

5 and 6-Digit Numbers

Learning Objectives :

- ❖ What is 5-Digit Numbers ?
- ❖ Reading and Writing 5-Digit Numbers
- ❖ Place Value
- ❖ Successor and Predecessor of a Number
- ❖ 6-Digit Numbers
- ❖ Expanded Form of a Number
- ❖ Comparison of Numbers
- ❖ Ordering of Numbers
- ❖ International Place Value System

What is 5-Digit Numbers ?

Number that has five digits is called 5-digit number.

Counting is done by numbers. To represent numbers by symbols of digits is called **numeration**. Thus, the digits form numerals, each numeral is **unique** for a number. Generally people use the words 'numbers' and 'numerals' in the same sense.

We know that :

$$1 \text{ more than } 9 = 9 + 1 = 10 \quad (\text{Smallest 2-digit number})$$

$$1 \text{ more than } 99 = 99 + 1 = 100 \quad (\text{Smallest 3-digit number})$$

$$1 \text{ more than } 999 = 999 + 1 = 1000 \quad (\text{Smallest 4-digit number})$$

$$\text{Similarly, } 1 \text{ more than } 9999 = 9999 + 1 = 10000 \quad (\text{Smallest 5-digit number})$$

10000 is called ten thousands.



Mental Maths

Circle the 5-digit numbers :

1546 45454 5210 3945 47001 10000 99999 54687

Reading and Writing 5-Digit Numbers

We need to write a 5-digit number in the place value chart before reading it.

The place value chart for numbers with 5-digits and more is divided into periods. Periods help in reading and writing large numbers.

Periods	Thousands		Ones		
Places	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)

The **Ones** period has three places, they are, **Hundreds**, **Tens** and **Ones**.

The **Thousands** period has two places, they are, **Ten Thousands** and **Thousands**.

Example 1 : Write 21934 in the place value chart and read it aloud.

Solution : Digits in the same period are read together.

Thousands		Ones		
Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
2	1	9	3	4

The number 21934 is read as **twenty one thousand nine hundred thirty four**.

Marking Periods in 5-Digit Numbers

Start at the ones place. Group the digits in threes and twos using a comma.

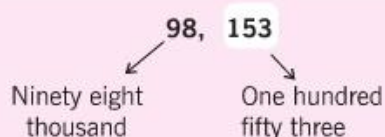
Example 2 : Mark periods in 98153 and rewrite it. Read it aloud.

To mark periods you can use a comma or leave a short space. For example, 98 153.

Solution :

Thousands		Ones		
Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
9	8	1	5	3

With commas :



In Words : Ninety eight thousand one hundred fifty three

⇒ Place Value

The value of a digit depends on its place or position, in the number. Each left place has a value of 10 times the place to its right.

Example 3 : Mark periods in 76125 and rewrite it. Also, write the place value of each digit.

Solution :

Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
7	6	1	2	5

76,125 or seventy six thousand one hundred twenty five

TTh	Th	H	T	O
7	6	1	2	5

→	5 ones	or	5
→	2 tens	or	20
→	1 hundred	or	100
→	6 thousands	or	6000
→	7 ten thousands	or	70000
			<u>76125</u>

The sum of place values of all digits of a number is the number itself.



Mental Maths

Encircle the numbers in which the periods are marked correctly :

1,2345 41,380 456,39 99,999 100,00 67,890

Successor and Predecessor of a Number

To write the **successor** of any number, we add 1 to it.

For example, $11,485 + 1 = 11,486$ and $39,999 + 1 = 40,000$

So, successor number of 11,485 is 11,486 and successor of 39,999 is 40,000.

To write the **predecessor** of any number, we subtract 1 from it.

For example, $13,485 - 1 = 13,484$ and $49,000 - 1 = 48,999$

So, predecessor of 13,485 is 13,484 and predecessor of 49,000 is 48,999.



Exercise 1.1

☞ Place these numbers in periods by putting your comma correctly :

1. 18960 _____ 2. 90098 _____ 3. 60000 _____

☞ Place these numbers in periods and write their names :

4. 15131 _____
 5. 22000 _____
 6. 30500 _____
 7. 55999 _____

☞ Write the numeral for each placing your comma correctly :

8. Thirty two thousand three hundred fifty one _____

9. Fifty nine thousand eight hundred nine _____

10. Seventy thousands ninety nine _____

☞ Write the successor of each :

11. 62099 _____

12. 80000 _____

13. 29999 _____

14. 40218 _____

15. 41349 _____

16. 90099 _____

☞ Write the predecessor of each :

17. 55208 _____

18. 90097 _____

19. 50000 _____

20. 56200 _____

21. 18960 _____

22. 23458 _____

☞ Write the place value of colour digits in each numbers :

23. 14,235

24. 76,954

25. 28,496

26. 85,173

27. 56,713

28. 20,569

Hots Questions



Put the beads given in bracket in A, B and C such that the number formed in A is the greatest and that formed in C is the least.

A (●)

B (●,●)

C (●,●,●)

TTh _____
Th _____
H _____
T ●●●●●●●●
O ●●●●●●●●

TTh _____
Th _____
H _____
T ●●●●●●●●
O ●●●●●●●●

TTh _____
Th _____
H _____
T ●●●●●●●●
O ●●●●●●●●

6-Digit Numbers

Numbers that have six digits are called **6-digit numbers**.

You already know that, 99,999 is the largest 5-digit number. What is $99,999 + 1$?

9 9 , 9 9 9 → largest 5-digit number

+ 1

1 , 0 0 , 0 0 0 → smallest 6-digit number

It is read **one lakh**. In any number 6th place from the right is of lakh.



Mental Maths

Encircle the 6-digit numbers :

154612

34821

999999

47001

480127

7003

690127

Writing 6-Digit Numbers in the Place Value Chart

A period called **Lakh** is used for writing a 6-digit number.

Periods →	Lakhs	Thousands		ones		
Places →	Lakhs (L)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)

Example 4 : Write 100000 in the place value chart and read it aloud.

Solution :

Lakhs	Thousands		ones		
Lakhs (L)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
1	0	0	0	0	0

The number 100000 is read as **one lakh**.

Marking Periods in 6-Digit Numbers

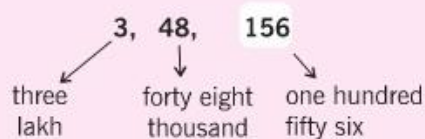
Start at the ones place. Group the digits in ones, thousands and lakhs using commas.

Example 5 : Mark periods in 348156 and rewrite it. Read it aloud.

Solution :

Lakhs	Thousands		ones		
Lakhs (L)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
3	4	8	1	5	6

With commas :



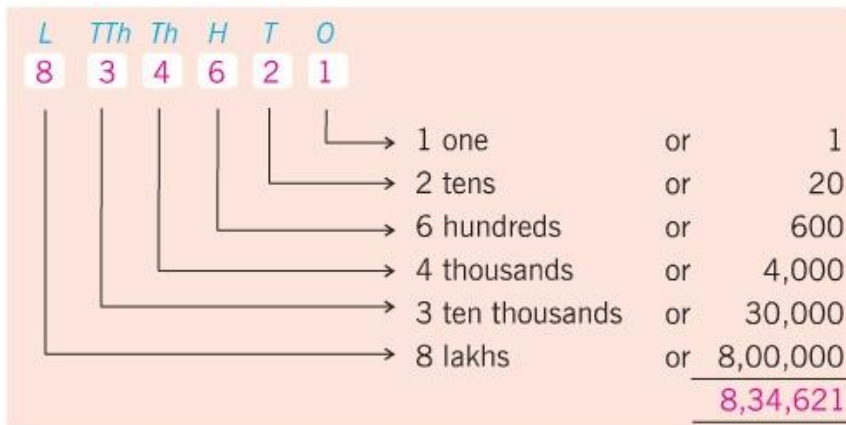
In words : Three lakh forty eight thousand one hundred fifty six.

Example 6 : Mark periods in 834621 and rewrite it. Also, write the place value of each digit.

Solution :

Lakhs (L)	Ten Thousands (TTh)	Thousands (Th)	Hundreds (H)	Tens (T)	Ones (O)
8	3	4	6	2	1

8,34,621 or eight lakh thirty four thousand six hundred twenty one



Exercise 1.2

☞ Mark the commas correctly to indicate periods and write the number names :

- 162802 _____
- 300698 _____
- 820036 _____
- 800052 _____

☞ Write the numeral for each placing your comma correctly :

- Four lakh nine thousand fifty one _____
- Eight lakh twenty two thousand eighty four _____
- Five lakh nineteen thousand three hundred two _____
- Nine lakh two thousand five hundred sixteen _____

☞ Write the successor of each :

- 510937 _____
- 708869 _____
- 482560 _____
- 105899 _____
- 989999 _____
- 820999 _____

☞ Write the predecessor of each :

- 510068 _____
- 212350 _____
- 406731 _____
- 405300 _____
- 820000 _____
- 500000 _____

☞ For each of the following write the next four numbers :

- 901050 _____, _____, _____, _____
- 500629 _____, _____, _____, _____
- 510068 _____, _____, _____, _____

☞ Write all the numbers between :

- 482558 and 482563 _____, _____, _____, _____

25. 301846 and 301851 _____, _____, _____, _____

26. 105989 and 105994 _____, _____, _____, _____

Write the place values of colour digits :

27. 693425

28. 218605

29. 46394

30. 400521

31. 701035

32. 769303

33. 486432

34. 286924

Expanded Form of a Number

Addition of place values of all the digits of a number is called its **expanded form**.

For example, expanded form of 44,444

$$= 40,000 + 4,000 + 400 + 40 + 4$$

Thus, expanded form of 9,25,467 = 9,00,000 + 20,000 + 5,000 + 400 + 60 + 7

Example 7 : Write 26304 in expanded form.

Solution : We write place value of each digit and add.

$$26304 = 20,000 + 6,000 + 300 + 0 + 4 \text{ or } 20,000 + 6,000 + 300 + 4$$

Example 8 : Write the following in short (standard) form :

$$4,00,000 + 30,000 + 8,000 + 800 + 60 + 5.$$

Solution : We place the digits according to their place values.

$$4,00,000 + 30,000 + 8,000 + 800 + 60 + 5 = 4,38,865$$



Exercise 1.3

Write the place value of 9 in each of the following :

1. 25297 _____

2. 39004 _____

3. 90827 _____

4. 872920 _____

5. 431390 _____

6. 291007 _____

Write the following in expanded form :

7. 16543 = _____

8. 34519 = _____

9. 46743 = _____

10. 436014 = _____

11. 688808 = _____

Write the following in short (standard) form :

12. $20000 + 5000 + 700 + 30 + 8$ = _____

13. $40000 + 6000 + 400 + 50 + 7$ = _____

14. $80000 + 7000 + 0 + 20 + 0$ = _____

15. $500000 + 60000 + 0 + 500 + 70 + 9$ = _____

16. $8,00,000 + 90,000 + 5,000 + 900 + 0 + 8$ = _____

☞ Answer the following questions :

17. What place is just to the right of lakhs place ? _____
18. What place is just to the right of thousand place ? _____
19. How many times is the thousands place to the hundreds place ? _____
20. What is the place value of zero in any number ? _____
21. Write the digit which has its place value and face value always equal ? _____
22. How many digits are there in one lakh ? _____

☞ Convert to higher places, as shown :

23. 40 tens = _____ hundreds
24. 20 ones = _____ tens
25. 40 hundreds = _____ thousands
26. 30 ten thousands = _____ lakhs
27. Write the place values of two 6's in the number 865604. _____

☞ Make a place value chart from ones to ten thousands. Enter in it the digits of the numerals given below :

28. 11,245 29. 19,038 30. 2,20,045 31. 6,90,008

⇒ Comparison of Numbers

Rule 1 : The number with more digits is always greater than the number with less digits.

For example, $100 > 98$ and $1017 > 998$ and $10,326 > 9,999$

Rule 2 : If the number of digits are the same, we compare the left most digits. If the left most digits are also the same, we compare the next digits and so on.

For example, $73,498 > 69,982$ (First digit is greater.)
 $1,43,207 > 1,42,985$ (First two digit the same.)
 $7,85,158 > 7,85,089$ (First three/digits the same.)

Example 9 : Write the smallest number among
24,307; 29,001 and 1,24,035.

Solution :

L	T-Th	Th	H	T	O
2	4	3	0	7	
2	9	0	0	1	
1	2	4	0	3	5

Digits at ten thousands place are the same.

Digits of first and third number at thousands place are equal and smaller.

The digit of first number at hundreds place is smaller than the third.

$$0 < 3$$

Hence, the first number 24,307 is the smallest.

Example 10 : Write the largest and the least 5-digit numbers using each of the digits 4, 0, 6, 7, 2 (only once).

Solution : To form largest number, we write the largest digit first and then the next smaller digits in order.

Largest number is **76,420**.

Smallest digit is 0. But 0 in the beginning of a number has no value. So we write the **next** smallest digit 2 in the beginning, then 0 and then the other larger digits in order.

Smallest number is **20,467**.

⇒ Ordering of Numbers

For **ascending (increasing)** order, we write the smallest number first and then the larger number, next larger number and so on.

For **descending (decreasing)** order, we write the largest number first and then the smaller number, next smaller number and so on.

Example 11 : Write the following numbers in descending order :

3001; 41,231; 43,012; 14,032.

Solution : Second and third number have ten thousands digits equal and larger. Then the digit of third number at thousands place is larger. So third number 43,012 is the largest. And 41,231 is larger than the other two numbers.

14,032 has 5 digits and 3,001 has 4 digits.

So **14,032 > 3,001**

Hence, the descending order is

43,012 > 41,231 > 14,032 > 3,001

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

e Exercise 1.4

1. Fill in > or < :

(a) 17403 17602

(b) 88088 80880

(c) 14397 1439

(d) 99909 99990

2. Encircle the smallest number in each group :

(a) 25777,

24203,

8664,

41622

(b) 89076,

89760,

87609,

98065

3. Encircle the largest number in each group :

(a) 47601,

49307,

9987,

47825

(b) 87609,

89760,

89076,

9806

4. (a) Write the greatest 5-digit number using each of the digits 2, 8, 5, 0, 2 (only once).
 (b) Write the smallest 6-digit number using each of the digits 8, 0, 7, 6, 3, 9 (only once).

5. Arrange in ascending order :

- | | | | |
|------------|--------|--------|-------|
| (a) 5015, | 4921, | 12756, | 12576 |
| (b) 60666, | 66066, | 6606, | 66606 |
| (c) 50055, | 5500, | 78801, | 75231 |

6. Arrange in descending order :

- | | | | |
|------------|--------|--------|-------|
| (a) 3426, | 12871, | 28036, | 27005 |
| (b) 79760, | 7806, | 77609, | 79076 |
| (c) 90099, | 99900, | 99009, | 90909 |

7. Fill in the blanks :

- (a) 435714 = _____ lakhs + _____ ten thousands + _____ thousands + _____ hundreds + _____ tens + _____ ones
 (b) 290567 = _____ lakhs + _____ ten thousands + _____ thousands + _____ hundreds + _____ tens + _____ ones

8. Write the place value of the Encircled digit :

- (a) 7031⑥4 = _____ (b) ⑦43127 = _____ (c) 2④1832 = _____
 (d) 72⑨390 = _____ (e) 9131③7 = _____ (f) ⑧23600 = _____

9. Write the following in expanded form :

- (a) 212350 = _____
 (b) 104695 = _____
 (c) 125735 = _____
 (d) 107908 = _____
 (e) 518306 = _____

10. Write the following in short (standard) form :

- (a) 4,00,000 + 40,000 + 9000 + 300 + 20 + 6 = _____
 (b) 1,00,000 + 0 + 7000 + 900 + 10 + 8 = _____
 (c) 3,00,000 + 90,000 + 0 + 500 + 70 + 6 = _____
 (d) 5,00,000 + 30,000 + 8000 + 0 + 50 + 4 = _____
 (e) 8,00,000 + 60,000 + 3000 + 100 + 0 + 0 = _____

11. Answer the following questions :

- (a) What place is just to the left of ten thousands place ? _____
 (b) What place is just to the right of ten thousands place ? _____
 (c) How many times is the lakhs place to the ten thousands place ? _____

- (d) How many digits are there in one lakh ? _____
- (e) What is the place value of 0 in 5,06,312 ? _____
12. Write the place values of two 5's in the number 500568 ? _____
13. Make a place value chart showing ones to lakhs. Enter in it the digits of the numerals given below :
- (a) 819909 (b) 201038 (c) 200457 (d) 900008
14. Rearrange the digits of the number to form the smallest and the largest possible numbers :
- (a) 7,04,183 smallest _____ largest _____
- (b) 7,34,890 smallest _____ largest _____
- (c) 8,48,332 smallest _____ largest _____
- (d) 1,01,162 smallest _____ largest _____
15. Which groups of numbers are written in ascending order and which are in descending order :
- (a) 2,29,000; 2,26,903; 2,19,701; 19,701 _____ order
- (b) 19,432; 2,10,037; 2,25,325; 3,25,425 _____ order
- (c) 3,01,200; 3,20,001; 3,20,100; 3,22,000 _____ order
- (d) 3,11,630; 3,10,840; 3,01,795; 3,01,629 _____ order
16. Arrange in ascending order :
- (a) 1,11,032; 1,10,123 1,01,321; 1,11,203
- (b) 6,96,669; 6,96,999; 6,69,996; 6,69,699
- (c) 7,48,550; 4,78,505; 8,47,055 4,78,550
- (d) 9,99,808; 9,89,908; 8,99,980; 9,98,098
17. Arrange in descending order :
- (a) 2,49,046; 2,49,406; 2,49,946; 2,49,496
- (b) 6,66,606; 66,606; 6,66,066; 6,60,666
- (c) 8,26,113; 8,26,331; 8,26,301; 8,26,103
- (d) 9,01,563; 9,06,513; 9,05,613; 9,03,516

⇒ International Place Value System

Periods of places are divided differently in the International Place Value System. In India, 100000 is called one lakh and written as 1,00,000. But in European countries, America etc., it is called one hundred thousand and written as 100,000.

Similarly, ten lakh is called one thousand thousand or one million and written as 1,000,000.

International Place Value Chart

Millions	Thousands			Ones		
Millions 1,000,000	Hundred Thousands 100,000	Ten Thousands 10,000	Thousands 1000	Hundreds 100	Tens 10	Ones 1
	5	4	3	2	1	6
	7	0	2	3	0	7

In International place value system, **each period has three places**. Digits of each period are read together and the name of the period (except ones) is read with it.

A comma (,) is put after each period. Thus, we write and read the two numbers given in the chart as :

543,216 Five hundred forty three thousands, two hundred sixteen.
702,307 Seven hundred two thousand, three hundred seven.

Example 12 : Write the value of each digit in 738598.

Solution : 738598

Value of 8 at ones place	8
Value of 9 at tens place	90
Value of 5 at hundreds place	500
Value of 8 at thousands place	8,000
Value of 3 at ten thousands place	30,000
Value of 7 at hundred thousands place	700,000

Example 13 : Write in numerals :

Two hundred thirty thousand, five hundred seventy.

Solution : 230,570



Exercise 1.5

1. Place the numbers in periods in the International way (mark commas) :

- | | |
|-----------------------|-----------------------|
| (a) 212350 _____ | (b) 435714 _____ |
| (c) 300698 _____ | (d) 210068 _____ |
| (e) 725000 _____ | (f) 823600 _____ |

2. Change the Indian periods into International periods :

- | | | | |
|--------------|-------|--------------|-------|
| (a) 4,00,028 | _____ | (b) 6,42,003 | _____ |
| (c) 5,00,629 | _____ | (d) 1,24,832 | _____ |
| (e) 2,80,009 | _____ | (f) 8,18,808 | _____ |

3. Change the International periods into Indian periods :

- | | | | |
|-------------|-------|-------------|-------|
| (a) 124,832 | _____ | (b) 808,818 | _____ |
| (c) 930,143 | _____ | (d) 240,682 | _____ |
| (e) 406,731 | _____ | (f) 196,021 | _____ |

4. Write the number names in International way :

- | | |
|------------|-------|
| (a) 137684 | _____ |
| (b) 417534 | _____ |
| (c) 680515 | _____ |
| (d) 592067 | _____ |
| (e) 896930 | _____ |

5. Write the numerals in International way, placing the comma correctly :

- | | |
|--|-------|
| (a) Two hundred thirty thousand one hundred eighteen | _____ |
| (b) Three hundred sixty one thousand two hundred forty three | _____ |
| (c) Six hundred six thousand six hundred sixty | _____ |
| (d) Four hundred thousand nine hundred fifty one | _____ |
| (e) Eight hundred twenty two thousand eighty four | _____ |

6. Write the numbers in expanded form in the International way :

- | | |
|------------|-------|
| (a) 872179 | _____ |
| (b) 243018 | _____ |
| (c) 606066 | _____ |
| (d) 251034 | _____ |
| (e) 909999 | _____ |

7. Write the following in short (standard) form :

- | | | |
|--|---|-------|
| (a) $500,000 + 10,000 + 5,000 + 100 + 0 + 6$ | = | _____ |
| (b) $800,000 + 40,000 + 0 + 200 + 50 + 4$ | = | _____ |
| (c) $100,000 + 0 + 2,000 + 100 + 0 + 8$ | = | _____ |
| (d) $800,000 + 90,000 + 9,000 + 0 + 90 + 0$ | = | _____ |
| (e) $300,000 + 50,000 + 7,000 + 0 + 50 + 7$ | = | _____ |

8. Arrange in ascending order in the International way :

- | | | | |
|--------------|----------|----------|---------|
| (a) 642,589; | 458,431; | 824,951; | 824,941 |
| (b) 770,750; | 760,420; | 709,900; | 750,006 |
| (c) 482,400; | 593,000; | 457,254; | 480,100 |

Let's Recall

Multiple Choice Questions (MCQs)

Tick (✓) the correct option :

- The successor of 12,088 is _____ .
(a) 12087 (b) 12080
(c) 12089 (d) 12090
- The place value of 7 in 54705 is _____ .
(a) 70 (b) 700
(c) 7 (d) None of these
- 78 thousands 5 hundreds 8 tens 7 ones can be written as _____ .
(a) 78,587 (b) 78,50,807
(c) 78,58,070 (d) None of these
- The smallest 6-digit number is _____ .
(a) 1 lakh (b) 10 lakh
(c) 10 thousand (d) None of these
- How many zeros should be written after 1 to get one lakh ?
(a) 3 (b) 4
(c) 5 (d) None of these
- The predecessor of the greatest 6-digit number is _____ .
(a) 9,99,998 (b) 9,99,997
(c) 9,99,999 (d) None of these
- What should be added to 99999 to make it a smallest number of 6-digits ?
(a) 10 (b) 1
(c) 100 (d) None of these
- The largest possible number formed by 7, 5, 3, 0, 8, 9 is _____ .
(a) 893057 (b) 789530
(c) 987530 (d) 305789
- Which set of numbers is in order from greatest to least ?
(a) 10147, 10163, 10234, 10275
(b) 10275, 10234, 10163, 10147
(c) 10275, 10163, 10234, 10147
(d) 10163, 10275, 10234, 10147
- There are eighty six thousand four hundred seconds in a day. How else could this number be written ?
(a) 80,064 (b) 80,640 (c) 86,400 (d) 86,404

Learning Objectives :

- ❖ What is Addition ? ❖ Properties of Addition ❖ Addition of 5-Digit and 6-Digit Numbers ❖ Word Problems on Addition
- ❖ Checking Addition ❖ Estimating the Sum ❖ Adding Horizontally

What is Addition ?

