cm = ☐ cm

(c) 212m = ☐ cm (d) 18m 85cm = ☐ cm

(e) 48m 57cm = ☐ cm (f) 94m 09cm = ☐ cm

(g) 714m 10cm = ☐ cm (h) 840m 29cm = ☐ cm

2 Convert into metres and centimetres.

(a) 384cm = ☐ m ☐ cm (b) 12,715cm = ☐ m ☐ cm

(c) 24,367cm = ☐ m ☐ cm (d) 552cm = ☐ m ☐ cm

(e) 796cm = ☐ m ☐ cm (f) 62,615cm = ☐ m ☐ cm

(g) 6,250cm = ☐ m ☐ cm (h) 92,945cm = ☐ m ☐ cm

3 Convert into metres.

(a) 35km = ☐ m (b) 2km 375m = ☐ m

(c) 9km 450m = ☐ m (d) 78km 044m = ☐ m

(e) 14km 157m = ☐ m (f) 91km 125m = ☐ m

(g) 21km 264m = ☐ m (h) 49km 075m = ☐ m

4 Convert into kilometres and metres.

(a) 1,925m = ☐ km ☐ m (b) 14,725m = ☐ km ☐ m

(c) 3,125m = ☐ km ☐ m (d) 25,528m = ☐ km ☐ m

(e) 33,409m = ☐ km ☐ m (f) 42,480m = ☐ km ☐ m

(g) 6,008m = ☐ km ☐ m (h) 91,025m = ☐ km ☐ m

12.2 ADDITION OF LENGTHS

EXAMPLE 1 Add 15m 5cm and 24m 95cm.

	m	cm
	1	1
	15	5
+	24	95
	40	00

METHOD

Step 1 : Add the centimetres first. 5 + 95 = 100cm = 1m.
Write 00 under the centimetres' column and carry 1 to the metres' column.

Step 2 : Add the metres. 15 + 24 + 1 (carry over) = 40m.
Write 40 under the metres' column.

Ans : 40m 00cm

We can add metres and centimetres like ordinary numbers but all centimetres must be written as two digit numbers like paise. For example, 6cm should be written as 06cm, and 8cm as 08cm, etc.

EXAMPLE 2 Add 7km 75m, 15km 8m and 32km 125m.

	km	m
	1	11
	7	075
	15	008
+	32	125
	54	208

METHOD

Step 1 : Add the metres. 75 + 8 + 125 = 208 m.
Write 208 under the metres' column.

Step 2 : Add the kilometres. 7 + 15 + 32 = 54 km.
Write 54 under the kilometres' column.

Ans : 54km 208 m

We can add kilometres and metres like ordinary numbers, but metres should be written as three digit numbers. For example, 98m should be written as 098m, 8m as 008m, etc.

EXERCISE 12(B)

A. Add the following.

1

m	cm
8	75
12	65
+ 4	15

2

m	cm
15	55
18	60
+ 24	95

3

m	cm
21	25
46	02
+ 30	75

4

m	cm
45	32
41	05
+ 2	83

5

km	m
57	550
32	068
+ 23	740

6

km	m
18	753
20	042
+ 30	012

7

km	m
25	321
15	487
+ 46	512

8

km	m
65	110
23	415
+ 39	025

Do the following sums in your note book.

B. Word problems

1. Suman cycled 6km 500m in one hour and 7km 750m in the next hour. How much distance did she cycle altogether?
2. A wire of length 2m 35cm is joined with another wire of length 7m 95cm. What will be the total length of the wire?

12.3 SUBTRACTION OF LENGTHS

EXAMPLE 1 Subtract 9 m 57 cm from 15 m 26 cm.

m	cm
15	26
– 9	57
5m	**69cm**

or

m	cm
14	126
– 9	57
5m	**69cm**

METHOD

Step 1 : Subtract the centimetres.
As 57 > 26, we cannot subtract 57 from 26.
So, borrow 1m from 15m. 1m = 100cm.
100cm + 26cm = 126cm.
Subtract 57cm from 126cm.
126 – 57 = 69cm.
Write 69 in the centimetres' column.

Step 2 : Subtract the metres.
Subtract 9m from 14m = 14m – 9m = 5m.
Write 5 in the metres' column.

Ans : 5m 69cm

Centimetres should be written as two digit numbers.

EXAMPLE 2 Subtract 17km 685m from 28km 74m.

km	m
27	
~~28~~	074
–17	685
10	**389**

METHOD

Step 1 : Subtract the metres first.
As 074 < 685, we cannot subtract 685 from 74.
So borrow 1 km from 28 km. 1 km + 74 m = 1074 m
Subtract 685 from 1074. 1074 – 685 = 389.
Write 389 in the metres' column.

Step 2 : Subtract the kilometres. 27 (28 – 1) – 17 = 10 km.
Write 10 in the kilometres' column.

Ans : 10km 389m

Metres should be written as three digit numbers.

EXERCISE 12(C)

A. Subtract the following.

1
m	cm
8	62
− 4	48

2
m	cm
17	48
− 12	29

3
m	cm
408	04
− 289	66

4
m	cm
78	48
− 25	64

5
km	m
8	317
− 5	183

6
km	m
24	476
− 19	358

7
km	m
32	075
− 24	063

8
km	m
74	210
− 22	324

Do the following in your note book.

B. Word problems

1. Sudhir is 163cm tall and Rupam is 1m 81cm tall. What is the difference between their heights?
2. A pipe of length 5m is cut into two pieces. If the length of one piece is 2m 65cm, what will be the length of the other piece?
3. Rajesh's house is 10km 250m from school and Vinod's house is 3km 875m from school. Whose house is nearer to the school and by how much?

12(B) WEIGHT

We measure the weight of objects in grams and kilograms. For example, we weigh ourselves in kilograms, we buy rice, wheat, fruit, etc. in kilograms, while smaller quantities, light objects or precious objects such as gold, silver, medicines etc. are weighed in grams.

1 kilogram = 1,000 grams

The short form of gram is 'g' and of kilogram is 'kg'.

12.4 CONVERSION

A. Kilograms into grams

To convert kilograms into grams, we multiply the number of kilograms by 1,000 (since 1kg = 1,000g) and then add the grams, if any, to it.

EXAMPLE Convert 1 kg, 5 kg, 6 kg 250 g and 8 kg 750 g to grams.

(a) 1 kg = 1,000g

(b) 5 kg = 5,000g

(c) 6kg 250g = 6,000g + 250g = 6,250g

(d) 8kg 750g = 8,000g + 750g = 8,750g

EXERCISE 12(D)

Convert into grams.

1. 2kg = ☐ g
2. 14kg 438g = ☐ g
3. 4kg = ☐ g
4. 24kg 175g = ☐ g
5. 10kg = ☐ g
6. 42kg 264g = ☐ g
7. 71kg 020g = ☐ g
8. 64kg 108g = ☐ g
9. 58kg 078g = ☐ g
10. 80kg 009g = ☐ g

B. Grams into kilograms

To convert grams into kilograms, we divide the number of grams by 1000.

EXAMPLES Convert the following into kilograms.

(a) 1,000g (b) 7,000g (c) 3,245g (d) 24,728g

(a) 1,000g = 1000 ÷ 1000 = 1 kg

(b) 7,000g = 7000 ÷ 1000 = 7 kg

(c) 3,245g = 3,000g + 245g = 3kg 245g

(d) 24,728g = 24,000g + 728g = 24kg + 728g
= 24kg 728g

When grams are converted into kilograms and grams, the number formed by the last three digits on the right gives the number of grams, and the number formed by the remaining digit(s) gives the number of kilograms.

EXERCISE 12(E)

Convert into kilograms and grams.

1. 3,000g = ☐ kg ☐ g
2. 48,000g = ☐ kg ☐ g
3. 1,250g = ☐ kg ☐ g
4. 2,765g = ☐ kg ☐ g
5. 3,105g = ☐ kg ☐ g
6. 27,650g = ☐ kg ☐ g
7. 44,600g = ☐ kg ☐ g
8. 38,842g = ☐ kg ☐ g
9. 66,085g = ☐ kg ☐ g
10. 35,005g = ☐ kg ☐ g

12.5 ADDITION OF WEIGHTS

EXAMPLE 1 Add 128 kg 75 g and 244 kg 686 g.

kg	g
1	11
128	75
+ 244	686
372	761

METHOD

Step 1 : Add the grams first.
75 + 686 = 761. Write 761g under the grams' column.

Step 2 : Add the kilograms.
128 + 244 = 372
Write 372kg under kilograms' column .

Ans : 372kg 761g

Grams should be written as a 3-digit number.
e.g., 38g should be written as 038g and 9g as 009g etc.

EXAMPLE 2 Add 375kg 898g, 283kg 275g and 175kg 8g.

kg	g
211	
375	898
283	275
+ 175	008
834	181

METHOD

Step 1 : Add the grams.
898 + 275 + 008 = 1,181g
1,181g = 1,000g + 181g = 1kg 181g
Write 181 in the grams' column and carry over 1 to the kilograms' column.

Step 2 : Add the kilograms.
375 + 283 + 175 + 1 (carry over) = 834kg
Write 834 in kilograms' column .

Ans : 834kg 181g

EXAMPLE 3 Three parcels weigh 55kg 750g, 123kg 825g and 89kg 48g. Find their total weight.

Solution :

	kg	g
Weight of the first parcel	= 55	750
Weight of the second parcel	= 123	825
Weight of the third parcel	= + 89	048
Total weight	**268**	**623**

Ans : 268kg 623g

EXERCISE 12(F)

A. Add the following.

1	kg	g
	8	124
	+ 7	324

2	kg	g
	12	214
	+ 17	325

3	kg	g
	24	316
	+ 18	643

4	kg	g
	26	543
	+ 38	686

5	kg	g
	124	086
	248	783
	+ 274	808

6	kg	g
	115	175
	364	585
	+ 423	748

7	kg	g
	1,214	824
	2,483	783
	+ 2,551	558

8	kg	g
	20,234	083
	32,178	748
	+ 41,482	814

Do the following sums in your note book.

B. Word problems

1. A man bought 30kg 500g rice from one shop and 48kg 755g rice from another shop. How much rice did he buy altogether?
2. A housewife buys 5kg 800g potatoes, 3kg 750g tomatoes and 4kg 500g onions. How much do these vegetables weigh altogether?

12.6 SUBTRACTION OF WEIGHTS

Grams should be written as a 3-digit number

EXAMPLE 1 Subtract 48 kg 85g from 95kg 250g.

kg	g
95	250
– 48	85
47	165

METHOD

Step 1 : Subtract the grams first.
250 – 85 = 165 g
Write 165 under grams' column.

Step 2 : Subtract the kilograms.
95 – 48 = 47 kg. Write 47 under kilograms' column.

Ans : 47 kg 165 g

EXAMPLE 2 Take away 488kg 796g from 515kg 86g.

kg	g
4	
5~~1~~5	1086
– 488	796
26	290

METHOD

Step 1 : Since 86 < 796, borrow 1 kg from 515 kg.
1 kg + 86 g = 1086 g. Now, 1086 – 796 = 290 g.
Write 290 under grams' column.

Step 2 : Since we borrowed 1 kg, so 515 kg becomes 514 kg.
514 – 488 = 26 kg. Write 26 under kilograms' column.

Ans : 26 kg 290 g

EXAMPLE 3 The total weight of two men is 138kg. If one of them weighs 78kg, find the weight of the other man.

Solution :

Total weight of the two men = 138 kg
Weight of one man = 78 kg
So, weight of the other man = 138kg – 78kg = 60kg

Ans : 60kg

EXERCISE 12(G)

A. Subtract the following.

1

kg	g
89	183
– 55	378

2

kg	g
91	243
– 48	467

3

kg	g
94	175
– 68	488

4

kg	g
225	165
– 118	348

5

kg	g
3,742	348
– 1,838	178

6

kg	g
5,043	218
– 2,866	634

7

kg	g
4,142	341
– 2,786	786

8

kg	g
27,141	086
–14,083	248

Do the following in your note book.

B. Word problems

1. By how much 123kg 160g is less than 208kg 048g ?
2. What should be added to 74kg 245g to get 86kg 418g ?
3. A school bag weighs 1kg 755g. If notebooks weighing 550g are removed from the bag, how much does the bag weigh now ?
4. For a birthday party, 15kg sweets were ordered. After the party 3kg 850g sweets were left. How many sweets (in kg) were consumed during the party?

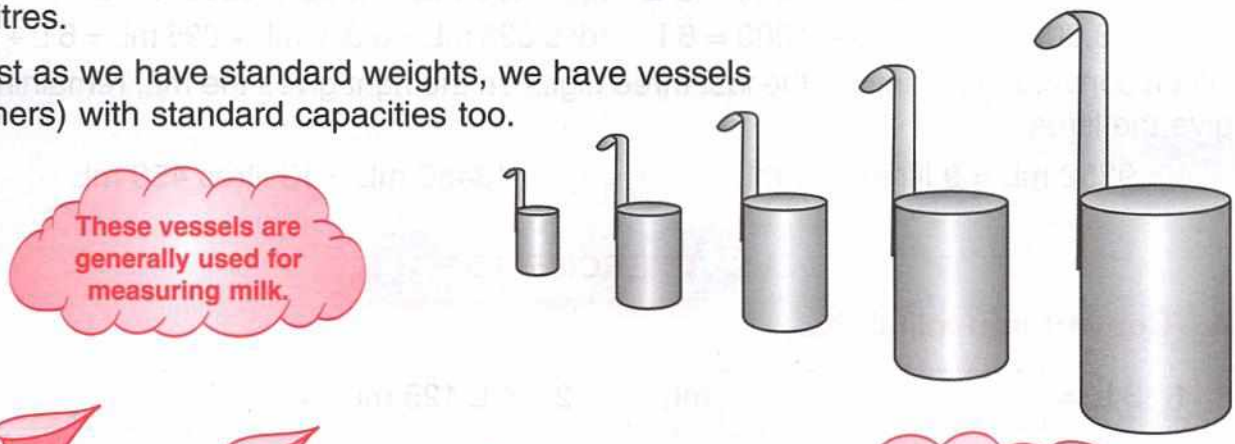
12(C) CAPACITY

We measure capacity in litres and millilitres. **Litre** is the standard unit of capacity. Liquids like milk, water, petrol, etc., are measured in litres. Smaller quantities like medicinal liquids such as cough syrups, tonics, etc., are measured in millilitres.

1 Litre = 1000 millilitres

'L' is the short form of litre and 'mL' is the short form of millilitres.

Just as we have standard weights, we have vessels (containers) with standard capacities too.



Chemists and druggists measure medicinal liquids with small graduated cylinders of capacities 1 mL to 100 mL.

12.7 CONVERSION

Litres into millilitres (litres × 1000)

To convert litres into mL, multiply the quantity by 1000.

EXAMPLE Convert the following into millilitres.
(a) 5 L (b) 7 L (c) 3 L 175 mL (d) 6 L 224 mL

1. 5 litres = 5 × 1000 = 5,000 mL
2. 7 litres = 7 × 1000 = 7,000 mL
3. 3 L 175 mL = 3 L + 175 mL = 3,000 mL + 175 mL = 3,175 mL
4. 6 L 224 mL = 6 L + 224 mL = 6,000 mL + 224 mL = 6,224 mL

Millilitres into litres (millilitres ÷ 1000)

To convert mL into litres, divide the quantity by 1000.

EXAMPLE Convert the following into litres and millilitres.
(a) 2,000 mL (b) 4,000 mL (c) 8,000 mL (d) 6,025 mL

(a) 2,000 mL = 2000 ÷ 1000 = 2 L (b) 4,000 mL = 4000 ÷ 1000 = 4 L
(c) 8,000 mL = 8000 ÷ 1000 = 8 L (d) 6,025 mL = 6,000 mL + 025 mL = 6 L + 025 mL

When converting mL into L, the last three digits on the right gives the mL, remaining digits give the litres.

9352 mL = 9 litres 352 mL 13450 mL = 13 litres 450 mL

EXERCISE 12(H)

A. Convert into millilitres.

1. 3 L = ☐ mL
2. 4 L 125 mL = ☐ mL
3. 6 L = ☐ mL
4. 5 L 225 mL = ☐ mL
5. 7 L = ☐ mL
6. 16L 440 mL = ☐ mL
7. 12L = ☐ mL
8. 24L 575 mL = ☐ mL
9. 15L = ☐ mL
10. 32L 340 mL = ☐ mL

B. Convert into litres.

1. 3,000 mL = ☐ L
2. 6,666 mL = ☐ L ☐ mL
3. 9,000 mL = ☐ L
4. 6,808 mL = ☐ L ☐ mL
5. 8,000 mL = ☐ L
6. 7,045 mL = ☐ L ☐ mL

7 1,375 mL = ( ) L ( ) mL 8 8,075 mL = ( ) L ( ) mL

9 8,400 mL = ( ) L ( ) mL 10 9,090 mL = ( ) L ( ) mL

12.8 ADDITION OF CAPACITIES/VOLUMES

Addition of capacity measures is carried out in the same way as in mass measures.

EXAMPLE 1 Add 6 L 225 mL and 4 L 383 mL.

mL should be written as a 3-digit number

	L	mL
	6	025
+	4	383
	10	408

METHOD

Step 1 : Add the millilitres first.
025 + 383 = 408 mL.
Write 408 under millilitres' column.

Step 2 : Add the litres. 6 + 4 = 10 L.
Write 10 under litres' column.

Ans : 10 L 408 mL

EXAMPLE 2 Add 26 L 475 mL and 18 L 883 mL.

	L	mL
	1	
	26	475
+	18	883
	45	358

METHOD

Step 1 : Add the millilitres first. 475 + 883 = 1,358 mL.
1,358 mL = 1,000 mL + 358 mL = 1 L + 358 mL
Write 358 in the millilitres' column and carry over 1 litre to the litres' column.

Step 2 : Add the litres. 26 + 18 + 1 (carry over) = 45 L.
Write 45 in the litres' column.

Ans : 45 L 358 mL

EXERCISE 12(I)

A. Add the following.

1

L	mL
26	139
+ 81	947

2

L	mL
123	510
+ 29	329

3

L	mL
111	106
+ 326	009

4

L	mL
412	603
+ 471	811

5

L	mL
374	078
249	998
+ 146	569

6

L	mL
574	665
283	843
+ 48	658

7

L	mL
124	643
94	724
+ 18	386

8

L	mL
404	485
317	645
+ 80	865

Do the following sums in your note book.

B. Word problems

1. 31 L 500 mL of milk in one can is mixed with 72 L 650 mL of milk in the other can. Find the total quantity of milk.

2. An oil merchant sells 100 L 450 mL of oil to one man and 126 L 725 mL to another man. How much oil does he sell altogether ?

12.9 SUBTRACTION

Subtraction of capacity measures is also carried out in the same way as in mass measures.

EXAMPLE 1 Subtract 9 L 48 mL from 14 L 374 mL.

mL should be written as a 3-digit number.

L	mL
	6 14
14	3~~74~~
− 9	048
5	326

METHOD

Step 1 : Subtract the millilitres first. 374 − 048 = 326 mL
Write 326 under millilitres' column.

Step 2 : Subtract the litres. 14 − 9 = 5 litres.
Write 5 under the litres' column.

Ans : 5 L 326 mL

EXAMPLE 2 Subtract 18 L 768 mL from 34 L 245 mL.

L	mL
33	
~~34~~	1245
− 18	768
15	477

METHOD

Step 1 : Subtract the millilitres first. 768 > 245. So, borrow 1 litre from 34 litres. 1 litre + 245 mL = 1245 mL. 1245 − 768 = 477 mL.
Write 477 under millilitres' column.
Subtract the litres.

Step 2 : 34 litres become 33 litres after giving away 1 L.
33 − 18 = 15 L.
Write 15 under litres' column.

Ans : 15 L 477 mL

EXERCISE 12(J)

A. Subtract the following.

1.

L	mL
17	136
− 12	388

2.

L	mL
81	008
− 35	624

3.

L	mL
148	240
− 98	484

4.

L	mL
321	152
− 214	654

5

L	mL
321	152
− 174	386

6

L	mL
405	505
− 266	788

7

L	mL
1,202	080
− 686	346

8

L	mL
2,468	250
− 1,784	864

Do the following sums in your note book.

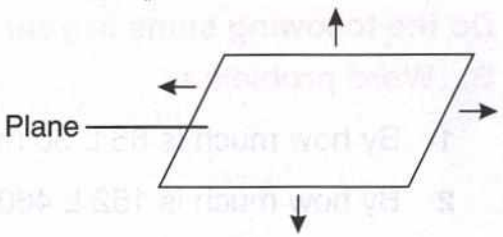
B. Word problems

1. By how much is 66 L 30 mL greater than 36 L 575 mL ?
2. By how much is 152 L 460 mL less than 180 L 45 mL ?
3. A tin contains 18 L 750 mL of oil. 7 L 935ml of oil is wasted due to leakage in the tin. How much oil is left in the tin ?
4. The petrol tank of a car holds 35 litres of petrol. If 21 L 725 mL is used, how much petrol is left in the tank of the car ?

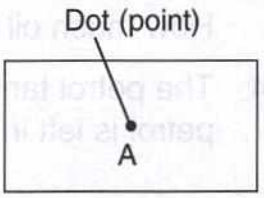
13 GEOMETRY

13.1 LINES

Terms used in geometry



Plane — It is a 2 dimensional flat surface and it does not have any thickness.



Point : It is a dot represented on a plane surface. In the figure given alongside, the small dot represents a point. A point shows a definite position. It has no length, breadth and thickness, it has no shape or size. Points are represented by dots and named by using capital letters like A, B, Q, P, etc.

Line : A line has no breadth, no thickness and no end points. It can be extended to any length on both sides. To show this, arrow heads are drawn at each end of the line.

We can name a line in two ways. We can name it as PQ and it is often written as PQ. We can name the line as a single small letter of the alphabet such as *l*, *m*, *p* or *r* etc. The line given above is represented by $\overleftrightarrow{XY}$ or $\overleftrightarrow{YX}$ or *m*.

Line segment : A part of the line is known as the line segment, (e.g.) the part of the line between points X and Y is known as a line segment. A line segment has two end points. It has a length with no breadth and thickness.

EXERCISE 13(A)

1 Fill in the blanks.

(a) A _____ represents a point.

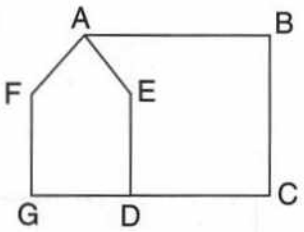
(b) A line has _____ end points.

(c) _____ has two end points.

(d) A line can be extended in _____ directions.

(e) A line segment has a _____ length.

2 Count the number of line segments in the following figures.

(a) 

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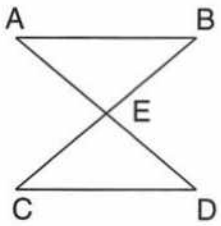
(b) 

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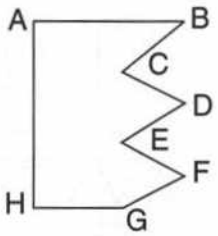
(c) 

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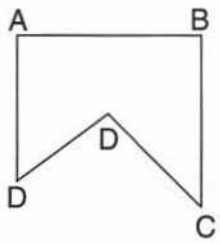
(d) 

_____

3 Classify the following as line, line segment or point.

(a) 
_____

(b) 
_____

(c) 
_____

(d)
_____

(e) 
_____

(f)
_____

4 Draw a line AB of any length. Mark a point C on the line anywhere. Draw another line XY passing through C.

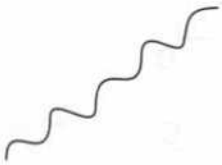
5 Mark points X and Y anywhere on the sheet and then join both the points. Also mark a point Z anywhere above the line and then join Z with the points X and Y. What shape do you get ?

LETS RECALL

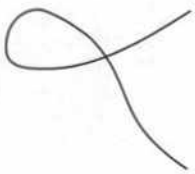
1 Tell whether the following lines are **"curved"** or **"straight"**.

(a)  _____

(b)  _____

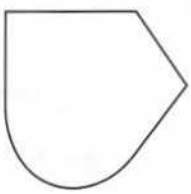
(c)  _____

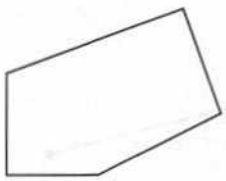
(d)  _____

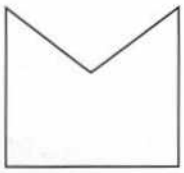
(e)  _____

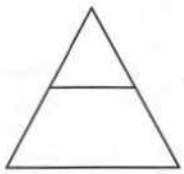
(f)  _____

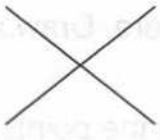
2 Find the number of straight lines in each figure.

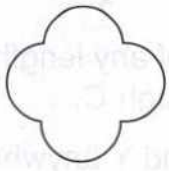
(a)  _____

(b)  _____

(c)  _____

(d)  _____

(e)  _____

 _____

13.2 TYPES OF STRAIGHT LINES

Parallel lines : The lines which do not meet at any point no matter in whatever direction we continue, are known as **parallel lines**.

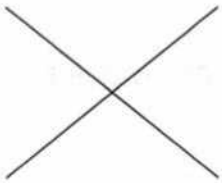
The distance between these lines is always equal even if we measure it from anywhere.

(a)

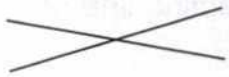
(b)

Intersecting lines : The lines or line segments which cross each other at any point are known as **intersecting lines**.

Non-parallel lines are always intersecting lines.



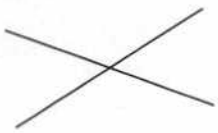
(a)

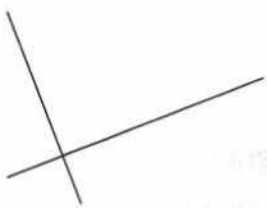


(b)

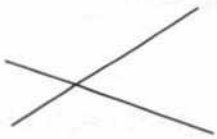
EXERCISE 13(B)

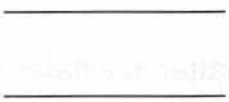
1 Identify the following lines as parallel or intersecting lines.

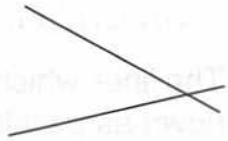
(a)  Intersecting line

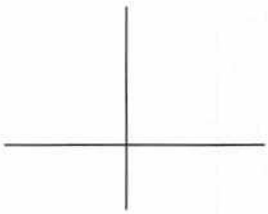
(b)  _____

(c)  _____

(d)  _____

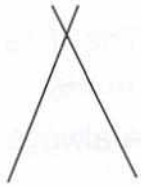
(e)  _____

(f)  _____

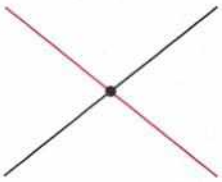
(g)  _____

(h)  _____

(i)  _____

(j)  _____

2 Draw an intersecting line passing through the given point in each case. (First one is done for you).

(a) 

(b) 

(c) 

(d) 

(e)

3 Fill in the blanks.

(a) Non-parallel lines are _____ lines.

(b) Distance between _____ lines remains same from any where.

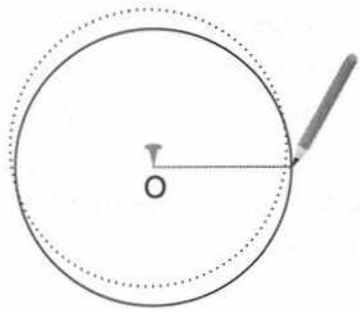
(c) Parallel lines do _____ meet at any point.

(d) Lines which meet each other at any point are known as _____ .

13.3 CIRCLE

What is a circle ?

Take a thread and tie its one end around a pencil. Secure the opposite end of the thread with a thumb pin onto a paper. Now move the pencil around. The pencil will make a path with the centre O. It is known as a **circle**.



A circle is a closed plane curve with a centre.

Centre is the fixed point O of the circle in the given plane from which every point on the curve is equidistant.

Look at the following objects.

Pizza

CD

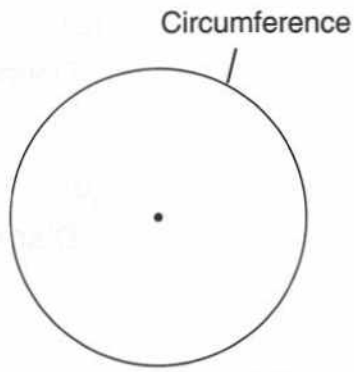
Plate

Bicycle wheel

All the above objects are examples of a circle.

Circumference

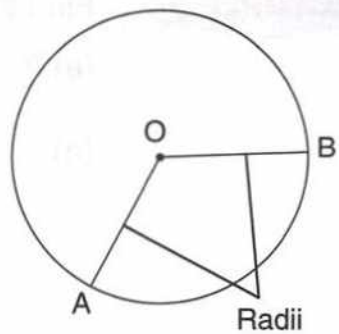
The length of the boundary of a circle is known as its **circumference**.



Radius (plural : radii)

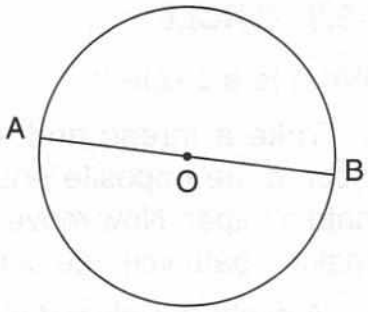
The line joining the centre of the circle to any point on the circumference is known as the **radius** of a circle. It is denoted by R. In the given figure, OA and OB are the radii of the circle.

All the radii of a circle are equal in length and we can make as many radii as we want in a given circle.



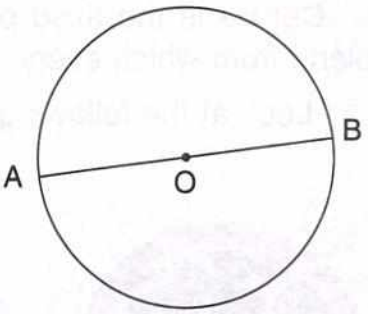
Diameter

A straight line which passes through the centre of the circle with its end points lying on its circumference is known as a **diameter**. It is denoted by D.



The straight line AOB in the circle is a diameter. We can make as many diameters as we want in a circle. Diameters of the same circle are always equal in length.

Relation between diameter and radius



OA and OB are the radii of the circle.

The straight line AOB is a diameter.

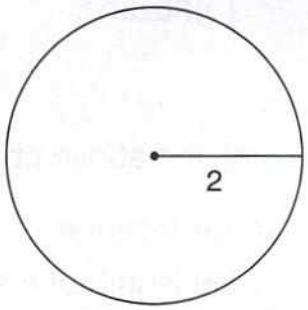
$\therefore$ We can say that the diameter of a cirlce is twice its radius.

$$\text{Diameter} = 2 \times \text{Radius} \quad \text{or} \quad \text{Radius} = \frac{\text{Diameter}}{2}$$

$$D = 2 \times R \quad \text{or} \quad R = \frac{D}{2}$$

EXAMPLE 1 Find the diameter of the circle, if its radius is :

(a) 2 cm (b) 7 cm



(a) $R = 2$

$\text{Diameter} = 2 \times \text{Radius} = 2 \times R$

$D = 2 \times 2 = \mathbf{4\ cm}$

(b) $R = 7$

$\text{Diameter} = 2 \times \text{Radius}$

$D = 2 \times R$

$D = 2 \times 7 = \mathbf{14\ cm}$

EXAMPLE 2 Find the radius of the circle, if its diameter is :

(a) 8 cm (b) 20 cm

(a) $\text{Radius} = \frac{\text{Diameter}}{2}$

$\text{Radius} = \frac{8}{2} = \mathbf{4\ cm}$

(b) Diameter = 20 cm

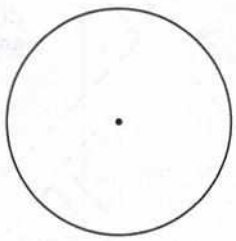
$$\text{Radius} = \frac{\text{Diameter}}{2}$$

$$= \frac{20}{2} = \textbf{10 cm}$$

EXERCISE 13(C)

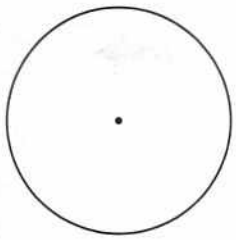
1 Draw the radius and the diameter in the following circles.

(a)



Radius

(b)



Diameter

2 Fill in the blanks.

(a) Diameter is _____ the radius of a circle.

(b) Radius of a circle is the distance from the _____ to the circumference of a circle.

(c) A circle has _____ sides.

(d) Diameter of the circle always passes through the _____ .

(e) Radius of a circle is half the _____ of the circle.

3 Find the radii of the circles whose diameters are given as follows :

(a) 12 cm (b) 22 cm (c) 18 cm

(d) 24 cm (e) 30 cm

4 Find the diameters of the circles whose radii are given as follows :

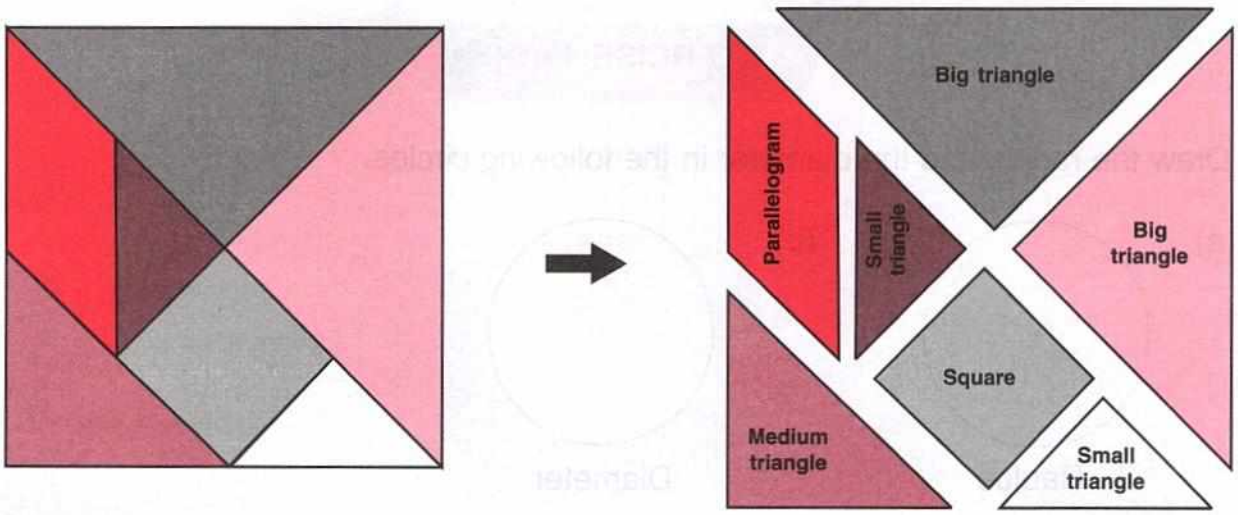
(a) 15 cm (b) 11 cm (c) 21 cm

(d) 9 cm (e) 25 cm

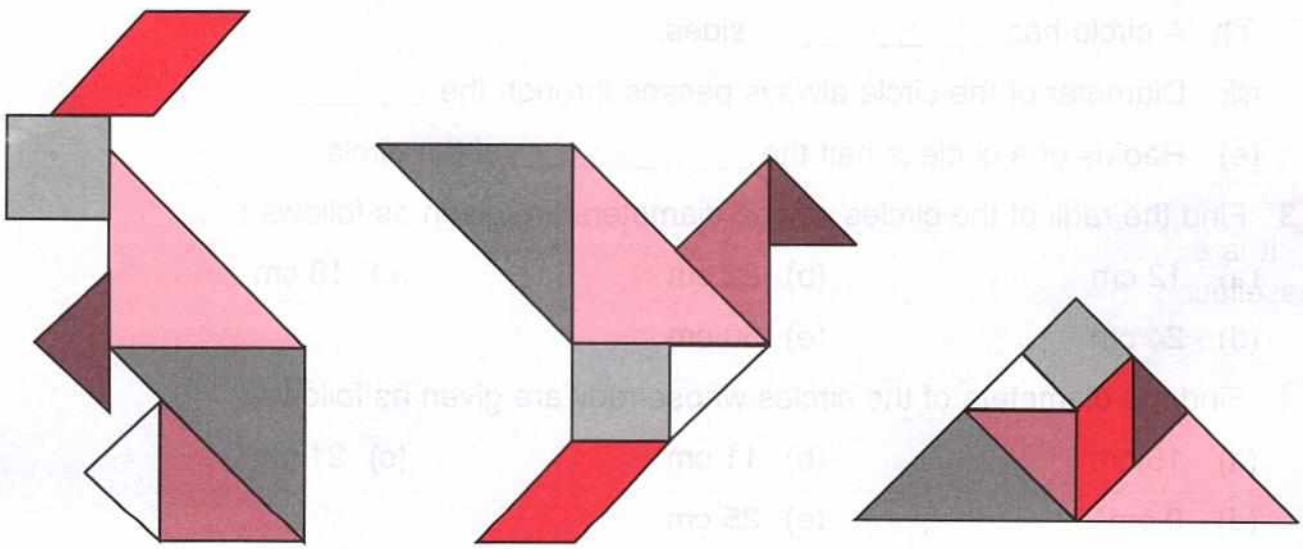
13.4 TANGRAM SHAPES

Tangram

It is a Chinese puzzle that consists of seven shapes known as **tans**. These tans are used to make different shapes by putting them together in different combinations.



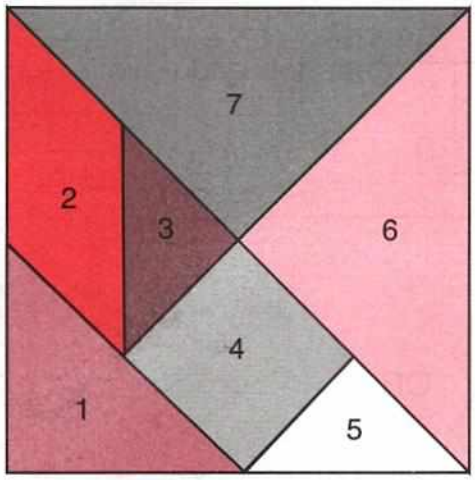
EXAMPLE Create some objects using tangram shapes.



Rabbit Bird Big triangle

EXERCISE 13(D)

1 Study the shape carefully and answer the following questions.



(a) How many pieces are there in a tangram puzzle ? _____

(b) Which piece of a tangram is a square ? _____

(c) How many pieces are trianglular in shape ? _____

(d) Which piece of a tangram is a parellelogram ? _____

(e) Are pieces 6 and 7 equal ? _____

2 Try to make the following from tangrams.

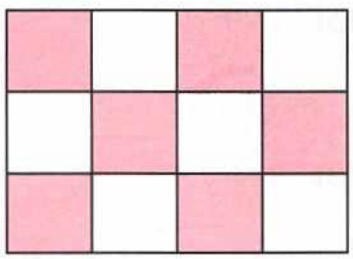
(a) Number 5 (b) Letter A (c) Shark

13.5 TESSELLATION OR TILING

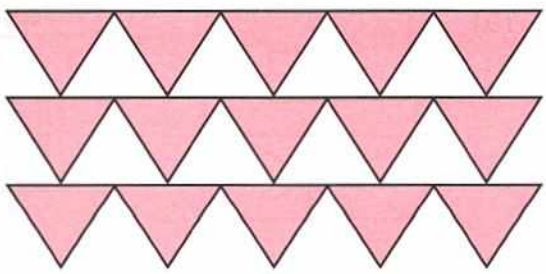
It is a pattern obtained upon the repetition of a unit flat shape on a plane surface. A tessellation should not have any gaps, spaces or overlaps.

EXAMPLE Observe the following patterns. Are they tessellations ?

(a)

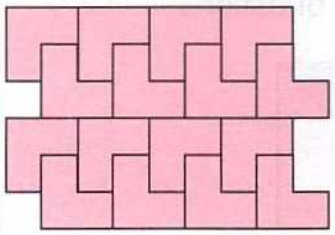
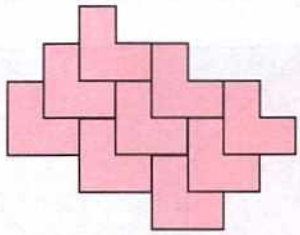
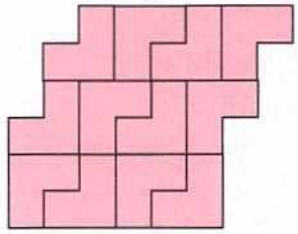
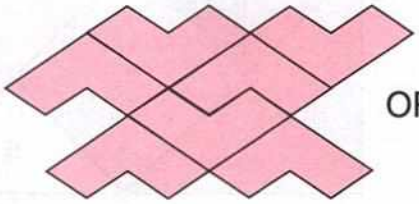
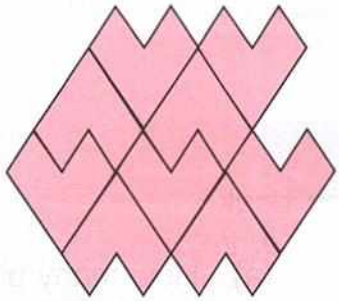


(b)



Yes, the patterns given above are tessellations as they are formed by repeating a unit shape without any gaps and overlaps.

We can form different tessellations using a single shape.

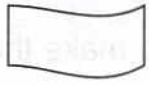
Unit shape	Tessellations
	 OR  OR 
	 OR  OR 

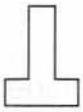
EXERCISE 13(E)

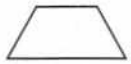
1 Create tessellations using the following unit shapes.

(a) 

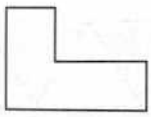
(b) 

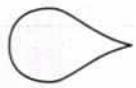
(c) 

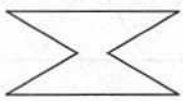
(d) 

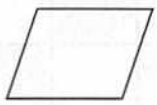
(e) 

2 Which of these can be used for tessellation ?

(a)  Yes

(b)  _____

(c)  _____

(d)  _____

(e)  _____

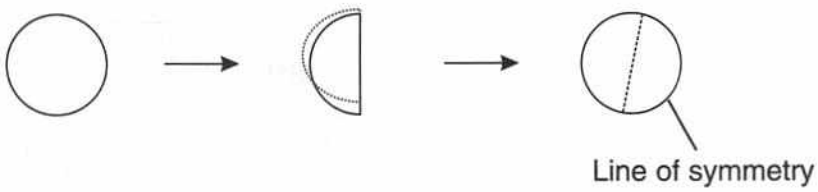
(f)  _____

13.6 SYMMETRY

Reflection symmetry or mirror symmetry occurs when a line is drawn to divide a shape in two halves such that each half is a reflection of the other.

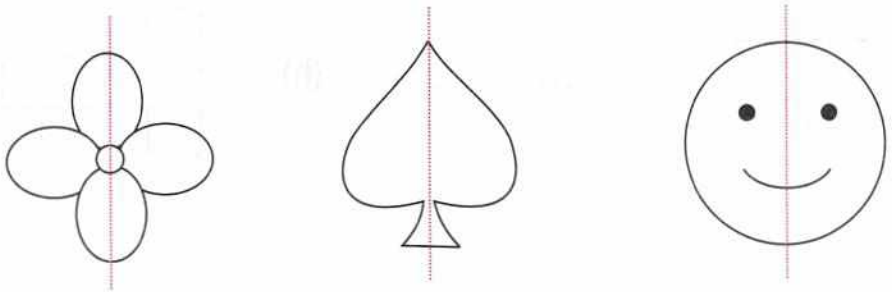
For example, take a circular paper. Fold the paper from the centre. The two halves completely overlap with each other. Thus, we say that a circle shows reflection symmetry.

The crease that is formed upon folding the circle is known as the line of symmetry.

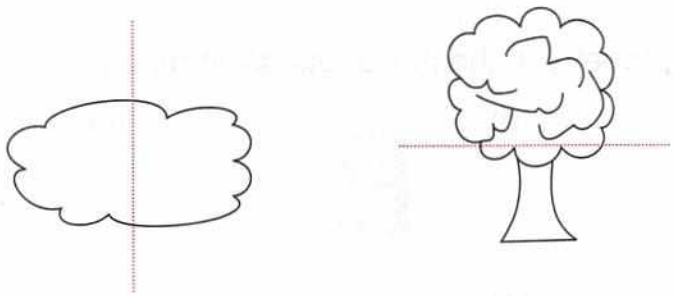


Look at some more examples given below. You will observe that the left half is a mirror image of the right half and vice-versa. Therefore, these figures are **symmetrical figures**.

EXAMPLE



Not all figures are symmetrical. Look at the following examples.

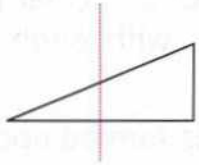


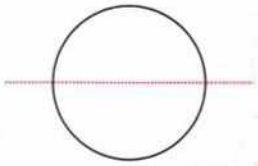
Do these figures show reflection symmetry along the line of symmetry ? No, they don't. Such figures are **asymmetrical**.

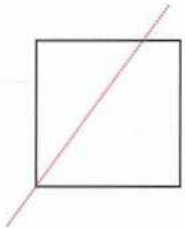
EXERCISE 13(F)

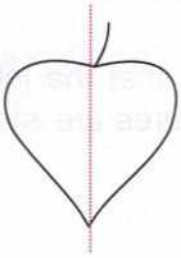
1 Tell **'Yes'** or **'No'** whether the line drawn is a line of symmetry or not.

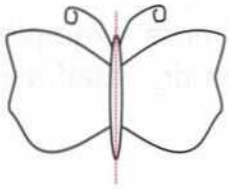
(a)  _____

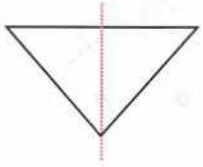
(b)  _____

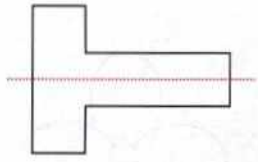
(c)  _____

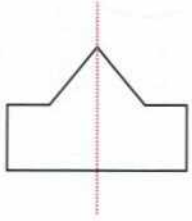
(d)  _____

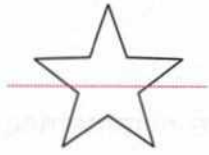
(e)  _____

(f)  _____

(g)  _____

(h)  _____

(i)  _____

(j)  _____

2 Draw the line of symmetry in the alphabets given below.

(a) A

(b) B

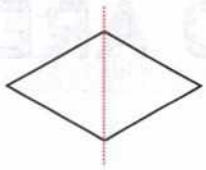
(c) C

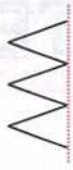
(d) D

(e) K

(f) H

3 Complete the symmetical figures given below. One is done for you

(a) 

(b) 

(c) 

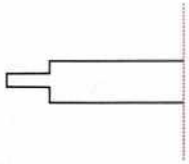
(d) 

(e) 

(f) 

(g) 

(h) 

(i) 

(j) 

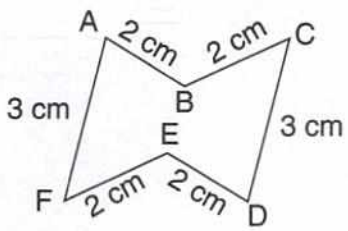
14 PERIMETER AND AREA

14.1 PERIMETER

The length of the boundary of a closed figure is called its **perimeter**. It will be equal to the sum of all the sides of a closed figure.

EXAMPLE Find the perimeter of the following.

(a)

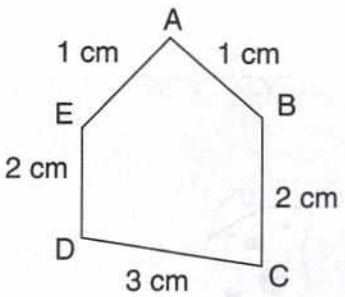


Its perimeter will be the sum of all sides of the figure.

Perimeter = AB + BC + CD + DE + EF + FA

= 2 + 2 + 3 + 2 + 2 + 3 = **14 cm**

(b)



Its perimeter will be the sum of all sides of the figure.

Perimeter = AB + BC + CD + DE + EA

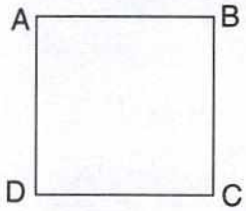
= 1 + 2 + 3 + 2 + 1 = **9 cm**

14.2 PERIMETER OF A SQUARE

A square is a figure in which all the sides are equal.

Perimeter of a square is the sum of all four equal sides.

∴ Perimeter of a square = 4 × length of one side.



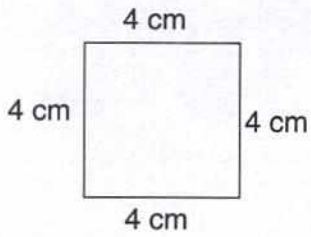
EXAMPLE 1 Find the perimeter of a square of side 4 cm.

Solution : Length of one side = 4 cm

Perimeter = 4 × length of one side

= 4 × 4

= **16 cm**



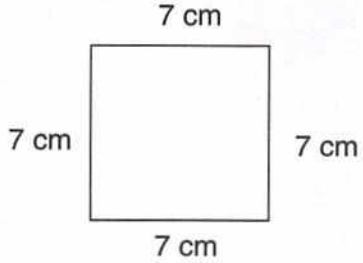
EXAMPLE 2 Find the perimeter of a square of side 7 cm.

Solution : Length of one side = 7 cm

Perimeter = 4 × length of one side

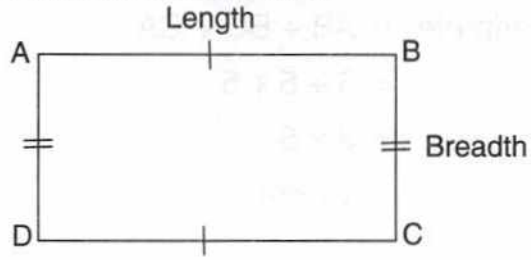
= 4 × 7

= **28 cm**



14.3 PERIMETER OF A RECTANGLE

Rectangle is a closed figure having equal opposite sides. The longer side is known as length and the smaller side is known as breadth.



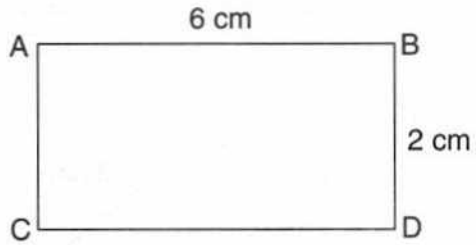
Perimeter of a rectangle = AB + BC + CD + DA
= AB + AB + BC + BC (as CD = AB and AD = BC)
= 2AB + 2BC
= 2(AB + BC)

Perimeter of rectangle = 2 × (length + breadth)

EXAMPLE Find the perimeter of a rectangle of length 6 cm and breadth 2 cm.