The action or process of adding something to something also is called addition. In mathematics, the process of calculating the total of two numbers or amounts is called **addition**. Its sign is '+'. The numbers which are added are called **addends**. The answer we get after adding is called the **sum** or **total**.

$$\begin{array}{r} 463 + 645 = 1108 \\ \underbrace{\hspace{1.5cm}} \quad \underbrace{\hspace{1.5cm}} \\ \text{addends} \quad \quad \text{sum} \end{array}$$

Properties of Addition

1. Two or more numbers added in any order give the same sum.

$$7,35,354 + 28,625 = 28,625 + 7,35,354 = 7,63,979$$

$$43,283 + 54,254 + 12,284 = 54,254 + 43,283 + 12,284 = 12,284 + 43,283 + 54,254 = 1,09,821$$

2. If we add one ten, one hundred, one thousand, one ten thousand or one lakh to any number, we add one in tens, hundreds, thousands, ten thousands or lakhs places respectively.

$$125 + 10 = 135$$

$$490 + 100 = 590$$

$$1,248 + 1,000 = 2,248$$

$$13,925 + 10,000 = 23,925$$

$$7,48,368 + 1,00,000 = 8,48,368$$

3. When zero is added to a number, the sum is the number itself.

$$78,759 + 0 = 78,759$$

and

$$0 + 2,93,489 = 2,93,489$$

**Exercise 2.1**

Fill in the blanks :

- | | | |
|-------------------|---|--|
| 1. 28,006 + 100 | = | |
| 2. 87,953 + 1,000 | = | |
| 3. 26,785 + 10 | = | |
| 4. 85,341 + 0 | = | |

5. $5,76,124 + 10,000 =$ _____
6. $3,04,851 + 1000 =$ _____
7. $1,82,434 + 10 =$ _____
8. $58,403 + 10,000 =$ _____
9. $2,37,983 + 100 =$ _____
10. $2,10,568 + 10 =$ _____
11. $0 + 1,24,675 =$ _____
12. $1,58,403 + 0 =$ _____
13. $4,34,218 + 1,00,000 =$ _____
14. $88,457 + 10,521 =$ _____ + 88,457
15. $20,521 + 16,564 + 18,374 = 18,374 +$ _____ + 20,521

➔ Addition of 5-Digit and 6-Digit Numbers

Example 1 : Add 21,792; 18,625 and 9,307.

Solution : We write the numbers in columns placing ones below ones, tens below tens, hundreds below hundreds and so on.

Sum of the ones digits : $2 + 5 + 7 = 14$

Write 4 ones, carry 1 ten.

Sum of the tens digits : 1 (carry) + $9 + 2 + 0 = 12$ tens. Write 2 tens, carry 1 hundred.

Sum of the hundreds digits : 1 (carry) + $7 + 6 + 3 = 17$ hundreds. Write 7 hundreds, carry 1 thousand.

Sum of the thousands digits : 1 (carry) + $1 + 8 + 9 = 19$ thousands. Write 9 thousands, carry 1 ten thousand.

Sum of the ten thousands digits : 1 (carry) + $2 + 1 = 4$ Sum = 49,724

T-Th	Th	H	T	O
1	1	1	1	
2	1	7	9	2
+	1	8	6	2
+	9	3	0	7
4	9	7	2	4

Example 2 : Add 2,67,354; 72,183 and 1,43,976.

Solution :

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

Write ones below ones, tens below tens and so on.

Sum = 4,83,513



Exercise 2.2

Common Mistake



4 6 3 9 4 2	1	4 6 3 9 4 2	1	4 6 3 9 4 2	1
+ 1 5 1 4 1 9		+ 1 5 1 4 1 9		+ 1 5 1 4 1 9	
5 11 4 13 5 11		6 1 5 3 6 1		6 1 5 3 6 1	

☞ Add :

$$\begin{array}{r} 1. \quad 5 \ 7, \ 0 \ 3 \ 8 \\ \quad \quad 6, \ 4 \ 2 \ 3 \\ + \quad 3 \ 0, \ 8 \ 7 \ 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad \quad 2 \ 8, \ 7 \ 5 \ 9 \\ \quad \quad \quad 1 \ 0, \ 6 \ 2 \ 3 \\ + \quad 1 \ 9, \ 3 \ 4 \ 8 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad \quad \quad 1 \ 7 \ 2, \ 3 \ 4 \ 5 \\ \quad \quad \quad \quad 5 \ 4, \ 3 \ 3 \ 8 \\ + \quad 2 \ 3 \ 0, \ 7 \ 0 \ 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 3, \ 9 \ 3, \ 7 \ 4 \ 0 \\ \quad \quad 3, \ 1 \ 4, \ 8 \ 4 \ 1 \\ + \quad 3 \ 5, \ 7 \ 8 \ 9 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 3, \ 4 \ 1, \ 0 \ 8 \ 9 \\ \quad \quad \quad 7 \ 1, \ 5 \ 6 \ 8 \\ + \quad 1, \ 0 \ 0, \ 8 \ 9 \ 5 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad \quad \quad 3 \ 6, \ 4 \ 0 \ 2 \\ \quad \quad \quad 1, \ 2 \ 8, \ 0 \ 0 \ 6 \\ + \quad 2, \ 8 \ 7, \ 9 \ 5 \ 3 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad \quad 4 \ 3, \ 9 \ 2 \ 5 \\ \quad \quad \quad 2 \ 4, \ 8 \ 3 \ 6 \\ + \quad 7, \ 8 \ 8, \ 6 \ 7 \ 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad \quad 1, \ 4 \ 0, \ 3 \ 0 \ 2 \\ \quad \quad \quad 2, \ 1 \ 4, \ 2 \ 0 \ 1 \\ + \quad 1, \ 5 \ 4, \ 2 \ 0 \ 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad \quad \quad 2, \ 1 \ 3, \ 9 \ 0 \ 9 \\ \quad \quad \quad 3, \ 5 \ 0, \ 3 \ 2 \ 8 \\ + \quad 1, \ 1 \ 3, \ 0 \ 3 \ 2 \\ \hline \end{array}$$

☞ Find the sum of :

10. 2 lakhs + 12 ten thousands + 23 thousands
11. 6 ten thousands + 13 thousands + 15 hundreds
12. 25 thousands + 7 hundreds + 5 tens
13. 5 ten thousands + 28 thousands + 12 tens
14. 14 ten thousands + 2 thousands + 3 hundreds + 24 tens

☞ Find the sum of :

15. 13,089 and 20,160 ?
16. 9,999 and 99,999 ?

☞ Arrange in columns and add :

17. 22,648 + 10,435 + 41,618
18. 1,31,234 + 11,345 + 9,607
19. 15,023 + 12,345 + 2,991
20. 18,614 + 9,245 + 17,629

☞ Find the sum of :

21. 31,840; 9,063 and 38,325
22. 26,090; 1,05,421 and 5,63,489
23. 2,49,633; 1,08,249 and 5,68,673
24. 77,777 and 8,888
25. 20,496 and 49,505
26. 70,014; 20,096 and 24,377
27. 1,09,819; 3,59,590 and 87,987

10. Three sugar factories produced 38,014; 53,482 and 9,578 bags of sugar respectively in a certain year. How much sugar was produced by those factories in that year ?
11. A milk dairy sold 3,40,775 litre; 3,31,212 litre and 2,25,819 litre milk in three months respectively. What is the total amount of milk sold in three months ?
12. There were 50,817 deers, 17,034 rabbits and 20,975 other animals in a national park. Find the total number of animals in the national park.

➤ Checking Addition

When numbers are added the sum is the same regardless of the order of the addends and same in condition when add down or add up respectively.

Example 4 : Add 32456 and 45962 and check the answer by adding up.

Solution :

3	2	4	5	6
+	4	5	9	6
<hr/>				
7	8	4	1	8

↓ Add down

7	8	4	1	8
+	3	2	4	5
<hr/>				
4	5	9	6	2

↑ Add up

78418. Since the sum is the same in both the cases, it is correct.

➤ Estimating the Sum

Round off the numbers to estimate their sum.
Estimating the sum gives a rough idea of the sum.

Example 5 : Find the estimated sum as well as the exact sum of 486 and 124.

Solution :

4	8	6
+	1	2
<hr/>		
?		

rounds up to

5	0	0
+	1	0
<hr/>		
6	0	0

rounds down to

4	8	6
+	1	2
<hr/>		
6	1	0

← estimated sum ← exact sum

The estimated sum of 486 and 124 is 600. The exact sum is 610.

➤ Adding Horizontally

Example 6 : Add 342 and 453 horizontally.

Solution : Remember to regroup if required.

- STEP 1** Add the ones.
STEP 2 Add the tens.
STEP 3 Add the hundreds.
Thus $342 + 453 = 795$

3 4 2 + 4 5 3 = 3 4 9 5

3 4 9 5 + 4 5 3 = 3 4 9 5

3 4 9 5 + 4 5 3 = 7 9 5



Exercise 2.4

Fill in the blanks :

1. _____ + 499 = 500
2. Successor of 4528 = _____
3. $13 + 23 + 17 = 17 + 13 +$ _____
4. $9 +$ _____ $+ 6 = 6 + 14 + 9$
5. $731 +$ _____ $= 732$
6. $64 + 0 =$ _____
7. $1000 + 740 =$ _____
8. Successor of 9999 = _____
9. $375 +$ _____ $= 485 + 375$
10. $1345 +$ _____ $= 2345$

Add. Check the answer :

11.
$$\begin{array}{r} 1\ 3\ 4\ 5\ 2 \\ + 2\ 4\ 3\ 5\ 6 \\ \hline \end{array}$$

$$\begin{array}{r} 1\ 3\ 4\ 5\ 2 \\ + 2\ 4\ 3\ 5\ 6 \\ \hline \end{array}$$
12.
$$\begin{array}{r} 2\ 6\ 7\ 0\ 5 \\ + 3\ 2\ 0\ 4\ 8 \\ \hline \end{array}$$

$$\begin{array}{r} 2\ 6\ 7\ 0\ 5 \\ + 3\ 2\ 0\ 4\ 8 \\ \hline \end{array}$$
13.
$$\begin{array}{r} 7\ 2\ 5\ 6\ 3 \\ + 2\ 4\ 4\ 6\ 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7\ 2\ 5\ 6\ 3 \\ + 2\ 4\ 4\ 6\ 7 \\ \hline \end{array}$$
14.
$$\begin{array}{r} 5\ 8\ 8\ 1\ 6 \\ + 3\ 1\ 0\ 5\ 9 \\ \hline \end{array}$$

$$\begin{array}{r} 5\ 8\ 8\ 1\ 6 \\ + 3\ 1\ 0\ 5\ 9 \\ \hline \end{array}$$

Estimate each sum. Also find the exact sum :

Question	Rounded Numbers	Estimated Sum	Exact Sum
15. $56 + 72$	(nearest 10)		
16. $315 + 425$	(nearest 100)		
17. $3892 + 5380$	(nearest 1000)		
18. $67 + 49$	(nearest 10)		
19. $462 + 271$	(nearest 100)		
20. $4290 + 6380$	(nearest 1000)		

Add horizontally and find the sum :

21. $48 + 21 =$ _____
22. $37 + 14 =$ _____
23. $15 + 346 =$ _____
24. $225 + 148 =$ _____
25. $380 + 479 =$ _____
26. $521 + 711 =$ _____
27. $341 + 198 =$ _____
28. $400 + 542 =$ _____
29. $625 + 222 =$ _____

Learning Objectives :

- ❖ What is Subtraction ? ❖ Subtraction of Tens, Hundreds, Thousands, Ten Thousands or Lakhs
- ❖ Subtraction of Zero from a Number ❖ Subtraction of 5-Digit and 6-Digit Numbers ❖ Word Problems on Subtraction
- ❖ Checking of Subtraction

What is Subtraction ?

Subtraction is an arithmetic operation that represents the operation of removing objects from a collection. It is signified by minus sign (—). The part we start with is called **minuend**. The part being taken away is called the **subtrahend**. The left or remain after subtraction is called **difference**.

$$\begin{array}{r} 465 \rightarrow \text{minuend} \\ -324 \rightarrow \text{subtrahend} \\ \hline 141 \rightarrow \text{difference} \end{array}$$

Subtraction of Tens, Hundreds, Thousand, Ten Thousands or Lakhs

When we subtract, tens, hundreds, thousands, ten thousands or lakhs from any number, we less from tens, hundreds, thousands, ten thousands and lakhs place respectively.

$$480 - 10 = 470 \quad 6,520 - 100 = 6420 \quad 43,280 - 1,000 = 42,280$$

$$1,25,680 - 10,000 = 1,15,680 \quad 4,95,325 - 1,00,000 = 3,95,325$$

Subtraction of Zero from a Number

When zero is subtracted from a number, we get the number itself.

For example, $78,759 - 0 = 78,759$ and $2,93,489 - 0 = 2,93,489$

**Exercise 3.1**

Fill in the blanks :

1. $1,82,434 - 10 = \underline{\hspace{2cm}}$
2. $28,006 - 0 = \underline{\hspace{2cm}}$
3. $82,434 - 100 = \underline{\hspace{2cm}}$
4. $87,953 - 10 = \underline{\hspace{2cm}}$
5. $1,76,124 - 1000 = \underline{\hspace{2cm}}$

6. $3,04,851 - 10,000 =$ _____
7. $26,785 - 1,000 =$ _____
8. $98,403 - 10,000 =$ _____
9. $1,34,570 - 0 =$ _____
10. $1,58,403 - 10 =$ _____
11. $1,16,564 - 0 =$ _____
12. $4,34,218 - 1,00,000 =$ _____
13. $2,37,983 - 10,000 =$ _____
14. $1,28,006 - 100 =$ _____

➔ Subtraction of 5-Digit and 6-Digit Numbers

Example 1 : Subtract 38938 from 66023.

Solution : We cannot subtract 8 ones from 3 ones.

So, we borrow 1 ten leaving behind 1 ten.

Now, 1 ten + 3 ones = 10 ones + 3 ones = 13 ones

13 ones – 8 ones = 5 ones,

write 5 under ones column.

We cannot subtract 3 tens from 1 ten.

So, we borrow 1 hundred.

But in the hundreds column, we have 0 hundreds, so we borrow 1 thousand, that is, 10 hundreds leaving behind 5 thousands. Now from 10 hundreds we borrow 1 hundred, leaving behind 9 hundreds.

1 hundred + 1 ten = 10 tens + 1 ten = 11 tens

11 tens – 3 tens = 8 tens, write 8 under tens column.

9 hundreds – 9 hundreds = 0, write 0 under hundreds column.

We cannot subtract 8 thousands from 5 thousands. So, we borrow 1 ten thousand, leaving behind 5 ten thousands.

1 ten thousand + 5 thousand = 15 thousands

15 thousands – 8 thousands = 7 thousands

Now, 5 ten thousands – 3 ten thousands = 2 ten thousands

Hence, $66,023 - 38,938 = 27,085$

	T-Th	H	T	O
	5	15	9	11
	6	6	0	2
–	3	8	9	3
–	2	7	0	8
	5			

Common Mistake



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

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



Exercise 3.2

Subtract :

$$\begin{array}{r} \text{1.} \quad \begin{array}{cccccc} \text{T-Th} & \text{Th} & \text{H} & \text{T} & \text{O} & \\ 5 & 8 & 0 & 7 & 1 & \\ - & 4 & 9 & 8 & 9 & 2 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{2.} \quad \begin{array}{cccccc} \text{T-Th} & \text{Th} & \text{H} & \text{T} & \text{O} & \\ 6 & 1 & 7 & 0 & 2 & \\ - & 3 & 2 & 8 & 2 & 4 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{3.} \quad \begin{array}{cccccc} \text{T-Th} & \text{Th} & \text{H} & \text{T} & \text{O} & \\ 4 & 7 & 3 & 8 & 4 & \\ - & 2 & 9 & 6 & 9 & 5 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{4.} \quad \begin{array}{cccccc} 7 & 2 & 3 & 4 & 5 & \\ - & 5 & 4 & 3 & 8 & 8 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{5.} \quad \begin{array}{cccccc} 5 & 2 & 0 & 6 & 7 & \\ - & 3 & 1 & 2 & 9 & 8 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{6.} \quad \begin{array}{cccccc} 5 & 2 & 2 & 3 & 4 & \\ - & 9 & 7 & 4 & 8 & \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{7.} \quad \begin{array}{cccccc} 9 & 5 & 1 & 6 & 7 & \\ - & 5 & 8 & 6 & 4 & 4 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{8.} \quad \begin{array}{cccccc} 9 & 4 & 6 & 2 & 3 & \\ - & 7 & 8 & 7 & 5 & 9 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{9.} \quad \begin{array}{cccccc} 8 & 1 & 4 & 1 & 9 & \\ - & 6 & 8 & 8 & 7 & 3 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{10.} \quad \begin{array}{cccccc} 6 & 0 & 3 & 0 & 4 & \\ - & 3 & 8 & 4 & 5 & 6 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{11.} \quad \begin{array}{cccccc} 7 & 1 & 0 & 2 & 6 & \\ - & 3 & 9 & 8 & 1 & 7 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{12.} \quad \begin{array}{cccccc} 4 & 7 & 0 & 0 & 1 & \\ - & 4 & 2 & 6 & 4 & 7 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{13.} \quad \begin{array}{cccccc} 2 & 0 & 9 & 8 & 0 & \\ - & 1 & 4 & 6 & 8 & 2 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{14.} \quad \begin{array}{cccccc} 8 & 4 & 4 & 6 & 1 & \\ - & 7 & 5 & 5 & 8 & 3 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{15.} \quad \begin{array}{cccccc} 8 & 3 & 8 & 6 & 7 & \\ - & 6 & 4 & 8 & 7 & 9 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{16.} \quad \begin{array}{cccccc} 3, & 9 & 3, & 9 & 1 & 0 \\ - & 2, & 9 & 6, & 4 & 9 & 7 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{17.} \quad \begin{array}{cccccc} 4, & 8 & 7, & 9 & 0 & 1 \\ - & 2, & 9 & 9, & 3 & 0 & 7 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{18.} \quad \begin{array}{cccccc} 4, & 3 & 1, & 3 & 0 & 9 \\ - & 1, & 1 & 3, & 9 & 0 & 3 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{19.} \quad \begin{array}{cccccc} 9, & 3 & 2, & 0 & 0 & 1 \\ - & 6, & 5 & 1, & 0 & 1 & 7 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{20.} \quad \begin{array}{cccccc} 1, & 5 & 2, & 8 & 0 & 0 \\ - & 5 & 4, & 9 & 3 & 6 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$

$$\begin{array}{r} \text{21.} \quad \begin{array}{cccccc} 4, & 8 & 1, & 7 & 9 & 3 \\ - & 1, & 9 & 3, & 8 & 2 & 4 \\ \hline & & & & & \\ \hline & & & & & \end{array} \end{array}$$



Exercise 3.3

☞ Arrange in columns and subtract :

1. $10,003 - 7,675 = \underline{\hspace{2cm}}$ 2. $94,247 - 67,451 = \underline{\hspace{2cm}}$

3. $60,395 - 49,146 = \underline{\hspace{2cm}}$ 4. $64,030 - 38,772 = \underline{\hspace{2cm}}$

☞ Find the difference :

5. $90,819$ and $59,590$

6. $70,014$ and $24,377$

7. $40,000$ and $23,214$

8. $49,633$ and $39,873$

9. $49,505$ and $20,496$

10. $77,777$ and $8,888$

☞ Find in the blanks :

11.
$$\begin{array}{r} 9 \square, 939 \\ - \square 4, 97\square \\ \hline 23, 962 \end{array}$$

12.
$$\begin{array}{r} 2, 85, 301 \\ - \square, \square, \square, \square, \square \\ \hline 1, 08, 563 \end{array}$$

13.
$$\begin{array}{r} 64, 002 \\ - \square\square, \square\square\square \\ \hline 27, 134 \end{array}$$

14. Find the number 2,979 less than 1,00,000. _____

15. Find the difference of 11,930 and 7058. _____

16. What must be subtracted from 75,755 to get 57,575 ? _____

17. Subtract the sum of 11,998 and 3,479 from 31,970. _____

18. What must be added to 89,756 to get 1,00,000 ? _____

☞ Find the difference :

19. 12 thousands — 15 hundreds

20. 7 lakhs — 35 thousands 6 hundreds

21. 4 thousands — 6 tens

22. 5 thousands — 40 tens

23. 3 ten thousands — 134 hundreds

Word Problems on Subtraction

Example 2 : 5,67,214 students were passed in a Board Examination. 75,612 students were passed in first division and 2,83,625 in second division. How many students were passed in third division ?

Solution : Students passed in first division = 75,612

Students passed in second division = 2,83,625

Students passed in first and second division = 3,59,237

Now, Total students passed = 5,67,214

Students passed in first and second division = 3,59,237

Students passed in third division = 2,07,977

$$\begin{array}{r} 5,67,214 \\ + 2,83,625 \\ \hline 8,50,839 \\ - 3,59,237 \\ \hline 4,91,602 \end{array}$$



Exercise 3.4

1. In an examination, 50,275 students appeared. 35,486 students passed. How many students failed ?
2. The population of a town is 96,954. How much less is it than one lakh ?
3. The population of a town is 64,935. Out of them there are 35,947 males. What is the number of the females in that town ?
4. An officer earns ₹ 1,52,340 in one year. He expends ₹ 1,07,545. How much money is saved by him ?
5. A publisher printed 25,000 books of mathematics. 4,374 books are left with him at the end of the year. How many books were sold during the year ?
6. Mr Pillai had 12,474 trees. 6,875 trees fell in a cyclone. How many trees were saved ?
7. Abha deposited ₹ 20,000 in her bank account. Later she withdrew ₹ 3,450 from it. How much money is there in her account now ?
8. The annual sale of company ABC is ₹ 9,28,645. Annual sale of company XYZ is ₹ 8,69,475. Whose sale exceeds and by how much ?
9. Saleena had ₹ 40,000. She bought a moped for ₹ 13,475 and a colour TV for ₹ 15,728. How much money is left with her now ?
10. A company had 8,40,000 kg sugar in its godown. It sold out 3,15,742 kg, 2,90,498 kg and 1,23,412 kg in three days. How much sugar is left now ?
11. The population of a city was 2,38,796. After 5 years it increased to 4,01,234. How much the population increased in five years ?

Let's Recall

Multiple Choice Questions (MCQs) :

Tick (✓) the correct option :

1. $34256 - 3097 = ?$
(a) 33,319 (b) 31,159 (c) 35,159 (d) 34,139
2. What must be subtracted from 78,779 to get 77444 ?
(a) 1,355 (b) 1,335 (c) 1,365 (d) 1,375
3. Rohan earns ₹ 78651 in a month and he spent ₹ 43441 from the earnings. How much money there Rohan saves ?
(a) ₹ 35,410 (b) ₹ 35,110 (c) ₹ 35,210 (d) ₹ 35,710

Learning Objectives :

- ✦ What is Multiplication ? ✦ Properties of Multiplication ✦ Multiplying by Ten, Hundred or Thousand
- ✦ Multiplying by 20, 30....., 200, 300, ✦ Multiplying by 1-Digit Numbers ✦ Multiplying by 2-Digit Numbers
- ✦ Multiplication by 3-Digit Numbers ✦ Word Problems on Multiplication ✦ Estimating the Product

⇒ What is Multiplication ?

The multiplication of whole numbers may be thought as a repeated addition; that is the multiplication of two numbers is equivalent to adding as many copies of one of them. Its sign is 'x'. The number which is multiplied is called **multiplicand** and the number by which we multiply is called **multiplier**. The answer of multiplication is called **product**.