Solution : Length = 6 cm, breadth = 2 cm

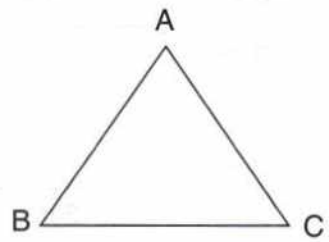
Perimeter = 2 × (length + breadth)
= 2 × (6 + 2)
= 2 × 8
= **16 cm**



14.4 PERIMETER OF A TRIANGLE

Triangle is a three sided closed figure. Perimeter of triangle will be the sum of all its sides.

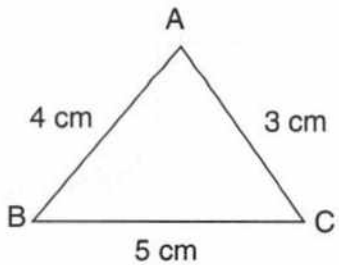
Perimeter of a triangle = AB + BC + CA



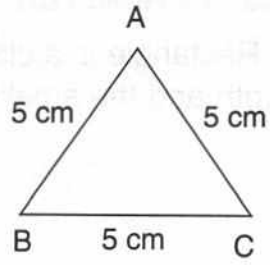
Perimeter of a triangle = Sum of lengths of all three sides.

EXAMPLE 1 Find the perimeter of the given triangle.

Solution : Perimeter = AB + BC + CA
= 4 + 5 + 3
= 12 cm



EXAMPLE 2 Find the perimeter of the given triangle.



Solution :

Side = 5 cm

Perimeter = AB + BC + CA

= 5 + 5 + 5

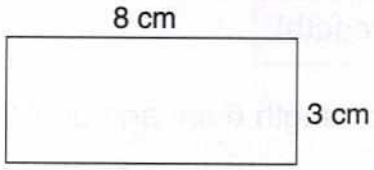
= 3 × 5

= **15 cm**

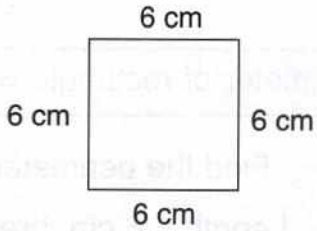
EXERCISE 14(A)

1 Find the perimeter of the figures given below.

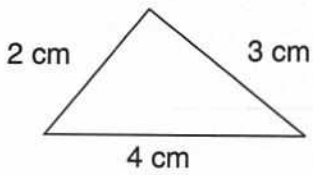
(a)



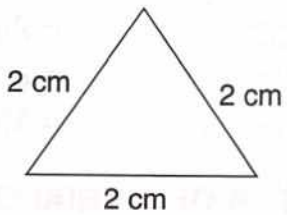
(b)



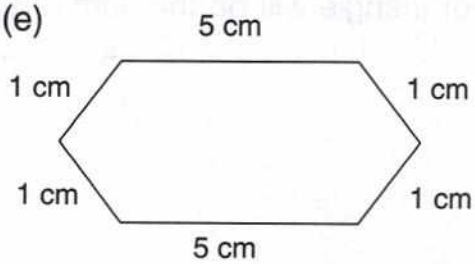
(c)



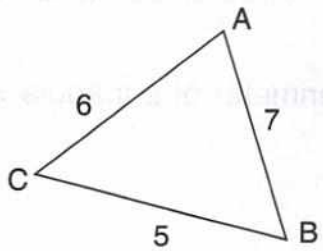
(d)



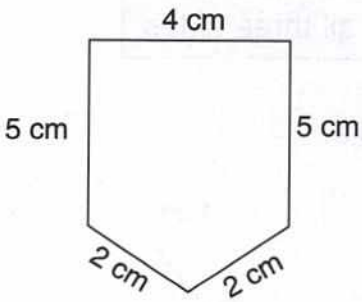
(e)



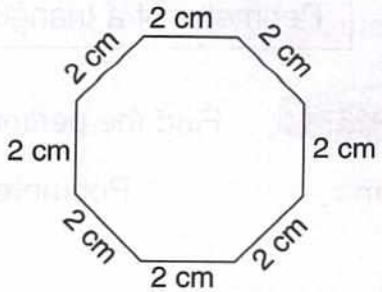
(f)



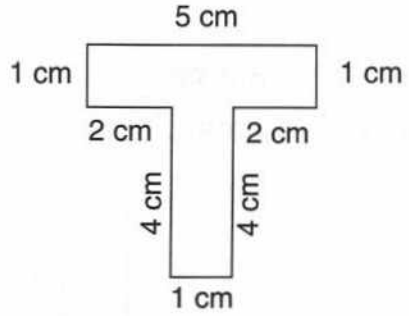
(g)



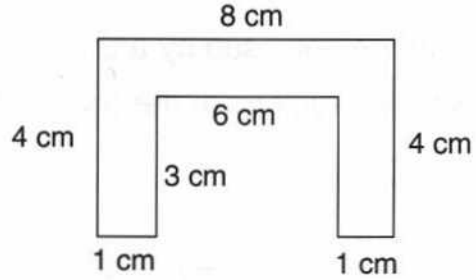
(h)



(i)



(j)



2 Find the perimeters of the squares with the following sides :

(a) 8 cm _____ (b) 10 m _____

(c) 9 m 15 cm _____ (d) 12 m 14 cm _____

3 Find the perimeters of the rectangles with the following dimensions :

(a) length = 7 cm; breadth = 3 cm _____

(b) length = 6m; breadth = 4 cm _____

(c) length = 2 cm; breadth = 1 cm _____

(d) length = 10 m 3 cm; breadth = 7 m 25 cm _____

4 Find the perimeters of the following triangles if the length of each side of the triangle is :

(a) 7 cm _____ (b) 9 m _____

(c) 8 m 5 cm _____ (d) 11 m 10 cm _____

5 Find the perimeters of the triangles with the following dimensions.

(a) AB = 8 cm; BC = 6 cm; CA = 7 cm _____

(b) AB = 4 cm; BC = 8 cm; CA = 9 cm _____

(c) AB = 7 cm; BC = 4·5 cm; CA = 3·5 cm _____

(d) AB = 12 m; BC = 11 m; CA = 9 m 7 cm _____

6 The length of a floor is 60 m and its breadth is 50 m. Find the perimeter of the floor.

7 A cloth is 7 m long and 2 m wide. If Sheena wants to lace it around, how much lace is required ?

8 A table top of wood is of length 150 m and breadth 120 m. What is its perimeter ?

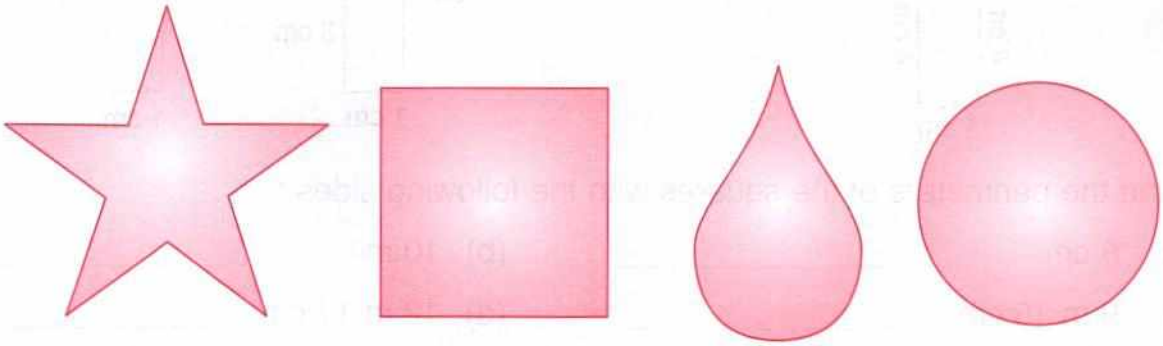
9 A triangular park has its sides of length 200 m, 180 m and 120 m respectively. Calculate the distance travelled by a man if he goes around the park twice.

10 A square shaped garden is of length 100 m. How much wire will be required for fencing around it thrice ?

14.5 AREA

The surface enclosed by a 2-D or plane figure is known as its **area**.

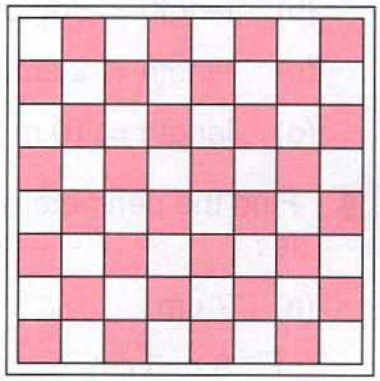
The shaded regions in the given figures are their respective areas.



Star Square Leaf Circle

14.6 UNIT OF AREA

We can use any plane figure as a unit to find the area of the required plane region. For example, let us consider a chessboard. It is made up of 64 squares. If we consider 1 square as a unit of area, then the area of the chessboard will be 64 squares.

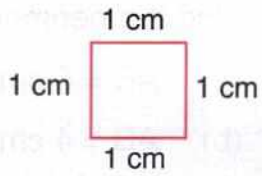


But for purposes of exact measurements, we use standard units of area having fixed dimensions.

The standard units for measuring areas which we generally use are square centimetre and square metre.

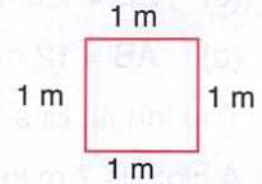
- The area of a square whose side is 1 cm long is one square centimetre.

  It is written as cm^2 or sq. cm.

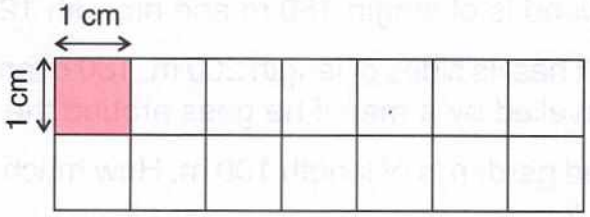


- The area of a square whose side is 1 m long is one square metre.

  It is written as m^2 or sq. m.



EXAMPLE 1 Calculate the area of the figure given below if the area of each square is 1 cm^2.

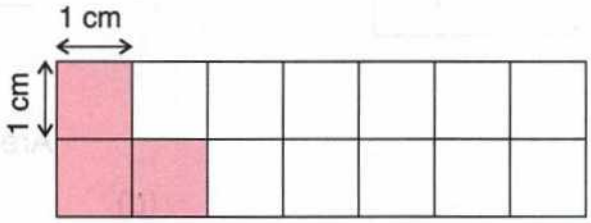


Area of one square = 1 cm × 1 cm = 1 cm².

Number of squares in the figure = 14

∴ Area of the figure = 1 × 14 = **14 cm²**.

EXAMPLE 2 Calculate the area of the shaded squares if the dimensions of each square are as given in the figure.



Area of 1 square = 1 × 1 = 1 cm²

∴ Area of 3 squares = 3 × 1 cm² = **3 cm²**.

EXAMPLE 3 A floor of a room is covered with square tiles of side 1 m. The floor consists of 30 square tiles. Find the area of the floor.

Area of 1 tile = 1 m × 1 m = 1 m²

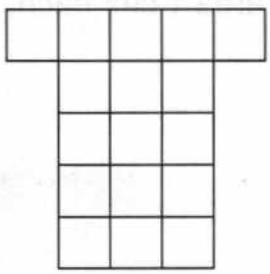
∴ Area of the floor = area of 1 tile × number of tiles

= 1 m² × 30 = **30 m²**

EXERCISE 14(B)

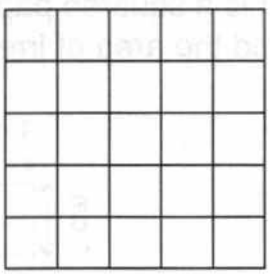
1 Find the area of the following figures if each square has an area of 1 cm².

(a)



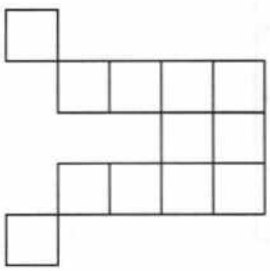
Area : _____

(b)



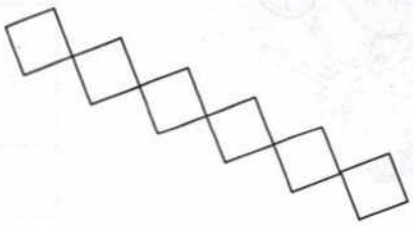
Area : _____

(c)



Area : _____

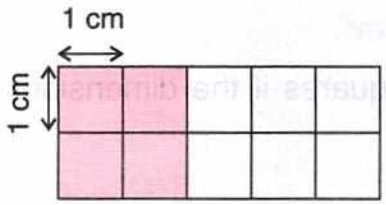
(d)



Area : _____

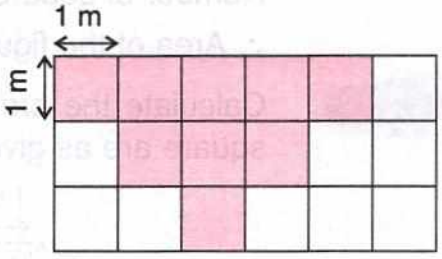
2 Find the area of the shaded region.

(a)



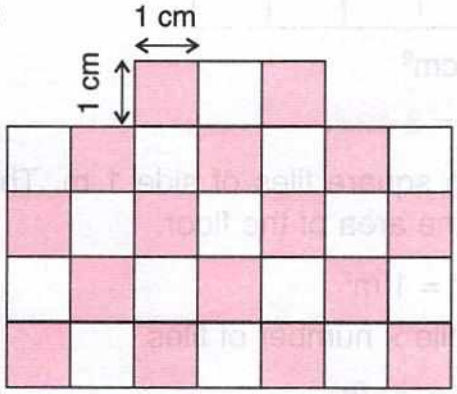
Area : _____

(b)



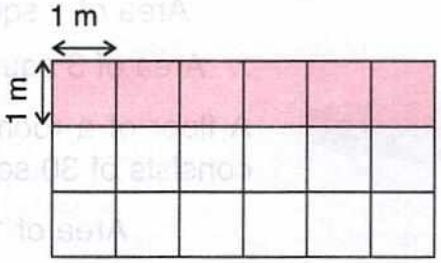
Area : _____

(c)



Area : _____

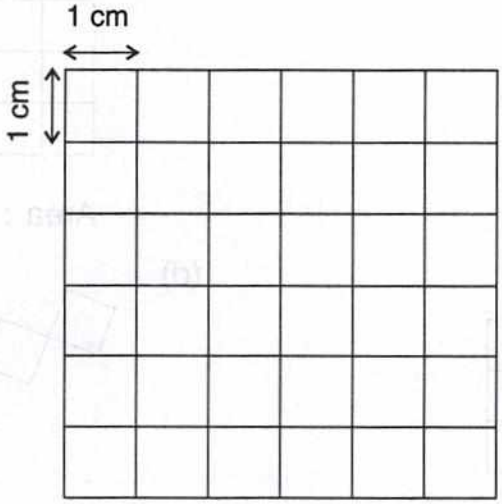
(d)



Area : _____

14.7 AREA OF AN IRREGULAR FIGURE

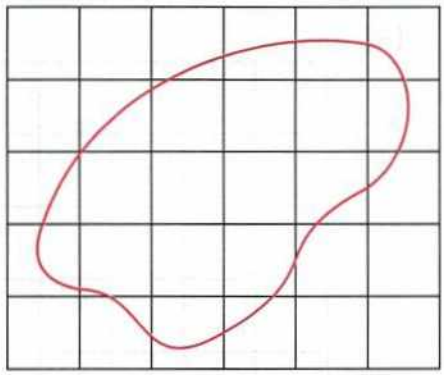
A graph paper is a squared paper consisting of squares of area 1 cm^2 each. We use a graph paper to find the area of irregular figures.



EXAMPLE Find the area of the irregular figure given below by using a graph paper

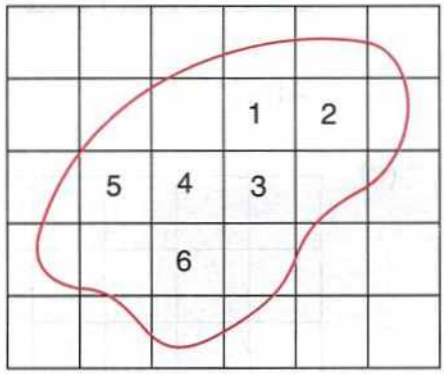
Solution : The irregular figure is first traced onto a graph paper.

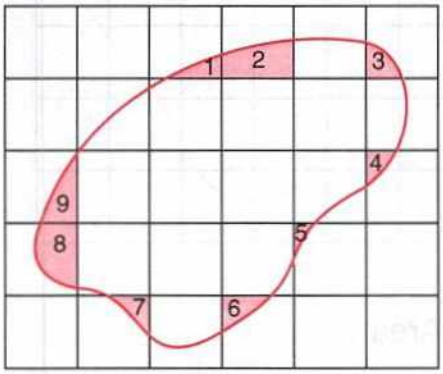
- This figure contains some complete squares and some incomplete squares.



Step 1 :

- Count the complete squares.
- There are 6 complete squares.





Step 2 :

- Now, neglect the squares which are less than half of the full squares.
- Neglect 9 squares as shown in the figure.

Step 3 :

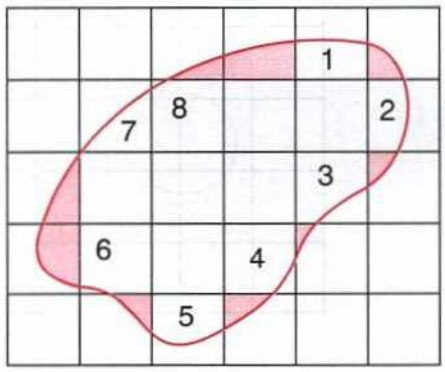
- Count the squares which are half or more than half of the full squares.
- There are 8 such squares.

Now add all the squares.

Total squares = 6 + 8 = 14

There are approximately 14 complete squares and the area of each sq is 1 m^2.

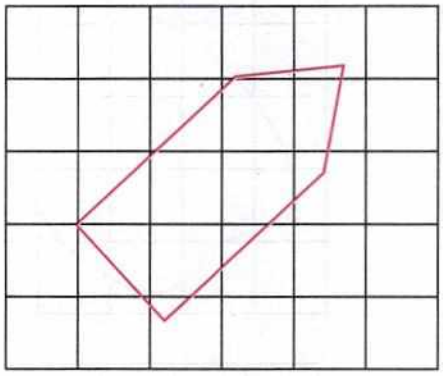
$\therefore$ Area of the figure = 1 $\times$ 14 = **14 m^2**.



EXERCISE 14(C)

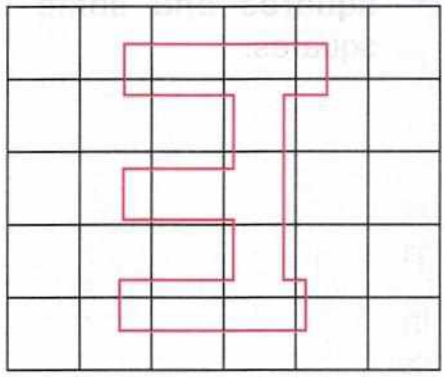
Find the approximate areas of the following figures.

(a)



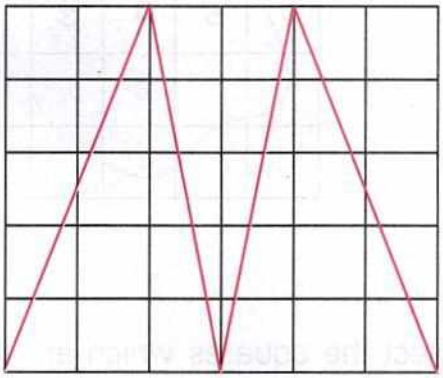
Area : _____

(b)



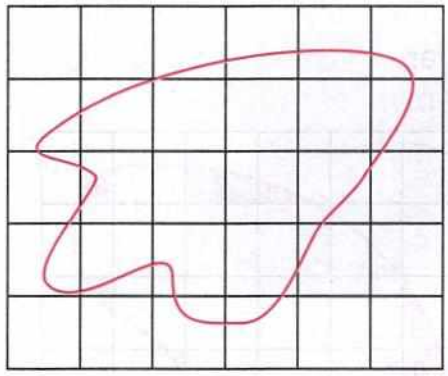
Area : _____

(c)



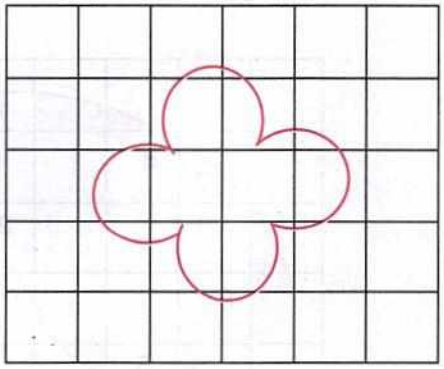
Area : _____

(d)



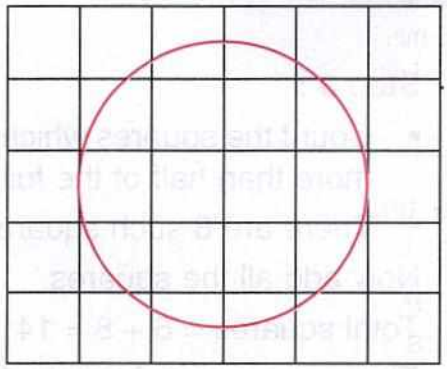
Area : _____

(e)



Area : _____

(f)



Area : _____

15 TIME AND CALENDAR

LETS RECALL

EXERCISE 15(A)

Fill in the blanks.

(a) There are _____ hours in a day.

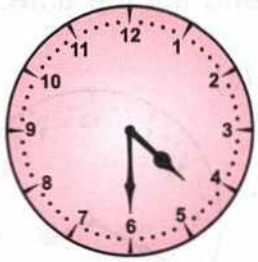
(b) In a clock, the smaller hand is called the _____ hand and the bigger hand is called the _____ hand.

(c) The minute hand takes _____ complete rounds in 1 day.

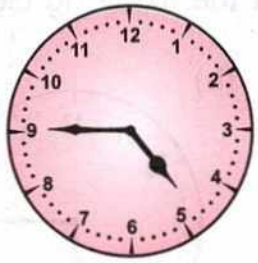
(d) The hour hand takes _____ complete rounds in 1 day.

So far, we have learnt how to tell the time when the minute hand is at 15, 30, 45 and 60 minutes. Let us revise.

The minute hand is at 3. The hour hand is close to 4. The time is 4:15 or quarter past 4, *i.e.* 15 minutes have passed since 4:00.



The minute hand is at 6. The hour hand is between 4 and 5. The time is 4:30 or half past 4, *i.e.* 30 minutes have passed since 4:00.



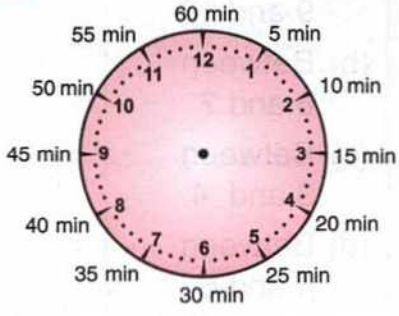
The minute hand is at 9. The hour hand is close to 5. The time is 4:45 or quarter to 5, *i.e.* 45 minutes have passed since 4:00 or 15 minutes are left till 5:00.

The minute hand is at 12. The hour hand is at 5. The time is 5:00, *i.e.* 60 minutes have passed since 4:00.

15.1 TELLING TIME CORRECT TO THE NEAREST MINUTES

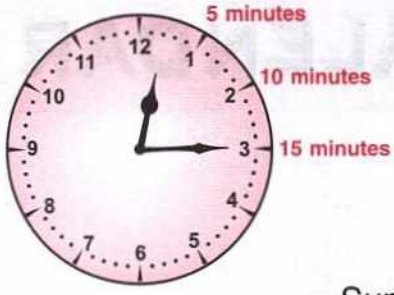
The time taken by the minute hand to move from one number to another is 5 minutes.

To take one full round, the minute hand moves by 12 such numbers. So the minute hand takes one round in $5 \times 12 = 60$ minutes.

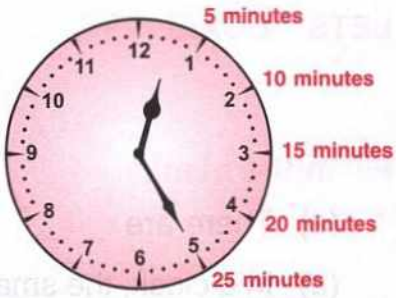


60 minutes = 1 hour

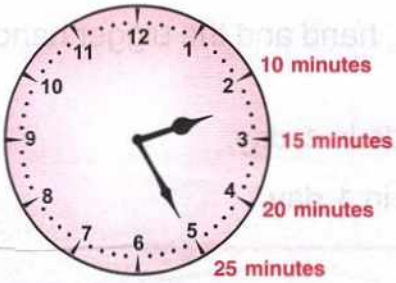
In the same time (*i.e.* 60 minutes), the hour hand moves from one number to the next number.



Suppose the minute hand moves from 12 to 3. It takes $5 \times 3 =$ **15 minutes**.



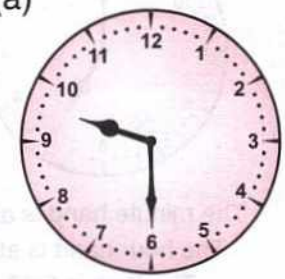
Suppose the minute hand moves from 12 to 5. It takes $5 \times 5 =$ **25 minutes**.



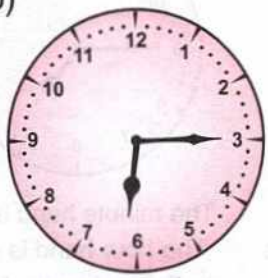
Suppose the minute hand moves from 2 to 5. It takes $25 - 10 =$ **15 minutes**.