⇒ Properties of Multiplication

1. The product of two numbers does not change, when the order of numbers is changed.

For example, $3 \times 5 = 5 \times 3$ and $173 \times 225 = 225 \times 173$

2. The product of three or more numbers does not change, when the grouping of numbers is changed.

For example, $(18 \times 23) \times 47 = 18 \times (23 \times 47)$

3. The product of a number and 1 is the number itself.

For example, $75,457 \times 1 = 75,457$ and $3,45,689 \times 1 = 3,45,689$

4. The product of any number and 0 is 0.

For example, $75,457 \times 0 = 0$ and $3,45,689 \times 0 = 0$

⇒ Multiplying by Ten, Hundred or Thousand

To multiply any number by ten, hundred or thousand, we add one, two or three zeroes respectively after the number.

$$15 \times 10 = 15 \boxed{0} = 150$$

$$28 \times 100 = 28 \boxed{00} = 2800$$

$$35 \times 1000 = 35 \boxed{000} = 35000$$



Exercise 4.1

☞ Fill in the blanks :

1. $32,789 \times 0 =$ _____
2. $12,789 \times 1 =$ _____
3. $735 \times 427 =$ _____ $\times 735$
4. $6 \times 25 = 25 \times$ _____
5. $5647 \times$ _____ $= 56,470$
6. $15 \times 10,000 =$ _____
7. $100 \times$ _____ $= 20,000$
8. _____ $\times 1000 = 5,46,000$
9. $452 \times 1000 =$ _____
10. $7645 \times 10 =$ _____

☞ Multiply the following numbers by 10 :

11. 6328 _____
12. 2807 _____
13. 5080 _____
14. 6007 _____
15. 2900 _____
16. 5559 _____

☞ Multiply the following by 10,000 :

17. 5 _____
18. 64 _____
19. 59 _____

⇒ Multiplying by 20, 30, ... 200, 300 ...

In this types of multiplication, we multiply the given number by the multiplier without zero(s). After that we add as zero(s) as multiplier has.

$$15 \times 30 \Rightarrow 15 \times 3 = 45 \Rightarrow 45 \boxed{0} = 450$$

$$38 \times 400 \Rightarrow 38 \times 4 = 152 \Rightarrow 152 \boxed{00} = 15200$$



Exercise 4.2

☞ Fill in the blanks :

1. $205 \times 60 =$ _____
2. $200 \times 88 =$ _____
3. $12 \times 6000 =$ _____
4. $40 \times 200 =$ _____
5. $325 \times 300 =$ _____
6. $60 \times 4,000 =$ _____
7. $245 \times 700 =$ _____
8. $20 \times 200 \times 5 =$ _____
9. $152 \times 6000 =$ _____
10. $2 \times 100 \times 50 =$ _____
11. A table cost ₹ 400. How many rupees will 120 such table cost ? _____
12. Ansh has 62 notes of ₹ 500 each. How many rupees does he have in all ? _____
13. There are 300 peanuts in a bag. How many peanuts are there in 2500 bags ? _____
14. Raghav has 615 notes of ₹ 50 each. How much money does she have in all ? _____

15. How many minutes are there in the month of April ? _____

[Hint : $30 \times 24 \times 60 = ?$]

16. Srishti has 25 notes of ₹ 200 each. How many rupees does she have in all ? _____

Common Mistake



Th	H	T	O	
6	1	9	0	
		x	5	
3	0	5	45	5

Th	H	T	O	
6	1	9	0	
		x	5	
3	0	9	5	0

➤ Multiplying by 1-Digit Numbers

Example 1 : Multiply 14,657 by 6.

Solution :

Carry →	2	3	3	4	
	1	4	6	5	7
			x		6
	8	7	9	4	2

Product = 87,942

➤ Multiplying by 2-Digit Numbers

Example 2 : Multiply 2356 by 39.

Solution : Carry (multiplication by tens) →

Carry (multiplication by ones) →

Multiplication by 9 ones ⇒ 2356 ones or $1 \times 39 = 21204$

Multiplication by 3 tens (start writing from tens column)

2356×3 tens or $10 = 70680$

Product = 91,884

1	1	1		
3	5	5		
2	3	5	6	
		x	3	9
2	1	2	0	4
7	0	6	8	x
9	1	8	8	4

Fact File

The language written in the above examples is to explain the steps of multiplication. Students are not required to write all the language.

➤ Multiplication by 3-Digit Numbers

Example 3 : Multiply 432 by 567.

Solution : Carry (multiplication by hundreds) →

Carry (multiplication by tens) →

Carry (multiplication by ones) →

Multiplication by ones = $432 \times 7 = 3024$

Multiplication by tens (start writing from tens column) = $432 \times 60 = 25920$

Multiplication by hundreds (start writing from hundreds column)

= $432 \times 500 = 216000$

Product = **2,44,944**

$$\begin{array}{r}
 1 1 \\
 1 1 \\
 2 1 \\
 4 3 2 \\
 \times 5 6 7 \\
 \hline
 3 0 2 4 \\
 2 5 9 2 \times \\
 2 1 6 0 \times \times \\
 \hline
 2 4 4 9 4 4
 \end{array}$$



Exercise 4.3

✎ Multiply :

1.
$$\begin{array}{r} 34 \\ \times 56 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 837 \\ \times 85 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 3676 \\ \times 89 \\ \hline \end{array}$$

8. 5374×83

11. $84,322 \times 6$

14. 7064×67

17. 402×157

20. 920×107

2.
$$\begin{array}{r} 474 \\ \times 38 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 806 \\ \times 79 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 2996 \\ \times 37 \\ \hline \end{array}$$

9. 1908×32

12. $40,371 \times 8$

15. 8270×59

18. 453×311

21. 143×607

Common Mistake



$\begin{array}{r} 89 \\ \times 67 \\ \hline 623 \\ 534 \\ \hline 1157 \end{array}$	$\begin{array}{r} 89 \\ \times 67 \\ \hline 623 \\ 534 \times \\ \hline 5963 \end{array}$
--	---

7.
$$\begin{array}{r} 4982 \\ \times 64 \\ \hline \end{array}$$

10. 2916×46

13. $11,579 \times 3$

16. 6359×48

19. 126×243

22. 795×352

Word Problems on Multiplication

Example 4 : A factory produces 435 buckets a day. How many buckets did it produce in the year 2018. If there were 75 holidays ?

Solution : The year 2018 is not divisible by 4 exactly. So it is not a leap year.

And number of days in the year 2018 = 365
 Holidays = 75
 Working days = $\underline{290}$
 Buckets produced in 1 day = 435
 Buckets Produced in 283 days = 435×290
 = 1,26,150

$$\begin{array}{r}
 435 \\
 \times 290 \\
 \hline
 000 \\
 3915 \times \\
 870 \times \times \\
 \hline
 126150
 \end{array}$$



Exercise 4.4

1. A wholesaler has 12,543 sacks of rice in stock. If each sack has 15 kg rice how much rice is there in all ? _____
2. A bag contains 98 kg wheat. Find the mass of wheat in 10,050 such bags. _____
3. There are 144 ball pens in a carton. How many ball pens are there in 85 cartons ? _____
4. A bus carries 75 persons. How many persons will be carried in 335 buses ? _____
5. The company price of a tricycle is ₹ 685. A retailer purchases 225 tricycles. How much will he pay ? _____
6. A packet contains 576 hankies. How many hankies will be there in 1225 packets ? _____
7. The monthly fees of a student is ₹ 175 in a school. What will be total monthly fees of the 857 students of that school ? _____
8. A sack of sugar weights 107 kilograms. What will be the weight of 407 such sacks ? _____
9. A packet contains 432 balloons. How many balloons are there in 1275 such packets ? _____
10. 795 fans are produced in a factory daily. How many fans are produced in a leap year ?
Number of holidays is 78. _____
11. A society has 684 members. Each member pays ₹ 1050 as the membership fees. How much money will be collected as membership fee ? _____

12. A television set costs ₹ 2250. Find the cost of 175 such sets. _____
13. A jet plane travels 1250 km in an hour. How many km does it travel in 18 hours? _____
14. A factory produces 6450 bulbs a day. How many bulbs will be produced in the month of March? Number of holidays is 5. _____
15. Find the cost of 175 bicycles, if one bicycle costs ₹ 1474. _____

Horizontal Method of Multiplication

Example 5 : Multiply 326 by 3.

Solution : **Step 1.** 6 ones \times 3 = 18 ones = 1 ten + 8 ones

Step 2. 2 tens \times 3 = 6 tens;

6 tens + 1 ten = 7 tens

Step 3. 3 hundreds \times 3 = 9 hundreds

$$\begin{array}{r} 3 2 6 \\ \times 3 \\ \hline 9 7 8 \end{array}$$

Example 6 : Find 1426×4 .

Solution : **Step 1.** 6 ones \times 4 = 24 ones = 2 tens + 4 ones

Step 2. 2 tens \times 4 = 8 tens;

8 tens + 2 tens = 10 tens.

10 tens = 1 hundred + 0 ten

Step 3. 4 hundreds \times 4 = 16 hundreds; 16 hundreds + 1 hundred = 17 hundreds

17 hundreds = 1 thousand + 7 hundreds

Step 4. 1 thousand \times 4 = 4 thousands; 4 thousands + 1 thousand = 5 thousands

$$\begin{array}{r} 1 4 2 6 \\ \times 4 \\ \hline 5 7 0 4 \end{array}$$

Estimating the Product

Round off the factors to estimate their product. While estimating products, round up the bigger factor and round down the smaller factor.

We estimate when exact product is not needed.

Example 7 : Find the estimated product as well as the exact product of 46 and 24.

Solution :

$6 > 5$ rounds up to

$4 < 6$ rounds down to

$$\begin{array}{r} 5 0 \\ \times 2 0 \\ \hline 1 0 0 0 \end{array}$$

estimated product

$$\begin{array}{r} 4 6 \\ \times 2 4 \\ \hline 1 1 0 4 \end{array}$$

exact product

The estimated product of 46 and 24 is 1000. The exact product is 1104.

Example 8 : Estimate the product of 408 and 131 by rounding to the

(a) nearest ten.

408 rounds up to 410.

131 rounds down to 130.

$$\begin{array}{r} 410 \\ \times 130 \\ \hline 53300 \end{array}$$

(b) nearest hundred.

408 rounds down to 400.

131 rounds down to 100.

$$\begin{array}{r} 400 \\ \times 100 \\ \hline 40000 \end{array}$$



Exercise 4.5

☞ Multiply horizontally to find the product :

1. $421 \times 3 =$ _____ 2. $234 \times 4 =$ _____ 3. $507 \times 8 =$ _____

4. $610 \times 9 =$ _____ 5. $1955 \times 7 =$ _____ 6. $6051 \times 6 =$ _____

7. $3790 \times 8 =$ _____ 8. $1836 \times 9 =$ _____ 9. $2039 \times 5 =$ _____

☞ Estimate the products by rounding up one factor and rounding down the other factor :

10. $45 \times 78 =$ _____ 11. $82 \times 33 =$ _____

12. $67 \times 26 =$ _____ 13. $43 \times 31 =$ _____

14. $417 \times 126 =$ _____ 15. $563 \times 724 =$ _____

16. $327 \times 168 =$ _____ 17. $231 \times 627 =$ _____

Let's Recall

Multiple Choice Questions (MCQs) :

Tick (✓) the correct option :

- Multiplication of 53090×100 is _____ .
 (a) 5309000 (b) 5300900 (c) 5300090 (d) None of these
- There are 65 pens in one packet. How many pens are there in such 605 packets ?
 (a) 39225 (b) 36625 (c) 39325 (d) 38325
- A plastic cup making machine produces 3600 cup everyday. How many cups did it produce in the year 2016. If there were 67 holidays ?
 (a) 1070600 (b) 1090000 (c) 1085300 (d) 1076400
- A plane travels 965 km in an hour. How many km does it travel in 32 hours ?
 (a) 30855 (b) 30880 (c) 30987 (d) 30761

Learning Objectives :

- ✦ What is Division ? ✦ Properties of Division ✦ Division by Ten, Hundred or Thousand
- ✦ Division by 1-Digit and 2-Digit Numbers ✦ Word Problems on Division ✦ Mixed Operations (DMAS)

What is Division ?

Division of two natural numbers is the process of calculating the numbers of times one number is contained within another one.

Its sign is ' \div '. The **divisor is the number by which a number is divided. Dividend is the number to which is divided. If some remains after division is called remainder. The answer is called quotient.**

$$\begin{array}{r} 4 \leftarrow \text{Quotient} \\ \text{Divisor} \rightarrow 6 \overline{)25} \leftarrow \text{Dividend} \\ \underline{24} \\ 1 \leftarrow \text{Remainder} \end{array}$$

Properties of Division

1. Every non-zero number is divisible by itself exactly and the quotient is 1.
For example, $10,385 \div 10,385 = 1$
2. Every number is divisible by 1 exactly and the quotient is the number itself.
For example, $24,387 \div 1 = 24,387$
3. Division of a number by zero is not possible.
4. When zero is divided by a non-zero number, the quotient is zero.
For example, $0 \div 15,476 = 0$

Division by Ten, Hundred or Thousand

1. If we divide such a number that has equal or more zeroes on its right than divisor. To multiply such numbers by 10, 100 or 1000 we remove 1, 2 or 3 zeros respectively from their right.

$$200 \div 10 \Rightarrow 20 \overline{)0} = 20 \quad 3,000 \div 100 \Rightarrow 30 \overline{)00} = 30$$

$$50,000 \div 1,000 \Rightarrow 50 \overline{)000} = 50$$

2. If we divide such a number that has not zeroes on its right. To multiply such numbers by 10, 100 or 1000, ones, tens and hundreds places digits are remainders respectively and remain numbers are quotients.

$$315 \div 10 \Rightarrow 31 \overline{)5} = 31 \text{ is quotient and } 5 \text{ is remainder.}$$

$$1,448 \div 100 \Rightarrow 14 \overline{)48} = 14 \text{ is quotient and } 48 \text{ is remainder.}$$

$$12,693 \div 1,000 \Rightarrow 12 \overline{)693} = 12 \text{ is quotient and } 693 \text{ is remainder.}$$



Exercise 5.1

Fill in the blanks

- | | |
|---|---------------------------------|
| 1. $5677 \div 5,677 =$ _____ | 2. $0 \div 1,245 =$ _____ |
| 3. $0 \div 10,748 =$ _____ | 4. $10,748 \div 1 =$ _____ |
| 5. $4329 \div 1 =$ _____ | 6. $10,748 \div 10,748 =$ _____ |
| 7. $5,00,400 \div 10 =$ _____ | 8. $3,04,000 \div 100 =$ _____ |
| 9. $1,24,510 \div 10 =$ _____ | 10. $3,000 \div 1,000 =$ _____ |
| 11. $9999 \div 9999 =$ _____ | 12. $0 \div 10 =$ _____ |
| 13. $17,000 \div 100 =$ _____ | 14. $1,24,000 \div 100 =$ _____ |
| 15. $90,015 \div 1,000 =$ quotient _____ remainder _____ | |
| 16. $2,57,616 \div 100 =$ quotient _____ remainder _____ | |
| 17. $572 \div 10 =$ quotient _____ remainder _____ | |
| 18. $3806 \div 10 =$ quotient _____ remainder _____ | |
| 19. $16,304 \div 100 =$ quotient _____ remainder _____ | |
| 20. $4,98,007 \div 100 =$ quotient _____ remainder _____ | |
| 21. $2,75,661 \div 1000 =$ quotient _____ remainder _____ | |

Division By 1-Digit Numbers

Example 1 : Divide 732 by 5 and check your answer.

Solution : **Check** : Dividend = Quotient \times Divisor + Remainder

We multiply the quotient by the divisor.
 $146 \times 5 = 730$ and $730 + 2$ (remainder)
 $= 732$ dividend

So, division is correct.

$732 \leftarrow$ We get the original dividend.

Quotient = 146, Remainder = 2

$$\begin{array}{r}
 146 \leftarrow \text{Quotient} \\
 \text{Divisor} \rightarrow 5 \overline{)732} \leftarrow \text{Dividend} \\
 \underline{5} \\
 23 \\
 \underline{20} \\
 32 \\
 \underline{30} \\
 2 \leftarrow \text{Remainder}
 \end{array}$$



Exercise 5.2

Divide and check your answer :

- | | | |
|--------------------------|--------------------------|--------------------------|
| 1. $4,056 \div 8$ _____ | 2. $3,696 \div 8$ _____ | 3. $2,178 \div 9$ _____ |
| 4. $1,204 \div 5$ _____ | 5. $1,395 \div 6$ _____ | 6. $6,728 \div 8$ _____ |
| 7. $5,264 \div 7$ _____ | 8. $6,789 \div 9$ _____ | 9. $5,678 \div 4$ _____ |
| 10. $7,231 \div 5$ _____ | 11. $4,109 \div 3$ _____ | 12. $5,172 \div 9$ _____ |
| 13. $3,265 \div 6$ _____ | 14. $3,120 \div 7$ _____ | 15. $1,469 \div 4$ _____ |

➤ Division by 2-Digit Numbers

Example 2 : Divide 9,734 by 15 and check your answer.

Solution : 15 can not divide 9, so we take the next digit 7 with 9, that is 9 thousands and 7 hundreds or 97 hundreds.

15 goes 6 times in 97.

$15 \times 6 = 90$ hundreds.

Subtract 90 from 97; remainder 7 hundreds.

Bring down 3 tens. 7 hundreds 3 tens = 73 tens.

15 goes 4 times in 73.

$15 \times 4 = 60$ tens, subtract, remainder 13 tens.

Bring down 4 ones.

13 tens 4 ones = 134 ones. 15 goes 8 times in 134 ones.

$15 \times 8 = 120$, subtract, remainder 14 ones.

Quotient = **648**, Remainder = **14**

Check : Dividend = Quotient \times Divisor + Remainder

Multiply 468 by the divisor 15.

$648 \times 15 = 9720$ and $9720 + 14 = 9734$ (dividend)

So, division is correct.

$$\begin{array}{r} 648 \\ 15 \overline{)9734} \\ \underline{90} \\ 73 \\ \underline{60} \\ 134 \\ \underline{120} \\ 14 \end{array}$$

Example 3 : Divide 8,080 by 39 in the long division form.

Solution : First, we look at the thousands $8 < 39$ so, we put the 8 thousands together with 0 hundreds $80 > 39$, so we can divide $80 \div 39 = 2$, remainder = 2

Next, we join the remainder of 2 hundreds to the tens column (bring down 8 tens) $28 < 39$, so it goes 0 times, 28 remainder as such.

Next, we join the remainder of 28 tens to ones column (bring down 0 ones) $280 > 39$, so we can divide $280 \div 39 = ?$

$39 \times 7 = 273$

Hence, Quotient = **207**, Remainder = **7**

$$\begin{array}{r} 207 \\ 39 \overline{)8080} \\ \underline{78} \\ 280 \\ \underline{273} \\ 7 \end{array}$$



Exercise 5.3

Divide in the long form :

- | | | | |
|---------------------|---------------------|---------------------|---------------------|
| 1. $6,153 \div 46$ | 2. $4,953 \div 36$ | 3. $5,092 \div 32$ | 4. $4,806 \div 28$ |
| 5. $1,000 \div 25$ | 6. $628 \div 27$ | 7. $932 \div 25$ | 8. $618 \div 22$ |
| 9. $6,703 \div 41$ | 10. $4,444 \div 39$ | 11. $7,575 \div 55$ | 12. $8,765 \div 65$ |
| 13. $7,370 \div 59$ | 14. $4,009 \div 39$ | 15. $2,825 \div 23$ | 16. $8,235 \div 53$ |
| 17. $9,999 \div 88$ | 18. $9,999 \div 99$ | 19. $9,430 \div 86$ | 20. $7,593 \div 72$ |
| 21. $5,296 \div 49$ | 22. $7,462 \div 57$ | 23. $8,430 \div 66$ | 24. $9,420 \div 91$ |
| 25. $6,320 \div 56$ | 26. $7,823 \div 74$ | 27. $6,495 \div 58$ | 28. $9,752 \div 82$ |

Word Problems on Division

Example 4 : 3,312 delicious apples are packed in 46 boxes. How many apples were packed in a box ?

Solution : 46 boxes have 3312 apples. 1 box has $3,312 \div 46$ apples.

$33 < 46$ so, we cannot divide 33, we divide 331 by 46

46 goes 7 times in 331.

$46 \times 7 = 322$

Subtract 322 from 331, remainder is 9.

Bring down 2, it makes 92.

46 goes 2 times in 92.

$46 \times 2 = 92$

Subtract 92 from 92, remainder 0.

Each box has **72 apples**.

$$\begin{array}{r} 72 \\ 46 \overline{)3312} \\ \underline{722} \\ 92 \\ \underline{92} \\ \times \end{array}$$



Exercise 5.4

Answer the following questions :

- In a garden, 1,887 trees are in 37 rows. If each row has the same number of trees, then how many trees are there in one row ? _____
- The total train fare of 34 persons was ₹ 6,494. What was the fare of one person ? _____
- 5559 books are arranged on 51 shelves. If equal number of books are kept on each shelf, then how many books are there on each shelf ? _____
- One truck can take a load of 68 bags. How many trucks will be required to take a load of 4896 such bags ? _____
- How many hours are there in 4,980 minutes ? _____
- An aeroplane travels 16,614 km in 18 hours. How many km does it travel per hour ? _____
- The cost of 35 tricycles is ₹ 11,410. Find the cost of one tricycle. _____
- From one roll of film I can get 24 photos. How many rolls do I need to take 1,032 photos ? _____
- How many bits each of length 75 m can be cut from 6,225 m of a rope ? What is the length left ? _____
- 92 crates of Limca can be put in a wagon. How many wagons are required for 11,500 crates ? _____
- There are 2,898 students in a school. They are made to stand in 46 rows equally. How many students are there in each row ? _____

12. 97 kilograms of wheat can be filled in a sack. How many sacks are required to fill 9,991 kg of wheat ? _____
13. 36 watches can be purchased for ₹ 9,540. What is the cost of one watch ? _____
14. Divide the greatest number of four digits by 95. _____
15. Reshu had 8,574 pearls. She made necklaces of 24 pearls each. How many necklaces were made and how many pearls were left ? _____
16. How many pieces of cloth can Riya cut from a cloth of 310 metres, if each piece is 10 m long ? _____
17. How many 10 rupee notes Mohan can get for ₹ 4160 ? _____
18. A book has 300 pages. If Sania reads 10 pages a day, then in how many days will she complete reading ? _____
19. 208 bananas were divided equally among 100 persons. How many bananas did every person get and how many bananas were left ? _____
20. How many 100 rupee notes Neeti can get for ₹ 6,000 ? _____
21. A book costs ₹ 100. How many such books can be purchased for ₹ 57,200 ? _____
22. A toy costs ₹ 1,000. How many toys can be purchased for ₹ 63,000 ? _____
23. ₹ 1,212 are divided among 10 persons. What will every person get and how many rupees will be left ? _____

Hots Questions

6 students worked together on a maths project. There were 6 sets of abacus on each student's table. Each abacus had 60 beads. There were 12 extra beads for each abacus. The beads were in 6 colours — red, white, yellow, black, green, blue. If there were an equal number of beads of each colour, how many beads of each colour were there on each student's table ?

➤ Mixed Operations (DMAS)

Sometimes all the four basic operations are involved in a question. Then we perform the operations in the following order :

Division, multiplication, addition, subtraction or DMAS

Example 5 : Simplify : $48 + 72 \div 9 \times 3 - 5 \times 7 + 4$

Solution : $48 + 72 \div 9 \times 3 - 5 \times 7 + 4$

$$\begin{aligned}
 &= 48 + 8 \times 3 - 5 \times 7 + 4 && \text{(Dividing)} \\
 &= 48 + 24 - 35 + 4 && \text{(Multiplying)} \\
 &= 48 + 24 + 4 - 35 && \text{(Making suitable order)} \\
 &= 76 - 35 && \text{(Adding)} \\
 &= 41 && \text{(Subtracting)}
 \end{aligned}$$

Example 6 : A book costs ₹ 175 and a bag costs thrice the book. Find the total cost of 6 books and 3 bags.