EXAMPLE Look at the following clocks and tell the time.

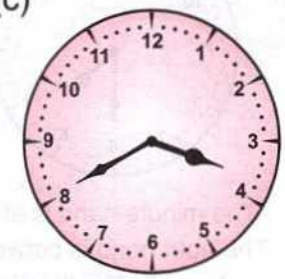
(a)



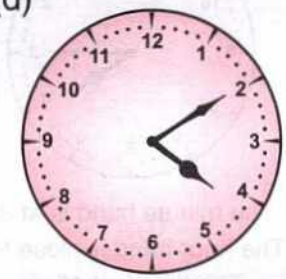
(b)



(c)



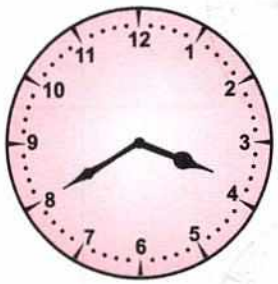
(d)



Position of the hour hand	Position of the minute hand	Number of minutes	Time	Method to tell the time
(a) Between 9 and 10	at 6	$6 \times 5 = 30$	9 : 30	30 minutes past 9.
(b) Between 6 and 7	at 3	$3 \times 5 = 15$	6 : 15	15 minutes past 6.
(c) Between 3 and 4	at 8	$8 \times 5 = 40$	3 : 40	40 minutes past 3.
(d) Between 4 and 5	at 2	$2 \times 5 = 10$	4 : 10	10 minutes past 4.

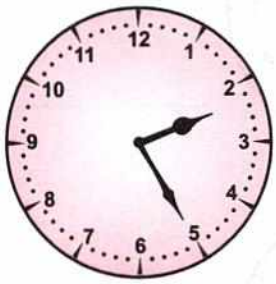
EXERCISE 15(B)

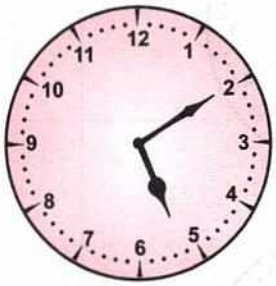
1 Look at each clock and write down the time shown by it in two ways. Part 'a' is done for you.

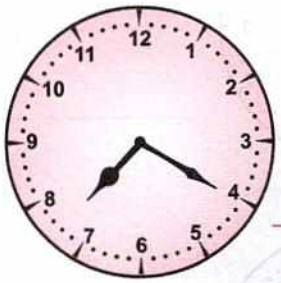
(a) 

3 : 40

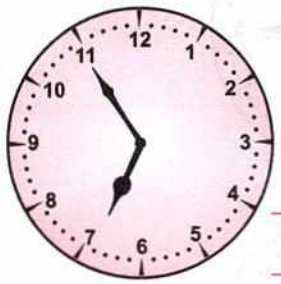
40 minutes past 3

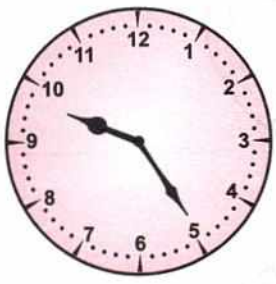
(b) 

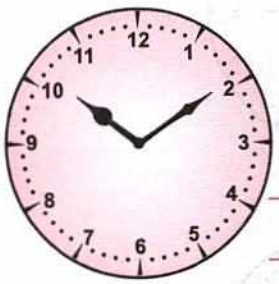
(c) 

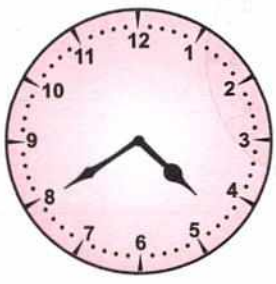
(d) 

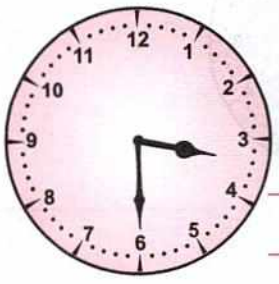
(e) 

(f) 

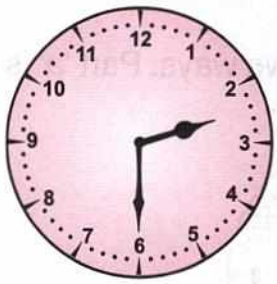
(g) 

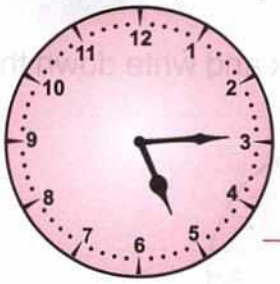
(h) 

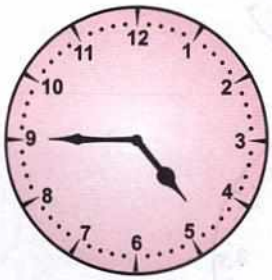
(i) 

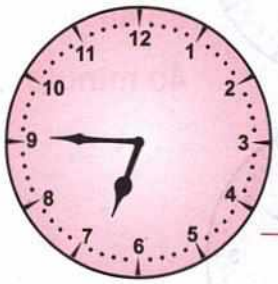
(j) 

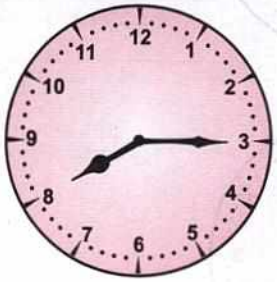
2 Write the time below each clock using half past/quarter past/quarter to.

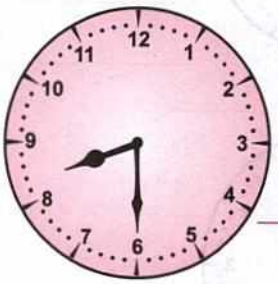
(a) 

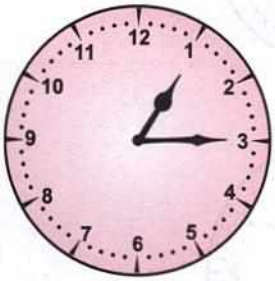
(b) 

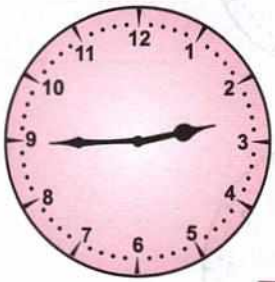
(c) 

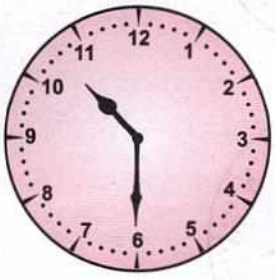
(d) 

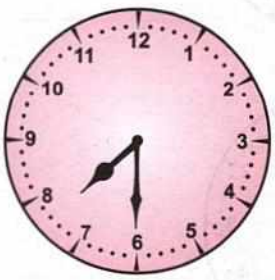
(e) 

(f) 

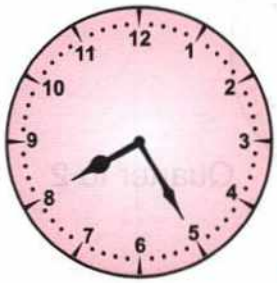
(g) 

(h) 

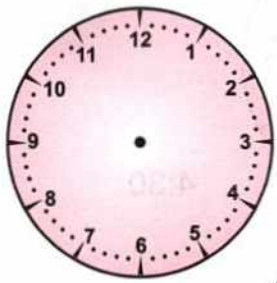
(i) 

(j) 

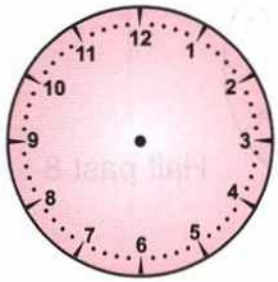
3 Draw the two hands in each clock to show the time given below it.

(a) 

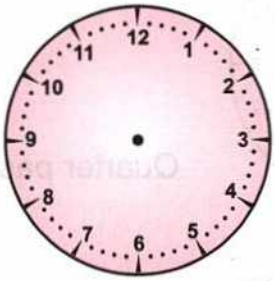
8 : 25

(b) 

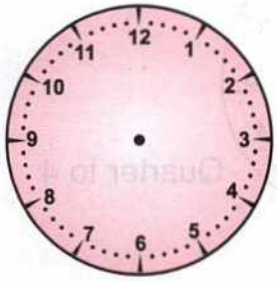
4 : 05

(c) 

9 : 10

(d) 

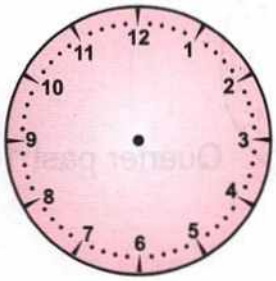
20 minutes past 7

(e) 

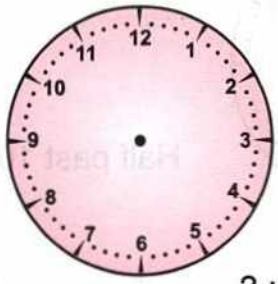
1 : 20

(f) 

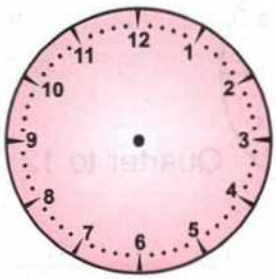
25 minutes past 5

(g) 

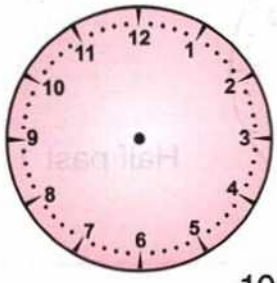
5 : 45

(h) 

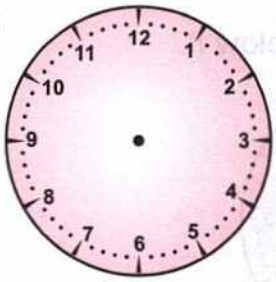
3 : 20

(i) 

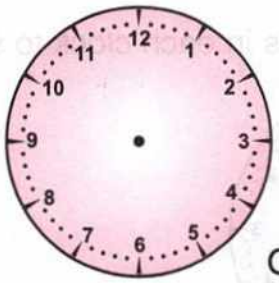
5 : 10

(j) 

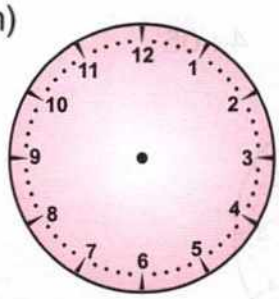
10 minutes past 5

(k) 

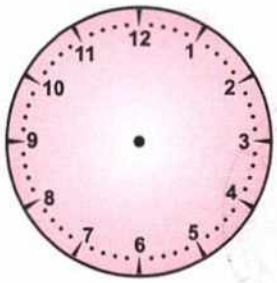
4:30

(l) 

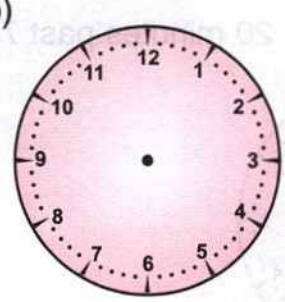
Quarter to 2

(m) 

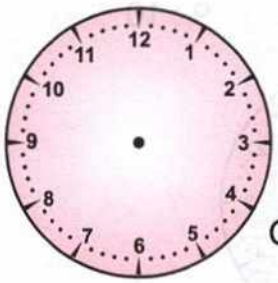
Quarter past 6

(n) 

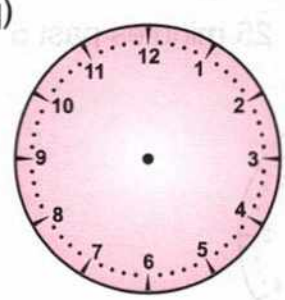
Half past 8

(o) 

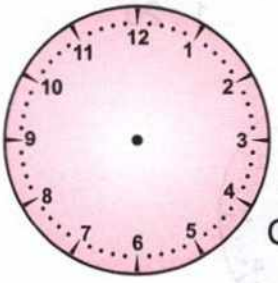
Quarter to 6

(p) 

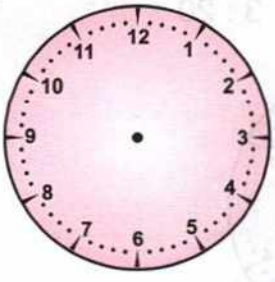
Quarter to 4

(q) 

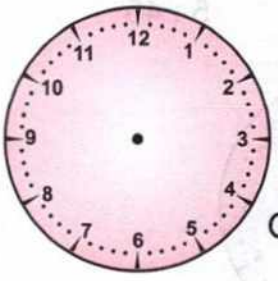
Half past 10

(r) 

Quarter past 11

(s) 

Half past 1

(t) 

Quarter to 12

15.2 CONVERSION OF TIME

60 seconds = 1 minute

60 minutes = 1 hour

24 hours = 1 day

EXAMPLE 1 Convert 15 minutes 20 seconds into seconds.

Solution :

1 minute = 60 sec.

15 minutes 20 sec. = $15 \times 60 + 20$

= $900 + 20 = 920$ sec.

EXAMPLE 2 Convert 8 hours 12 minutes into minutes.

Solution :

1 hour = 60 minutes

8 hours 12 minutes = $8 \times 60 + 12$

= 492 minutes

EXAMPLE 3 Convert 125 seconds into minutes and seconds.

Solution :

60 seconds = 1 minute

125 seconds = $125 \div 60$

$$\begin{array}{r|l} & 2 \\ 60 & 125 \\ & -120 \\ \hline & 5 \end{array}$$

Here, the quotient 2 denotes the minutes and remainder 5 represents the seconds.

Ans. 2 minutes 5 seconds

EXAMPLE 4 Convert into hours.

(a) 7 days (b) 2 days 8 hours

Solution : (a) 1 day = 24 hours

7 days = $7 \times 24 = 168$ hours

(b) 1 day = 24 hours

2 days 8 hours = $2 \times 24 + 8 = 56$ hours

EXAMPLE 5 Convert 842 minutes into hours and minutes.

Solution :

60 minutes = 1 hour

842 minutes = $842 \div 60$

$$\begin{array}{r|l} & 14 \\ 60 & 842 \\ & -60 \\ \hline & 242 \\ & -240 \\ \hline & 2 \end{array}$$

Here, the quotient 14 represents the hours and the remainder 2 represents the minutes.

Ans. 14 hours 2 minutes

EXAMPLE 6 Convert 5,248 seconds into hours, minutes and seconds.

Solution :

```
        87 ← Minutes
60 ) 5,248 (
   −480
    448
   −420
     28 ← Second
```

```
        1 ← Hour
60 ) 87 (
   − 60
    27 ← Minutes
```

METHOD

Step 1 : First convert seconds into minutes.
60 seconds = 1 minute
5,248 seconds = 5,248 ÷ 60 minutes
87 minutes 28 seconds

Step 2 : Now, convert 87 minutes into hours (87 minutes is more than 60 minutes, we can convert it into hours and minutes.)
60 minutes = 1 hour.
87 minutes = (87 ÷ 60) = 1 hour 27 minutes.

Ans. 5,248 seconds = 1 hour 27 min 28 sec

EXERCISE 15(C)

1 Convert into hours.

(a) 8 days _____ (b) 5 days 10 hours _____

(c) 10 days 20 hours _____ (d) 6 days 2 hours _____

2 Convert into minutes.

(a) 3 hours _____ (b) 2 hours 6 minutes _____

(c) 8 hours 40 minutes _____ (d) 15 hours 30 minutes _____

3 Convert into seconds.

(a) 6 minutes _____ (b) 2 minutes 4 seconds _____

(c) 40 minutes 30 seconds _____ (d) 1 hour 2 minutes 30 seconds _____

4 Convert into minutes and seconds.

(a) 450 seconds _____ (b) 540 seconds _____

(c) 900 seconds _____ (d) 1006 seconds _____

5 Convert into hours and minutes.

(a) 135 minutes _____ (b) 80 minutes _____

(c) 750 minutes _____ (d) 1000 minutes _____

6 Convert into days and hours.

(a) 72 hours _____ (b) 100 hours _____

(c) 145 hours _____ (d) 240 hours _____

7 Convert into hours, minutes and seconds.

(a) 3840 seconds _____ (b) 4740 seconds _____

(c) 7200 seconds _____ (d) 8404 seconds _____

(e) 5555 seconds _____ (f) 9435 seconds _____

8 Match the following :

Column A	Column B
(a) 11:30 am to 1:45 pm	(1) 250 hours
(b) A leap year	(2) 12 hours
(c) 70 minutes	(3) 2 hours 15 minutes
(d) 10 days 10 hours	(4) 366 days.
(e) 0200 hours to 1400 hours	(5) 1 hour 600 seconds.

15.3 OPERATIONS ON TIME MEASURES

EXAMPLE 1 Add 10 minutes 50 seconds and 15 minutes 40 seconds.

Solution :

	Min.	Sec.
	1	
	10	50
+	15	40
	26	30

Step 1 : Add the seconds first. 50 + 40 = 90 seconds
90 sec = 60 sec + 30 sec = 1 minute 30 seconds
Write 30 under the second's column and carry over 1 to minute's column.

Step 2 : Add the minutes. 10 + 15 + 1 (carry over) = 26 minutes.
Write 26 under the minute's column.

Ans. 26 minutes 30 seconds

EXAMPLE 2 Add 3 hours 40 minutes 20 seconds, 6 hours 24 minutes 30 seconds and 7 hours 30 minutes 40 seconds.

Solution :

	Hr.	Min.	Sec.
	1	1	
	3	40	20
	6	24	30
+	7	30	40
	17	35	30

Step 1 : Add the seconds first. 20 + 30 + 40 = 90 seconds
90 seconds = 60 sec + 30 sec = 1 minute 30 seconds
Write 30 under the second's column and carry over 1 to minute's column.

Step 2 : Add the minutes. 40 + 24 + 30 + 1 (carry over)
95 minutes = 60 min + 35 min = 1 hour 35 minutes
Write 35 under the minute's column and carry over 1 to the hour's column.

Step 3 : Add the hours. 3 + 6 + 7 + 1 (carry over) = 17 hours
Write 17 hours under the hour's column.

Ans. 17 hours 35 minutes 30 seconds

EXAMPLE 3 Add 4 days 16 hours 40 minutes, 3 days 10 hours 20 minutes and 10 days 20 hours 10 minutes.

Solution :

Days	Hr.	Min.
1	1	
4	16	40
3	10	20
+ 10	20	10
18	23	10

Step 1 : Add the minutes. 40 + 20 + 10 = 70 minutes
= 60 minutes + 10 minutes = 1 hour 10 minutes

Step 2 : Add the hours. 16 + 10 + 20 + 1 (carry over) = 47 hours
= 24 hours + 23 hours = 1 day 23 hours

Step 3 : Add the days. 4 + 3 + 10 + 1 (carry over) = 18 days

Ans. 18 days 23 hours 10 minutes

EXAMPLE 4 Find the difference between 8 hours 16 minutes 15 seconds and 6 hours 24 minutes 30 seconds.

Solution :

Hr.	Min.	Sec.
8	16	15
– 6	24	30
1	51	45

Step 1 : Start with seconds. Since 15 < 30, borrow 1 minute
1 minute + 15 seconds = 75 seconds
75 – 30 = 45 seconds.

Step 2 : Subtract the minutes. 16 minutes have become 15 minutes since we borrowed 1 minute. 15 < 24. Borrow 1 hour from 8 hours. (60 + 15) – 24 = 51 minutes. [∵ 1 hour = 60 minutes]

Step 3 : Subtract the hours. 7 – 6 = 1 hour
[8 hours have become 7 hours since we borrowed 1 hour.]

Ans. 1 hour 51 minutes 45 seconds

EXERCISE 15(D)

Try to add orally.

1 20 minutes + 50 minutes + 10 minutes.

2 10 seconds + 40 seconds + 32 seconds.

3 16 minutes 20 seconds + 20 minutes 35 seconds.

4 10 minutes 16 seconds + 16 minutes 24 seconds + 12 minutes 45 seconds.

5 Add :

(a)

Hours	Minutes	Seconds
14	20	15
16	45	45
+ 6	30	30

(b)

Hours	Minutes	Seconds
6	50	40
7	35	55
+ 8	20	18

(c)

Hours	Minutes	Seconds
14	20	15
8	45	25
+ 6	30	30

(d)

Hours	Minutes	Seconds
16	25	40
17	35	25
+ 8	12	18

6 Subtract :

(a)

Hours	Minutes	Seconds
9	16	24
− 8	05	14

(b)

Hours	Minutes	Seconds
16	56	45
− 4	23	13

(c)

Hours	Minutes	Seconds
25	14	13
− 15	23	28

(d)

Hours	Minutes	Seconds
8	23	12
− 5	45	33

7 How much is 3 hours 12 minutes more than 1 hour 40 minutes?

8 Radha and Richa went for a movie. The movie lasted for 2 hours 30 minutes. After the movie they went for shopping and spent 1 hour 45 minutes. Calculate the total time spent by them.

9 Anju goes to school at 7:10 am and comes back home at 2 pm. Find the time she spends in the school.

10 Rajesh studies from 6 am to 6:45 am and 7 pm to 8:45 pm daily. How many hours does he study everyday ?

11 Sudha told Shubha that she sees T.V. for 1 hour 30 minutes. Subha replied that she sees T.V. only for 90 minutes. Who sees T.V. for more time?

15.4 CALENDAR

A calendar shows the dates, weeks, and months of a particular year. It also gives information about holidays and festivals.

We know that 7 days = 1 week, 12 months = 1 year

WEEK

A week contains 7 days

Monday **Tuesday** **Wednesday** **Thursday**
Friday **Saturday** **Sunday**

MONTHS

There are 12 months in a year and each month contains either 30 or 31 days.

But the month of Feburary contains either 28 days or 29 days.

Month	Number of days
January	31 days
February	28 days or 29 days
March	31 days
April	30 days
May	31 days
June	30 days
July	31 days
August	31 days
September	30 days
October	31 days
November	30 days
December	31 days

The year in which February has 29 days is called a **leap year**.

YEAR

There are 365 days in a year and 366 days in a leap year.

LEAP YEAR

A year which is exactly divisible by 4 is known as a leap year.

It comes once in every four years. The next leap year will be 2024.

EXAMPLE 1 Will 2036 be a leap year ?

Solution : Let us divide 2036 by 4.

$$
\begin{array}{r}
509 \\
4\overline{)2036} \\
-20 \\
\hline
36 \\
-36 \\
\hline
0
\end{array}
$$

Since, 2036 is completely divisible by 4, it will be a **leap year**.

EXAMPLE 2 How many days are there from 5th April to 28th May ?

Solution :

Number of days in April = 30

Number of days from 5th April to 30th April = 30 – 5

= 25 days

Now, number of days from 5th April to 28th May = 25 + 28

= **53 days**.

EXAMPLE 3 Look at the calender given below. Answer the questions that follow.

REFERENCE CALENDAR 2017

JANUARY						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

FEBRUARY						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

MARCH						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

APRIL						
S	M	T	W	T	F	S
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

MAY						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

JUNE						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

JULY						
S	M	T	W	T	F	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

AUGUST						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

SEPTEMBER						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

OCTOBER						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

NOVEMBER						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

DECEMBER						
S	M	T	W	T	F	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

(a) Christmas is falling on what day ?

Ans. Monday

(b) What will be the date on the last Sunday of June ?

Ans. The last Sunday will be 25th of June .

(c) How many Fridays are there in the month of September ?

Ans. There are 5 Fridays *i.e.* 1st, 8th, 15th, 22nd and 29th.

(d) How many Saturdays and Sundays are there in the month of April ?

Ans. 10

EXERCISE 15(E)

A. Fill in the blanks.

1. A week has _____ days.
2. There are _____ days in a year.
3. There are 366 days in a _____ year.
4. There are _____ days in the month of December.
5. There are _____ days in the month of November.
6. There can be _____ days or _____ days in the month of Feburary.
7. There are _____ months in a year.
8. Tuesday comes after _____ .
9. March comes between _____ and _____ .

B. Which of the following would be leap years ?

1. 1988
2. 2068
3. 2056
4. 2014

C. How many days were there in February 2020 ? _____

D. How many days are there from :

(a) 7th August to 13th September _____

(b) 1st November to 7th December _____

(c) 4th June to 1st July _____

(d) 23rd December to 24th January _____

(e) 11th Feburary to 27th May _____

E. Palvi came to my house on 10th January. She stayed with us for 40 days. On what date did she leave ? _____

F. Look at the calendar given below. Answer the questions that follow.

REFERENCE CALENDAR 2018

JANUARY

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

FEBRUARY

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

MARCH

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

APRIL

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

MAY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

JUNE

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

JULY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

AUGUST

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

SEPTEMBER

S	M	T	W	T	F	S
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

OCTOBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

NOVEMBER

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

DECEMBER

S	M	T	W	T	F	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

(1) Independence Day is falling on which day ? _____

(2) What will be the date on the last Friday of August ? _____

(3) How many Thursdays are there in the month of March ? _____

(4) How many Saturdays and Sundays are there in the month of June ? _____

(5) How many Sundays are there in the whole year ? _____

(6) On which day does October 2 fall ? _____

(7) What day is it on 1st July 2018 ? _____

(8) How many days are there in the months of May, June, July and August taken together ? _____

16 MONEY

We need money to purchase goods for our daily needs and to pay for the services we get like paying electricity bills, telephone bills, gas bills, etc. To buy anything from the market, we need money. It is available in the form of coins or notes. We in India deal with the currency in rupees and paise. ₹ 1, ₹ 2, ₹ 5 and ₹ 10 are available in notes (paper currency) as well as in coins.