Solution : Cost of 1 bag = ₹ 175 × 3
Cost of 3 bags = ₹ 175 × 3 × 3
Cost of 6 book = ₹ 175 × 6
Total cost (in ₹) = ₹ 175 × 3 × 3 + 175 × 6
= ₹ 175 × 9 + 175 × 6
= 1575 + 1050 = ₹ 2625



Exercise 5.5

Simplify :

- $25 \times 2 + 3 \times 18 \div 3 - 18$
- $8 \times 16 \div 4 - 8 + 6 - 5$
- $10 \times 3 - 6 \div 2 \times 4 + 6 \times 2$
- $12 + 15 - 8 + 3 - 4$
- $42 \div 7 \times 3 - 8 + 9 - 2$
- $6 \times 3 + 15 \div 3 \times 2 - 3 - 4$
- $63 \div 9 \times 3 - 56 \div 8 + 36 \div 9$
- $100 \div 20 - 5 \times 2 + 60 \div 12$
- $19 \times 5 - 18 \times 12 \div 4$
- $15 \times 5 - 12 \times 6 + 4$
- 80 mangoes were divided equally among 16 children. 6 children kept their mangoes in a bag. 5 other children also kept 4 mangoes each in the same bag. How many mangoes are there in that bag now ?
- ₹ 63 were divided among 7 girls equally. 5 girls spent their money to purchase snacks. 2 girls spent ₹ 3 each to purchase fruits. How many rupees the girls spent in all ?
- A notebook costs ₹ 10 and a book costs thrice the notebook. Find the total cost of 3 books and 5 notebooks.
- 16 flowers are used in making a garland. Half of it are used in decorating a flower vase. How many flowers are required for making 10 garlands and decorating 5 vases ?

Let's Recall

Multiple Choice Questions (MCQs) :

Tick (✓) the correct option :

- $25756 \div 100 =$ quotient _____ remainder _____
(a) 25,766 (b) 25,756 (c) 25,765 (d) None of these
- $50512 \div 77 = ?$
(a) 636 (b) 556 (c) 616 (d) 656
- $56 + 63 \div 7 \times 8 \div 4 - 33 = ?$
(a) 41 (b) 1 (c) 18 (d) None of these

Learning Objectives :

- What is Unitary Method ?
- How We Apply Unitary Method ?

What is Unitary Method ?

The unitary method is used to find the value of a unit from the value of a multiple and hence the value of a multiple.

How We Apply Unitary Method ?

- When the price, number, quantity, etc. of many articles are given, we **divide** them by the number of articles to find them of one article.

For example, Price of 9 toys = ₹ 90
Price of 1 toy = ₹ 90 ÷ 9 = ₹ 10

- When the price of one article is given, we **multiply** it by the number of articles to find the price of many articles.

For example, Price of 1 toy = ₹ 10
Price of 15 toys = ₹ 10 × 15 = ₹ 150

- We can mix the above two operations.

Example 1 : The price of 9 toys is ₹ 90. What will be the price of 15 toys ?

Solution : ∴ Price of 9 toys = ₹ 90
∴ Price of 1 toy = ₹ 90 ÷ 9 = ₹ 10
∴ Price of 15 toys = ₹ 10 × 15 = ₹ 150

Fact File

[∴ is the symbol of 'because' and ∴ is the symbol of 'therefore'.]

'Unitary' word is derived from the word 'unit'. First, we find the price of **unit** (one article) by division operation. Then we find the price of **many** articles by multiplication operation.

Thus unitary method involves both the operations division and multiplication.

Example 2 : Rosy runs 200 m in 10 minutes. How many metres will she run in 4 minutes ?

Solution : ∴ Distance run by Rosy in 10 minutes = 200 m
∴ Distance run by Rosy in 1 minute = 200 ÷ 10 = 20 m
∴ Distance run by Rosy in 4 minutes = 20 × 4 = 80 m

Unitary method does not work where quantities do not change in proportion :

1. One stone can chase away 2 crows sitting on a tree. How many stones do we need to chase away 10 crows sitting on the tree?
—Certainly not 5 stones
2. The length of a 10 rupee note is 14 cm. What will be the length of a 20 rupee note?
—Certainly not 28 cm
3. Anjali is 100 cm tall at the age of 8 years. How tall will she be at the age of 16 years ?
—Certainly not 200 cm



Exercise 6

1. 5 litre milk costs ₹ 85. What will be the cost of 8 litre milk ? _____
2. 12 notebooks cost ₹ 48. Find the cost of 15 notebooks. _____
3. One dozen pencils cost ₹ 36. What will be the cost of 16 pencils ? _____
4. 435 kg rice is filled equally in 15 sacks. How much rice do 7 sacks contain ? _____
5. 8 metre cloth costs ₹ 176. What will 5 metre cloth cost ? _____
6. Cost of 4 kg sugar is ₹ 60. Find the cost of 10 kg sugar. _____
7. Cost of 10 kg rice is ₹ 90. Find the cost of 4 kg rice. _____
8. A bicycle rider goes 35 km in 5 hours. How much distance will he go in 3 hours ? _____
9. Cost of 12 cricket balls is ₹ 36. What is the cost of 5 cricket balls ? _____
10. A car travels 180 km in 4 hours. How many km will it travel in 3 hours ? _____
11. A train travels 219 km distance in 3 hours. How many kilometres will it travel in 8 hours ? _____
12. 5 bundles of sugarcane cost ₹ 80. How much will 3 bundles cost ? _____
13. Richa makes 279 toys in 9 days. How many toys does she make in 6 days ? _____
14. The cost of 1 quintal wheat is ₹ 700. What is the cost of 40 kg wheat ?
[Hint : 1 quintal = 100 kg] _____
15. 15 kg vegetable oil costs ₹ 465. Find the cost of 4 kg vegetable oil. _____
16. There are 80 bottles in 4 crates. How many bottles are there in 12 crates ? _____
17. An aircraft covers 1540 km in 14 hours. How far will it go in 8 hours ? _____

18. A factory produces 3750 screws in 3 days. How many screws will be produced in 21 days ? _____
19. 20 trucks can carry 5000 bags of cement. How many bags of cement can be carried in 7 trucks ? _____
20. The rent of a house for a year is ₹ 2400. Find the rent for 3 months. _____
21. There are 400 rubber bands in 8 packets. How many rubber bands are there in 15 packets ? _____
22. A car runs 285 km on 15 L petrol. How many kilometres can it run on 10 L petrol ? _____

Let's Recall

Multiple Choice Questions (MCQs) :

Tick (✓) the correct option :

- The sum of 42,294 and 26,947 is _____.
 (a) 58241 (b) 68342 (c) 69241 (d) 68244
- $82,978 + \dots = 82,979$
 (a) 0 (b) 1 (c) 100 (d) 10
- $56,314 - \dots = 16,118$
 (a) 40196 (b) 40176 (c) 41196 (d) 42186
- The sum of $6394 + 19750$ is _____.
 (a) 25144 (b) 26144 (c) 26844 (d) 26244
- There were 3856 trees in a forest. In another forest there were 4795 trees. How many more trees were there in the second forest ?
 (a) 930 (b) 939 (c) 1689 (d) 1600
- The difference of the largest 5-digit number and smallest 3-digit number is _____.
 (a) 99,982 (b) 98,999 (c) 99,899 (d) 98,889
- Ram, Rahul and Rohit shared a bag of marbles. The bag contained 33272 marbles. How many marbles were left over after the friends shared equally ?
 (a) 90 (b) 91 (c) 6 (d) 2
- The remainder is always _____.
 (a) less than the divisor (b) more than the divisor
 (c) equal to the divisor (d) 1 more than the divisor
- On multiplying 4000 and 70, the number of zeros placed at the right side of the product is _____.
 (a) 3 (b) 5 (c) 4 (d) 2
- The product of zero and number is _____.
 (a) Zero (b) One
 (c) The number itself (d) None of these

Characteristics of Multiples and Factors

Learning Objectives :

- ◆ Multiples, Common Multiples and Properties of Multiples
- ◆ Even Numbers and Odd Numbers
- ◆ Factors
- ◆ Divisible Numbers
- ◆ Properties of Factors
- ◆ Prime and Composite Numbers
- ◆ What is Test of Divisibility ?
- ◆ Test of Divisibility by 2, by 5, by 10, etc.
- ◆ Test of Divisibility by 3, by 9, etc.

➤ Multiples

When we multiply any two or more numbers, we get a product. The product is called a multiple of each of the numbers multiplied.

We know $4 \times 1 = 4$ $4 \times 2 = 8$ $4 \times 3 = 12$ $4 \times 4 = 16$

The numbers 4, 8, 12, 16, are obtained on **multiplying** 4 by 1, 2, 3, 4,

The numbers 4, 8, 12, 16, are called **multiples** of 4.

Here is a table which shows the first ten multiples of numbers 1 to 10 :

Numbers	Multiples									
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

➤ Common Multiples

Look at the multiples of 2 and 3.

Multiples of 2 : 2, 4, 6, 8, 10, 12, 14, 16, 18, 20,

Multiples of 3 : 3, 6, 9, 12, 15, 18, 21, 24, 27, 30,

We see that 6 is a multiple of both 2 and 3. Similarly, 12 and 18 are also multiples of both 2 and 3.

6, 12 and 18 are called **common** multiples of 2 and 3.

Now, look at the multiplication fact : $2 \times 3 \times 4 = 24$.

Here 24 is common multiple of 2, 3 and 4 each.

⇒ Properties of Multiples

1. Every number is a multiple of itself.

For example, $7 \times 1 = 7$ $12 \times 1 = 12$
7 is a multiple of 7. 12 is a multiple of 12.

2. Every number is a multiple of 1.

Because any number multiplied by 1 gives itself.

For example, $1 \times 8 = 8$

3. The multiples of a number are not countable.

4. Every multiple of a whole number is either **greater than** or **equal to** that number.

For example, 6, 12, 18, 24, multiples of 6 are greater than 6 while multiple 6 is equal to 6.

5. Zero is a multiple of every number. Because every number multiplied by zero gives zero.

For example, $9 \times 0 = 0$

6. A multiple of a number can be divided by that number exactly (without any remainder).

15 is a multiple of 3 as $15 \div 3 = 5$ and 63 is a multiple of 7 as $63 \div 7 = 9$.

⇒ Even Numbers

A number which is a multiple of 2 is called an **even number**.

2, 4, 6, 8, 10, 12, 14, ... are even numbers.

Three dots (...) show that even numbers are much more and not countable.

Even numbers have digits 0, 2, 4, 6 or 8 at their ones place.

⇒ Odd Numbers

A number which is not a multiple of 2 is called an **odd number**.

1, 3, 5, 7, 9, 11, 13, 15, ... are odd numbers.

Three dots (...) show that odd numbers are much more and not countable.

Odd numbers have digits 1, 3, 5, 7 or 9 at their ones place.

If we add **1** to an odd number it becomes an **even number**.

If we add **1** to an even number it becomes an **odd number**.

Example 1 : Write the next three multiples of 7.

7, 14, 21, 28,

Solution : 35, 42, 49

Example 2 : Write the first five multiples of 12.

Solution : 12, 24, 36, 48, 60

Example 3 : Is 60 a multiple of 12 ?

Solution : $60 \div 12 = 5$

60 is exactly divisible by 12, so 60 is a multiple of 12.

Example 4 : Write the numerals for all even numbers between 51 to 71.

Solution : Even numbers have digits 0, 2, 4, 6 or 8 at their ones place.

So, the even numbers between 51 to 71 are :

52, 54, 56, 58, 60, 62, 64, 66, 68, 70

Example 5 : Are all the multiple of 6 also multiple of 3 ?

Solution : Yes, because 6 is a multiple of 3.



Exercise 7.1

- Write first five multiples of :
(a) 8 (b) 12 (c) 17 (d) 20 (e) 25
- Write the next three multiples of :
(a) 4 : 4, 8, 12, 16 (b) 6 : 6, 12, 18, 24
(c) 9 : 9, 18, 27, 36 (d) 14 : 14, 28, 42, 56
- Encircle the even numbers :
6 9 12 14 25 36 58 73 94
- Is the first number multiple of the second ?
(a) 30, 5 (b) 45, 9 (c) 51, 7 (d) 36, 12
(e) 64, 16 (f) 60, 13 (g) 90, 18 (h) 90, 20
- Write the numerals for all the even numbers between 31 to 51.
- Encircle the odd numbers :
7 10 15 21 24 36 55 92
- Write the set of multiples, then find two common multiples of :
(a) 3 and 4 (b) 3 and 5 (c) 4 and 5
- Write the numerals for all the odd numbers between 40 and 60.
- Are all the multiples of 6 also multiples of 2 ? Why ?
- Fill in the blanks :
(a) Smallest even number is _____ .

- (b) Smallest even number of 2-digits is _____ .
- (c) Smallest even number of 3-digits is _____ .
- (d) If we add 1 to an even number, we get an _____ number.
- (e) If we add 1 to an odd number, we get an _____ number.
- (f) Every number is a multiple of itself and _____ .
- (g) Smallest multiple of 15 (except zero) is _____ .
- (h) Fifth multiple of 12 is _____ .
- (i) Multiples of 8 between 30 and 50 is _____ .
- (j) Multiple of every number is _____ .

11. Look at the word **DICTIONARY** and numbers the letter as shown :

D	I	C	T	I	O	N	A	R	Y
1	2								

Vivek has made a few words from the word **DICTIONARY** but some letters are missing. Read the clues and fill in the blanks to make meaningful words.

- ⊙ I C I T Y (The missing letter is the smallest multiple of 3.)
- ⊙ I A C I O N (The missing letter is the second multiple of 2.)
- ⊙ I D I A R (the missing letter is the second multiple of 5.)
- ⊙ I R T I O N (The missing letter is the fourth multiple of 2.)

⇒ Factors

Write multiplication factors of 18.

$$1 \times 18 = 18 \text{ or } 9 \times 2 = 18 \text{ or } 6 \times 3 = 18$$

Thus, we can divide 18 in ones, twos, threes, sixes and eighteen, with none left over. 1, 2, 3, 6, 9 and 18 are called factors of the number 18.

When we multiply any two or more numbers, we get a product. Each number is called a factor of the product.

To find the factors of any numbers is called **factorization**.

⇒ Divisible Numbers

A number is divisible by another if on dividing, the remainder is 0.

Other number is a factor of the first number.

For example,

$$\begin{array}{r} 5 \\ 7 \overline{)35} \\ \underline{35} \\ 0 \end{array}$$

35 is divisible by 7
or
7 is a factor of 35.

$$\begin{array}{r} 7 \\ 6 \overline{)42} \\ \underline{42} \\ 0 \end{array}$$

42 is divisible by 6
or
6 is a factor of 42.

$$\begin{array}{r} 7 \\ 9 \overline{)65} \\ \underline{63} \\ 2 \end{array}$$

65 is not divisible by 9
or
9 is not a factor of 65.

➤ Properties of Factors

Numbers	All the Factors			
1	1			
2	1	2		
3	1	3		
4	1	2	4	
5	1	5		
6	1	2	3	6
7	1	7		
8	1	2	4	8
9	1	3	9	
10	1	2	5	10

Fact File

1. Every number is a factor of itself.
2. 1 is a factor of every number.
3. The factors of a number are countable.
4. Every factor of a number is either less than or equal to the number.
5. Zero is never a factor of any

➤ Prime Numbers

A number which has **only two** factors (1 and itself) is called a **prime number**. For example 2, 3, 5, 7 (see table).

Other prime numbers up to 100 are 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.

⇒ Composite Numbers

A number which has **more than two** factors is called a **composite number**.

For example, 4, 6, 8, 9, 10 (see table).

Fact File

1. Number 1 has only one factor (itself), Therefore, 1 is neither prime nor a composite number.
2. The smallest prime number is 2. It has only two factors : 1 and 2.
3. 2 is the only number which is even and prime both.
4. Every even number greater than 2 is a composite number because it has more than two factors (1, 2 and itself).
5. Every prime number is odd except 2.

Example 6 : Find all the factors of 48.

Solution : Multiplication facts of 48 are

$$1 \times 48 = 48 \quad 2 \times 24 = 48 \quad 3 \times 16 = 48$$

$$4 \times 12 = 48 \quad 6 \times 8 = 48$$

All the factors of 48 are 1, 2, 3, 4, 6, 8, 12, 16, 24, 48.

Example 7 : Find whether 23 is prime or composite.

Solution : 23 has only two factors 1 and 23.

Hence, 23 is a prime number.

Example 8 : Find whether 35 is prime or composite.

Solution : 35 has more than two factors : 1, 5, 7, 35.

Hence, 35 is a composite number.



Exercise 7.2

1. Write the smallest and greatest factors of :
(a) 30 (b) 49 (c) 59 (d) 80 (e) 95
2. Find how many factors does each have :
(a) 4 (b) 7 (c) 1 (d) 10 (e) 12
3. Find whether the given numbers are prime or composite :
(a) 4 (b) 6 (c) 11 (d) 17 (e) 22
(f) 49 (g) 29 (h) 61 (i) 72 (j) 89
4. Is the first number divisible by the second ?
(a) 34, 5 (b) 40, 6 (c) 56, 8 (d) 72, 9 (e) 80, 12
5. Write any two factors of each :
(a) 12 (b) 16 (c) 25 (d) 42 (e) 80

6. Find all the factors of each :
- (a) 12 (b) 15 (c) 24 (d) 60 (e) 76
7. Is every odd number prime ? Why (Check whether 9, 15 and 21 are prime) ?
8. Find all the factors of each and separate prime factors from them :
- (a) 10 (b) 12 (c) 14 (d) 18 (e) 22
9. Write all the prime numbers between 1 and 40.
10. Fill in the blanks :
- (a) Number _____ is neither prime nor composite.
- (b) Smallest prime number is _____.
- (c) _____ is the only number which is even and prime both.
- (d) The smallest composite number is _____.
- (e) Every prime number is odd except _____.
- (f) Every number is a factor of _____.
- (g) _____ is a factor of all numbers.
- (h) _____ is not a factor of any number.
- (i) A prime number has _____ factors.
- (j) A composite number has _____ factors.



Mental Maths

Mental Maths

Write T for true or F for false :

- | | |
|--|--|
| 1. 5 and 3 are factors of 15. <input type="checkbox"/> | 2. 2 and 4 are factors of 24. <input type="checkbox"/> |
| 3. 7 and 5 are factors of 35. <input type="checkbox"/> | 4. 8 and 9 are factors of 98. <input type="checkbox"/> |

➤ What is Test of Divisibility ?

If we divide a number by other, two positions can be possible :

1. Number is divided by other.
2. Number is not divided by other.

To test a number is divisible by other is called test of divisibility.

➤ Test of Divisibility by 2

Multiples of 2 are 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, etc. They have one's digits as 0, 2, 4, 6 or 8 (divisible by 2).

A number is divisible by 2 if it has 0, 2, 4, 6 or 8 at its ones place.

➤ Test of Divisibility by 5

Multiples of 5 are 5, 10, 20, 25, 30,

Their ones digit is either 0 or 5.

A number is divisible by 5 if it has 5 or 0 at its ones place.

⇒ Test of Divisibility by 10

Multiples of 10 are 10, 20, 30, 40, 50,

All these numbers are divisible by 10. Note that ones digit of every multiple is zero.

A number is divisible by 10 if it has 0 at its ones place.

Example 9 : Which numbers are divisible by 5 ?

54, 75, 145, 970, 1234

Solution : 54 has ones digit neither 0 nor 5, hence, it is not divisible by 5.

75 has ones digit as 5, hence, it is divisible by 5.

145 has ones digit as 5, hence, it is divisible by 5.

970 has ones digit as 0, hence, it is divisible by 5.

1234 has one digit neither 0 nor 5, hence, it is not divisible by 5.

Example 10 : What smallest number should be added to 168 to make it divisible by 10 ?

Solution : There is digit 8 at ones place in 168. To make 168 divisible by 10, the digit should be 0. The smallest number to be added = $10 - 8 = 2$.



Exercise 7.3

☞ Test whether each of the following numbers are divisible by 10 ?

- | | | | |
|--------|--------|--------|---------|
| 1. 60 | 2. 46 | 3. 225 | 4. 105 |
| 5. 970 | 6. 309 | 7. 380 | 8. 4009 |

☞ Test whether each of the following numbers are divisible by 5 ?

- | | | | |
|----------|---------|---------|---------|
| 9. 45 | 10. 54 | 11. 135 | 12. 104 |
| 13. 1089 | 14. 515 | 15. 557 | 16. 955 |

☞ Test whether each of the following numbers are divisible by 2 ?

- | | | | |
|----------|----------|----------|----------|
| 17. 445 | 18. 396 | 19. 1278 | 20. 1003 |
| 21. 2223 | 22. 1144 | 23. 1352 | 24. 2441 |

25. What smallest number should we add to 2543 to make it divisible by 5 ? _____

26. What smallest number should we add to 1457 to make it divisible by 2 ? _____

27. Is a number divisible by 10 even or odd ? _____

28. Write five numbers divisible by 5 but not divisible by 10. _____

29. Is there any number which is divisible by 10 but not by 5 ? _____

30. What smallest number should we subtract from 888 to make it divisible by 10 ? _____

⇒ Divisibility by 3

Add the digits of some multiples of 3.

Multiple of 3	Sum of digits	Is the sum of digits divisible by 3 ?
$44 \times 3 = 132$	$1 + 3 + 2 = 6$	Yes
$245 \times 3 = 735$	$7 + 3 + 5 = 15$	Yes

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

➔ Divisibility by 9

Add the digits of some multiples of 9.

Multiple of 9	Sum of digits	Is the sum of digits divisible by 9 ?
$17 \times 9 = 153$	$1 + 5 + 3 = 9$	Yes
$132 \times 9 = 1188$	$1 + 1 + 8 + 8 = 18$	Yes

A number is divisible by 9 if the sum of its digits is divisible by 9.

Example 11 : Is 6943 divisible by 3 ?

Solution : $6 + 9 + 4 + 3 = 22$, which is not divisible by 3, so 6943 is not divisible by 3.

Example 12 : Is 7308 divisible by 9 ?

Solution : $7 + 3 + 0 + 8 = 18$, which is divisible by 9, so 7308 is divisible by 9.

Fact File

All the numbers divisible by 9 are divisible by 3. But all the numbers divisible by 3 are not divisible by 9. Because 3 is a factor of 9.



Exercise 7.4

☞ Test whether each of the following numbers are divisible by 3 ?

1. 75 2. 47 3. 89 4. 365
5. 105 6. 8082 7. 1006 8. 1182

☞ Test whether each of the following numbers are divisible by 9 ?

9. 72 10. 49 11. 345 12. 123
13. 387 14. 783 15. 1044 16. 1225

17. If a number is divisible by 3, will it also be divisible by 9 ? Give three examples.

18. What smallest number should we add to 545 to make it divisible by 9 ?

19. If a number is divisible by 9, will it also be divisible by 3 ? Give two examples.

20. Write the smallest digit to make the number divisible by 3 :

- (a) 2 (b) 4 (c) 6
(d) 0 (e) 7 (f) 5

Highest Common Factor (HCF)

Learning Objectives :

- ❖ What is Prime Factorization ? ❖ Methods of Prime Factorization ❖ Common Factor and Highest Common Factor (HCF)
- ❖ Co-Prime Numbers ❖ Co-Divisible Numbers ❖ Highest Common Factor (HCF) by Prime Factorization
- ❖ Properties of Highest Common Factor

➤ What is Prime Factorization ?

We have studied a prime number. A factor that is a prime number is called prime factor.

For example, $210 = 21 \times 10$ and 21 and 10 are factors of 210. But 21 and 10 are composite number. So 21 and 10 are not prime factors.

Look again $210 = 2 \times 3 \times 5 \times 7$ and 2, 3, 5 and 7 are factors of 210 and prime numbers too. So 2, 3, 5 and 7 is prime factors.