Universal symbol of Rupee is "₹".

Similarly, the symbol of US Dollar is "$" and the symbol of UK Pound is "£"

16.1 COINS

16.2 CURRENCY NOTES

EXERCISE 16(A)

Identify the coins and the rupee notes.

(a)  ₹ 10 note

(b)  _____

(c)  _____

(d)  _____

(e)  _____

(f)  _____

(g)  _____

(h)  _____

(i)  _____

(j)  _____

16.3 RUPEE AND PAISE

We separate rupees and paise by a dot ".".

EXAMPLES

₹ 5.50 — This means 5 rupees and 50 paise.

₹ 52.75 — This means 52 rupees and 75 paise.

EXERCISE 16(B)

A. Write in words :

1. ₹ 18.50 = Eighteen rupees and fifty paise
2. ₹ 419.25 = _____
3. ₹ 198.75 = _____

4 ₹ 490 = _____

5 ₹ 922.20 = _____

6 ₹ 23.85 = _____

7 ₹ 562.75 = _____

8 ₹ 2152.25 = _____

9 ₹ 420 = _____

10 ₹ 675.50 = _____

B. Write in numeral form

1 Six rupees eighty paise = _____ .

2 Fifty seven rupees ten paise = _____ .

3 Twenty five rupees sixty five paise = _____ .

4 Ninety one rupees = _____ .

5 Two hundred rupees seventy five paise = _____ .

6 Seventy eight rupees fifteen paise = _____ .

7 Five hundred fifty five rupees fifty paise = _____ .

8 Two thousand rupees = _____ .

9 Nine hundred rupees ninety paise = _____ .

10 Seven hundred twenty four rupees thirty nine paise = _____ .

16.4 CONVERTING RUPEES (₹) INTO PAISE (p)

1 rupee = 100 paise

To convert rupees into paise, multiply the amount given in rupees by 100.

EXAMPLES Convert ₹ 19 into paise.

- We multiply 19 by 100.

₹ 19 = 19 × 100

= **1900 p**

- Convert ₹ 250 into paise

$$₹\ 250 = 250 \times 100$$
$$= \mathbf{25000\ p}$$

16.5 CONVERTING PAISE (p) INTO RUPEES (₹)

When we convert paise into rupees, we put a dot after 2 digits from the right of the given number.

EXAMPLES Convert 195 p into rupees

	2nd	1st	
1	. 9	5	Put a dot after the 2nd digit from the right.

$= ₹\ 1.95$

- Convert 550 p into rupees

	2nd	1st	
5	. 5	0	Put a dot after the 2nd digit from the right.

$= ₹\ 5.50$

EXERCISE 16(C)

1 Convert rupees into paise.

(a) ₹ 42 = _____ (b) ₹ 525 = _____ (c) ₹ 963 = _____

(d) ₹ 795 = _____ (e) ₹ 375 = _____ (f) ₹ 675 = _____

(g) ₹ 2222 = _____ (h) ₹ 410 = _____ (i) ₹ 846 = _____

2 Convert paise into rupees.

(a) 725p = _____ (b) 2000p = _____ (c) 25613p = _____

(d) 8479p = _____ (e) 1818p = _____ (f) 144p = _____

(g) 562p = _____ (h) 31121p = _____ (i) 71340p = _____

3 Evaluate the given details

(a) ₹ 500 + ₹ 20 = ₹ 520 (b) ₹ 500 + ₹ 200 + ₹ 10 = _____

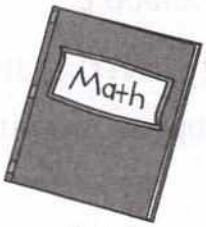
(c) ₹ 2000 + ₹ 50 = _____ (d) ₹ 200 + ₹ 10 + ₹ 5 + ₹ 1 = _____

(e) ₹ 100 + ₹ 50 + ₹ 20 + ₹ 10 + ₹ 2 = _____

4 Calculate the money required to buy each set of products shown below.

(a)

₹ 5 + 

₹ 5 + 

₹ 25 + 

₹3 = _____

(b)

₹ 10 + 

₹ 10 + 

₹ 30 = _____

(c)

₹ 175 + 

₹ 45 + 

₹ 210 = _____

(d)

₹ 250 + 

₹ 500 + 

₹ 275 = _____

(e)

₹ 150 + 

₹ 500 + 

₹ 350 = _____

16.6 ADDITION OF MONEY

EXAMPLE 1 Add ₹ 25.50 to ₹ 14.

	₹	p
	25	50
+	14	00
	39	50

₹ 39.50 **Ans.**

METHOD

Step 1 : Arrange the given money in rupees and paise in columns.

Step 2 : Add the paise first
50 + 0 = 50 p.
Write 50 under the paise column.

Step 3 : Now add the rupees
25 + 14 = ₹ 39
Write 39 under the rupee column as shown.

EXAMPLE 2 Add ₹ 242.50, ₹ 65.50 and ₹ 9.50.

	₹	p
	111	
	242	50
	65	50
+	9	50
	317	50

₹ 317.50 **Ans.**

METHOD

Step 1 : Write the given money in rupees and paise columns.

Step 2 : Add the paise first.
50 + 50 + 50 = 150 p.
100 p = ₹ 1
∴ 150 p = 100 p + 50 p = ₹ 1 + 50 p
So we will write 50 under paise column and carry ₹ 1 to the rupees column.

Step 3 : Add rupees now,
242 + 65 + 9 + 1 (carry over) = ₹ 317
This we will write under rupees column.
∴ The answer is ₹ 317.50

EXERCISE 16(D)

1 Add the following.

(a)

	₹	p
	36	55
+	25	75

(b)

	₹	p
	66	00
+	65	85

(c)

	₹	p
	41	32
+	10	05

(d)

	₹	p
	83	82
+	72	15

(e)

	₹	p
	101	25
+	100	00

(f)

	₹	p
	98	25
+	25	50

(g)

	₹	p
	80	80
+	75	25

(h)

	₹	p
	165	25
+	95	15

(i)

₹	p
355	50
+ 214	25

(j)

₹	p
469	00
+ 401	50

(k)

₹	p
238	50
+ 150	00

(l)

₹	p
400	50
+ 351	00

(m)

₹	p
238	50
382	25
+ 195	65

(n)

₹	p
441	15
140	45
+ 352	55

(o)

₹	p
345	15
181	75
+ 736	00

(p)

₹	p
346	25
505	50
+ 231	50

(q)

₹	p
1149	45
2280	00
+ 9275	35

(r)

₹	p
897	30
7160	55
+ 2986	50

(s)

₹	p
4505	45
9814	25
+ 165	85

(t)

₹	p
1286	50
3844	00
+ 15178	15

2 Add the following.

(a) ₹ 6324.50 + ₹ 4834.00 + ₹ 3871.50 = _____

(b) ₹ 5353.25 + ₹ 4682.00 + ₹ 198.00 = _____

(c) ₹ 98.05 + ₹ 981.15 + ₹ 8433.50 = _____

(d) ₹ 4021.75 + ₹ 3672.80 + ₹ 187.50 = _____

(e) ₹ 507.15 + ₹ 984.00 + ₹ 873.00 = _____

16.7 SUBTRACTION OF MONEY

EXAMPLE 1 Subtract ₹ 5.25 from ₹ 75.50.

₹	p
75	50
− 5	25
70	25

Ans. ₹ 70.25

METHOD

Step 1 : Write the given amounts below rupees and paise columns.

Step 2 : Subtract the paise first
50 − 25 p = 25 p.
Now write 25 under the paise column.

Step 3 : Now subtract the rupees.
75 − 5 = ₹ 70.
Write 70 under the rupees column now.

EXAMPLE 2 Subtract ₹ 62.25 from ₹ 97.00.

	₹	p
	96	100
	~~97~~	~~00~~
−	62	25
	34	75

Ans. ₹ 34.75

METHOD

Step 1 : Write the given amounts in rupees and paise columns.

Step 2 : Subtract the paise first but we cannot subtract as 25 > 0. Therefore we will borrow ₹ 1 from 97 rupees.
(₹ 1 = 100 p) ₹ 1 + 0 p = 100 p

Step 3 : Now subtract 25 p from 100 p
100 − 25 = 75 p
We will write 75 p under paise column.

Step 4 : As ₹ 1 is borrowed from 97, so now the rupees left are ₹ 96. Now subtract 62 from 96.
96 − 62 = ₹ 34.
We will write ₹ 34 under rupees column.

EXERCISE 16(E)

1 Subtract the following.

(a)

	₹	p
	10	30
−	6	10

(b)

	₹	p
	41	55
−	40	15

(c)

	₹	p
	28	80
−	16	75

(d)

	₹	p
	98	65
−	47	55

(e)

	₹	p
	618	45
−	421	75

(f)

	₹	p
	590	50
−	84	40

(g)

	₹	p
	4364	35
−	2482	05

(h)

	₹	p
	773	45
−	348	00

(i)

	₹	p
	598	75
−	125	25

(j)

	₹	p
	634	50
−	241	40

(k)

	₹	p
	808	30
−	475	05

(l)

	₹	p
	313	50
−	162	00

(m)

	₹	p
	531	80
−	476	70

(n)

	₹	p
	385	65
−	198	55

(o)

	₹	p
	1843	75
−	1200	60

(p)

	₹	p
	4105	50
−	2953	25

2 Subtract the following.

(a) ₹ 388 – ₹ 74.25 = _____

(b) ₹ 153.50 – ₹ 92.05 = _____

(c) ₹ 808.75 – ₹ 582.15 = _____

(d) ₹ 1356.19 – ₹ 25.24 = _____

(e) ₹ 7275.75 – ₹ 823.25 = _____

16.8 WORD PROBLEMS

1 Mahi had ₹ 75 and she took a ₹ 10 note from her mother. How much money does Mahi have now ?

2 Seema bought a pair of shoes for ₹ 999 and she bought a pair of socks for ₹ 125.50. How much money did she spend ?

3 Ram went to the market to buy vegetables. He bought tomatoes for ₹ 40.50, onions for ₹ 25.00 and potatoes for ₹ 50.75. How much money did he give to the vegetable seller ?

4 John had a saving of ₹ 4,500. He deposited ₹ 960.25 this month. How much money does he have now ?

5 During class picnic, Rama bought a packet of chips for ₹ 25.50, a coke for ₹ 36.25 and a chocolate for ₹ 10. How much money did she spend ?

6 Radha was having ₹ 1000. She bought a dress for ₹ 599.50. How much money does she have now ?

7 Suraj had ₹ 672.25. He gave a friend ₹ 350.50 for some urgent work. How much money does Suraj have now ?

8 Esha had ₹ 325. She did shopping for ₹ 275.50. How much money is left with her now ?

9 Charles went to market with ₹ 500 in his packet. He bought a pastry for ₹ 67.50 and a burger for ₹ 110.75. How much money Charles is left with ?

10 Mohit went to Delhi and he bought a ticket to enter a water park for ₹ 450.75. He gave a note of ₹ 2000 at the ticket centre. How much money was returned to Mohit along with the ticket ?

17 DATA HANDLING

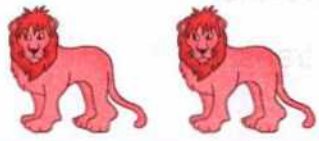
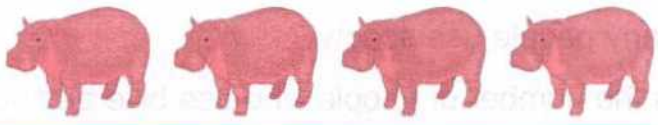
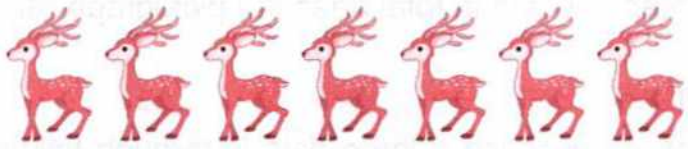
We collect information about various things and people in different forms. The information we collect is known as **data**.

The presentation of collected information in an arranged and sorted way is known as **Data Handling**.

17.1 PICTOGRAPH

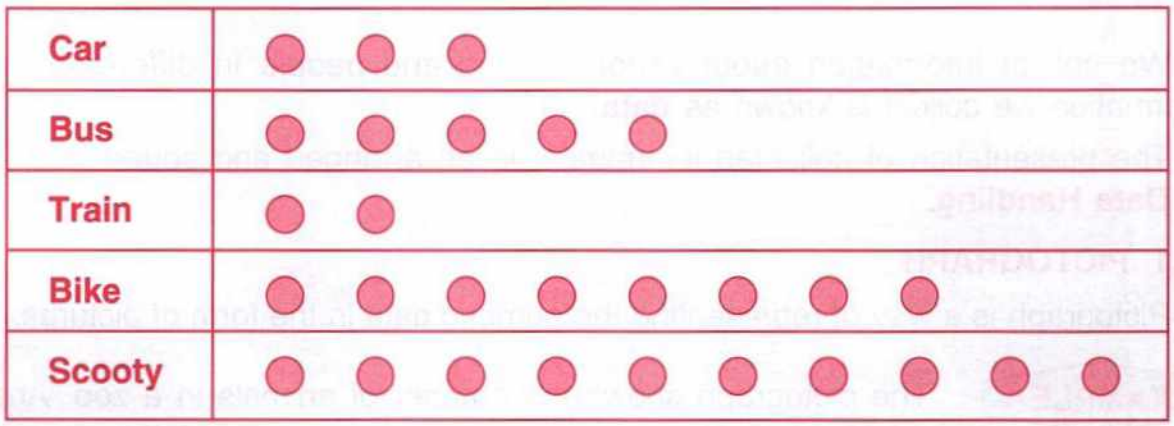
Pictograph is a way of representing the numeric data in the form of pictures.

EXAMPLE 1 The pictograph shows the number of animals in a zoo. Answer the questions that follow.

Lion	
Tiger	
Hippo	
Deer	
Elephant	

1. Which animal is the maximum in number ? **Deer**
2. How many tigers are there ? **3**
3. Which animal is the least in number ? **Lion**
4. How many elephants are there ? **3**
5. How many hippos and deers are there in the zoo ? **11**

EXAMPLE 2 People use different personal vehicles and public transport to go to office. The pictograph below shows the detailed information regarding the means of transport used by the staff of an office. Study the pictograph and answer the questions that follow.



Each dot (●) represents 10 people.

(a) How many people use public transport ? **70**

(b) How many people use car ? **30**

(c) Which mode of travelling is the most preferred ? **Scooty**

(d) Which personal vehicle is preferred the least ? **Car**

(e) Which public transport is preferred the least ? **Train**

(f) How many people use scooty ? **100**

(g) What is the number of people who use bike and scooty ? **180**

(i) How many people in total does the pictograph represent ? **280**

17.2 TALLY MARKS

Another way of representing a large data is through tally marks. Here, numbers are represented in groups of five by drawing lines.

One vertical line is made for each of the first four numbers and the fifth number is represented by a slanting line drawn across the previous four vertical lines.

EXAMPLE 1 There are 40 students in a class. Students have different favourite subjects. The representation below shows the detailed information of the data. Read the data and answer the following questions.

Subject	Number of students liking the subject
English	𝍸 III
Hindi	𝍸 I
Maths	𝍸 𝍸 II
Computer studies	𝍸 IIII
Arts	𝍸

1. Students' most favourite subject is _____ . **Maths**
2. Students' least favourite subject is _____ . **Arts**
3. How many students like English ? **8**
4. How many students like Computer Studies ? **9**
5. How many students like Hindi and Arts ? **11**

EXERCISE 17(A)

1 The table below represents the favourite fast foods of children. Read carefully and answer the questions given below.

Pizza	𝍸
Burger	𝍸 III
Sandwich	IIII
Noodles	𝍸 I
Pasta	II

(a) Which food is the most popular among the students ? _____

(b) Which is the least popular food among the students ? _____

(c) How many children are represented in the table altogether ? _____

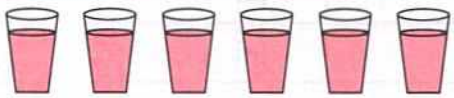
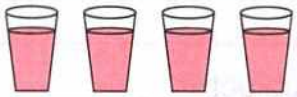
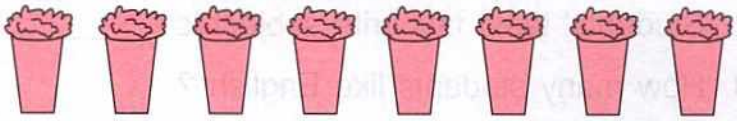
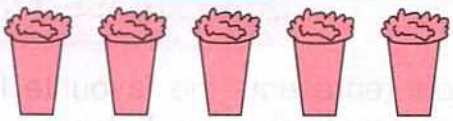
(d) Number of children who like noodles is _____ . _____

(e) How many children like pizza and burger ? _____

(f) How many children like sandwich and pasta ? _____

(g) Number of children who like noodles and pizza is _____ . _____

2 The following pictograph shows the weekly sale of shakes and juices at a juice corner. Read and answer the questions carefully.

Mixed fruit juice	
Orange juice	
Pineapple juice	
Chocolate shake	
Strawberry shake	
Banana shake	

[Each glass represents 20 glasses of juice and shake.]

(a) What is the weekly sale of shakes at the juice corner ? _____

(b) Which juice or shake is the most popular ? _____

(c) What is the total sale of mixed fruit juice and orange juice together ? _____

(d) Which juice or shake is the least popular ? _____

(e) How many glasses of banana shake are sold in a week ? _____

(f) What number of glasses of strawberry shake are sold in a week ? _____

(g) How many glasses of chocolate shake and pineapple juice are sold ? _____

(h) What is the sale of pineapple juice ? _____

3 The pictograph below shows the musical instruments which students play in a music school. Answer the following questions after observing the pictograph carefully.

Guitar	
Piano	
Flute	
Tabla	
Harmonium	

Scale :  = 500 children ;  = 250 children

(a) How many students are there in the music school ? _____

(b) How many children like to play guitar ? _____

(c) What is the number of students who love to play harmonium ? _____

(d) Which instrument is the most popular ? _____

(e) Which instrument is the least popular ? _____

(f) How many children like to play flute and tabla ? _____

(g) What is the number of children who love to play piano and harmonium ? _____

(h) How many children love to play guitar and flute ? _____

4 The table below shows the games which are played in a school. Answer the following questions after observing the pictograph carefully.

Cricket	
Carrom	
Chess	
Badminton	
Basket ball	

Each ( ) represents 50 students.

(a) How many students love to play a game ? _____

(b) How many students love to play chess ? _____

(c) Which game is the most popular among children ? _____

(d) Which game is the least popular among children ? _____

(e) How many students play carrom and chess ? _____

(f) How many students love to play badminton ? _____

(g) How many students love to play basketball and badminton ? _____

(h) How many children play cricket ?

17.3 BAR GRAPH

A bar graph is the representation of numerical data in the form of rectangular bars having standard width but variable length according to the scale chosen.

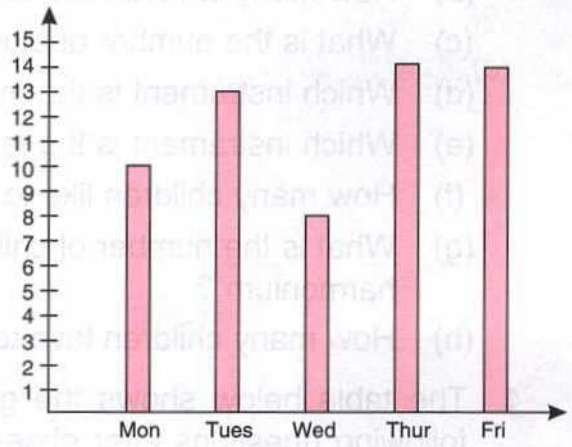
There are two types of bar graphs :

1. Vertical bar graphs
2. Horizontal bar graphs

Vertical bar graph

Vertical bar graphs are those graphs in which data is represented in vertical bars. The vertical bars are drawn from bottom going upwards.

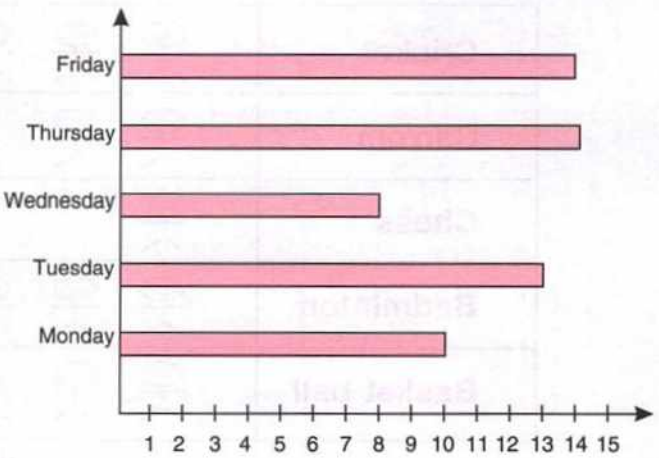
The graph given alongside is representing the number of people visiting a cinema hall on five different days of a week.



Horizontal bar graphs

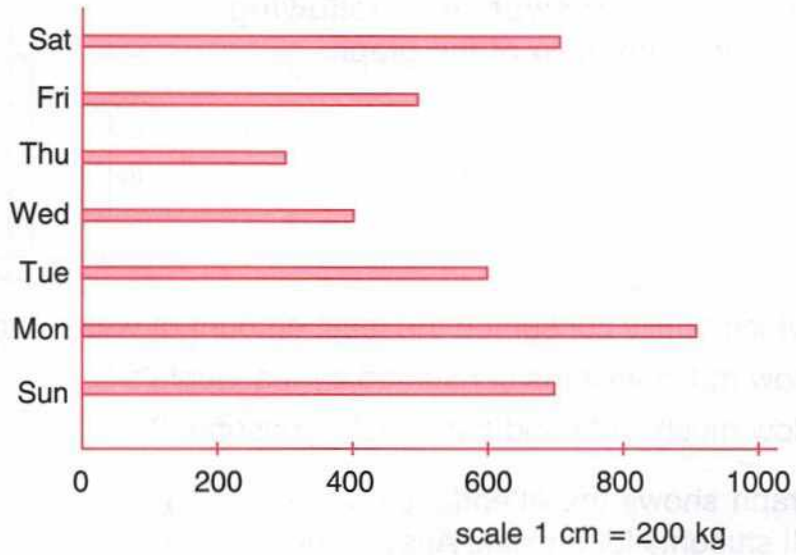
Horizontal bar graphs are those graphs in which data is represented in horizontal bars. The horizontal bars are drawn from left to right.

The graph given alongside is representing the same data as shown in the vertical bar graph.



EXAMPLES

Daily sale of sugar in a departmental store is shown in the bar graph below.



(a) Which day has the maximum sale ? **Monday**

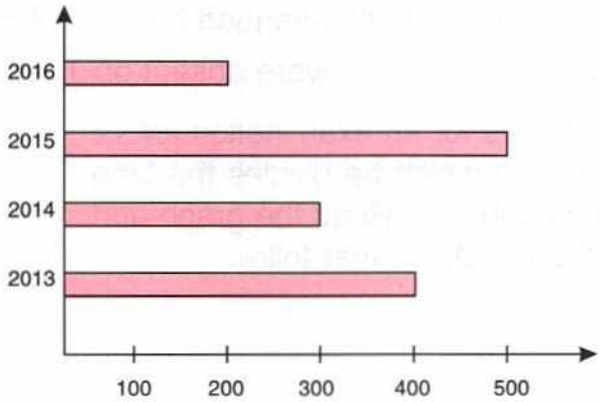
(b) Which day has the least sale ? **Thursday**

(c) Calculate the total sale of the week. **4,100 kg**

(d) Which two days have the same sale ? **Saturday and Sunday**

EXERCISE 17(B)

1 The graph below shows the number of students who participated in a maths olympiad in the past years.

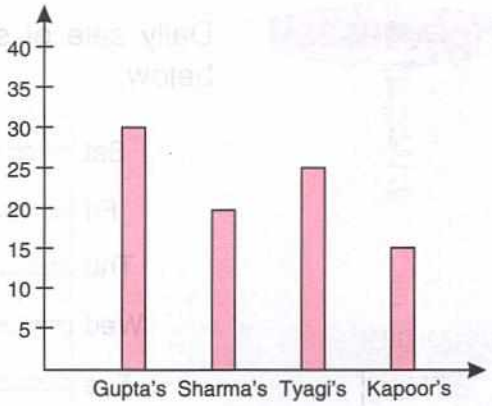


(a) In which year did the maximum number of students appear in the olympiad ?

(b) How many students participated in the olympiad in 2014 ?

(c) How many students participated in the olympiad in 2016 and 2014 ?

2 The graph given alongside shows the consumption of water per day by each family (in L). Answer the following questions with the help of the graph.

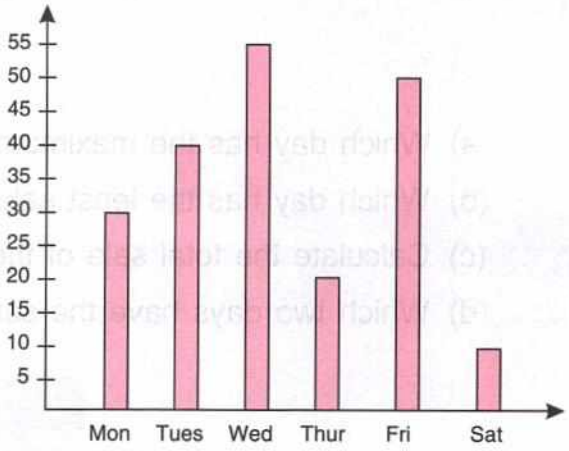


(a) Which family consumed the least amount of water and how much ?

(b) How much water is consumed by the Gupta's ?

(c) How much water did the Tyagi's consume ?

3 The graph shows the attendance of 55 class-II students for a week. Answer the following questions with the help of the graph.



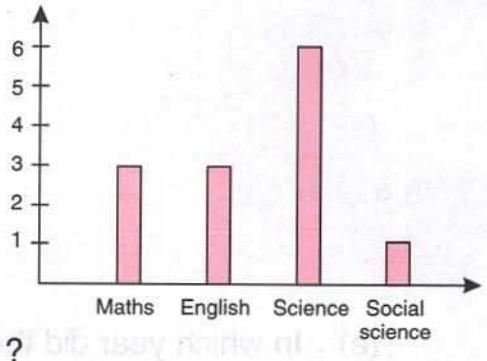
(a) On which day most of the students attended the school ?

(b) How many students attended the school on Monday ?

(c) How many students attended the school on Tuesday and Friday altogether ?

(d) How many students were absent on Tuesday ?

4 Charles studies for an examination for 12 hours a day in which he divides the time for different subjects. Read the graph and answer the questions that follow :



(a) Which subject does Charles study the most ?

(b) How many hours a day does Charles study maths ?

(c) How many hours does Charles study English and Social Science per day ?

18 PATTERNS

The arrangement in which colours, designs, shapes or numbers are arranged according to a rule is called **pattern**.

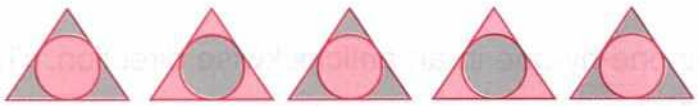
The pattern consisting of colours, designs or shapes is called a **geometrical pattern**.

The pattern consisting of numbers is called a **number pattern**.

18.1 REVISION

1 Complete the following patterns by drawing the figure that should come next.

(a) 

(b) 

(c) 

(d) 

(e) 

(f) A AB ABC ABCD ABCDE

(g) AZ BY CX DW EV

(h) AC BD EG FH IK JL

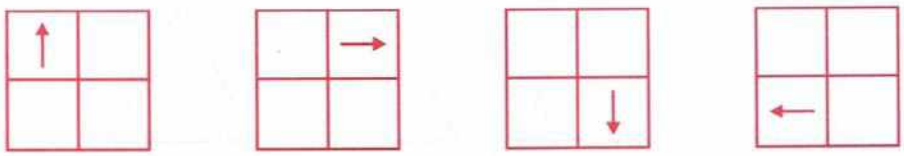
2 Complete the following number patterns by writing the next number.

(a) 100, 90, 80, 70, _____

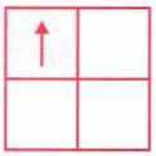
(b) 160, 80, 40, 20, _____

In a geometric pattern, one can easily guess the next figure.

EXAMPLE 1 What will be the next unit of the pattern given below ?



In the above pattern, arrow is shifting to the next block. At the same time, arrow is also turning in the clock-wise direction.

Therefore, the next unit will be  .

EXAMPLE 2 Observe the pattern given below and draw the figure that should come next.

(a)  _____

(b)  _____

(c)  _____

Solution :

(a) We are adding lines one-by-one in an anticlockwise direction. Therefore, the next figure should be  .

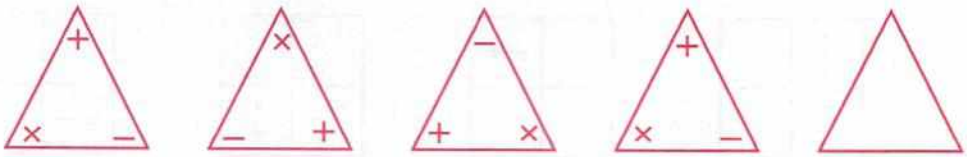
(b) We are removing lines one by one in a clockwise direction. Therefore, the next figure should be  .

(c) Letter A is being rotated in a clockwise direction. Therefore, the next figure should be  .

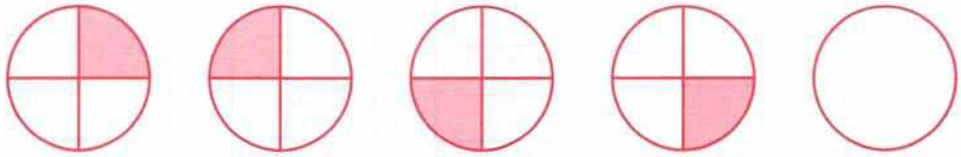
EXERCISE 18(A)

1 Observe the given patterns and complete their last figures.

(a) 

(b) 

(c) 

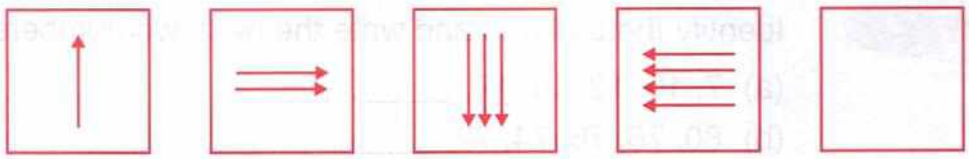
(d) 

18.2 PROGRESSIVE PATTERNS

The patterns which can go on and on, without coming to an end are called progressive patterns. Such patterns are infinite.

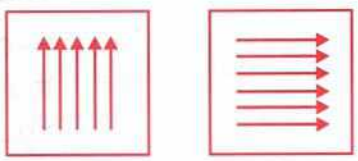
A. Progressive geometric patterns

EXAMPLE 1 What will be the next two units of the patterns given below ?

(a) 

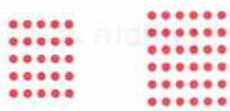
(b) 

In pattern (a), we are increasing the arrows one by one. Also, the arrow is moving in a clockwise direction.

Therefore, the next 2 units of the pattern will be  .

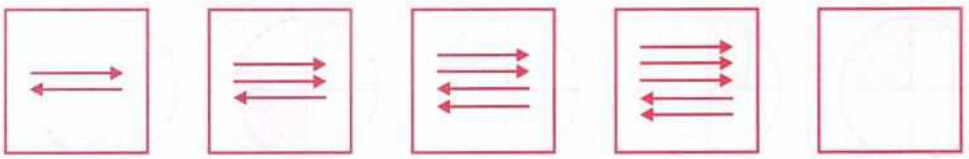
In pattern (b), the number of dots are increasing one by one in the bottom row. We see that the number of rows and columns is also increasing by 1 in the subsequent units.

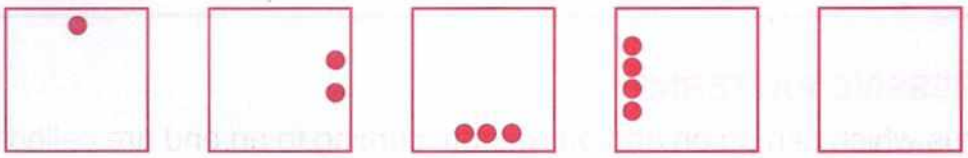
So, the next unit will have 5 rows and 5 columns of 5 dots each. Similarly, the following unit will have 6 rows and 6 columns of 6 dots each and so on.



EXERCISE 18(B)

Observe the given pattern and complete the last figure.

(a) 

(b) 

18.3 PROGRESSIVE NUMBER PATTERNS

Arrangement of numbers according to a rule is called a **number pattern**.

EXAMPLE

Identify the patterns and write the next two numbers.

(a) 7, 10, 13, 16, 19, _____, _____ .

(b) 80, 78, 76, 74, 72, _____, _____ .

(c) 4, 7, 13, 25, 49, _____, _____ .

Solution :

(a) Each term of the given pattern is obtained by adding 3 to the previous number. So the next two numbers are

$19 + 3 = 22$; $22 + 3 = 25$

Thus the pattern is 7, 10, 13, 16, 19, 22, 25

(b) Each term of the given pattern is obtained by subtracting 2 from the previous term. So the next two terms are :

$72 - 2 = 70$; $70 - 2 = 68$

Thus the pattern is 80, 78, 76, 74, 72, 70, 68

(c) Each term of the given pattern is obtained by multiplying the previous term by 2 and then subtracting 1 from the product.

$4 \times 2 - 1 = 7$, $7 \times 2 - 1 = 13$, $13 \times 2 - 1 = 25$, $25 \times 2 - 1 = 49$

So the next two terms are

$49 \times 2 - 1 = 97$; $97 \times 2 - 1 = 193$

Thus the pattern is 4, 7, 13, 25, 49, 97, 193

EXERCISE 18(C)

Identify the pattern and write the next two terms.

(a) 1, 5, 9, 13, 17, _____, _____.

(b) 2, 5, 8, 11, 14, _____, _____.

(c) 60, 55, 50, 45, _____, _____.

(d) 56, 50, 44, 38, _____, _____.

(e) 64, 32, 16, 8, _____, _____.

(f) 4, 6, 10, 18, _____, _____.

(g) 2, 5, 11, 23, _____, _____.

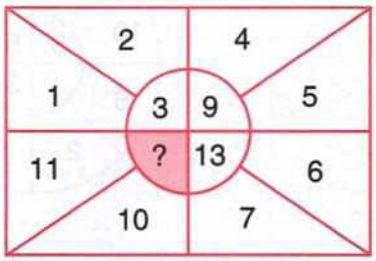
(h) 1, 3, 7, 15, _____, _____.

18.4 PATTERNS INVOLVING NUMBER OPERATIONS

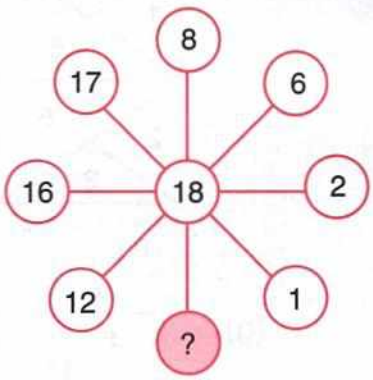
EXAMPLES Study the pattern and fill in the blanks.

(a) In the given arrangement of numbers, each number in the circle is the sum of two numbers outside it.

Clearly, the missing number is 11 + 10 = **21**.



(b) In this pattern, the sum of the two numbers written at the ends of a straight line is 18. So, the missing number is **10** as 8 + 10 = 18.



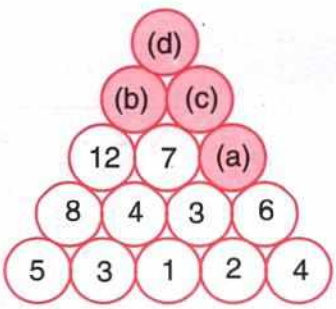
(c) In this pattern, we are writing the sum of two adjacent numbers in the circle drawn above the two numbers. Therefore, the full pattern will be as follows.

∴ (a) 3 + 6 = **9** ∴ a = 9

(b) 12 + 7 = **19** ∴ b = 19

(c) 7 + 9 = **16** ∴ c = 16

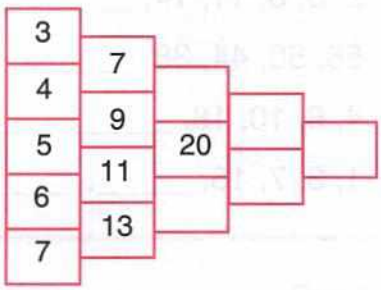
(d) 19 + 16 = **35** ∴ d = 35



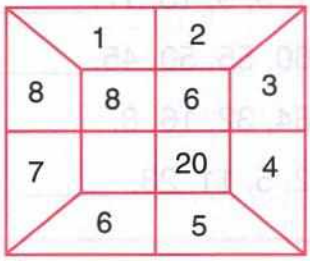
EXERCISE 18(D)

Study the pattern and fill the empty spaces.

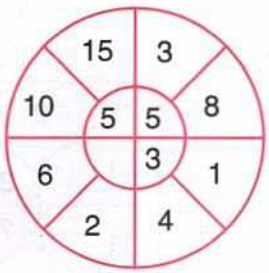
(a)



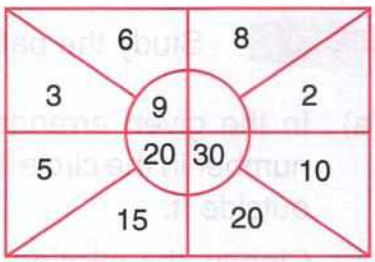
(b)



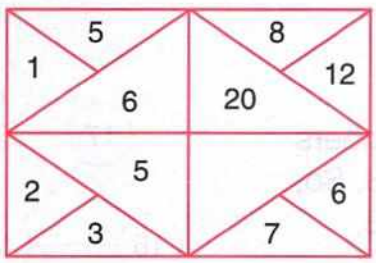
(c)



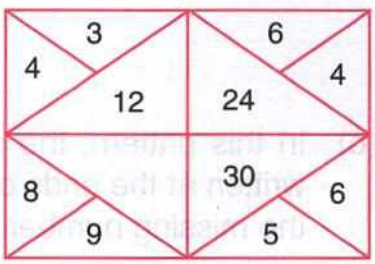
(d)



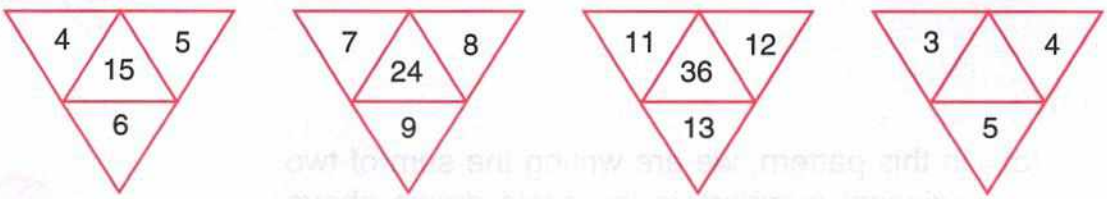
(e)



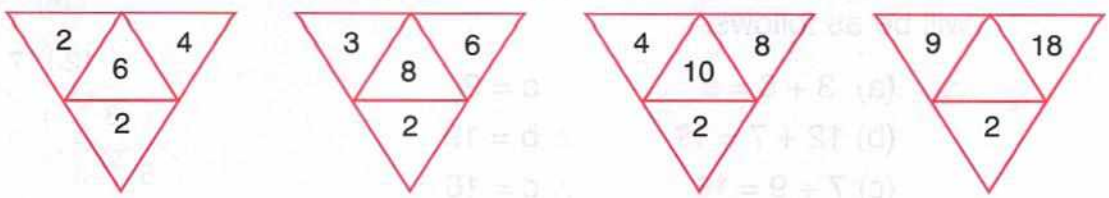
(f)



(g)



(h)



18.5 PATTERNS IN ADDITION

Addition of *three* consecutive numbers.

$1 + \mathbf{2} + 3 = 6$
$2 + \mathbf{3} + 4 = 9$
$3 + \mathbf{4} + 5 = 12$
$4 + \mathbf{5} + 6 = 15$

Here, we observe that the sums are three times the middle numbers, *i.e.* $3 \times 2 = 6$
$3 \times 3 = 9$
$3 \times 4 = 12$
$3 \times 5 = 15$

Addition of *four* consecutive numbers.

$1 + 2 + 3 + 4 = 10$
$2 + 3 + 4 + 5 = 14$
$3 + 4 + 5 + 6 = 18$
$4 + 5 + 6 + 7 = 22$

We observe that the sum of 4 consecutive numbers is equal to the sum of the first and the last number $\times$ 2, *i.e.* $(1 + 4) \times 2 = 5 \times 2 = 10$.

OR

Sum of the two middle numbers $\times$ 2,
i.e. $(2 + 3) \times 2 = 5 \times 2 = 10$

Addition of *five* consecutive numbers.

$1 + 2 + \mathbf{3} + 4 + 5 = 15$
$2 + 3 + \mathbf{4} + 5 + 6 = 20$
$3 + 4 + \mathbf{5} + 6 + 7 = 25$
$4 + 5 + \mathbf{6} + 7 + 8 = 30$

Here, we observe that the sums are five times the middle numbers, *i.e.* $3 \times 5 = 15$
$4 \times 5 = 20$
$5 \times 5 = 25$
$6 \times 5 = 30$

EXERCISE 18(E)

Observe the pattern in each of the following and fill in the blanks.

(a)
$1 + 2 + 3 + 4 + 5 = 15$
$2 + 3 + 4 + 5 + 6 = 20$
$3 + 4 + 5 + 6 + 7 = 25$
$8 + 9 + 10 + 11 + 12 =$ _____
$18 + 19 + 20 + 21 + 22 =$ _____
$98 + 99 + 100 + 101 + 102 =$ _____

(b)
$1 + 2 + 3 + 4 = 10$
$2 + 3 + 4 + 5 = 14$
$3 + 4 + 5 + 6 = 18$
$6 + 7 + 8 + 9 =$ _____
$9 + 10 + 11 + 12 =$ _____
$10 + 11 + 12 + 13 =$ _____
$11 + 12 + 13 + 14 =$ _____

18.6 PATTERNS IN MULTIPLICATION

EXAMPLE 1 Observe the following multiplication patterns.

Solution :

$1 \times 1 = 1$
$11 \times 11 = 121$
$111 \times 111 = 12321$
$1111 \times 1111 = 1234321$

Yes, first count upto the number of 1s in the multiplier. There are 5 ones. So, 12345. Then count in reverse till 123454321.

Can you find the value of $11111 \times 11111 = ?$

EXAMPLE 2 Observe the following multiplication patterns.

$11 \times 11 = 121$
$21 \times 21 = 441$
$31 \times 31 = 961$
$41 \times 41 =$ _____

Solution :

Ones place = 1
Tens place = Tens digit × 2
Remaining digits = Tens digit × Tens digit
In 41×41, ones place = 1
Tens place = $4 \times 2 = 8$
Remaining digits = $4 \times 4 = 16$
so, $41 \times 41 = 1681$

EXERCISE 18(F)

Observe the pattern in each of the following and fill in the blanks.

(a)
$1 + 2 + 3 = 6$
$2 + 3 + 4 = 9$
$3 + 4 + 5 = 12$
$9 + 10 + 11 =$ _____
$19 + 20 + 21 =$ _____
$99 + 100 + 101 =$ _____

(b)
$5 \times 5 = 25$
$55 \times 5 = 275$
$555 \times 5 = 2775$
$5555 \times 5 = 27775$
$55555 \times 5 =$ _____
$555555 \times 5 =$ _____

(c)
$9 \times 6 = 54$
$9 \times 66 = 594$
$9 \times 666 = 5994$
$9 \times 6666 =$ _____
$9 \times 66666 =$ _____
$9 \times$ _____ $= 59999994$

Self Assessment

A. Choose the correct answers.

1. The largest 6-digit number formed using digits 0, 1, 2, 3, 4 and 5 is
   (a) 5,01,234 (b) 54,032 (c) 5,43,210 (d) 5,34,210
2. The largest 7-digit number formed using digits 0, 1, 2, 3, 4 and 5 is
   (a) 55,55,555 (b) 55,54,321 (c) 55,45,321 (d) 5,55,31,240
3. The sum of 348, 4,321 and 5,350 rounded off to the nearest 10 is
   (a) 10,090 (b) 10,019 (c) 10,020 (d) 10,025
4. The difference of 8,349 and 5,359 rounded off to the nearest 100 is
   (a) 2,900 (b) 2,990 (c) 2,090 (d) 2,009
5. The sum of 3,832, 2,506 and 1,823 rounded off to the nearest 1,000 is
   (a) 8,000 (b) 7,000 (c) 10,000 (d) 9,000
6. The Roman numeral used for 100 is
   (a) V (b) X (c) C (d) M
7. The Roman numeral for 39 is
   (a) XXXI (b) IX (c) XXXIX (d) XIX
8. The Roman numeral XXVIII means
   (a) 38 (b) 18 (c) 27 (d) 28
9. On subtracting 3,879 from 8,976, we get
   (a) 5,970 (b) 5,097 (c) 5,079 (d) 5,970
10. The product of 387 and 48 is
    (a) 15,768 (b) 18,576 (c) 15,876 (d) 16,785
11. When we divide a number by itself, we get
    (a) 0 (b) 1 (c) Number itself (d) 100
12. When we multiply a number by 0, we get
    (a) 1 (b) 0 (c) 10 (d) 100
13. Which of the following is not a factor of 24 ?
    (a) 4 (b) 8 (c) 2 (d) 5
14. The fraction representing three fourths is
    (a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{3}{4}$ (d) $\frac{1}{8}$

15. Sum of $\frac{3}{4} + \frac{1}{2}$ is

(a) $\frac{5}{2}$ (b) $\frac{1}{2}$ (c) $\frac{3}{6}$ (d) $\frac{5}{4}$

16. Which of the following is not a 2-D figure

(a) Circle (b) Triangle (c) Square (d) Cone

17. The perimeter of a rectangle of length 12 cm and breadth 8 cm is

(a) 30 cm (b) 40 cm (c) 50 cm (d) 96 cm

18. We convert millilitres into litres by dividing millilitres by

(a) 10 (b) 100 (c) 1000 (d) 10,000

19. 28 hours 20 minutes in minutes is

(a) 1,700 min (b) 1,800 min (c) 1,900 min (d) 17,500 min

20. 39 hours 53 minutes in minutes is

(a) 2,933 min (b) 2,393 min (c) 2,993 min (d) 2,333 min

21. Complete the number pattern : 87, 77, 67, 57, ___

(a) 7 (b) 47 (c) 37 (d) 27

B. Fill in the blanks.

1. The smallest 5-digit number is ..... .
2. When we round off 8,35,047 to the nearest 1,000, we get ..... .
3. The Roman numeral for 41 is ..... .
4. The Roman numeral D stands for ..... .
5. When we add 0 to 43,832, we get ..... .
6. When we multiply zero by any number, we get ..... .
7. 8,345 – 3,219 = ...
8. 3,415 × 5 = ...
9. 38,532 ÷ 12 = ...
10. When we divide 3,456 by 15, the remainder is ..... .
11. Fractions $\frac{1}{3}, \frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \frac{5}{15}, \frac{6}{18}$, etc. are called ..... .
12. To convert grams into kilograms, we divide the grams by ..... .
13. 3,567 cm = ... m + ... cm.

14. January, March, May, July, August, October and December have ..... days.

15. 1 day = ... minutes.

16. In a leap year we have ..... days.

17. Next leap year is ..... .

18. When two or more prime numbers are multiplied, we get ..... .

19. The radii of a circle are ..... .

20. Prime numbers are ..... .

21. $\frac{1}{3}, \frac{3}{4}, \frac{5}{6}, \frac{7}{8}$, etc. are examples of ..... .

22. A number is divisible by 4 if ..... .

C. Answer the following questions.

1. Represent the following on an abacus.

(a) 3,246 (b) 87,678 (c) 4,83,945 (d) 45,67,890

2. Compare the following pairs of numbers

(a) 32,41,532, 32,40,532 (b) 53,21,453, 53,01,232

3. Write the following in ascending order :

3,25,678, 43,21,345, 6,78,910, 45,00,423, 73,21,452

4. Arrange the following in descending order :

4,56,721, 2,34,567, 3,24,567, 7,32,457, 8,32,176

5. Write the following in Hindu-Arabic numbers

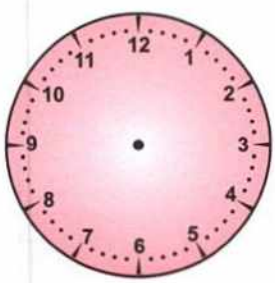
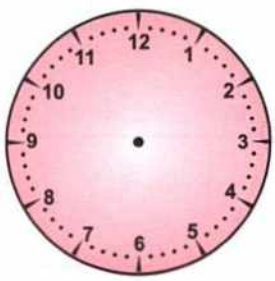
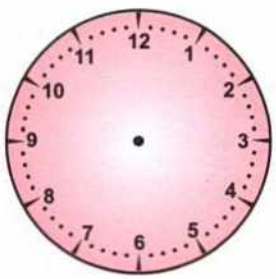
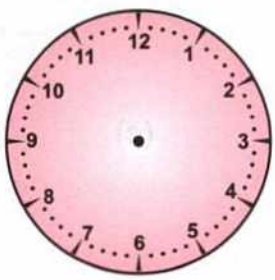
(a) IX (b) XXVI (c) XXXIX (d) L

6. Write the Roman numerals for the following

(a) 19 (b) 29 (c) 37 (d) 47

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

(a) 6:15 (b) 13:30 (c) 19:45 (d) 23:00

8. Estimate the sum of the following by rounding off to the nearest 100.
3,24,567 + 4,12,341 + 5,35,672

9. Solve the following :
(a) 65,678 + 32,415 – 18,756 – 45,678
(b) 78,375 – 32,456 + 34,567 – 54,278

10. Multiply 375 and 478

11. Divide using long division method
(a) 34,567 ÷ 9 (b) 39,678 ÷ 28 (c) 98,345 ÷ 121 (d) 73,691 ÷ 12

12. For a function Aman bought white, red, yellow and maroon coloured roses. Draw a pictograph to represent the given data.