➤ Methods of Prime Factorization

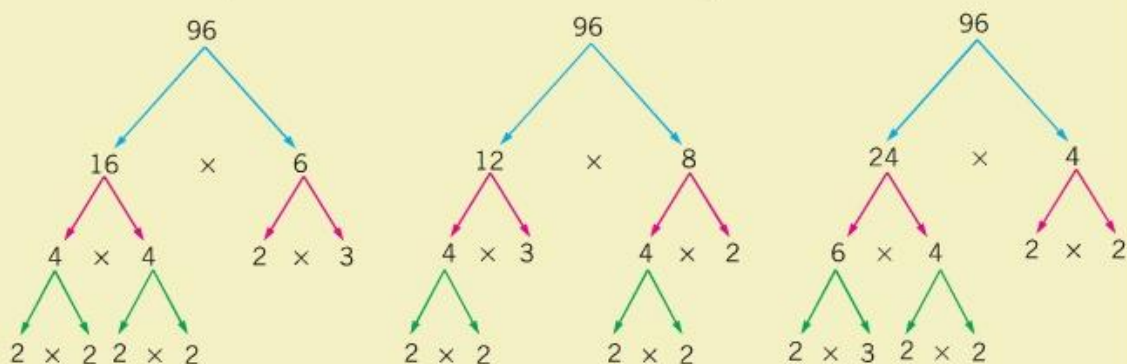
1. Factor Tree Method

To know prime factors of any numbers, we divide the numbers by simple composite number and then we divide factors till we do'n't get prime factors.

Example 1 : Find the prime factors of 96.

Solution : $96 = 16 \times 6$ or 12×8 or 24×4

We can show this process in the form of a tree in different ways :



So the prime factors of $96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$ in three has given above.

2. Division Method

First we test the divisibility of the given numbers by prime numbers 2, 3, 5, 7, 11, etc. Then we divide the number by those numbers which divide exactly.

Example 1 : Find the prime factors of 30.
Solution : 30 has 0 at ones place, so 30 is divisible by 2.
 $1 + 5 = 6$, so 15 is divisible by 3.
 $30 = 2 \times 3 \times 5$

2	30
3	15
	5

Example 2 : Find the prime factors of 210.
Solution : 210 has 0 at ones place, so 210 is divisible by 2.
 $1 + 0 + 5 = 6$, so 105 is divisible by 3.
35 has 5 at ones place, so it's divisible by 5.
 $210 = 2 \times 3 \times 5 \times 7$

2	210
3	105
5	35
	7

Exercise 8.1

☞ Find the prime factors of the following numbers by Factor Tree method :

- | | | | |
|-------|---------|--------|--------|
| 1. 48 | 2. 56 | 3. 60 | 4. 64 |
| 5. 24 | 6. 30 | 7. 40 | 8. 36 |
| 9. 84 | 10. 100 | 11. 98 | 12. 96 |

☞ Find the prime factors of the following numbers by Division method :

- | | | | |
|---------|---------|---------|---------|
| 13. 40 | 14. 44 | 15. 30 | 16. 36 |
| 17. 98 | 18. 100 | 19. 104 | 20. 108 |
| 21. 112 | 22. 120 | 23. 128 | 24. 132 |
| 25. 168 | 26. 198 | 27. 216 | 28. 224 |
| 29. 162 | 30. 200 | 31. 225 | 32. 243 |

☞ Common Factor

We consider two numbers 20 and 28.

Find out all the factors of 20 and 28.

$$\begin{array}{llll} & 20 = 1 \times 20; & 20 = 2 \times 10; & 20 = 4 \times 5 \\ \text{And} & 28 = 1 \times 28 & 28 = 2 \times 14; & 28 = 4 \times 7 \end{array}$$

All the factors of 20 = 1, 2, 4, 5, 10, 20

All the factors of 28 = 1, 2, 4, 7, 14, 28

The common factors of 20 and 28 are 1, 2 and 4.

☞ Highest Common Factor (HCF)

Common factors of 20 and 28 = 1, 2, 4

In these factors, 4 is the highest (greatest) common factor.

Hence, highest common factor of 20 and 28 = 4

Co-Prime Numbers

Two (or more) numbers which have only 1 as their common factor are called **co-prime numbers**.

For example, Factors of 16 = 1, 2, 4, 8, 16

Factors of 27 = 1, 3, 9, 27

\therefore Common factor of 16 and 27 = 1

Hence, 16 and 27 are co-prime.

Co-Divisible Numbers

Two (or more) numbers which have two or more common factors are called **co-divisible numbers**.

For example, 30 and 35 are co-divisible as they have two common factors 1 and 5.

Exercise 8.2

Write all the factors of the following numbers and find their highest common factor :

- | | | | |
|---------------|----------------|----------------|---------------|
| 1. 24, 30 | 2. 24, 28 | 3. 20, 24 | 4. 15, 20 |
| 5. 35, 42 | 6. 25, 35 | 7. 28, 32 | 8. 24, 32 |
| 9. 25, 35, 45 | 10. 16, 24, 28 | 11. 10, 15, 25 | 12. 8, 12, 20 |

Which one of the pair of numbers is co-prime and which one co-divisible ?

- | | | | |
|------------|------------|------------|------------|
| 13. 40, 91 | 14. 24, 49 | 15. 28, 42 | 16. 27, 35 |
| 17. 25, 36 | 18. 50, 60 | 19. 18, 24 | 20. 8, 15 |

Highest Common Factor (HCF) by Prime Factorization

Example 3 : Find highest common factor of 36 and 48 by prime factorization.

Solution : First we find prime factors of both the numbers.

2	36
2	18
3	9
	3

2	48
2	24
2	12
2	6
	3

$$36 = 2 \times 2 \times 3 \times 3$$

$$48 = 2 \times 2 \times 2 \times 2 \times 3$$

All common prime factors of both the numbers = $2 \times 2 \times 3$

Highest common factor of 36 and 48 = $2 \times 2 \times 3 = 12$

Example 4 : Find the highest common factor of 48, 72, 96 by division method of prime factorization.

Solution : All common prime factors of all the numbers

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

\therefore Highest common factor of 48, 72 and 96

$$= 2 \times 2 \times 2 \times 3 = 24$$

2	48, 72, 96
2	24, 36, 48
2	12, 18, 24
3	6, 9, 12
	2, 3, 4



Exercise 8.3

Find the HCF of the following numbers using division method of prime factorization :

- | | | | |
|----------------|----------------|-----------------|----------------|
| 1. 12, 18 | 2. 16, 20 | 3. 15, 25 | 4. 18, 21 |
| 5. 17, 27 | 6. 28, 35 | 7. 24, 32 | 8. 27, 36 |
| 9. 32, 40 | 10. 32, 48 | 11. 36, 48 | 12. 36, 60 |
| 13. 48, 56 | 14. 12, 32 | 15. 49, 70 | 16. 63, 91 |
| 17. 80, 60 | 18. 72, 90 | 19. 80, 100 | 20. 75, 100 |
| 21. 120, 144 | 22. 112, 160 | 23. 216, 372 | 24. 384, 512 |
| 25. 12, 28, 44 | 26. 21, 35, 77 | 27. 54, 81, 108 | 28. 68, 76, 96 |

Properties of Highest Common Factor

- Highest common factor of two or more numbers is the greatest number which divides each of them exactly.

For example, 15 is the HCF of 30 and 45.

Then $30 \div 15 = 2,$ $45 \div 15 = 3$

- The HCF of two or three numbers cannot be greater than any one of them.
- The HCF of two co-prime numbers is 1.
- If a number is a factor of another number, then their HCF is the factor (smaller number) itself.

For example, HCF of 5 and 25 is 5.

Word Problems on HCF

Example 5 : 120 pencils and 180 pens are packed in equal number in some packets. What is the greatest number of pencils or pens in each packet ?

Solution : The number of pencils or pens in each packet is equal, that is, it divides 120 and 180 exactly. Hence, it is the HCF of 120 and 180.

All common prime factors of both the numbers

$$= 2 \times 2 \times 3 \times 5$$

HCF of both numbers

$$= 2 \times 2 \times 3 \times 5 = 60$$

Thus, greatest number of pencils or pens in each packet = 60

2	120, 180
2	60, 90
5	30, 45
3	6, 9
	2, 3



Exercise 8.4

Find the highest common factor of the following numbers using properties :

- | | | | |
|------------|--------------|-------------|-------------|
| 1. 7, 49 | 2. 6, 12, 24 | 3. 7, 10 | 4. 9, 16 |
| 5. 25, 125 | 6. 50, 77 | 7. 100, 200 | 8. 128, 512 |

9. Find the HCF of 32 and 80. Is it a prime number or composite number ?
10. Find the HCF of 90 and 108. Is it even or odd ?
11. Find the greatest number which divides 68 and 116 to give 4 as remainder in each case.
12. Find the greatest number which divides both 36 and 63 exactly.
13. What is the greatest number which divides both 391 and 527 exactly ?
14. Three cans contain 16 litres, 20 litres and 28 litres milk. The milk is measured by a jug. Each time no milk is left in each can. What is the greatest capacity of the jug ?
15. The students of three classes can be made to stand into rows having equal number of students. There are 40, 48 and 64 students in the classes respectively. Find the maximum (greatest) number of students standing in each row.
16. A hall is 36 metres long and 15 metres broad. what is the length of the greatest rod to measure its length and breadth ?
17. Separate teams are to be made from 112 boys and 96 girls. Each team has equal number of boys or girls. What is the greatest number of children in each team ?
18. What will be the side of the greatest square tile which can be used exactly (without cutting) for a floor 28 metres long and 18 metres wide ?
19. Three labourers got ₹ 81, ₹ 135 and ₹ 162 respectively for their wages of some days. If their wages are equal, then what was their maximum daily wages ?
20. Two ropes 30 m and 45 m long are to be cut into smaller pieces of equal length. What will be the maximum length of each piece ?

Lowest (Least) Common Multiple (LCM)

Learning Objectives :

- ✦ What is Lowest Common Multiple (LCM) ?
- ✦ Properties of Lowest Common Multiple
- ✦ Finding LCM by Prime Factorization
- ✦ Word Problems on LCM

What is Lowest Common Multiple (LCM) ?

We have already studied about multiples.

Consider any two numbers. Here is 2 and 3.

Multiples of 2 = 2, 4, 6, 8, 10, 12, 14, 16, 18, 20

Multiples of 3 = 3, 6, 9, 12, 15, 18, 21, 24, 27, 30

We notice that some of multiples of 2 and 3 are common. They are 6, 12, 18

They are called common multiples.

In 6, 12 and 18, 6 is lowest common multiple.

Properties of Lowest Common Multiple

1. Lowest common multiple of two or more numbers is the smallest number which is divisible by all these numbers.

For example, Lowest common multiple of 3, 9 and 12 = 36

We see that $36 \div 3 = 12$, $36 \div 9 = 4$, $36 \div 12 = 3$

2. If one number is the multiple of the other, the greater number is the lowest common multiple of two numbers.

For example, LCM of 5 and 25 is 25.

3. The lowest common multiple of the two co-prime numbers is their product.

For example, LCM of 7 and 9 = $7 \times 9 = 63$

4. The lowest common multiple of two or more numbers cannot be less than any one of them.

Finding LCM by Prime Factorization

Example 1 : Find the LCM of 60, 36 and 84.

Solution : 1. First find the factors of each number separately.
2. Put the common factors in one column.
3. Take one factor from each column. In other words,

Take all the factors except the common factor taking only once and multiply.

2	60
2	30
3	15
	5

2	36
2	18
3	9
	3

2	84
2	42
3	21
	7

$$60 = 2 \times 2 \times 3 \times 5$$

$$36 = 2 \times 2 \times 3 \times 3$$

$$84 = 2 \times 2 \times 3 \times 7$$

$$\text{LCM of } 60, 36 \text{ and } 84 = 2 \times 2 \times 3 \times 5 \times 3 \times 7 = 1260$$

Short method :

1. Divide all the numbers by prime numbers 2, 3, 5, 7 etc. respectively.
 - (a) Divide by 2 until 2 divides more than one numbers.
 - (b) Divide by 3 until 3 divides more than one numbers and so on.
2. If any number is not divisible put it as such in the next line.
3. When you get all factors co-prime in the quotient line, stop division.
4. Multiply all the divisors and last quotient factors.

2	60, 36, 84
2	30, 18, 42
3	15, 9, 21
	5, 3, 7

$$\text{LCM of } 60, 36 \text{ and } 84 = 2 \times 2 \times 3 \times 5 \times 3 \times 7 = 1260$$



Exercise 9.1

Find the lowest common multiple of the following numbers by properties :

- | | | | |
|-----------|------------|----------|------------|
| 1. 9, 11 | 2. 7, 35 | 3. 4, 25 | 4. 18, 90 |
| 5. 16, 80 | 6. 3, 5, 7 | 7. 8, 15 | 8. 6, 7, 5 |

Find the LCM of the following numbers by prime factorization :

- | | | |
|-----------------|----------------|----------------|
| 9. 24, 30 | 10. 16, 20 | 11. 12, 18 |
| 12. 25, 30 | 13. 9, 12 | 14. 12, 16 |
| 15. 12, 24 | 16. 18, 27 | 17. 20, 25 |
| 18. 18, 48 | 19. 14, 21 | 20. 24, 28 |
| 21. 42, 56 | 22. 26, 39 | 23. 52, 104 |
| 24. 64, 96 | 25. 15, 25, 40 | 26. 24, 36, 54 |
| 27. 40, 60, 100 | 28. 36, 45, 72 | |

⇒ Word Problems on LCM

Example 2 : Find the smallest number exactly divisible by 20, 24 and 30 each.

Solution :

The smallest number exactly divisible by 20, 24 and 30 each is their LCM.

$$\text{LCM of 20, 24 and 30} = 2 \times 2 \times 3 \times 5 \times 2 = 120$$

2	20, 24, 30
2	10, 12, 15
3	5, 6, 15
5	5, 2, 5
	1, 2, 1

Example 3 : Four bells ring at the intervals of 10, 12, 15 and 20 seconds. If they start ringing together at 9 am, after how much minimum time will they ring again together ?

Solution :

Minimum time after which all the bells ring together is the LCM of 10, 12, 15 and 20 seconds.

$$10, 12, 15 \text{ and } 20 = 2 \times 2 \times 3 \times 5$$

$$= 60 \text{ seconds}$$

$$= 1 \text{ minute}$$

The bells will ring again together after **1 minute** of 9 am or they will ring again of **9 : 01 am**.

2	10, 12, 15, 20
2	5, 6, 15, 10
3	5, 3, 15, 5
5	5, 1, 5, 5
	1, 1, 1, 1



Exercise 9.2

- Find the least number exactly divisible by 15, 20 and 24. _____
- Find the smallest number which is exactly divisible by 18, 24 and 40. _____
- Find the smallest number which when divided by 15, 25 and 40 gives 14 as remainder in each case. _____
- What is the least number of toffees Pihu should have so that when she divides them among 8, 12 and 20 children, no toffee is left with her ? _____
- The green light of a crossing goes on and off after every 30 seconds and the green light of another crossing goes on and off after every 45 seconds. If they are lighted together at 10 pm, then after how much minimum time will they be lighted on again together ? _____
- Three bells ring at the intervals of 8, 10 and 15 minutes. If they start ringing together at 12 pm, then after how much minimum time will they ring again together ? _____
- Three bells ring at intervals of 10, 20 and 30 minutes. If they all ring at 12 noon together, then at what time will they next ring together ? _____
- A hostel warden distributes equal number of mangoes to 30, 40 and 45 students respectively. No mango is left with him in each case. What is the least number of mangoes he has ? _____

9. Renu packs 10, 12 and 15 toys respectively. 7 toys are left in each case. What is the minimum number of toys with her? _____
10. Salina makes heaps of 10, 15, and 25 marbles. The heaps are made exactly each time. What is the minimum number of marbles in each case? _____
11. Two schools are facing each other. Their bells ring at intervals of 30 and 40 minutes. If they ring together at 7 : 30 am, then when they ring again together? _____
12. Roma has some apples. She makes heaps of 10, 15 and 18 apples respectively. No apple is left in each case. What is the minimum number of apples she has? _____

Let's Recall

Multiple Choice Questions (MCQs) :

Tick (✓) the correct option :

1. Which one of the following is not a prime number ?
 (a) 17 (b) 37 (c) 28 (d) 47
2. The multiples of 9 are _____ .
 (a) 1, 3, 9, (b) 3, 9, 18,
 (c) 9, 18, 27, (d) None of these
3. Which one of the following numbers is divisible by 9 ?
 (a) 37,025 (b) 4,51,327 (c) 5,41,423 (d) 5,40,810
4. 5 is one of the factor of _____ .
 (a) 36 (b) 30 (c) 42 (d) 21
5. Which one of the following numbers is divisible by 2, 4 and 5 ?
 (a) 24 (b) 10 (c) 80 (d) 145
6. The factors of 10 are _____ .
 (a) 1, 2, 5 (b) 1, 2
 (c) 1, 2, 5, 10 (d) None of these
7. Which one of the following is divisible by 2 ?
 (a) 75 (b) 88 (c) 101 (d) 41
8. The first three multiples of 10 are _____ .
 (a) 10, 20, 30 (b) 5, 10, 15 (c) 10, 20, 40 (d) 2, 5, 10
9. The smallest number exactly divisible by 20, 24 and 30 each is _____ .
 (a) 80 (b) 120 (c) 160 (d) 180
10. What is the smallest digit to be written in the box to make the number 2465□ divisible by 3 ?
 (a) 0 (b) 1 (c) 4 (d) 3

Common Fractions

Learning Objectives :

- ◆ Equivalent Fractions
- ◆ To Find Equivalent Fractions
- ◆ Checking for Equivalence of Fractions
- ◆ Fractions in Lowest Terms
- ◆ Types of Fractions
- ◆ Comparison of Fractions

Equivalent Fractions

Fractions which have the same value, even though they may look different are called **equivalent fractions**.

Look at the shaded part of each figure :



Fig. I



Fig. II



Fig. III



Fig. IV

We can see that shaded parts of Fig. (i), (ii) and (iv) are equal, that is,

$$\frac{2}{3} = \frac{4}{6} = \frac{6}{9}$$

Fractions $\frac{2}{3}$, $\frac{4}{6}$ and $\frac{6}{9}$ are equivalent.

Now, $\frac{5}{7}$ is the shaded part of Fig. (iii) equal to any of Fig. (i), (ii) or (iv) ?

Obviously not. Therefore, $\frac{5}{7}$ is not equivalent to $\frac{2}{3}$, $\frac{4}{6}$ or $\frac{6}{9}$.

⇒ To Find Equivalent Fractions

We multiply (or divide) the numerator and denominator of the given fraction by the same non-zero number to find equivalent fraction.

For example, $\frac{3}{4} = \frac{3 \times 2}{4 \times 2} = \frac{3 \times 3}{4 \times 3} = \frac{3 \times 4}{4 \times 4} = \frac{3 \times 5}{4 \times 5} = \frac{3 \times 6}{4 \times 6} \dots\dots\dots$

Or $\frac{3}{4} = \frac{6}{8} = \frac{9}{12} = \frac{12}{16} = \frac{15}{20} = \frac{18}{24}, \dots\dots\dots$

And $\frac{24}{36} = \frac{26 \div 2}{36 \div 2} = \frac{12 \div 2}{18 \div 2} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$

And $\frac{24}{36} = \frac{12}{18} = \frac{6}{9} = \frac{2}{3}$

Finding Equivalent Fraction with Given Denominator or Numerator

If we want to get an equivalent fraction with a **higher** numerator and denominator, we **multiply** both the numerator and denominator of the given fraction by a non-zero number.

For example,

$\frac{4}{5} = \frac{16}{20}$ numerators 4 and 16; $16 \div 4 = 4$, so $\frac{4}{5} = \frac{4 \times 4}{5 \times 4} = \frac{16}{20}$

$\frac{3}{5} = \frac{24}{40}$ denominators 5 and 40; $40 \div 5 = 8$, so $\frac{3}{5} = \frac{3 \times 8}{5 \times 8} = \frac{24}{40}$

To get an equivalent fraction with a **lower** numerator and denominator, we **divide** both the numerator and the denominator of the given fraction by a non-zero number.

$\frac{8}{12} = \frac{2}{3}$; numerators 8 and 2; $8 \div 4 = 2$, so $\frac{8}{12} = \frac{8 \div 4}{12 \div 4} = \frac{2}{3}$

$\frac{21}{35} = \frac{3}{5}$; denominators 35 and 7; $35 \div 7 = 5$, so $\frac{21}{35} = \frac{21 \div 7}{35 \div 7} = \frac{3}{5}$

Exercise 10.1

Write the first the five equivalent fractions for each :

1. $\frac{1}{4}$

2. $\frac{3}{4}$

3. $\frac{2}{5}$

4. $\frac{1}{3}$

5. $\frac{2}{3}$

6. $\frac{5}{9}$

7. $\frac{6}{11}$

8. $\frac{8}{15}$

9. $\frac{3}{7}$

10. $\frac{1}{8}$

☞ Write the next four equivalent fractions :

11. $\frac{3}{5}, \frac{6}{10}, \frac{9}{15}$

12. $\frac{5}{8}, \frac{10}{16}, \frac{15}{24}$

13. $\frac{4}{9}, \frac{8}{18}, \frac{12}{27}$

14. $\frac{1}{4}, \frac{2}{8}, \frac{3}{12}$

15. $\frac{1}{6}, \frac{2}{12}, \frac{3}{18}$

16. $\frac{1}{7}, \frac{2}{14}, \frac{3}{21}$

☞ Fill in the blanks :

17. $\frac{3}{6} = \frac{9}{\square}$

18. $\frac{1}{2} = \frac{\square}{10}$

19. $\frac{3}{8} = \frac{\square}{24}$

20. $\frac{25}{35} = \frac{\square}{7}$

21. $\frac{8}{28} = \frac{\square}{7}$

22. $\frac{63}{91} = \frac{\square}{13}$

23. $\frac{1}{4} = \frac{3}{\square}$

24. $\frac{3}{7} = \frac{15}{\square}$

25. $\frac{4}{9} = \frac{16}{\square}$

26. $\frac{25}{30} = \frac{5}{\square}$

27. $\frac{20}{80} = \frac{10}{\square}$

28. $\frac{75}{100} = \frac{3}{\square}$

☞ Find an equivalent fraction with denominator 18 :

29. $\frac{16}{36}$

30. $\frac{1}{2}$

31. $\frac{45}{54}$

32. $\frac{2}{3}$

☞ Find an equivalent fraction of $\frac{3}{8}$ with :

33. Denominator 24

34. Numerator 12

35. Numerator 18

☞ Find an equivalent fraction of $\frac{24}{36}$ with :

36. Numerator 8

37. Denominator 18

38. Denominator 9

☞ Checking for Equivalence of Fractions

1. To know that two fractions are equivalent or not, we cross-multiply the numerators and denominators of two fractions. If the two cross-products are the same, the fractions are equivalent or not.

Example 1 : Check whether the following are equivalent fractions or not :

(a) $\frac{5}{6}$ and $\frac{15}{18}$

(b) $\frac{2}{7}$ and $\frac{6}{14}$

Solution : (a) $\frac{5}{6} \times \frac{15}{18} \rightarrow \frac{5 \times 18 = 90}{6 \times 15 = 90} \rightarrow \frac{5}{6}$ is equivalent to $\frac{15}{18}$.

(b) $\frac{2}{7} \times \frac{6}{14} \rightarrow \frac{2 \times 14 = 28}{7 \times 6 = 42} \rightarrow \frac{2}{7}$ is not equivalent to $\frac{6}{14}$.

2. Divide the greater numerator and denominator by the smaller numerator and denominator **in the same order**. If we get the same quotient, then the fractions are equivalent. In the example 1, we have

(a) $\frac{15 \div 5 = 3}{18 \div 6 = 3} \rightarrow \frac{5}{6}$ is equivalent to $\frac{15}{18}$.