Rose flowers	Number of flowers
White	12
Red	15
Yellow	9
Maroon	4

13. Find the next number in the given pattern and write the rule.
(a) 20, 30, 40, 50, ____ (b) 130, 230, 330, ____
(c) 75, 65, 55, 45, ____ (d) 5, 10, 15, 20, 25, ____

14. Make a pattern with 5 numbers such that the sum grows by 8 each time.

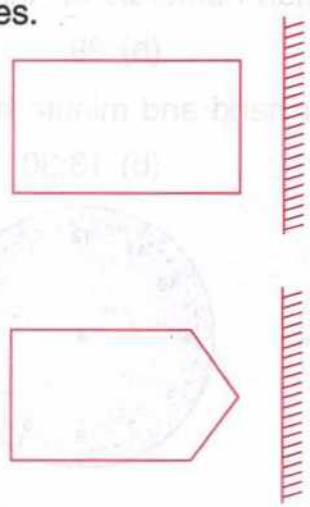
15. Find the LCM of the following by division method.
(a) 38, 48, 56 (b) 150, 250, 450

16. Add
(a) $\frac{1}{3} + \frac{8}{9}$ (b) $\frac{1}{3} + \frac{1}{2} + \frac{3}{4}$ (c) $\frac{3}{7} + \frac{4}{7}$

17. Draw the reflection of the given shapes.

(a)

(b)

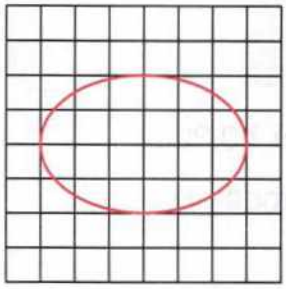


(c)

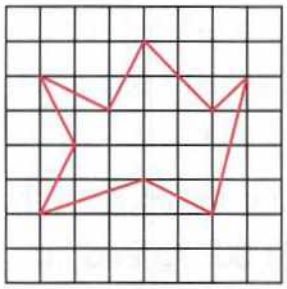
(d)

18. Find the area covered by the irregular lamina

(a)

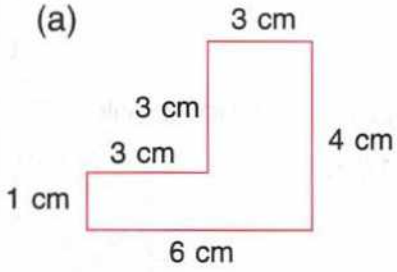


(b)

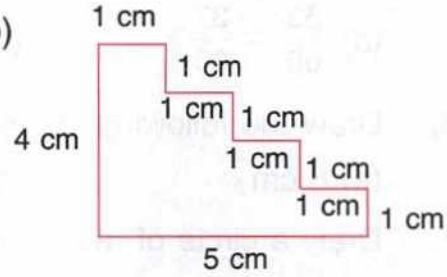


19. Find the perimeter of the given figures

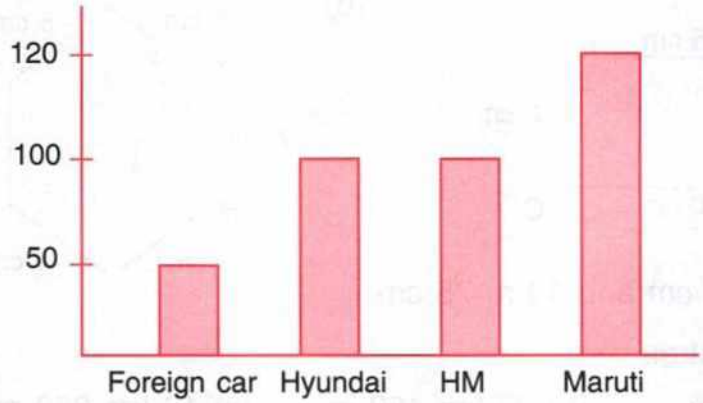
(a)



(b)



20. The following graph represents the sale of cars in a city. Observe the graph and answer the questions that follow.



(a) How many foreign cars were sold ?

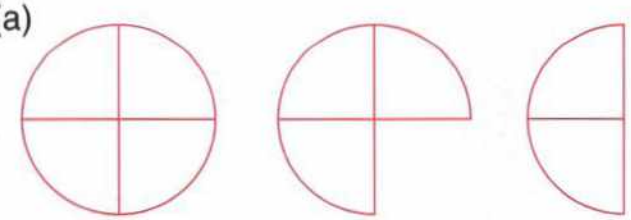
(b) How many HM cars were sold ?

(c) How many Hyundai cars were sold ?

(d) Which was the most popular car ?

21. Complete the pattern

(a)



(b) 1000, 2000, 3000, _____

22. Solve the following using long division method.
(a) 93,001 ÷ 12 (b) 83,215 ÷ 21

23. Calculate the prime factors of the following
(a) 1,024 (b) 3,584 (c) 40,320

24. Find the HCF of the following by factorisation method.
(a) 30, 75 and 105 (b) 120, 240, 180

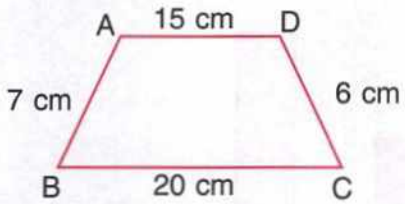
25. Solve
(a) $\frac{53}{60} - \frac{37}{60}$ (b) $\frac{16}{100} + \frac{39}{100} + \frac{29}{100}$

26. Draw the following line segments of given lengths in your notebook.
(a) 8 cm (b) 9·5 cm (c) 12 cm

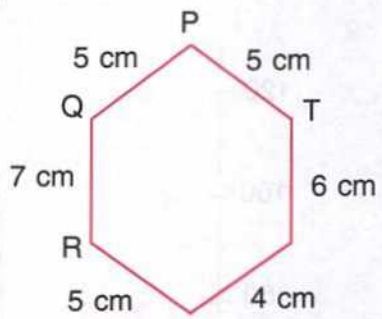
27. Draw a circle of radius 8 cm. Find its diameter.

28. Find the area and perimeter of a square of side 14 cm.

29. Find the perimeter of the following figures
(a)



(b)



30. Add : 327 m 90 cm and 18 m 75 cm.

31. Convert into metres
(a) 56 km 825 m (b) 37 km 450 m (c) 18 km 650 m
(d) 120 km 460 m (e) 200 km 150 m

32. Multiply :
(a) 30 km 400 m by 6 (b) 14 L 350 mL by 5

33. Convert the following to hours, minutes and seconds :
(a) 6,789 seconds (b) 7,890 seconds (c) 2,16,000 seconds

34. The table below gives information about the number of students who play games in a school.

Game	Number of students
Football	1,020
Basketball	750
Volleyball	190
Cricket	2,010
Hockey	900

Answer the following questions.

(a) How many students play games ?

(b) Name the most popular game.

(c) Name the least popular game.

(d) How many students play basketball ?

ANSWERS

EXERCISE-1

1. (a) 9, 4, 3, 3 (b) 7, 0, 4, 7 (c) 2, 1, 2, 5, 4 (d) 2, 7, 8, 0, 8
(e) 4, 8, 1, 9, 3 (f) 5, 1, 7, 3, 2

2. (a) 200 (b) 3,000 (c) 40 (d) 0 (e) 10,000
(f) 4,000 (g) 60,000 (h) 9 (i) 500 (j) 70,000

3. (a) 50,000 + 2,000 + 80 + 3
(b) 70,000 + 1,000 + 700 + 70 + 5
(c) 10,000 + 40
(d) 80,000 + 6,000 + 9
(e) 90,000 + 4,000 + 900 + 10 + 5

4. (a) 40,605 (b) 77,800 (c) 14,123 (d) 22,447 (e) 65,310

5. (a) 7,483 (b) 9,304 (c) 43,642 (d) 75,920 (e) 80,107

6. (b) Eight thousand forty three
(c) Twenty one thousand two hundred forty nine
(d) Thirty five thousand seven hundred twenty
(e) Fifty thousand seven hundred fifty
(f) Eighty one thousand forty eight
(g) Ninety thousand nine hundred ninety
(h) Ninety two thousand forty

7. (a) > (b) < (c) < (d) < (e) > (f) > (g) < (h) > (i) < (j) >

8. (a) 745, 5,074, 7,054, 7,145
(b) 5,218, 8,215, 25,218, 28,215
(c) 810, 68,548, 86,845, 86,848
(d) 775, 5,175, 55,775, 57,575
(e) 13,456, 37,894, 53,891, 93,216
(f) 41,321, 45,678, 53,432, 98,321

9. (a) 9,410, 9,140, 9,014, 910
(b) 81,828, 17,111, 11,171, 1,888
(c) 97,760, 96,700, 67,900, 9,900
(d) 86,656, 86,156, 81,756, 18,657
(e) 94,567, 84,132, 42,102, 34,567
(f) 94,351, 74,567, 45,412, 21,032

10. (a) 35,400 (b) 50,000 (c) 50,100 (d) 62,601 (e) 75,000 (f) 86,900
(g) 91,010 (h) 45,090

11. (a) 25,499 (b) 38,289 (c) 44,409 (d) 68,699
(e) 70,665 (f) 82,000 (g) 93,999 (h) 85,009

12. (a) 2,578 (b) 2,348
(c) 10,238 (d) 13,457 (e) 30,589 (f) 10,358 (g) 12,467 (h) 10,245

13. (a) 9,752 (b) 9,651 (c) 55,330 (d) 98,432 (e) 87,541 (f) 76,531
(g) 85,421 (h) 45,310

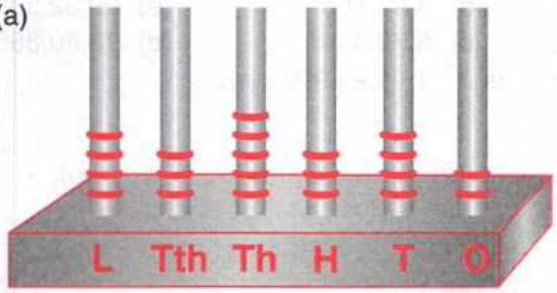
EXERCISE-2 (A)

1. (a) Two lakh four thousand one hundred fifty seven
(b) Three lakh seventy thousand twenty five
(c) Five lakh sixty three thousand seven
(d) Five lakh twenty six thousand forty seven
(e) Fifty four lakh nine hundred eighty three
(f) Ninety seven lakh thirty four thousand eighty
(g) Forty nine lakh fifteen thousand five hundred forty five
(h) Eighty six lakh seventy nine thousand four
(i) Nine lakh forty nine thousand two hundred sixty eight

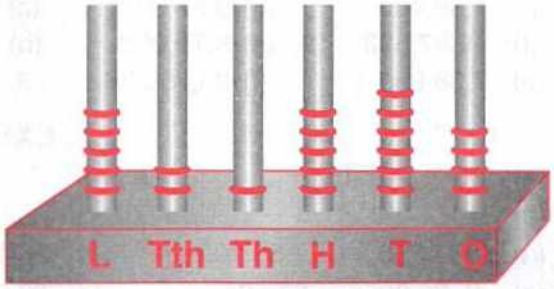
2. (a) 2,51,437 (b) 54,024 (c) 6,72,003 (d) 8,008 (e) 5,20,616
(f) 4,02,069 (g) 1,05,002 (h) 9,11,600 (i) 30,205 (j) 4,20,030

3. (a) 4,35,342 ; Four lakh thirty five thousand three hundred forty two
(b) 4,15,21,564 ; Four crore fifteen lakh twenty one thousand five hundred sixty four
(c) 35,26,852 ; Thirty five lakh twenty six thousand eight hundred fifty two
(d) 36,71,433 ; Thirty six lakh seventy one thousand four hundred thirty three

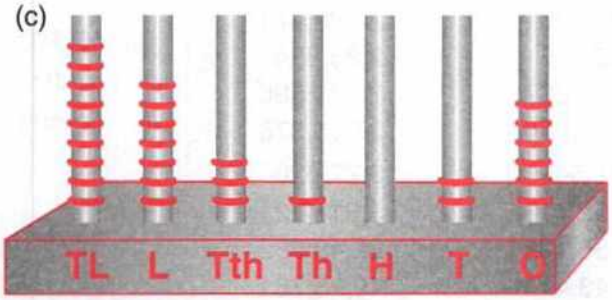
4. (a)



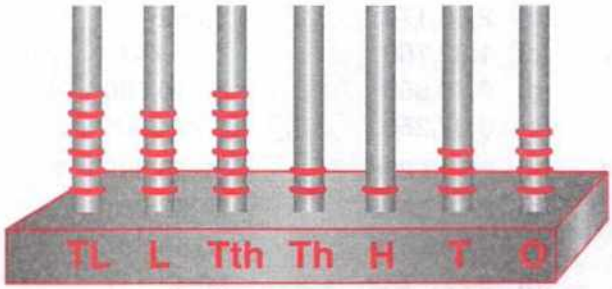
(b)



(c)



(d)



4.

(a)	5,38,537	5,38,538	5,38,539	5,38,540	5,38,541
(b)	7,69,499	7,69,500	7,69,501	7,69,502	7,69,503
(c)	19,34,629	19,34,630	19,34,631	19,34,632	19,34,633
(d)	58,28,798	58,28,799	58,28,800	58,28,801	58,28,802
(e)	72,00,810	72,00,811	72,00,812	72,00,813	72,00,814
(f)	47,05,619	47,05,620	47,05,621	47,05,622	47,05,623
(g)	75,84,006	75,84,007	75,84,008	75,84,009	75,84,010
(h)	47,76,609	47,76,610	47,76,611	47,76,612	47,76,613

EXERCISE-2 (B)

1. (a) 2 (b) 2 (c) 2 (d) 800 (e) 9,00,000 (f) 80 (g) 0

2. (a) 4,000 (b) 30,000 (c) 800 (h) 7 (i) 0 (j) 5,000

3.

(a)	5,00,000	60,000	3,000	0	80	1
(b)	2,00,000	70,000	5,000	400	0	9
(c)	60,000	0	300	10	5	

4. (a) 5,99,994 (b) 5,994 (c) 54

5. (a) 40,400 (b) 44,000 (c) 40,400

EXERCISE-2 (C)

1.

(a)	50,000	+	2,000	+	700	+	40	+	3	
(b)	2,00,000	+	70,000	+	2,000	+	600	+	30	+ 1
(c)	30,00,000	+	3,00,000	+	40,000	+	200	+	30	+ 9
(d)	1,00,000	+	40,000	+	3,000	+	600	+	80	+ 1
(e)	70,00,000	+	4,00,000	+	2,000	+	70	+	8	
(f)	5,00,000	+	200	+	1					

2. (a) 2,63,902 (b) 5,03,027 (c) 3,80,075 (d) 90,05,603 (e) 48,70,509
(f) 80,09,350 (g) 2005007 (h) 3,00,200 (i) 4,00,030 (j) 60,00,009

3. (a) 7,000, 60 (b) 8,000 (c) 500 (d) 50,000, 700 (e) 8,000
(f) 4,00,000, 800 (g) 60,00,000, 600 (h) 4,00,000, 2
(i) 50,00,000, 7,00,000, 4,000 (j) 40,00,000, 8

EXERCISE-2 (D)

1. (a) 4,89,400 (b) 9,87,000 (c) 63,47,310 (d) 3,93,100 (e) 29,32,501
(f) 49,87,533 **2.** (a) 8,79,999 (b) 52,35,699 (c) 3,72,099 (d) 73,50,366
(e) 7,38,999 (f) 93,75,286 **3.** 1,00,000 ; yes **4.** 9,99,999 ; yes

EXERCISE-2 (E)

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

2. (a) 7,93,250 7,56,100 (b) 20,14,612 90,147 (c) 13,51,721 83,617
(d) 45,76,825 57,591 (e) 62,83,100 27,148

3.

(a)	1,02,356	7,05,981	8,25,699	82,24,532
(b)	2,83,174	9,35,813	9,43,210	24,98,471
(c)	1,32,769	1,35,747	2,85,715	2,85,834
(d)	9,70,855	68,10,780	68,15,267	73,23,586
(e)	3,07,256	3,27,256	37,24,930	37,26,378

4.

(a)	65,43,298	32,58,495	6,27,541	3,27,320
(b)	24,92,415	24,52,781	24,52,738	3,51,472
(c)	44,49,615	40,49,497	32,36,175	22,49,582
(d)	94,28,752	90,43,157	49,43,418	40,28,781
(e)	6,11,25,413	60,58,413	60,54,831	1,28,123

EXERCISE-2 (F)

1. (a) 2,03,579 (b) 1,03,468 (c) 2,04,569
2. (a) 88,88,888 (b) 99,99,999 (c) 88,88,888
3. (a) 7,77,777 (b) 8,88,888 (c) 9,99,999
4. (a) 20,00,000 (b) 11,11,111 (c) 33,33,333

EXERCISE-3 (A)

1. XX, XXI, XXII, XXIII, XXIV, XXV, XXVI, XXVII, XXVIII, XXIX, XXX, XXXI, XXXII, XXXIII, XXXIV, XXXV

2. XL, XLI, XLII, XLIII, XLIV, XLV, XLVI, XLVII, XLVIII, XLIX, L

3. (b) 10 + 9 = 19 (c) 10 + 2 = 12 (d) 5 + 3 = 8 (e) 10 – 1 = 9
(f) 5 + 1 = 6 (g) 20 + 1 = 21 (h) 50 – 10 = 40 (i) 20 + 5 = 25
(j) 40 + 8 = 48 (k) 30 + 7 = 37 (l) 20 + 9 = 29 (m) 40 + 3 = 43
(n) 10 + 10 = 20 (o) 40 + 2 = 42

4. (a) VII (b) XI (c) VIII (d) XXXI (e) LXVI (f) IX (g) L
(h) XIX (i) XXII (j) XXIX (k) XL (l) V (m) XXXVIII (n) XXVI
(o) X (p) XXXVII (q) XIV (r) XLII (s) XV (t) XLVIII

5. (a) 36 (b) 20 (c) 14 (d) 8 (e) 29 (f) 4 (g) 40
(h) 21 (i) 19 (j) 49 (k) 5 (l) 25 (m) 50 (n) 24
(o) 37 (p) 43 (q) 45 (r) 7 (s) 10

6.

(a)	V	VI	VII	VIII	IX	X
(b)	XX	XXI	XXII	XXIII	XXIV	XXV
(c)	XLV	XLVI	XLVII	XLVIII	XLIX	L
(d)	XXX	XXXI	XXXII	XXXIII	XXXIV	XXXV
(e)	XV	XVI	XVII	XVIII	XIX	XX

7. (a) (x) (b) (i) (c) (viii) (d) (vii) (e) (ii) (f) (iv)
(g) (ix) (h) (v) (i) (vi) (j) (iii)

8. (a) = (b) = (c) > (d) < (e) < (f) >
(g) < (h) < (i) > (j) >

9. (a) 2:00 (b) 8:00 (c) 11:30 (d) 4:15 (e) 10:45 (f) 3:30

EXERCISE-4 (A)

1. (a) 43,000 (b) 61,071 (c) 75,509 (d) 37,015 (e) 81,298 (f) 17,325
2. (a) 415 (b) 37,406 (c) 49,000 (d) 34,642 (e) 84 (f) 41,442
3. (a) 27,717 (b) 45,463 (c) 44,881 (d) 1,72,234 (e) 72,384 (f) 1,91,082

EXERCISE-4 (B)

1. (a) 5,64,800 (b) 8,87,111 (c) 5,10,939 (d) 7,18,163 (e) 3,44,521 (f) 8,64,122
(g) 7,51,226 (h) 3,51,919 (i) 6,92,178 2. (a) 64,13,899 (b) 73,32,580 (c) 69,48,289
(d) 60,08,863 (e) 87,66,738 (f) 59,02,260 3. (a) 1,62,203 (b) 4,33,113

EXERCISE-4 (C)

1. 52,172 2. 7,21,041 3. 5,89,752 4. 19,02,553 5. 4,79,032 6. 1,60,286
7. 9,96,456 8. 10,99,999 9. 18,05,979

EXERCISE-5 (A)

1. (a) 2,589 (b) 2,393 (c) 8,266 (d) 5,823 (e) 11,079 (f) 3,658
(g) 3,514 (h) 8,135 (i) 12,089 (j) 22,759 (k) 13,805 (l) 40,228
2. (a) 5,057 (b) 10,603 (c) 3,589 (d) 6,504 (e) 14,648
3. (a) 6,842 (b) 5,340 (c) 10,889

EXERCISE-5 (B)

1. (a) 1,67,053 (b) 2,08,851 (c) 1,86,889 (d) 1,90,389 (e) 1,83,668 (f) 46,686
(g) 75,429 (h) 1,97,732 (i) 1,81,684
2. (a) 20,27,393 (b) 4,80,990 (c) 7,28,263 ; 20,110 (d) 2,00,000 ; 71,785
(e) 57,558 (f) 1,93,884 (g) 40,48,447 3. (a) 6,08,367 (b) 6,13,679
(c) 2,17,023 (d) 1,70,844 4. (a) 1,22,458 (b) 2,02,515 (c) 1,02,189 (d) 2,12,034

EXERCISE-5 (C)

1. 19,122 2. 11,365 3. 5,06,993 4. 1,14,441 5. 4,02,412 6. 1,99,481
7. 3,16,167 8. Oven; 15,485 9. 47,000 10. 39,445

EXERCISE-6 (A)

1. (a) 2,880 (b) 4,176 (c) 1,764 (d) 2,214 (e) 8,366 (f) 58,328
(g) 43,732 (h) 14,789 (i) 51,832 (j) 68,154 (k) 21,168 (l) 20,706

EXERCISE-6 (B)

1. (a) 4,080 (b) 1,280 (c) 890 (d) 9,300 (e) 18,980 (f) 24,930
(g) 5,60,950 (h) 7,82,200 2. (a) 4,700 (b) 70,800 (c) 56,800 (d) 7,54,000
(e) 8,92,200 (f) 63,09,100 (g) 98,20,100 (h) 99,99,900 3. (a) 64,000 (b) 23,10,000
(c) 4,64,000 (d) 6,25,000 (e) 40,01,000 (f) 9,87,000 (g) 83,49,000 (h) 54,66,000
4. (a) 2,800 (b) 2,430 (c) 1,72,000 (d) 84,010 (e) 4,03,000 (f) 8,93,000
(g) 55,000 (h) 40,05,000

EXERCISE-6 (C)

(a) 66,272 (b) 1,54,812 (c) 3,09,974 (d) 5,71,788 (e) 6,40,010 (f) 8,08,416
(g) 14,64,935 (h) 18,75,551 (i) 38,27,946 (j) 29,58,615

EXERCISE-6 (D)

1. (a) 1,29,952 (b) 8,42,160 (c) 28,69,050 (d) 4,00,950 (e) 83,20,888
2. (a) 2,48,589 (b) 2,96,625 (c) 3,93,272 (d) 2,33,334 (e) 2,20,604 (f) 63,10,146
   (g) 6,04,428 (h) 63,89,322 (i) 24,50,439 (j) 37,79,908 (k) 68,85,966 (l) 67,07,157
   (m) 90,95,074 (n) 84,14,549 (o) 89,83,952

Word Problems

1. ₹ 87,500
2. 2,54,520 apples
3. ₹ 4,13,000
4. 34,308 toffees
5. 6,21,319 people
6. 57,204 people
7. 16,41,420 trees and flower plants
8. ₹ 81,05,750
9. ₹ 29,500
10. 2,13,500 boxes

EXERCISE-7 (A)

(a) 816 ; 0 (b) 809 ; 0 (c) 688 ; 0 (d) 1296 ; 0 (e) 745 ; 3 (f) 492 ; 4
(g) 873 ; 0 (h) 1124 ; 0 (i) 1014 ; 3 (j) 1333 ; 2 (k) 321 ; 4 (l) 242 ; 6
(m) 89 ; 17 (n) 64 ; 0 (o) 116 ; 71 (p) 214 ; 10 (q) 484 ; 12 (r) 421 ; 5
(s) 73 ; 34 (t) 156 ; 48

EXERCISE-7 (B)

(a) 512 ; 0 (b) 4 ; 650 (c) 95; 70 (d) 19; 0 (e) 545; 5 (f) 4679; 921
(g) 64 ; 43 (h) 8 ; 470 (i) 3 ; 300 (j) 448 ; 8 (k) 568 ; 10 (l) 3236 ; 55
(m) 765 ; 87 (n) 966 ; 60 (o) 6436 ; 379 (p) 4875 ; 6 (q) 4008 ; 493 (r) 65760 ; 5
(s) 4644 ; 78 (t) 787 ; 878 (u) 1870 ; 7 (v) 890 ; 0

EXERCISE-7 (C)

(a) 25307 ; 2 (b) 12912 ; 0 (c) 10244 ; 0 (d) 13905 ; 0 (e) 4730 ; 0 (f) 6311 ; 10
(g) 2315 ; 12 (h) 307 ; 6 (i) 123 ; 2 (j) 769 ; 56 (k) 748 ; 125 (l) 72 ; 121
(m) 424 ; 49 (n) 222 ; 151 (o) 179 ; 246 (p) 236 ; 153

EXERCISE-7 (D)

1. 323 books
2. 828 ; 9
3. ₹ 8458
4. 909 pins
5. 275 notes
6. ₹ 1640
7. 27 watches
8. 82 almirahs
9. 321 scooters
10. 347 rows

EXERCISE-8

1. ₹ 200
2. ₹ 56
3. ₹ 1491
4. ₹ 156
5. ₹ 154
6. 476 km
7. 192 km
8. ₹ 10350
9. ₹ 5440
10. 68600 locks

EXERCISE-9 (A)

1. (a) 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 (b) 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60
2. (a) 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 (b) 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65
3. (68) 75 ✓ 83 ✓ (94) (100)
   217 ✓ (440) 777 ✓ 941 ✓ (980)
   (2140) (3666) 7845 ✓ 9949 ✓ (8000)
   24215 ✓ (36882) (47440) 82819 ✓ (92944)
   226041 ✓ 880819 ✓ (944482) (660000) 316615 ✓

EXERCISE-9 (B)