(b) $\frac{6 \div 2 = 3}{14 \div 7 = 2} \rightarrow \frac{2}{7}$ is not equivalent to $\frac{6}{14}$.

⇒ Fractions in Lowest Terms

A fraction is in the lowest terms if the only common factor of the numerator and the denominator is 1.

Example 2 : Is the fraction $\frac{6}{9}$ in the lowest term ?

Solution : If numerator and denominator are co-prime numbers then fraction is in its lowest term or not.

Here 6 and 9 are not co-prime.

So, $\frac{6}{9}$ is not in the lowest terms.

Reducing a Fraction to its Lowest Terms (Simplifying a Fraction)

To simplify a fraction, we go on dividing the numerator and denominator by their common factors till we are left with only the common factor 1.

Example 3 : Simplify : (a) $\frac{24}{36}$ (b) $\frac{45}{54}$

Solution : (a) $\frac{24}{36} = \frac{24 \div 2}{36 \div 2} = \frac{12 \div 2}{18 \div 2} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$

(b) $\frac{45}{54} = \frac{45 \div 3}{54 \div 3} = \frac{15 \div 3}{18 \div 3} = \frac{5}{6}$

Short method :

(a) $\frac{24 \div 12}{36 \div 12} = \frac{2}{3}$

(b) $\frac{45 \div 9}{54 \div 9} = \frac{5}{6}$

Example 4 : Fill in blank the fraction in its lowest terms :

20 paise is _____ of one rupee.

Solution : 1 rupee = 100 paise.

20 paise is $\frac{20}{100}$ of one rupee = $\frac{20 \div 20}{100 \div 20} = \frac{1}{5}$ of one rupee.



Exercise 10.2

☞ Check whether the following are equivalent fractions or not :

1. $\frac{3}{4}, \frac{9}{12}$ 2. $\frac{6}{12}, \frac{2}{3}$ 3. $\frac{20}{36}, \frac{5}{8}$ 4. $\frac{15}{17}, \frac{90}{102}$ 5. $\frac{21}{30}, \frac{7}{15}$

☞ Find if the fraction is in its lowest terms :

6. $\frac{40}{50}$ 7. $\frac{6}{25}$ 8. $\frac{15}{20}$ 9. $\frac{22}{33}$ 10. $\frac{5}{9}$

☞ Simplify each fraction to its lowest terms :

11. $\frac{21}{24}$ 12. $\frac{20}{25}$ 13. $\frac{18}{45}$ 14. $\frac{24}{36}$ 15. $\frac{48}{60}$
16. $\frac{18}{24}$ 17. $\frac{40}{72}$ 18. $\frac{75}{80}$ 19. $\frac{9}{27}$ 20. $\frac{45}{60}$

☞ Fill the fraction in its lowest terms :

21. 20 seconds is $\frac{\square}{\square}$ of one minute. 22. 500 grams is $\frac{\square}{\square}$ of one kilogram.

23. 16 hours is $\frac{\square}{\square}$ of one day. 24. 50 cm is $\frac{\square}{\square}$ of one metre.

Maths From The Past

The Egyptians wrote all their fractions using unit fractions. A unit fraction has 1 as its numerator. They put a 'mouth' picture (which meant 'part') above a number to make it a unit fraction. For example : $\frac{1}{2}$ was written as shown here.

Types of Fractions

Like Fractions : Fractions with the same denominators are **like fractions**.

For example, $\frac{1}{6}, \frac{2}{6}, \frac{3}{6}, \frac{4}{6}, \frac{5}{6}$ are like fractions.

Unlike Fractions : Fractions with different denominators are **unlike fractions**.

For example, $\frac{1}{3}, \frac{3}{4}, \frac{1}{2}, \frac{8}{9}$ are unlike fractions.

Unit Fractions : A fraction having 1 as numerator is called a **unit fraction**.

For example, $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \dots$



Proper Fraction : A fraction in which numerator is smaller than the denominator is called a **proper fraction**.

For example, $\frac{5}{9}, \frac{7}{12}, \frac{13}{20}, \frac{71}{100}$

Improper Fraction : A fraction in which numerator is either greater than or equal to the denominator is called an **improper fraction**.

For example, $\frac{5}{2}, \frac{7}{3}, \frac{26}{15}, \frac{181}{87}, \frac{19}{19}$

Mixed Number or Mixed Numeral : When an improper fraction is written as a combination of a whole and a proper fraction, it is called a **mixed number**.

For example, $1\frac{1}{2}, 1\frac{2}{3}, 1\frac{1}{4}, 2\frac{1}{5}, 4\frac{7}{8}$

Fraction as Division

If 9 mangoes are divided equally between 3 children, each child gets

$$9 \div 3 = 3 \text{ mangoes}$$

If 6 apples are divided equally between 3 children, each child gets

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

If 3 apples are divided equally between 3 children, each child gets

$$3 \div 3 = 1 \text{ apple}$$

If 1 apple is divided equally between 3 children, each child gets

$$1 \div 3 = ? \text{ (What)}$$

But we call one part out of two equal parts as $\frac{1}{3}$.

So, $1 \div 3 = \frac{1}{3}$

In the same way, we can express any division as a fraction.

So, $4 \div 3 = \frac{4}{3}, 5 \div 7 = \frac{5}{7}$

We can also express any fraction as a division.

For example, $\frac{2}{5} = 2 \div 5; \frac{10}{3} = 10 \div 3$

Changing Improper Fractions into Mixed Numerals

Example 5 : Change the improper fraction $\frac{7}{5}$ into a mixed numeral.

Solution : $\frac{7}{5}$ Denominator \rightarrow
$$\begin{array}{r} 1 \leftarrow \text{Whole number} \\ 5 \overline{) 7} \\ -5 \\ \hline 2 \leftarrow \text{New numerator} \end{array}$$

So, $\frac{7}{5} = 1\frac{2}{5}$

Example 6 : Change the improper fraction $\frac{13}{3}$ into a mixed numeral.

Solution : $\frac{13}{3}$ Denominator \rightarrow
$$\begin{array}{r} 4 \leftarrow \text{Whole number} \\ 3 \overline{) 13} \\ -12 \\ \hline 1 \leftarrow \text{New numerator} \end{array}$$

So, $\frac{13}{3} = 4\frac{1}{3}$

$$\frac{\text{Nr.}}{\text{Dr.}} = \text{W.N.} \cdot \frac{\text{Nr.}}{\text{Dr.}} \quad \text{Denominator} \rightarrow \begin{array}{r} \text{W.N.} \leftarrow \text{Whole number} \\ \text{Dr.} \overline{) \text{Nr.}} \\ \hline \text{R(Nr.)} \leftarrow \text{New numerator} \end{array}$$

Changing Mixed Numerals to Improper Fractions

Example 7 : Change the mixed numeral $3\frac{1}{2}$ into an improper fraction.

$$\frac{\text{Nr.}}{\text{Dr.}} = \frac{\text{W} \times \text{Dr.} + \text{Nr.}}{\text{Dr.}}$$

Solution : $3\frac{1}{2} = \frac{3 \times 2 + 1}{2} = \frac{6 + 1}{2} = \frac{7}{2}$

Example 8 : Change the mixed numeral $5\frac{3}{4}$ into an improper fraction.

Solution : $5\frac{3}{4} = \frac{5 \times 4 + 3}{4} = \frac{20 + 3}{4} = \frac{23}{4}$



Exercise 10.3

1. Fill in the blanks :

- A group of fractions having different denominators is called _____ fractions.
- A _____ fraction always has 1 as the numerator.
- If the numerator of a fraction is less than its denominator, it is a _____ fraction.
- A group of fractions having same denominator is called _____ fractions.
- A mixed number is a combination of a _____ fraction and a _____ number.

2. Which are proper fractions ?

$$\frac{4}{9}, \frac{9}{4}, 11\frac{1}{3}, \frac{3}{15}, \frac{21}{5}$$

3. Which are improper fractions ?

$$\frac{15}{7}, \frac{20}{8}, \frac{3}{5}, 1\frac{7}{8}, \frac{7}{6}$$

4. Which are unit fractions ?

$$\frac{4}{9}, \frac{1}{5}, \frac{1}{7}, \frac{11}{4}, 1\frac{1}{2}$$

5. Which are mixed numbers ?

$$1\frac{2}{3}, 5\frac{1}{2}, \frac{7}{9}, \frac{5}{2}, 7\frac{3}{10}$$

6. Which group of fractions are like and which are unlike ?

(a) $\frac{3}{8}, \frac{5}{8}, \frac{7}{8}$

(b) $\frac{4}{9}, \frac{8}{9}, \frac{1}{9}$

(c) $\frac{2}{5}, \frac{3}{4}, \frac{7}{8}$

7. Write each division in the form of a fraction :

(a) $35 \div 30$

(b) $8 \div 3$

(c) $15 \div 7$

(d) $6 \div 12$

(e) $15 \div 20$

8. Write each fraction in the form of a division :

(a) $\frac{48}{12}$

(b) $\frac{15}{20}$

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

(d) $\frac{9}{8}$

(e) $\frac{10}{21}$

9. Change the following into mixed numbers :

(a) $\frac{28}{3}$

(b) $\frac{17}{5}$

(c) $\frac{26}{7}$

(d) $\frac{26}{10}$

(e) $\frac{33}{4}$

(f) $\frac{49}{8}$

(g) $\frac{41}{7}$

(h) $\frac{81}{10}$

(i) $\frac{16}{9}$

(j) $\frac{59}{18}$

10. Change the following into improper fractions :

(a) $15\frac{7}{10}$

(b) $3\frac{1}{2}$

(c) $5\frac{1}{3}$

(d) $2\frac{1}{4}$

(e) $8\frac{2}{3}$

(f) $5\frac{9}{17}$

(g) $1\frac{6}{7}$

(h) $6\frac{1}{8}$

(i) $3\frac{3}{20}$

(j) $11\frac{7}{9}$

Comparison of Fractions

1. Fractions with the same denominators : The fraction with a greater numerator will be greater.

For example, $\frac{4}{5} > \frac{3}{5}$ or $\frac{3}{5} < \frac{4}{5}$

2. Fractions with the same numerators : The fraction with a smaller denominator will be greater.

For example, $\frac{7}{9} > \frac{7}{11}$ or $\frac{7}{11} < \frac{7}{9}$

Comparison of Fractions by Changing to Like Fractions

(i) When a denominator is a multiple of the other : We multiply the numerator and denominator both of one fraction by such a number, that its denominator equals to the denominator of the other.

Example 9 : Which is greater : $\frac{2}{3}$ or $\frac{5}{6}$?

Solution : $\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6}$ [6 ÷ 3 = 2]

Now $\frac{5}{6} > \frac{4}{6}$ So, $\frac{5}{6} > \frac{2}{3}$

(ii) When a denominator is not multiple of the other : We find the smallest common denominator that is, LCM of the denominators.

Then we change the given fractions into equivalent fractions with the smallest common denominator.

Example 10 : Compare $\frac{4}{5}$ and $\frac{7}{8}$.

Solution : LCM of 5 and 8 is $5 \times 8 = 40$
 $40 \div 5 = 8$ and $40 \div 8 = 5$

Now, $\frac{4}{5} = \frac{4 \times 8}{5 \times 8} = \frac{32}{40}$;
 $\frac{7}{8} = \frac{7 \times 5}{8 \times 5} = \frac{35}{40}$

$\frac{35}{40} > \frac{32}{40}$ or $\frac{7}{8} > \frac{4}{5}$ (corresponding fractions)

Short method : LCM of 5 and 8 is $5 \times 8 = 40$

$\frac{4}{5}, \frac{7}{8}$
 $= \frac{8 \times 4, 7 \times 5}{40} = \frac{32, 35}{40}$

$35 > 32$ or $\frac{7}{8} > \frac{4}{5}$ (corresponding fractions)

Example 11 : Arrange the following fractions in ascending order :

$\frac{3}{4}, \frac{5}{6}, \frac{4}{5}$

Solution : LCM of 4, 6 and 5 = $2 \times 2 \times 3 \times 5 = 60$

Now, $60 \div 4 = 15$; $\frac{3}{4} = \frac{3 \times 15}{4 \times 15} = \frac{45}{60}$

$$60 \div 6 = 10; \quad \frac{5}{6} = \frac{5 \times 10}{6 \times 10} = \frac{50}{60}$$

$$60 \div 5 = 12; \quad \frac{4}{5} = \frac{4 \times 12}{5 \times 12} = \frac{48}{60}$$

2	4, 6, 5
	2, 3, 5

Now arrange numerators in ascending order :

$$45 < 48 < 50 \quad \text{or} \quad \frac{45}{60} < \frac{48}{60} < \frac{50}{60}$$

or $\frac{3}{4} < \frac{4}{5} < \frac{5}{6}$ (corresponding equivalent fractions)

Short method : LCM of 4, 6, 5 = $2 \times 2 \times 3 \times 5 = 60$

$$\frac{3}{4}, \frac{5}{6}, \frac{4}{5}$$

$$\frac{15 \times 3, 10 \times 5, 12 \times 4}{60}$$

$$\frac{45, 50, 48}{60}$$

$$45 < 48 < 50$$

Ascending order of corresponding fractions

$$\frac{3}{4} < \frac{4}{5} < \frac{5}{6}$$

2	4, 6, 5
	2, 3, 5

(iii) **Comparison of fractions by cross multiplication :** We do cross multiply the numerator and denominator of the two fractions.

Rule of cross multiplication

We write Numerator as Nr. and Denominator as Dr.

If, Nr. of first \times Dr. of second $>$ Nr. of second \times Dr. of first

Then, first fraction $>$ second fraction

The reverse is equally true.

Example 12 : Compare $\frac{7}{12}$ and $\frac{11}{18}$.

Solution : Cross multiply

$$\frac{7}{12} \times \frac{11}{18} \rightarrow \frac{7 \times 18 = 126}{12 \times 11 = 132} \rightarrow \frac{11}{18} > \frac{7}{12}$$

because $132 > 126$

Example 13 : Compare $\frac{17}{5}$ and $3\frac{1}{3}$.

Solution : $3\frac{1}{3} = \frac{3 \times 3 + 1}{3} = \frac{9 + 1}{3} = \frac{10}{3}$

Cross multiply $\frac{17}{5} \times \frac{10}{3} \rightarrow \frac{17 \times 3 = 51}{10 \times 5 = 50} \rightarrow \frac{17}{5} > \frac{10}{3}$ or $\frac{17}{5} > 3\frac{1}{3}$



Exercise 10.4

☞ Compare the given fractions and put $>$ or $<$ sign in the box :

1. $\frac{10}{13}$ $\frac{10}{11}$

2. $\frac{7}{19}$ $\frac{7}{29}$

3. $\frac{25}{7}$ $\frac{25}{9}$

4. $\frac{7}{8}$ $\frac{5}{8}$

5. $\frac{8}{13}$ $\frac{11}{13}$

6. $\frac{10}{18}$ $\frac{13}{18}$

☞ Change each set of the fraction so that they have the same denominator :

7. $\frac{7}{12}, \frac{3}{7}$

8. $\frac{7}{8}, \frac{3}{5}$

9. $\frac{2}{3}, \frac{3}{4}$

10. $\frac{3}{5}, \frac{7}{10}$

11. $\frac{3}{8}, \frac{5}{4}$

12. $\frac{2}{3}, \frac{7}{9}$

☞ Compare by changing to like fractions :

13. $\frac{13}{14}, \frac{11}{12}$

14. $\frac{5}{8}, \frac{7}{10}$

15. $\frac{3}{5}, \frac{5}{7}$

16. $\frac{4}{5}, \frac{11}{12}$

17. $\frac{1}{2}, \frac{3}{4}$

18. $\frac{3}{4}, \frac{2}{6}$

☞ Arrange the following fractions in ascending order :

19. $\frac{5}{6}, \frac{7}{12}, \frac{11}{18}$

20. $\frac{3}{4}, \frac{4}{5}, \frac{7}{10}$

21. $\frac{2}{3}, \frac{4}{5}, \frac{3}{10}$

☞ Arrange the following fractions in descending order :

22. $\frac{2}{3}, \frac{5}{6}, \frac{3}{5}$

23. $\frac{4}{9}, \frac{2}{3}, \frac{11}{18}$

24. $\frac{9}{16}, \frac{3}{4}, \frac{1}{2}$

☞ Compare the fractions by cross multiplying :

25. $\frac{7}{8}$ $\frac{5}{7}$

26. $\frac{3}{5}$ $\frac{2}{3}$

27. $\frac{3}{4}$ $\frac{5}{6}$

28. $\frac{11}{12}$ $\frac{8}{9}$

29. $\frac{15}{8}$ $\frac{12}{5}$

30. $\frac{16}{5}$ $\frac{10}{3}$

31. Pihu buys $2\frac{4}{5}$ litre milk daily and Mona buys $2\frac{3}{4}$ litre milk daily. Who buys more milk ? _____

32. $1\frac{2}{5}$ metre cloth was used in Rajan's shirt and $1\frac{3}{7}$ metre cloth was used in Rao's shirt. Whose shirt was made with more cloth ? _____

Operations in Common Fractions

Learning Objectives :

- ◆ Addition of Like and Unlike Fractions
- ◆ Addition of Mixed Numbers
- ◆ Word Problems on Addition of Fractions
- ◆ Subtraction of Like and Unlike Fractions
- ◆ Subtraction of Mixed Numbers
- ◆ Word Problems on Subtraction of Fractions

➤ Addition of Like Fractions

We add the numerators. The sum of the numerators will be the numerator of the sum of the fractions. Denominator will be the same as of the given fractions.

Example 1 : Solve : $\frac{11}{24} + \frac{5}{24} + \frac{17}{24}$

Solution : $\frac{11}{24} + \frac{5}{24} + \frac{17}{24} = \frac{11+5+17}{24} = \frac{33}{24} = \frac{11}{8} = 1\frac{3}{8}$ $\left[\frac{33 \div 3}{24 \div 3} = \frac{11}{8} \right]$

➤ Addition of Unlike Fractions

First we change the unlike fractions into like fractions. Then we find the LCM of their denominators. Then change the fractions into equivalent fractions with the denominators equal to LCM.

Example 2 : Solve : $\frac{7}{16} + \frac{3}{4} + \frac{5}{12}$

Solution : $48 \div 16 = 3$; $\frac{7}{16} = \frac{7 \times 3}{16 \times 3} = \frac{21}{48}$ [LCM of 16, 4 and 12 = $2 \times 2 \times 4 \times 3 = 48$]

$= 48 \div 4 = 12$; $\frac{3}{4} = \frac{3 \times 12}{4 \times 12} = \frac{36}{48}$

$48 \div 12 = 4$; $\frac{5}{12} = \frac{5 \times 4}{12 \times 4} = \frac{20}{48}$

2	16, 4, 12
2	8, 2, 6
	4, 1, 3

We divide the required denominator by the denominator of each fraction and multiply the numerator and denominator of each fraction by the corresponding quotient.

Now $\frac{7}{16} + \frac{3}{4} + \frac{5}{12} = \frac{21}{48} + \frac{36}{48} + \frac{20}{48}$
 $= \frac{21+36+20}{48} = \frac{77}{48} = 1\frac{29}{48}$

Short method: $\frac{3}{4} + \frac{7}{16} + \frac{5}{12} = \frac{12 \times 3 + 3 \times 7 + 4 \times 5}{48}$
 $= \frac{36 + 21 + 20}{48} = \frac{77}{48} = 1\frac{29}{48}$

We divide 48 by denominator 4 and get quotient 12. Now multiply 12 by numerator 3 and so on.

LCM of 4, 16 and 12 = $2 \times 2 \times 4 \times 3 = 48$



Exercise 11.1

☞ Fill in the blanks :

1. $\frac{3}{10} + \frac{7}{10} = \frac{\quad}{\quad}$

2. $\frac{9}{17} + \frac{6}{17} = \frac{\quad}{\quad}$

3. $\frac{7}{13} + \frac{4}{13} = \frac{\quad}{\quad}$

4. $\frac{3}{7} + \frac{2}{7} = \frac{\quad}{\quad}$

5. $\frac{5}{9} + \frac{2}{9} = \frac{\quad}{\quad}$

6. $\frac{1}{8} + \frac{5}{8} = \frac{\quad}{\quad}$

7. $\frac{11}{18} + \frac{3}{18} = \frac{\quad}{\quad}$

8. $\frac{16}{31} + \frac{9}{31} = \frac{\quad}{\quad}$

9. $\frac{1}{9} + \frac{2}{9} + \frac{5}{9} = \frac{\quad}{\quad}$

☞ Add and change the answers to mixed numbers :

10. $\frac{1}{12} + \frac{3}{12} + \frac{5}{12} + \frac{7}{12}$

11. $\frac{4}{5} + \frac{3}{5} + \frac{1}{5} + \frac{2}{5}$

12. $\frac{4}{19} + \frac{6}{19} + \frac{5}{19} + \frac{7}{19}$

13. $\frac{2}{9} + \frac{7}{9} + \frac{5}{9}$

14. $\frac{5}{18} + \frac{10}{18} + \frac{7}{18}$

15. $\frac{7}{22} + \frac{13}{22} + \frac{5}{22}$

☞ Change into like fractions and add :

16. $\frac{4}{7} + \frac{5}{6}$

17. $\frac{3}{4} + \frac{4}{7}$

18. $\frac{5}{6} + \frac{3}{4}$

19. $\frac{1}{2} + \frac{1}{3}$

20. $\frac{2}{3} + \frac{3}{4}$

21. $\frac{2}{3} + \frac{2}{5}$

22. $\frac{1}{4} + \frac{1}{8} + \frac{1}{16}$

23. $\frac{3}{10} + \frac{7}{15} + \frac{13}{30}$

24. $\frac{5}{12} + \frac{7}{16} + \frac{17}{24}$

25. $\frac{2}{9} + \frac{5}{12}$

26. $\frac{2}{7} + \frac{3}{14}$

27. $\frac{1}{8} + \frac{1}{14}$

➤ Addition of Mixed Numbers

Example 3 : Solve : $4\frac{5}{12} + 3\frac{3}{12}$

Solution : $4\frac{5}{12} + 3\frac{3}{12} = 4 + \frac{5}{12} + 3 + \frac{3}{12}$

$$= 4 + 3 + \frac{5}{12} + \frac{3}{12}$$

$$= 7 + \frac{8}{12} = 7 + \frac{2}{3} = 7\frac{2}{3}$$

Example 4 : Solve : $2\frac{3}{14} + 3\frac{1}{7} + 1\frac{5}{28}$

Solution : $2\frac{3}{14} + 3\frac{1}{7} + 1\frac{5}{28}$

$$= 2 + 3 + 1 + \frac{3}{14} + \frac{1}{7} + \frac{5}{28}$$

$$= 6 + \frac{2 \times 3 + 4 \times 1 + 1 \times 5}{28}$$

$$= 6 + \frac{6 + 4 + 5}{28} = 6 + \frac{15}{28} = 6\frac{15}{28}$$

[LCM of 7, 14 and 28 is 28.]

Second method : We change the mixed numbers to improper fractions first.

$$2\frac{3}{14} + 3\frac{1}{7} + 1\frac{5}{28}$$

$$= \frac{31}{14} + \frac{22}{7} + \frac{33}{28}$$

$$= \frac{2 \times 31 + 4 \times 22 + 1 \times 33}{28}$$

[LCM of 7, 14 and 28 is 28.]

$$= \frac{62 + 88 + 33}{28} = \frac{183}{28} = 6\frac{15}{28}$$

$$\begin{array}{r} 6 \\ 28 \overline{)183} \\ \underline{168} \\ 15 \end{array}$$

Note : In addition, first method is short and mostly used.



Exercise 11.2

Add whole numbers and fractions separately :

1. $1\frac{1}{2} + 2\frac{2}{3}$

2. $1\frac{3}{4} + 2\frac{1}{2}$

3. $1\frac{7}{8} + 1\frac{5}{12}$

4. $4\frac{1}{7} + 6\frac{6}{7}$

5. $2\frac{1}{4} + 4\frac{3}{4}$

6. $5\frac{1}{4} + 4\frac{1}{5}$

7. $2\frac{3}{7} + 3\frac{11}{14}$

8. $2\frac{7}{12} + 1\frac{2}{9}$

9. $2\frac{3}{14} + 1\frac{5}{28} + 3$

10. $3\frac{3}{10} + 2\frac{7}{20} + 1\frac{11}{30}$

11. $1\frac{1}{4} + 2\frac{3}{5} + 4\frac{1}{3}$

12. $1\frac{1}{16} + 1\frac{1}{8} + 2\frac{1}{4}$

Change into improper fractions and add following :

13. $1\frac{3}{4} + 3\frac{1}{2} + 5\frac{1}{8}$

14. $\frac{1}{4} + 2\frac{1}{6} + 1\frac{1}{24}$

15. $1\frac{4}{15} + 2\frac{7}{10} + 2\frac{3}{5}$

16. $1\frac{2}{3} + 2\frac{1}{4} + 4\frac{1}{6}$

17. $2\frac{1}{2} + 5\frac{1}{5} + 1\frac{9}{10}$

18. $4\frac{1}{2} + 2\frac{1}{6} + \frac{5}{12}$

Word Problems on Addition of Fractions

Example 5 : A deer took three jumps. The first jump was $3\frac{1}{5}$ m long, the second was $4\frac{9}{10}$ m and the third was $3\frac{3}{5}$ m. How far did the deer reach ?

Solution : The distance reached by the deer in 3 jumps

$$= 3\frac{1}{5} + 4\frac{9}{10} + 3\frac{3}{5} \text{ m}$$

$$= \frac{16}{5} + \frac{49}{10} + \frac{18}{5}$$

$$= \frac{16 \times 2 + 49 + 18 \times 2}{10} \quad [\text{LCM of 5, 10 and 5 is 10.}]$$

$$= \frac{32 + 49 + 36}{10} = \frac{117}{10} = 11\frac{7}{10} \text{ m}$$


Exercise 11.3

- Ravi took $\frac{3}{4}$ hour to paint a table and $\frac{1}{3}$ hour to paint a chair. How much time did he take in all ? _____
- Roma had $2\frac{1}{20}$ rupees. Her sister gave her $1\frac{1}{5}$ rupees. How many rupees does she have now ? _____
- Mona read $\frac{3}{5}$ part of a comic on Saturday and $\frac{3}{10}$ part on Sunday. Find the total part of the comic read by her. _____
- Pari's mother gave her $5\frac{1}{2}$ rupees. Her father gave her $7\frac{1}{4}$ rupees. How many rupees does Pari have ? _____
- Vishal spent $2\frac{5}{6}$ hours in watching TV and $1\frac{5}{12}$ hours in playing cricket. How much total time did he spend in enjoying both ? _____
- Anjali bought $1\frac{3}{8}$ metre red ribbon and $2\frac{1}{4}$ metre yellow ribbon. How much total ribbon did she buy ? _____
- $1\frac{9}{10}$ metre cloth was used in Priyanka's kurta and $2\frac{1}{5}$ metre in her salwar. How much total length of cloth was used in her suit ? _____
- A frog leaped $\frac{2}{3}$ m, $\frac{3}{4}$ m and $\frac{4}{5}$ m in three jumps respectively. How many metres did it leap in all ? _____

9. Ajay bought $1\frac{1}{2}$ kg grapes, $1\frac{1}{8}$ kg apples and $\frac{3}{4}$ kg dates. How many kg fruits did he buy ? _____
10. The mass of a canister is $1\frac{1}{8}$ kg. If it has $14\frac{3}{4}$ kg oil, what is the mass of the canister with oil ? _____
11. Jai eats $1\frac{1}{3}$ bars of chocolates on his way to school and $2\frac{1}{4}$ bars on the way back. How much chocolate bars did he eat in all ? _____

➤ Subtraction of Like Fractions and Unlike Fractions

We subtract numerators of like fractions. The denominator does not change.

Example 6 : Subtract $\frac{31}{39} - \frac{14}{39}$.

Solution : $\frac{31}{39} - \frac{14}{39} = \frac{31-14}{39} = \frac{17}{39}$

Example 7 : Solve $\frac{11}{13} - \frac{5}{6}$.

Solution : $\frac{11}{13} - \frac{5}{6}$
 $= \frac{11 \times 6 - 5 \times 13}{78} = \frac{66 - 65}{78} = \frac{1}{78}$

[LCM of 13 and 6 = $13 \times 6 = 78$]

We find LCM of denominators and change the fractions into like fraction.



Exercise 11.4

✎ Subtract :

1. $\frac{21}{31} - \frac{14}{31} = \frac{\quad}{\quad}$

2. $\frac{24}{25} - \frac{13}{25} = \frac{\quad}{\quad}$

3. $\frac{8}{15} - \frac{4}{15} = \frac{\quad}{\quad}$

4. $\frac{4}{5} - \frac{2}{5} = \frac{\quad}{\quad}$

5. $\frac{6}{7} - \frac{4}{7} = \frac{\quad}{\quad}$

6. $\frac{9}{11} - \frac{5}{11} = \frac{\quad}{\quad}$

7. $\frac{16}{21} - \frac{4}{21} = \frac{\quad}{\quad}$

8. $\frac{11}{16} - \frac{\quad}{16} = \frac{5}{16}$

9. $\frac{17}{18} - \frac{13}{18} = \frac{\quad}{\quad}$

✎ Change to like fractions and subtract :

10. $\frac{1}{6} - \frac{1}{9} = \frac{\quad}{\quad}$

11. $\frac{5}{8} - \frac{5}{16} = \frac{\quad}{\quad}$

12. $\frac{3}{4} - \frac{1}{3} = \frac{\quad}{\quad}$

13. $\frac{4}{5} - \frac{7}{10} = \frac{\quad}{\quad}$

14. $\frac{3}{4} - \frac{2}{3} = \frac{\quad}{\quad}$

15. $\frac{4}{5} - \frac{3}{4} = \frac{\quad}{\quad}$

$$16. \frac{7}{8} - \frac{6}{7} = \frac{\quad}{\quad}$$

$$17. \frac{7}{16} - \frac{5}{24} = \frac{\quad}{\quad}$$

$$18. \frac{3}{4} - \frac{7}{10} = \frac{\quad}{\quad}$$

$$19. \frac{1}{8} - \frac{1}{12} = \frac{\quad}{\quad}$$

$$20. \frac{3}{10} - \frac{4}{15} = \frac{\quad}{\quad}$$

$$21. \frac{5}{6} - \frac{3}{8} = \frac{\quad}{\quad}$$

$$22. \frac{3}{14} - \frac{1}{21} = \frac{\quad}{\quad}$$

$$23. \frac{5}{12} - \frac{1}{6} = \frac{\quad}{\quad}$$

$$24. \frac{9}{10} - \frac{5}{6} = \frac{\quad}{\quad}$$

25. How much is $\frac{1}{3}$ less than from $\frac{1}{2}$?

26. How much is $\frac{1}{2}$ less than from $\frac{3}{4}$?

27. Find the difference of $\frac{9}{16}$ and $\frac{7}{24}$.

➤ Subtraction of Mixed Numbers

Example 8 : Find the difference : $5 - \frac{8}{9}$.

Second method : $5 - \frac{8}{9} = 4 + 1 - \frac{8}{9}$

$$\begin{aligned} \text{Solution} : 5 - \frac{8}{9} &= \frac{5}{1} - \frac{8}{9} = \frac{9 \times 5 - 8 \times 1}{9} \\ &= \frac{45 - 8}{9} = \frac{37}{9} = 4\frac{1}{9} \end{aligned}$$

$$\begin{aligned} &= 4 + \frac{9}{9} - \frac{8}{9} \\ &= 4 + \frac{1}{9} = 4\frac{1}{9} \end{aligned}$$

Example 9 : Solve : $5\frac{7}{12} - 3\frac{5}{18}$

Solution : Here denominators are not the same, so we change to improper fractions.

$$\begin{aligned} 5\frac{7}{12} - 3\frac{5}{18} &= \frac{67}{12} - \frac{59}{18} \\ &= \frac{67 \times 3 - 59 \times 2}{36} \\ &= \frac{201 - 118}{36} = \frac{83}{36} = 2\frac{11}{36} \end{aligned}$$

2	12, 18
2	6, 9
3	3, 9
	1, 3

(LCM of 12 and 18
= $2 \times 2 \times 3 \times 3 = 36$)

Example 10 : How much is $4\frac{9}{11}$ less than from 7?

Solution : We need to find $7 - 4\frac{9}{11}$

$$\begin{aligned} 7 - 4\frac{9}{11} &= \frac{7}{1} - \frac{53}{11} \\ &= \frac{7 \times 11 - 53 \times 1}{11} = \frac{77 - 53}{11} = \frac{24}{11} = 2\frac{2}{11} \end{aligned}$$



Exercise 11.5

☞ Subtract (find the difference) :

1. $5 - 1\frac{7}{9}$

2. $4 - 1\frac{4}{6}$

3. $7 - \frac{9}{11}$

4. $3 - \frac{4}{5}$

5. $1 - \frac{2}{3}$

6. $12 - 4\frac{3}{4}$

7. $2\frac{1}{5} - 1\frac{3}{10}$

8. $3\frac{3}{4} - 1\frac{1}{4}$

9. $3\frac{1}{3} - 2\frac{1}{9}$

10. $2\frac{5}{12} - 1\frac{1}{6}$

11. $1\frac{7}{10} - 1\frac{3}{5}$

12. $2\frac{5}{6} - 1\frac{2}{3}$

13. How much is $\frac{1}{2}$ less than from $1\frac{1}{4}$.

14. How much is $\frac{3}{4}$ less than from $2\frac{1}{2}$.

15. What is to be added to $2\frac{1}{3}$ to get $3\frac{1}{9}$?

16. How much is $1\frac{3}{8}$ less than from $1\frac{5}{6}$?

17. What is to be subtracted from 5 to get $2\frac{1}{2}$?

☞ Word Problems on Subtraction of Fractions

Example 11 : There is $5\frac{4}{15}$ kg mustard oil in first can and $4\frac{7}{12}$ kg mustard oil in second can. How much oil is more in the first can than second can ?

Solution : Oil in the first can = $5\frac{4}{15}$ kg.
Oil in the second can = $4\frac{7}{12}$ kg.
Difference = $5\frac{4}{15} - 4\frac{7}{12}$
 $= \frac{79}{15} - \frac{55}{12}$
 $= \frac{4 \times 79 - 5 \times 55}{60}$
 $= \frac{316 - 275}{60}$
 $= \frac{41}{60}$ kg



Exercise 11.6

1. Rani jumped $3\frac{1}{4}$ metre and Neha jumped $3\frac{2}{5}$ metre long. Who jumped longer and how much longer? _____
2. A gas cylinder contains 14 kg of gas. $9\frac{3}{5}$ kg of gas is used. How much of gas is left in the cylinder? _____
3. Roma and Mona ran a 100 metre race. It took Roma $18\frac{6}{10}$ seconds and Mona $16\frac{3}{10}$ seconds. How much longer did Roma take? _____
4. Sania bought 4 litre of milk in the morning. During the day $2\frac{3}{4}$ litre milk was used. How much milk is left? _____
5. Riya drank $17\frac{7}{10}$ litre milk in February. She drank $18\frac{3}{10}$ litre milk in March. How much more milk did she drink in March? _____
6. Pihu walked $2\frac{1}{2}$ km. Rakhi walked $1\frac{7}{10}$ km. Who walked farther and how much? _____
7. A bucket contained $10\frac{2}{5}$ liter water. Vardan takes $1\frac{3}{4}$ liter for his water pistol. How much water is left in the bucket? _____
8. It takes Swami $1\frac{1}{2}$ hours to reach school on a bicycle. It takes him $\frac{2}{3}$ hours on a scooter. How much longer does it take on the bicycle? _____
9. Mary bought $2\frac{1}{2}$ L milk in the morning. $\frac{3}{4}$ L milk was used in the morning and $1\frac{1}{5}$ L in the day. How much of milk is left in the evening? _____
10. Anjali is $132\frac{3}{5}$ cm tall and Riya is $136\frac{1}{10}$ cm tall. Who is the taller of the two, and how much? _____
11. There was $1\frac{7}{10}$ liter petrol in the tank of Abhinav's motorcycle. He got $2\frac{1}{2}$ liter petrol poured in it. $1\frac{3}{4}$ liter petrol was left in the tank in the evening. How much petrol was consumed during the whole day? _____
12. One-ninth of the students of class IV have curly hair. What fraction of the students of Class IV do not have curly hair? _____

Let's Recall

Multiple Choice Questions (MCQs)

Tick (✓) the correct option :

- A fraction where numerator is equal to or greater than denominator is called _____.
(a) an improper fraction (b) a proper fraction
(c) a unit fraction (d) None of these
- A fraction where numerator is less than denominator is called _____.
(a) an improper fraction (b) a proper fraction
(c) a unit fraction (d) None of these
- The correct improper fraction of $3\frac{1}{7}$ is _____.
(a) $\frac{11}{7}$ (b) $\frac{22}{7}$ (c) $\frac{31}{7}$ (d) None of these
- The correct mixed fraction of $\frac{37}{8}$ is _____.
(a) $4\frac{3}{8}$ (b) $5\frac{4}{8}$ (c) $4\frac{5}{8}$ (d) None of these
- Which pair of the following is an equivalent fraction ?
(a) $\frac{5}{15}$ and $\frac{1}{3}$ (b) $\frac{2}{3}$ and $\frac{3}{4}$ (c) $\frac{1}{3}$ and $\frac{4}{5}$ (d) $\frac{2}{5}$ and $\frac{6}{2}$
- Which one of the following is not an unlike fraction ?
(a) $\frac{7}{5}, \frac{3}{2}$ (b) $\frac{9}{4}, \frac{1}{4}$ (c) $\frac{3}{6}, \frac{9}{7}$ (d) $\frac{9}{12}, \frac{9}{18}$
- The sum of $\frac{4}{7}$ and $2\frac{5}{7}$ is _____.
(a) $2\frac{4}{7}$ (b) $3\frac{2}{7}$ (c) $3\frac{1}{7}$ (d) $3\frac{5}{7}$
- Which one of the following is true ?
(a) $2\frac{2}{3} > 1\frac{3}{4}$ (b) $\frac{3}{2} > \frac{5}{2}$ (c) $4\frac{2}{7} > 4\frac{1}{3}$ (d) None of these
- Which one pair of the following is in the ascending order ?
(a) $\frac{1}{3} < \frac{2}{3} < \frac{4}{3} < \frac{5}{3}$ (b) $\frac{2}{3} < \frac{1}{3} < \frac{5}{3} < \frac{4}{3}$
(c) $\frac{1}{3} < \frac{4}{3} < \frac{2}{3} < \frac{5}{3}$ (d) $\frac{5}{3} < \frac{4}{3} < \frac{2}{3} < \frac{1}{3}$

Learning Objectives :

- ✦ What is Money ? ✦ Conversion of Rupees into Paise and Paise into Rupees ✦ Adding and Subtracting Money
- ✦ Making Bill

⇒ What is money ?

Money is any item or verifiable record that is generally accepted as payment for goods and services and repayment of debts in a particular country or socio-economic context.

Indian money is expressed in rupees and paise. In one rupee, there are 100 p.

Rupees come in the form of coins and notes. There are small denominations rupee coins such as ₹ 1, ₹ 2, ₹ 5 and ₹ 10. The higher denominations are available in rupee notes of ₹ 5, ₹ 10, ₹ 20, ₹ 50, ₹ 100, ₹ 500, ₹ 1000 and ₹ 2000.

Paise comes in the form of coins. We have 10 p, 20 p, 25 p, 50 p coins.

₹ is the short form of rupees and 'p' for paise. '₹' is always written before the money value. *For example* ₹ 25, 'p' is always written after the money value. *For example*, 75 p.

A point '.' is used as a separator to express Indian rupees. *For example* ₹ 30.50 means ₹ 30 and 50 p.

⇒ Conversion of Rupees into Paise and Paise into Rupees

- To change 'rupees' into 'paise' we multiply the number of rupees by 100.
₹ 1 = 100 paise. Then ₹ 2 = 2×100 paise = 200 paise
- To change an amount of 'rupees' and 'paise' into paise we multiply the number of rupees by 100 and add to it the number of paise.

Note : An amount of more than 100 paise can be expressed in rupees and paise.

**Exercise 12.1****Fill in the blanks :**

1. ₹ 18 = _____ p
2. ₹ 15 = _____ p
3. ₹ _____ = 3500 p
4. ₹ 107.50 = _____ p
5. ₹ 223.58 = _____ p
6. ₹ 524.86 = _____ p
7. 3525 p = ₹ _____
8. 8990 p = ₹ _____
9. 4390 p = ₹ _____

10. 75965 p = ₹ _____ and _____ p
 11. 16930 p = ₹ _____ and _____ p
 12. 12970 p = ₹ _____ and _____ p

➤ Adding and Subtracting Money

Adding and subtracting money is similar to adding and subtracting numbers. We just need to follow place value rule of adding and subtracting numbers. To find the total amount or balance amount, we write one amount under the other such that the point is exactly under the point and then add or subtract in the usual way.

Example 1 : Add ₹ 439.75 and ₹ 249.69.

Solution : $75\text{ p} + 69\text{ p} = 144\text{ p}$
 $144\text{ p} = ₹ 1\text{ and }44\text{ p}$

Write 44 at p column and 1 at ₹ column as carrying.

Thus, ₹ 439.75 + ₹ 249.69 = ₹ 689.44

$$\begin{array}{r} ₹\ 439.75 \\ + ₹\ 249.69 \\ \hline ₹\ 689.44 \end{array}$$

Example 2 : Subtract ₹ 148.68 from ₹ 430.32

Solution : We cannot subtract 68 p from 32 p. Borrow ₹ 1 and make it 100 p. Now $100\text{ p} + 32\text{ p} = 132\text{ p}$
 $132\text{ p} - 68\text{ p} = 64\text{ p}$

$$\begin{array}{r} ₹\ 430.32 \\ - ₹\ 148.68 \\ \hline ₹\ 281.64 \end{array}$$



Exercise 12.2

Find the sum of the following :

1.
$$\begin{array}{r} ₹\ 45 \\ + ₹\ 58 \\ \hline \end{array}$$

2.
$$\begin{array}{r} ₹\ 193 \\ + ₹\ 175 \\ \hline \end{array}$$

5.
$$\begin{array}{r} ₹\ 384.80 \\ + ₹\ 355.45 \\ \hline \end{array}$$

3.
$$\begin{array}{r} ₹\ 200 \\ - ₹\ 45.25 \\ \hline 155.25 \end{array} \quad \times$$

3.
$$\begin{array}{r} ₹\ 54.63 \\ + ₹\ 13.08 \\ \hline \end{array}$$

6.
$$\begin{array}{r} ₹\ 425.90 \\ + ₹\ 345.75 \\ \hline \end{array}$$

Common Mistake



$$\begin{array}{r} ₹\ 200.00 \\ - ₹\ 45.25 \\ \hline 154.75 \end{array} \quad \checkmark$$

4.
$$\begin{array}{r} ₹\ 235.75 \\ + ₹\ 545.87 \\ \hline \end{array}$$

7.
$$\begin{array}{r} ₹\ 496.29 \\ + ₹\ 285.97 \\ \hline \end{array}$$

☞ Subtract the following :

$$\begin{array}{r} 8. \quad ₹ 80 \\ - ₹ 36 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad ₹ 185 \\ - ₹ 085 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad ₹ 3800 \\ - ₹ 1950 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad ₹ 5500 \\ - ₹ 2675 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad ₹ 185.05 \\ - ₹ 95.80 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad ₹ 865.95 \\ - ₹ 520.45 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad ₹ 800.60 \\ - ₹ 145.88 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad ₹ 455.75 \\ - ₹ 170.95 \\ \hline \\ \hline \end{array}$$

☞ Making Bill

Example 3 : Study the following bill to answer the questions.

S. No.	Item	Quantity	Cost (₹)
1.	Biscuits	2 packets	24.00
2.	Juice	1 tetrapack	57.75
3.	Bread	1 loaf	13.00
4.	Cheese	2 cubes	16.50
5.	Chips	4 packets	40.00

1. What is the total bill amount ?
2. If Anju gave ₹ 500, how much money would she get back ?

Solution : 1. Total bill amount = 24.00 + 57.75 + 13.00 + 16.50 + 40.00 = ₹ 151.25

$$\begin{array}{r} 24.00 \\ 57.75 \\ 13.00 \\ 16.50 \\ + 40.00 \\ \hline 151.25 \end{array}$$

2. If Anju gave ₹ 500 note then she would get back
= ₹ 500 - ₹ 151.25
= ₹ 348.75

$$\begin{array}{r} 500.00 \\ - 151.25 \\ \hline 348.75 \end{array}$$



Exercise 12.3

☞ Fill in the blanks.

1. I have ₹ 196. I spend ₹ 98. I am left with ₹ _____ .
2. Nidhi bought a pencil for ₹ 2.50 and an eraser for ₹ 1.50. She paid ₹ _____ .
3. A pen costs ₹ 10.25. How much will 3 pens cost ? _____ .
4. 6 bus tickets cost ₹ 60.60. What is the cost of 1 ticket ? _____ .
5. A drum costs ₹ 27.25. I have ₹ 20.50. How much more money do I need to buy this drum ? _____ .
6. I spent ₹ 7.50 and have ₹ 7.50 left with me. How much money did I have in the beginning ? _____ .

☞ Read the bills to find the total amount and the money left over :

7. Money paid = ₹ 100

S. No.	Item	Quantity	Cost (₹)
1.	Comb	1	28.75
2.	Ribbon	2 m	16.50
3.	Clips	6	30.60
4.	Hair pins	2	15.00
			Total =

Money left over =

8. Money paid = ₹ 500

S. No.	Item	Quantity	Cost (₹)
1.	T-shirt	1	237.75
2.	Floater	1 pair	199.99
			Total =

Money left over =

9. Money paid = ₹ 100 + ₹ 100 + ₹ 50 = _____

S. No.	Item	Quantity	Cost (₹)
1.	Potatoes	$\frac{1}{2}$ kg	7.50
2.	Onions	1 kg	16.00
3.	Apples	1 kg	120.00
4.	Cherry	$\frac{1}{4}$ kg	24.00
			Total =

Money left over =

 Solve :

10. A chocolate bar costs ₹ 15.25. How much money will be returned if Aman buys 3 chocolate bars and pays by a 100-rupee note ?
11. Sheela bought 5 metres of cloth for ₹ 235.20. What is the cost of a metre of cloth ?
12. Gunjan spends ₹ 16.80 on newspaper every week. What is the cost of 1 newspaper ?
13. Deepak wants to buy a book costing ₹ 197.75. He has only ₹ 139 with him. How much more money does he need to buy the book ?
14. At a carnival, Rahul spent ₹ 45 on rides, ₹ 137 on games and ₹ 92.50 on food. If he had ₹ 300, how much is left with him ?
15. 1 kg of sweets cost ₹ 240. What amount will be paid for $2\frac{1}{2}$ kg sweets ?
16. The price of a pencil is ₹ 6. How many pencils can be bought for ₹ 100 ? How much money will be left over ?
17. Reema bought apples for ₹ 22.75. The shopkeeper returned ₹ 27.25. How much money did she give him ?

Learning Objectives :

- ❖ What is a Clock ? ❖ Watching Time in a Clock ❖ Use of am and pm ❖ The 24-hour Clock Time ❖ To Convert 24-hour Clock Time into 12-hour Clock Time ❖ Conversion of Time ❖ Addition and Subtraction of Hours and Minutes
- ❖ Word Problems on Addition and Subtraction of Hours-Minutes ❖ Calendar ❖ Conversion of Years and Months
- ❖ Addition and Subtraction of Years and Months ❖ Word Problems on Calendar

➤ What is a Clock ?