1. (a), (d), (e), (g), (h), (j), (l)
2. (a) 1 (b) 1 (c) 1 (d) 1 (e) 1
3. (a) 1 (b) 1 (c) 1 (d) 1 (e) 1
4. (a) Yes (b) Yes (c) Yes (d) Yes (e) Yes

5. (a), (b), (c), (h), (i), (j), (l) 6. 804, 808, 812, 816, 820, 824, 828, 832, 836, 840
7. 7424, 7428, 7432, 7436, 7440, 7444, 7448, 7452, 7456, 7460
8. (a), (b), (c), (f), (h), (i), (j), (l) 9. 0, 1 and 2; 0, 1, 2, 3 and 4 10. (c), (e), (f)
11. (a) 1 ; 8 (b) 2 ; 7 (c) 3 ; 6 (d) 4 ; 5 (e) 1 ; 8
(f) 5 ; 4 (g) 5 ; 4 (h) 5 ; 4 12. (a), (b), (c), (e), (f), (h)
13. (a) 3 ; 2 (b) 2 ; 3 (c) 4 ; 1 (d) 1 ; 4 14. (a) 3 ; 3 (b) 2 ; 4
(c) 2 ; 4 (d) 5 ; 1 (e) 2 ; 4 (f) 4 ; 2 (g) 4 ; 2 (h) 5 ; 1

EXERCISE-10 (A)

1. (a) 5, 6 (b) 7, 4 (c) 1, 3, 5, 15 (d) 1, 7, 49 (e) 1
2. (a) ✓ (b) ✓ (c) ✓ (d) ✓ (e) ✓ (g) ✓
(h) ✓ (j) ✓
3. (a) 1, 2, 7, 14 (b) 1, 3, 5, 15 (c) 1, 2, 3, 6, 9, 18
(d) 1, 3, 9, 27 (e) 1, 2, 3, 6, 7, 14, 21, 42 (f) 1, 2, 5, 10, 25, 50
(g) 1, 2, 4, 8, 16, 32, 64 (h) 1, 13 (i) 1, 19
(j) 1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96
(k) 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120
(l) 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72
4. 1, 2, 4, 7, 8, 14, 28, 56. No, because 56 is not divisible by 5

EXERCISE-10 (B)

1. (a) Composite (b) Prime (c) Prime (d) Composite (e) Prime
(f) Composite (g) Prime (h) Composite (i) Composite (j) Prime
2. Prime numbers : 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71
3. 29 4. 9 ; 4 5. 67 6. 6 7. 63 8. 2 9. 15 10. 37

EXERCISE-10 (C)

1. (a) Even (b) Odd (c) 0 (d) One ; itself (e) Infinite
(f) 6 (g) 7 (h) 3 (i) 24 (j) 60
2. (a) 9, 12, 15, 18, 21, 24 (b) 12, 16, 20, 24, 28, 32 3. (a) 10, 20, 30
(b) 12, 24, 36 (c) 21, 42, 63 (d) 20, 40, 60 (e) 24, 48, 72 (f) 35, 70, 105
4. (4) (8) 10 (12) (16) ~~20~~ (24) (28) ~~30~~ (32)
(36) ~~40~~ (44) (48) (52) (56) ~~60~~ (64) (68) (72)
(76) ~~80~~ (84) (88) (92) (96) ~~100~~
Common multiples are : 20 40 60 80 100 .....
5. 6 — 6, 18, 30, 36, 48, 54, 60, 72 3 — 18, 21, 24, 30, 36, 42
11 — 22, 33, 44, 55, 66 15 — 30, 45, 60, 75

EXERCISE-10 (D)

1. (a) 8 (b) 12 (c) 12 (d) 5 (e) 15
(f) 2 (g) 18 (h) 14 (i) 1 (j) 14
2. (a) 4 (b) 2 (c) 4 (d) 7 (e) 36
(f) 2 (g) 14 (h) 16 (i) 5 (j) 2
3. (a) 20 (b) 45 (c) 21 (d) 29 (e) 14
(f) 12 (g) 25 (h) 27 (i) 23 (j) 24

EXERCISE-10 (E)

1. (a) 6 (b) 12 (c) 15 (d) 9 (e) 20
(f) 12 (g) 36 (h) 12 (i) 16 (j) 36

2. (a) 48 (b) 48 (c) 100 (d) 200 (e) 448
(f) 288 (g) 252 (h) 252 (i) 45 (j) 60

3. (a) 36 (b) 50 (c) 135 (d) 294 (e) 64
(f) 54 (g) 252 (h) 960 (i) 224 (j) 81

EXERCISE-11 (A)

1. (a) $\frac{1}{3}$ (b) $\frac{1}{4}$ (c) $\frac{1}{8}$ (d) $\frac{1}{3}$ (e) $\frac{1}{8}$ (f) $\frac{1}{6}$

3. (b) $\frac{2}{3}$ (c) $\frac{7}{9}$ (d) $\frac{11}{12}$ (e) $\frac{4}{5}$ (f) $\frac{5}{9}$ (g) $\frac{6}{11}$
(h) $\frac{8}{13}$ (i) $\frac{3}{4}$ (j) $\frac{9}{17}$

4. (b) $\frac{9}{11}$ (c) $\frac{3}{14}$ (d) $\frac{9}{14}$ (e) $\frac{3}{7}$ (f) $\frac{11}{12}$

5. (a) Two-sevenths (b) Three-eighths (c) Seven-ninths
(d) Eleven-thirteenths (e) Four-fifteenths (f) One-half

EXERCISE-11 (B)

1. (a) $\frac{1}{2}, \frac{1}{4}$ (b) $\frac{1}{5}$ (c) $\frac{1}{2}$ (d) $\frac{1}{7}$ (e) $\frac{1}{9}$

2. (a) $\frac{2}{3}$ (b) $\frac{2}{5}$ (c) $\frac{3}{4}$ (d) $\frac{2}{3}$ (e) $\frac{6}{12}$

3. (a) $\frac{7}{13}, \frac{5}{13}, \frac{9}{13}, \frac{8}{13}$ (b) $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}$ (c) $\frac{2}{5}, \frac{3}{5}, \frac{1}{5}, \frac{4}{5}$
(d) $\frac{1}{6}, \frac{3}{6}, \frac{4}{6}$ (e) $\frac{1}{7}, \frac{2}{7}, \frac{3}{7}$

4. (a) $\frac{4}{6}, \frac{6}{9}$ (b) $\frac{10}{14}, \frac{15}{21}$ (c) $\frac{12}{22}, \frac{18}{33}$ (d) $\frac{10}{18}, \frac{15}{27}$ (e) $\frac{6}{20}, \frac{9}{30}$

5. (a) 40 (b) 20 (c) 7 (d) 5 (e) 5

6. (a) Yes (b) Yes (c) No (d) No (e) Yes
(f) No (g) No (h) No (i) Yes

EXERCISE-11 (C)

1. (a) 6 (b) 2 (c) 5, 8 (d) 2 (e) 13
(f) 2, 10 (g) 3, 29 (h) 3, 17 (i) 3 (j) 15, 25

2. (a) 1 (b) $\frac{4}{7}$ (c) 1 (d) $\frac{10}{11}$ (e) $\frac{8}{13}$
(f) $\frac{11}{12}$ (g) $\frac{15}{19}$ (h) $\frac{20}{23}$ (i) $\frac{14}{19}$ (j) $\frac{12}{15} = \frac{4}{5}$

EXERCISE-11 (D)

1. (a) 1 (b) 2 (c) 8, 25 (d) 3, 14 (e) 34
(f) 4, 18 (g) 10 (h) 1, 13 (i) 6, 42 (j) 30, 92

2. (a) $\frac{1}{7}$ (b) $\frac{5}{11}$ (c) $\frac{6}{17}$ (d) $\frac{5}{31}$ (e) $\frac{2}{15}$
(f) $\frac{5}{25} = \frac{1}{5}$ (g) $\frac{6}{23}$ (h) $\frac{3}{19}$ (i) $\frac{1}{26}$ (j) $\frac{2}{43}$

EXERCISE-12 (A)

1. (a) 10500 (b) 415 (c) 21200 (d) 1885 (e) 4857
   (f) 9409 (g) 71410 (h) 84029
2. (a) 3m 84cm (b) 127m 15cm (c) 243m 67cm (d) 5m 52cm (e) 7, 96cm
   (f) 626m 15cm (g) 62m 50cm (h) 929m 45cm
3. (a) 35000 (b) 2375 (c) 9450 (d) 78044 (e) 14157
   (f) 91125 (g) 21264 (h) 49075
4. (a) 1 km 925m (b) 14km 725m (c) 3km 125m (d) 25km 528m (e) 33km 409m
   (f) 42km 480m (g) 6km 8m (h) 91km 25m

EXERCISE-12 (B)

A. (1) 25m 55cm (2) 59m 10cm (3) 98m 2cm (4) 89m 20cm (5) 113km 358m
   (6) 68km 807m (7) 87km 320m (8) 127km 550m

B. (1) 14km 250m (2) 10m 30cm

EXERCISE-12 (C)

A. (1) 4m 14cm (2) 5m 19cm (3) 118m 38cm (4) 52m 84cm (5) 3km 134m
   (6) 5km 118m (7) 8km 12m (8) 51km 886m

B. (1) 18 cm (2) 2m 35cm (3) Vinod's house ; 6km 375m

EXERCISE-12 (D)

(1) 2000 (2) 14438 (3) 4000 (4) 24175 (5) 10000
(6) 42264 (7) 71020 (8) 64108 (9) 58078 (10) 80009

EXERCISE-12 (E)

(1) 3kg (2) 48kg (3) 1kg 250g (4) 2kg 765g (5) 3kg 105g
(6) 27kg 650g (7) 44kg 600g (8) 38kg 842g (9) 66kg 85g (10) 35kg 5g

EXERCISE-12 (F)

A. (1) 15kg 448g (2) 29kg 539g (3) 42kg 959g (4) 65kg 229g (5) 647kg 677g
   (6) 903kg 508g (7) 6250kg 165g (8) 93895kg 645g B. (1) 79kg 255g (2) 14kg 50g

EXERCISE-12 (G)

A. (1) 33kg 805g (2) 42kg 776g (3) 25kg 687g (4) 106kg 817g (5) 1904kg 170g
   (6) 2176kg 584g (7) 1355kg 555g (8) 13057kg 838g

B. (1) 84kg 888g (2) 12kg 173g (3) 1kg 205g (4) 11kg 150g

EXERCISE-12 (H)

A. (1) 3000 (2) 4125 (3) 6000 (4) 5225 (5) 7000
   (6) 16440 (7) 12000 (8) 24575 (9) 15000 (10) 32340

B. (1) 3L (2) 6L 666mL (3) 9L (4) 6L 808mL (5) 8L
   (6) 7L 45mL (7) 1L 375 mL (8) 8L 75mL (9) 8L 400mL (10) 9L 90mL

EXERCISE-12 (I)

A. (1) 108L 86mL (2) 152L 839mL (3) 437L 115mL (4) 884L 414mL (5) 770L 645mL
   (6) 907L 166mL (7) 237L 753mL (8) 802L 995mL B. (1) 104L 150mL (2) 227L 175mL

EXERCISE-12 (J)

A. (1) 4L 748mL (2) 45L 384mL (3) 49L 756mL (4) 106L 498mL (5) 146L 766mL
(6) 138L 717mK (7) 515L 734mL (8) 683L 386mL

B. (1) 29L 455mL (2) 27L 585mL (3) 10L 815mL (4) 13L 275mL

EXERCISE-14 (A)

1. (a) 22 cm (b) 24 cm (c) 9 cm (d) 6 cm (e) 14 cm
(f) 18 cm (g) 18 cm (h) 16 cm (i) 20 cm (j) 31 cm

2. (a) 32 cm (b) 40 m (c) 36 m 60 cm (d) 48 m 56 cm

3. (a) 20 cm (b) 12 m 8 cm (c) 6 cm (d) 34 m 56 cm

4. (a) 21 cm (b) 27 m (c) 24 m 15 cm (d) 33 m 30 cm

5. (a) 21 cm (b) 21 cm (c) 15 cm (d) 32 m 7 cm

6. 220 m **7.** 18 m **8.** 540 m **9.** 1000 m **10.** 1200 m

EXERCISE-14 (B)

1. (a) 17 cm^2 (b) 25 cm^2 (c) 12 cm^2 (d) 6 cm^2

2. (a) 4 cm^2 (b) 9 m^2 (c) 16 cm^2 (d) 6 m^2

EXERCISE-14 (C)

(a) 6 cm^2 (b) 8 cm^2 (c) 16 cm^2 (d) 11 cm^2 (e) 8 cm^2 (f) 12 cm^2

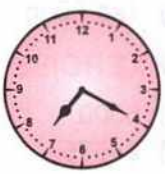
EXERCISE-15 (A)

(a) 24 (b) hour, minute (c) 24 (d) 2

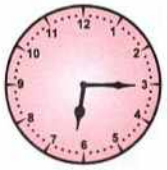
EXERCISE-15 (B)

1. (b) 2 : 25
25 minutes past 2
(c) 5:10
10 minutes past 5
(d) 7 : 20
20 minutes past 7
(e) 3 : 35
35 minutes past 3
(f) 6 : 55
55 minutes past 6
(g) 9 : 25
25 minutes past 9
(h) 10 : 10
10 minutes past 10
(i) 4 : 40
40 minutes past 4
(j) 3 : 30
30 minutes past 3

2. (a) Half past 2
(b) Quarter past 5
(c) Quarter to 5
(d) Quarter to 7
(e) Quarter past 8
(f) Half past 8
(g) Quarter past 1
(h) Quarter to 3
(i) Half past 10
(j) Half past 7

2. (b)  (c)  (d)  (e)  (f) 

(g)  (h)  (i)  (j)  (k) 

(l)  (m)  (n)  (o)  (p) 

(q)  (r)  (s)  (t) 

EXERCISE-15 (C)

1. (a) 192 (b) 130 (c) 260 (d) 146

2. (a) 180 (b) 126 (c) 520 (d) 930

3. (a) 360 (b) 124 (c) 2430 (d) 3750

4. (a) 7 minutes 30 seconds (b) 9 minutes
(c) 15 minutes (d) 16 minutes 46 seconds

5. (a) 2 hour 15 minutes (b) 1 hour 20 minutes
(c) 12 hours 30 minutes (d) 16 hours 40 minutes

6. (a) 3 days (b) 4 days 4 hours
(c) 6 days 1 hour (d) 10 days

7. (a) 1 hour 4 minutes (b) 1 hour 19 minutes
(c) 2 hours (d) 2 hours 20 minutes 4 seconds
(e) 1 hour 32 minutes 35 seconds (f) 2 hours 37 minutes 15 seconds

8. (a) (3) (b) (4) (c) (5) (d) (1) (e) (2)

EXERCISE-15 (D)

1. 1 hour 20 minutes or 80 minutes **2.** 1 minute 22 seconds or 82 seconds

3. 36 minutes 55 seconds **4.** 39 minutes 25 seconds

5. (a) 37 hours 36 minutes 30 seconds (b) 22 hours 46 minutes 53 seconds
(c) 29 hours 36 minutes 10 seconds (d) 42 hours 13 minutes 23 seconds

6. (a) 1 hour 11 minutes 10 seconds (b) 12 hour 33 minutes 32 seconds
(c) 9 hours 50 minutes 45 seconds (d) 2 hours 37 minutes 39 seconds

7. 1 hour 32 minutes **8.** 4 hours 15 minutes **9.** 6 hours 50 minutes

10. 2 hours 30 minutes **11.** Both watch TV for the same time

EXERCISE-15 (E)

A. (1) 7 (2) 365 (3) Leap (4) 31 (5) 30
(6) 28; 29 (7) 12 (8) Monday (9) February, April

B. 1, 2, 3 **C.** 29 days **D.** (a) 37 days (b) 36 days
(c) 27 days (d) 32 days (e) 105 days **E.** 19th February

F. (1) Wednesday (2) 31st August (3) 5 (4) 9 (5) 52
(6) Tuesday (7) Sunday (8) 123 days

EXERCISE-16 (A)

(b) ₹ 2 note (c) ₹ 100 note (d) ₹ 200 note (e) ₹ 50 note (f) ₹ 2000 note
(g) 50 p coin (h) ₹ 1 note (i) ₹ 500 note (j) ₹ 10 coin

EXERCISE-16 (B)

A. (2) Four hundred nineteen rupees and twenty five paise
(3) One hundred ninety eight rupees and seventy five paise
(4) Four hundred ninety rupees
(5) Nine hundred twenty two rupees and twenty paise
(6) Twenty three rupees and eighty five paise
(7) Five hundred sixty two rupees and seventy five paise
(8) Two thousand one hundred fifty two rupees and twenty five paise
(9) Four hundred twenty rupees
(10) Six hundred seventy five rupees and fifty paise.

B. (1) ₹ 6.80 (2) ₹ 57.10 (3) ₹ 25.65 (4) ₹ 91 (5) ₹200.75
(6) ₹ 78.15 (7) ₹ 555.50 (8) ₹ 2000 (9) ₹ 900.90 (10) ₹ 724.39

EXERCISE-16 (C)

1. (a) 4200 p (b) 52500 p (c) 96300 p (d) 79500 p (e) 37500 p
(f) 67500 p (g) 222200 p (h) 41000 p (i) 84600 p

2. (a) ₹ 7.25 (b) ₹ 20 (c) ₹ 256.13 (d) ₹ 84.79 (e) ₹ 18.18
(f) ₹ 1.44 (g) ₹ 5.62 (h) ₹ 311.21 (i) ₹ 713.40

3. (a) ₹ 710 (b) ₹ 2050 (c) ₹ 216 (d) ₹ 182

4. (a) ₹ 38 (b) ₹ 50 (c) ₹ 430 (d) ₹ 1025 (e) ₹ 1000

EXERCISE-16 (D)

1. (a) ₹ 62.30 (b) ₹ 131.85 (c) ₹ 51.37 (d) ₹ 155.97 (e) ₹ 201.25
(f) ₹ 123.75 (g) ₹ 156.05 (h) ₹ 260.40 (i) ₹ 569.75 (j) ₹ 870.50
(k) ₹ 388.50 (l) ₹ 751.50 (m) ₹ 816.40 (n) ₹ 934.15 (o) ₹ 1262.90
(p) ₹ 1083.25 (q) ₹ 12704.80 (r) ₹ 11044.35 (s) ₹ 14485.55 (t) ₹ 20308.65

2. (a) ₹ 15030 (b) ₹ 10233.25 (c) ₹ 9512.70 (d) ₹ 7882.05 (e) ₹ 2364.15

EXERCISE-16 (E)

1. (a) ₹ 4.20 (b) ₹ 1.40 (c) ₹ 12.05 (d) ₹ 51.10 (e) ₹ 196.70 (f) ₹ 506.10
(g) ₹ 1882.30 (h) ₹ 425.45 (i) ₹ 473.50 (j) ₹ 393.10 (k) ₹ 333.25 (l) ₹ 151.50
(m) ₹ 55.10 (n) ₹ 187.10 (o) ₹ 643.15 (p) ₹ 1152.25

2. (a) ₹ 313.75 (b) ₹ 61.45 (c) ₹ 226.60 (d) ₹ 1330.95 (e) ₹ 6452.50

Word Problems

1. ₹ 85 **2.** ₹ 1124.50 **3.** ₹ 116.25 **4.** ₹ 5460.25 **5.** ₹ 71.75
6. ₹ 400.50 **7.** ₹ 321.45 **8.** ₹ 49.50 **9.** ₹ 321.75 **10.** ₹ 1549.25

EXERCISE-17 (A)

1. (a) Burger (b) Pasta (c) 25 (d) 6 (e) 13
(f) 6 (g) 11

2. (a) 320 glasses (b) Chocolate shake (c) 260 glasses (d) Straberry shake
(e) 100 glasses (f) 60 glasses (g) 240 glasses (h) 80 glasses

3. (a) 8250 (b) 2750 (c) 1500 (d) Guitar (e) Flute
(f) 2000 (g) 3500 (h) 3500

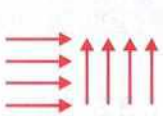
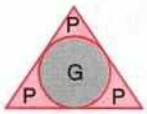
4. (a) 800 (b) 50 (c) Cricket (d) Chess (e) 150
(f) 200 (g) 350 (h) 300

EXERCISE-17 (B)

1. (a) 2015 (b) 300 (c) 500 **2.** (a) Kapoor's; 15L (b) 30 L (c) 25 L

3. (a) Wednesday (b) 30 (c) 90 (d) 15 **4.** (a) Science (b) 3 hours (c) 4 hours

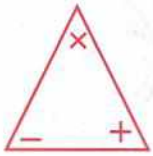
EXERCISE-18 (Revision)

1. (a)  (b) 

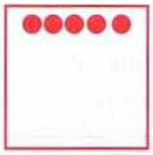
(c)  (d)  (e) 

(f) ABCDEF (g) FU (h) MO **2.** (a) 60 (b) 10

EXERCISE-18 (A)

1. (a)  (b)  (c)  (d) 

EXERCISE-18 (B)

(a)  (b) 

EXERCISE-18 (C)

(a) 21, 25 (b) 17, 20 (c) 40, 35 (d) 32, 26

(e) 4, 2 (f) 34, 66 (g) 47, 95 (h) 31, 63

EXERCISE-18 (D)

(a)

3				
4	7			
5	9	16	36	80
6	11	20	44	
7	13	24		

(b) 42 (c) 4 (d) 10

(e) 13 (f) 72 (g) 12

(h) 20

EXERCISE-18 (E)

1. (a)
$$8 + 9 + 10 + 11 + 12 = 50$$
$$18 + 19 + 20 + 21 + 22 = 100$$
$$98 + 99 + 100 + 101 + 102 = 500$$

(b)
$$6 + 7 + 8 + 9 = 30$$
$$9 + 10 + 11 + 12 = 42$$
$$10 + 11 + 12 + 13 = 46$$
$$11 + 12 + 13 + 14 = 50$$

EXERCISE-18 (F)

(a)
$$9 + 10 + 11 = 30$$
$$19 + 20 + 21 = 60$$
$$99 + 100 + 101 = 300$$

(b)
$$55555 \times 5 = 277775$$
$$555555 \times 5 = 2777775$$

(c) 59994
599994
666666

Self Assessment

A. (1) (c) (2) (a) (3) (c) (4) (a) (5) (d) (6) (c) (7) (c)
(8) (d) (9) (b) (10) (b) (11) (b) (12) (b) (13) (d) (14) (c)
(15) (d) (16) (d) (17) (b) (18) (c) (19) (a) (20) (b) (21) (b)

B. (1) 10,000 (2) 8,35,000 (3) XLI (4) 500 (5) 43,832 (6) 0 (7) 5,126
(8) 17,075 (9) 3,211 (10) 6 (11) Equivalent fractions (12) 1,000 (13) 35m 67cm
(14) 31 (15) 1,440 (16) 366 (17) 2,020 (18) a composite number
(19) Equal (20) Co-prime to each other (21) Unlike fractions
(22) The last two digits of the number is divisible by 4

C. 1. (a) (b) (c) (d)

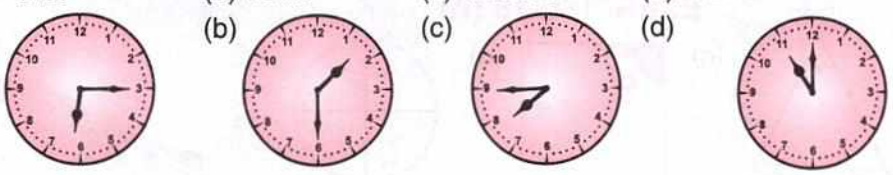
2. (a) 32,40,532 < 32,41,532 (b) 53,21,453 > 53,01,232

3. 3,25,678; 6,78,910; 43,21,345; 45,00,423; 73,21,452 **4.** 8,32,176; 7,32,457; 4,56,721; 3,24,567; 2,34,567

5. (a) 9 (b) 26 (c) 39 (d) 50

6. (a) XIX (b) XXIX (c) XXXVII (d) XLVII

7. (a) (b) (c) (d)



8. 1272600 **9.** (a) 33659 (b) 26208 **10.** (a) 179250

11. (a) Quotient 3840, remainder 7 (b) Quotient 1417, remainder 2
(c) Quotient 812, remainder 93 (d) Quotient 6140, remainder 11

12.

Rose flowers	Numbers of flowers
White	
Red	
Yellow	
Maroon	

13. (a) 60, start from 20, add 10 (b) 430, start from 130, add 100
(c) 35, start from 75, subtract 10 (d) 30, start from 5, add 5

14. 2, 10, 18, 26, 34 **15.** (a) 6,384 (b) 2,250 **16.** (a) $\frac{11}{9}$ (b) $\frac{19}{12}$ (c) $\frac{7}{7} = 1$

18. (a) 20 units (b) 17 units **19.** (a) 20 cm (b) 17 cm **20.** (a) 50 (b) 100
(c) 100 (d) Maruti **21.** (a) (b) 4000 **22.** (a) 7750·08 (b) 3962·62

23. (a) 2 (b) 2 and 7
(c) 2, 3, 5 and 7 **24.** (a) 15 (b) 60

25. (a) $\frac{16}{60}$ (b) $\frac{84}{100}$ **27.** 16 cm

28. Area = 196 cm², Perimeter = 56 cm **29.** (a) 48 cm (b) 32 cm

30. 346 m 65 cm **31.** (a) 56,825 m (b) 37,450 m (c) 18,650 m (d) 1,20,460 m
(e) 2,00,150 m **32.** (a) 182 km 400 m (b) 71 L 750 mL

33. (a) 1 hour 53 minutes 9 seconds (b) 2 hours 11 minutes 30 seconds (c) 60 hours

34. (a) 4,870 (b) Cricket (c) Volleyball (d) 750