A clock is an instrument used to measure, keep and indicate time.

➤ Watching Time in a Clock

The dial of the clock is marked with 60 equal small and 12 big divisions (marks). The minute-hand takes one minute in moving from one division to the the next division. It takes one hour to complete one round of the dial. While the hour-hand moves 5 small divisions or 1 big division.

Thus, 1 hour = 60 minutes



Time in words : 17 minutes past 1

Time in figure : 1 : 17



Time in words : 8 minutes to 6

Time in figure : 6 : 52

The simplest form of telling time is writing the hours and minutes passed. Conventionally, we say 'minutes past the hour' up to 30 minutes and 'minutes to the hour' after 30 minutes as shown above.

In case of 15, 30 and 45 minutes, we use words 'quarter past' 'half past' and 'quarter to' respectively.

For example,

4 : 15	quarter past four
4 : 30	half past four
4 : 45	quarter to five



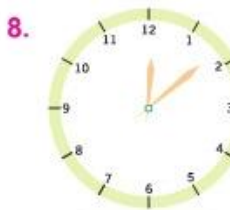
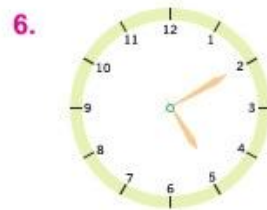
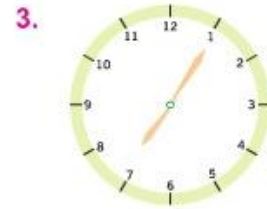
Exercise 13.1

Write these times in words and in figures :



12 : 15

a quarter past 12





Exercise 13.2

Write these times in figures :

- | | | | |
|----------------------|-------|------------------------|-------|
| 1. Quarter to seven | _____ | 2. Half past twelve | _____ |
| 3. Quarter past ten | _____ | 4. Quarter past four | _____ |
| 5. 15 minutes to 3 | _____ | 6. 28 minutes past 4 | _____ |
| 7. Quarter to one | _____ | 8. Quarter to two | _____ |
| 9. 10 minutes to 9 | _____ | 10. 10 minutes to 8 | _____ |
| 11. 20 minutes to 4 | _____ | 12. 33 minutes past 12 | _____ |
| 13. 10 minutes to 1 | _____ | 14. 7 minutes to 10 | _____ |
| 15. 8 minutes past 5 | _____ | 16. 4 minutes past 3 | _____ |

Write these times in words :

- | | | | |
|------------|------------|-------------|-------------|
| 17. 5 : 15 | 18. 7 : 45 | 19. 8 : 15 | 20. 9 : 30 |
| 21. 5 : 17 | 22. 3 : 43 | 23. 8 : 52 | 24. 1 : 40 |
| 25. 8 : 43 | 26. 6 : 30 | 27. 11 : 08 | 28. 10 : 05 |

29. 10 minutes later than 4 : 45
 30. 10 minutes earlier than 7 : 45
 31. 15 minutes later than 7 : 45
 32. 15 minutes later than 12 : 45
 33. $\frac{1}{4}$ hour earlier than 6 : 20
 34. $\frac{1}{2}$ hour earlier than 10 : 45

Rewrite the following after changing 'past' into 'to' :

- | | |
|-----------------------|-------|
| 35. 40 minutes past 5 | _____ |
| 36. 45 minutes past 3 | _____ |
| 37. 55 minutes past 7 | _____ |
| 38. 35 minutes past 4 | _____ |

Use of am and pm

A day has 24 hours. When the hours hand of a clock goes around the clock once, 12 hours have passed. The hour hand completes 2 rounds of the clock face twice in a day.

A new day begins at 12 O'clock midnight and ends at 12 O'clock the next midnight.

We use **am** (*ante meridiem*) for the time after mid-night and afternoon.

We use **pm** (*post meridiem*) for the time after 12 noon and before 12 mid-night.

Fact File

We do not write am for 12 O'clock a.m. for 12 O'clock noon or p.m. for 12 O'clock midnight.

Example 1 : Write the time in am or pm :

- (a) 3 : 30 in the morning (b) 9 : 50 in the night
(c) 1 : 35 in the afternoon (d) 2 : 00 in the night

Solution : (a) 3 : 30 am (b) 9 : 50 pm
(c) 1 : 35 pm (d) 2 : 00 am

Exercise 13.3

 Write these times in am or pm :

- | | |
|------------------------------------|--------------------------------|
| 1. 10 : 05 in the night | 2. 12 : 30 in the night |
| 3. 7 : 15 in the morning | 4. 8 : 15 in the evening |
| 5. 20 minutes past one afternoon | 6. Quarter to 4 in the morning |
| 7. 12 : 30 in the afternoon | 8. 5 : 30 in the evening |
| 9. Half past five in the morning | 10. Quarter to 12 in the night |
| 11. Quarter past 10 in the morning | 12. 3 O'clock in the afternoon |

 What time was it 3 hours before (earlier than) these timings ?

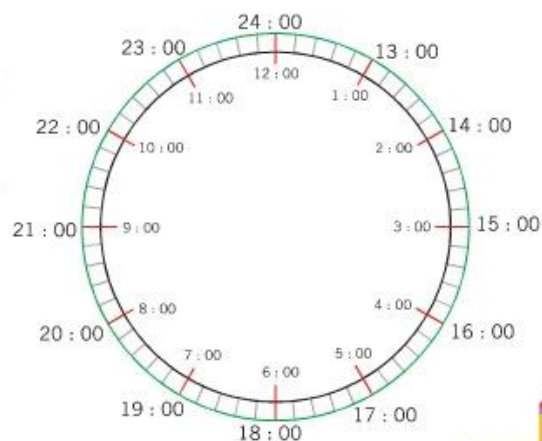
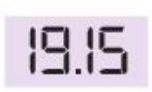
- | | | | |
|---------------|-------|------------------|-------|
| 13. 12 noon | _____ | 14. 12 mid-night | _____ |
| 15. 2 : 10 am | _____ | 16. 1 : 30 pm | _____ |
| 17. 1 : 00 am | _____ | 18. 2 : 25 pm | _____ |

 What time will it be 4 hours after (later than) these timings ?

- | | | | |
|--|-------|----------------|-------|
| 19. 9 : 30 am | _____ | 20. 12 noon | _____ |
| 21. 4 : 30 am | _____ | 22. 7 : 05 pm | _____ |
| 23. 12 mid-night | _____ | 24. 2 : 05 am | _____ |
| 25. 11 : 50 am | _____ | 26. 11 : 00 pm | _____ |
| 27. What time did the first bell ring ? | _____ | | _____ |
| 28. What time did you reach home yesterday ? | _____ | | _____ |
| 29. When did you go to bed yesterday ? | _____ | | _____ |

The 24-hour Clock Time

We normally use a 12-hour clock. To make the time clear we use am or pm. But to avoid confusion, Railways, Airlines and Armed Forces, use 24-hour clock time. Many digital watches also show time in 24-hour clock time.



 **In 24-hour Clock Time.**

12 : 45 am is written as 1245 hours.

4 am is written as 0400 hours.

12 noon is written as 1200 hours.

12 : 30 pm is written as 1230 hours.

1 pm is written as 1300 hours.

Similarly, 10 pm is written as 2200 hours.

12 mid-night is written as 2400 hours or 0000 hours.

The two digits from the left denote the number of hours and the two digits from the right denote the number of minutes.

Thus, to convert pm to 24-hour clock time we add 12 hour to the given time in pm except 12 : 01 to 12 : 59 pm.

12 : 01 am to 12 : 59 am are written as 0001 hours to 0059 hours.

 **To Convert 24-hour Clock Time into 12-hour Clock Time**

Example 2 : Change the 24-hour clock time to 12-hour clock time :

(a) 0030 hours

(b) 0950 hours

(c) 2100 hours

(d) 2350 hours

(e) 2400 hours

(f) 0100 hours

Solution : (a) 0030 hours = 12 : 30 am

(b) 0950 hours = 9 : 50 am

(c) 2100 hours = $2100 - 1200 = 9 : 00$ pm

(d) 2350 hours = $2350 - 1200 = 11 : 50$ pm

(e) 2400 hours = $2400 - 1200 = 12$ mid-night

(f) 0100 hours = 1 : 00 am

Common Mistake



9.15 am \rightarrow 5.10 pm \times

4 hours 5 minutes

9.15 am \rightarrow 5.10 pm \checkmark

7 hours 55 minutes

 **Exercise 13.4**

 Change to 24-hour clock time :

1. 12 : 35 pm

2. 12 noon

3. 12 mid-night

4. 6 : 20 pm

5. 12 : 05 pm

6. 12 : 30 am

7. 3 : 15 am

8. 11 : 05 pm

9. 11 : 00 am

 Change to 12-hour clock time using am and pm :

10. 2400 hours

11. 0010 hours

12. 0105 hours

13. 0520 hours

14. 0000 hours

15. 1200 hours

16. 1201 hours 17. 0045 hours 18. 1908 hours
 19. Karnataka Express leaves New Delhi at 2115 hours. What is the time in 12-hour clock time ?
 20. Rajdhani Express leaves New Delhi at 4 : 30 pm for Mumbai. What is the time in 24-hour clock time ?

☞ Answer, using both 12-hour clock and 24-hour clock time ?

21. At what time do you get up in the morning ? _____
 22. At what time do you go to school ? _____
 23. At what time do your father go to office ? _____
 24. At what time do you return from school ? _____
 25. At what time do you study at home ? _____

↻ Conversion of Time

We know that

$$1 \text{ day} = 24 \text{ hours} \quad \text{and} \quad 1 \text{ hour} = 60 \text{ minutes}$$

$$1 \text{ minute} = 60 \text{ seconds} \quad \text{and} \quad 1 \text{ hour} = 60 \times 60 = 3600 \text{ seconds}$$

Fact File

- The time 0001 hours to 0059 hours is written as 12 : 01 am to 12 : 59.
- The time 1201 hours to 1259 hours is written as 12 : 01 pm to 12 : 59 pm

Example 3 : Convert 7 days 16 hours to hours.

Solution : $7 \text{ days } 16 \text{ hours} = (7 \times 24) + 16$
 $= 168 + 16 = 184 \text{ hours}$

Example 4 : Convert 388 hours into days and hours.

Solution : We divide 388 hours by 24 hours to convert into days.

$$\begin{array}{r} 16 \quad \leftarrow \text{days} \\ 24 \overline{)388} \\ \underline{24} \downarrow \\ 148 \\ \underline{144} \\ 4 \quad \leftarrow \text{hours} \end{array}$$

388 hours = 16 days 4 hours

Example 5 : Convert 4 hours 15 minutes into minutes.

Solution : $4 \text{ hours } 15 \text{ minutes} = (4 \times 60) + 15$
 $= 240 + 15 = 255 \text{ minutes}$

Example 6 : Convert 575 minutes into hours and minutes.

Solution :

$$\begin{array}{r} 9 \leftarrow \text{hours} \\ 60 \overline{)575} \\ \underline{540} \\ 35 \leftarrow \text{minutes} \end{array}$$

$$575 \text{ minutes} = 9 \text{ hours } 35 \text{ minutes}$$

Example 7 : Convert 7 minutes 35 seconds into seconds.

Solution :

$$\begin{aligned} 7 \text{ minutes } 35 \text{ seconds} &= (7 \times 60) + 35 \\ &= 420 + 35 = 455 \text{ seconds} \end{aligned}$$

Example 8 : Convert 200 seconds into minutes and seconds.

Solution :

$$\begin{array}{r} 3 \leftarrow \text{minutes} \\ 60 \overline{)200} \\ \underline{180} \\ 20 \leftarrow \text{seconds} \end{array}$$

$$200 \text{ seconds} = 3 \text{ minutes } 20 \text{ seconds}$$

Example 9 : How many seconds are there in 6 hours 25 minutes ?

Solution :

$$\begin{aligned} 6 \text{ hours } 25 \text{ minutes} &= 6 \times 3600 + 25 \times 60 \quad (1 \text{ hour} = 60 \times 60 = 3600 \text{ seconds}) \\ &= 21600 + 1500 = 23100 \text{ seconds} \end{aligned}$$



Exercise 13.5

☞ Convert into hours :

- 3 days 12 hours
- 2 days 8 hours
- 5 days 18 hours
- 4 days
- 8 days 22 hours
- 10 days 29 hours

☞ Convert into days and hours :

- 45 hours
- 37 hours
- 68 hours
- 80 hours
- 300 hours
- 100 hours

☞ Convert into minutes :

- 3 hours 11 minutes
- 2 hours 15 minutes
- 5 hours 41 minutes
- 9 hours 6 minutes
- 12 hours 10 minutes
- 10 hours 17 minutes

☞ Convert into hours and minutes :

- 100 minutes
- 75 minutes
- 187 minutes
- 396 minutes
- 800 minutes
- 207 minutes

☞ Convert into seconds :

25. 2 minutes 15 seconds 26. 3 minutes 27. 5 minutes 47 seconds
 28. 8 minutes 10 seconds 29. 25 minutes 5 seconds 30. 9 minutes 17 seconds

☞ Convert into minutes and seconds :

31. 96 seconds 32. 78 seconds 33. 105 seconds
 34. 200 seconds 35. 630 seconds 36. 540 seconds

☞ Convert into seconds :

37. 2 hours 10 minutes 38. 1 hour 5 minutes 39. 1 hour 11 minutes

➤ Addition and Subtraction of Hours and Minutes

Example 10 : Add 54 minutes to 48 minutes.

Solution :

h	min
+	54
	48
102	

$$\begin{array}{r} 1 \\ 60 \overline{)102} \\ \underline{60} \\ 42 \end{array}$$

h	min
1	
	54
	48
1 42	

So, 54 minutes + 48 minutes = **1 hour 42 minutes**

Example 11 : Add 1 hour 26 minutes and 2 hour 40 minutes.

Solution : $26 + 40 = 66 = 60 + 6 \text{ min}$
 $= 1 \text{ h} + 6 \text{ min}$

Write 6 at minutes column and 1 (carrying) at hours column.

$1 \text{ h} + \text{carrying } 1 \text{ h} + 2 \text{ h} = 4 \text{ h}$

Sum = **4 h 6 min**

h	min
1	
	26
+	2 40
4 06	

Example 12 : Subtract 45 minutes from 2 hours 15 minutes.

Solution : We cannot subtract 45 minutes from 15 minutes.

So, we borrow 1 hour from 2 hours leaving behind 1 hour.

$1 \text{ hour } 15 \text{ min} = 60 \text{ min} + 15 \text{ min} = 75 \text{ min}$

$75 \text{ min} - 45 \text{ min} = 30 \text{ min}$

Difference = **1 h 30 min**

h	min
1	75
2	15
-	45
1 30	

Common Mistake



$1 \text{ hour} + 15 \text{ minutes} + 40 \text{ minutes} = 56 \text{ minutes}$ ✗

Add the same units (minutes + minutes, hours + hours) = **1 hour 55 minutes** ✓



Exercise 13.6

✎ Add :

$$\begin{array}{r} 1. \quad \text{h} \quad \text{min} \\ \quad 3 \quad 27 \\ + 1 \quad 33 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad \text{h} \quad \text{min} \\ \quad 4 \quad 35 \\ + 2 \quad 20 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad \text{h} \quad \text{min} \\ \quad 6 \quad 48 \\ + 5 \quad 32 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad \text{h} \quad \text{min} \\ \quad 6 \quad 45 \\ + 7 \quad 30 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad \text{h} \quad \text{min} \\ \quad 16 \quad 45 \\ + 15 \quad 55 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad \text{h} \quad \text{min} \\ \quad 9 \quad 50 \\ + 3 \quad 40 \\ \hline \end{array}$$

✎ Subtract :

$$\begin{array}{r} 7. \quad \text{h} \quad \text{min} \\ \quad 2 \quad 25 \\ - \quad \quad 56 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad \text{h} \quad \text{min} \\ \quad 1 \quad 35 \\ - \quad \quad 45 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad \text{h} \quad \text{min} \\ \quad 6 \quad 9 \\ - 2 \quad 22 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad \text{h} \quad \text{min} \\ \quad 5 \quad 40 \\ - 2 \quad 50 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad \text{h} \quad \text{min} \\ \quad 15 \quad 10 \\ - 2 \quad 40 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad \text{h} \quad \text{min} \\ \quad 10 \quad 00 \\ - 3 \quad 30 \\ \hline \end{array}$$

Word Problems on Addition and Subtraction of Hours-Minutes

Example 13 : Pihu went to bed at 2150 hours and got up at 0530 hours. How long did she sleep ?

Solution : Sleep-time before mid-night

$$= 2400 - 2150 \text{ hours} = 2 \text{ h } 10 \text{ min}$$

$$\text{Sleep time after mid-night} = 5 \text{ h } 30 \text{ min}$$

$$\text{Total sleep time of Pihu} = 2 \text{ h } 10 \text{ min} + 5 \text{ h } 30 \text{ min}$$

$$= 7 \text{ h } 40 \text{ min}$$



Exercise 13.7

1. A film show started at 3 : 25 pm It ran for 2 hours 40 minutes. At what time does it end ? _____



2. Sania leaves her home for school at 6:45 am. She reaches school after 40 minutes. At what time does she reach the school ?
3. Mona went to school at 7 : 15 am and returned after 6 hours 30 minutes. When did she reach home ?
4. A train left Howrah station at 0940 hours and reached Kanpur after 15 hours 30 minutes. What was the time then ?
5. An air-bus left New Delhi at 1950 hours. It arrived at Chennai in $2\frac{1}{2}$ hours. At what time did it arrive ?
6. If the sun rose at 5 : 58 am on 20th September and set at 5 : 57, then what was the length of the day on that date ?
7. A hockey-match ended at 4 : 15 pm. If the match lasted for 2 hours 30 minutes, then when did it start ?
8. Vardan studies for 4 hours 30 minutes at school and 2 hours 40 minutes at home. How much total time does he study ?
9. A train leaves Mumbai at 1930 hours and reaches Surat after 2 hours 30 minutes. At what time does it reach Surat ?
10. Riya leaves her house at 8 : 45 am and returns at 6 : 15 pm. After how much time does she return back ?
11. The first period of Sunrise School starts at 7 : 45 am and finishes at 8 : 25 am. Find the duration of the first period.
12. An aeroplane leaves Bengaluru at 0625 hours and reaches Mumbai at 0910 hours. How long does it take to reach Mumbai ?
13. Meenu wants her cake to be ready at 1 pm. If the cake takes 45 minutes to bake, then at what time must it be put in the oven ?
14. It takes Kamal 25 minutes to cycle to school. If he reaches school at 7 : 15 am then what time did he set out ?
15. A passenger train departs from Delhi at 1740 hours and arrives Ambala City at 2020 hours. How much does it take to reach Ambala City ?

➤ Calendar

Calendar is a system of organising days for social, religions, commercial or administrative purposes. This is done by giving names of periods of time, typically days, weeks, months and years. A date is the designation of a single, specific day within such a system.

Look at the calendar for the year 2019 A.D. The calendar of the year shows all the twelve months. It shows **days** and **dates** for each month.

Do all the months have the same number of days ?

Which months have 30 days ?

Which months have 31 days ?

Which month has 29 days ?

What is the total number of days in the year 2019 ?

Add the number of days of all months. It comes out 365 days.

A year which has 366 days is a leap year ?

A year that is divisible by 4 exactly is called a leap year.

The years 2016, 2020, 2012 will be leap years.

$2004 \div 4 = 501$, $2008 \div 4 = 502$, $2000 \div 4 = 500$

But the years 2010, 2011, 2013, 2014 will not be leap years.

Each of these will have 365 days. (February 28 days).

The first Sunday in January 2019 falls on 6 January, so other Sundays fall on 13, 20 and 27. January (after an equal interval of 7 days).

Similarly, we can find the dates of other days in any month.



Exercise 13.8

Look at the calendar for the year 2019 and answer :

- How many months in a year have 31 days ? Name them.
- How many months in a year have 30 days ? Name them.
- What is the total number of days in the year 2019 ?
- How many months in a year have less than 30 days ? Name them.
- The first date of January 2019 falls on Tuesday. What other dates of this month falls on Tuesday ?
- Count the total number of Sundays in the year 2019.
- What days fall on the following dates of February 2019 ?
 (a) 1 (b) 6 (c) 14 (d) 20 (e) 28
- Write the dates for the following days of March 2019 ?
 (a) Second Saturday (b) First Monday (c) Last Sunday
- In 2019, what date is ?
 (a) The first Monday in July
 (b) One week after August 15th
 (c) Two weeks after October 2nd
 (d) The last Sunday of the year
 (e) One week before December 25th
- Which of the following are leap years ?
 (a) 2010 (b) 2004 (c) 2006 (d) 1996 (e) 2008

Conversion of Years and Months

We know that 1 year = 12 months.

Example 13 : Convert 7 years 5 months into months.

Solution : 7 years 5 months = $7 \times 12 + 5$ months
 $= 84 + 5 = 89$ months

Example 14 : Convert 94 months into years.

Solution : We divide the number of months by 12.
Quotient is years and remainder is months.

$$\begin{array}{r} 7 \leftarrow \text{years} \\ 12 \overline{)94} \\ \underline{84} \\ 10 \leftarrow \text{months} \end{array}$$

94 months = 7 years 10 months

➤ Addition and Subtraction of Years and Months

Example 15 : Add 5 years 7 months and 3 years 9 months.

Solution : $7 + 9 = 16$ months
 $= 12 + 4$ months
 $= 1$ year + 4 months
Sum = 9 years 4 months

years	months
5	7
+ 3	9
<hr/>	<hr/>
9	4

Example 16 : Subtract 3 years 5 months from 7 years 2 months.

Solution : Borrow 1 year.
1 year 2 months
 $= 12$ months + 2 months
 $= 14$ months
 $14 - 5 = 9$ months
Difference = 3 years 9 months

years	months
7	2
- 3	5
<hr/>	<hr/>
3	9

➤ Word Problems on Calendar

Example 17 : A school was closed on 21st May and opened on 8th July. For how many days did the school remain closed ?

Solution : Number of days closed in May = $31 - 20 = 11$ days
Number of days closed in June = 30 days
Number of days closed in July = 7 days
Total number of days school remain closed = $11 + 30 + 7 = 48$ days

Common Mistake



Days in February

$$30 - 1 = 29 \quad \times$$

$$28 - 1 = 27 \quad \checkmark$$

$$\text{Days in May} = 31 - 15 = 16 \quad \times$$

$$13 - 14 = 17, \text{ 15th May is included in the vacations, so take away 14 not 15. } \checkmark$$



Exercise 13.9

☞ Convert into months :

1. 4 years 2 months 2. 3 years 5 months 3. 5 years 6 months

☞ Convert into years and months :

4. 42 months 5. 18 months 6. 27 months

☞ Add the following :

7. 9 years 3 months and 7 years 9 months

8. 8 years 7 months and 5 years 8 months

☞ Find the difference :

9. 10 years—6 years 8 months

10. 7 years 6 months—4 years 9 months

☞ Solve the following :

11. Mehul left for tour on January 7, 2019 and returned home on April 8, 2019. How long did he remain out of the home ?

12. Tina's school was closed on 16th May, 2018 and opened on 1 July, 2018. Find the number of days the school remained closed.

13. Rajiv joined a factory on 9 January, 2016. He worked for 25 days only. On what date did Rajiv left the factory ?

14. The annual examination in a school started on 20 April, 2015 and ended on 2 May, 2015. How long did the examination continue ?

15. Sahil joined Central School on 10 July, 2017 and left on 5 December, 2018. How long did he stay at Central School ?

16. Renu left for Mumbai on 18th of December, 2017 and came back on 4th January, 2018. How long did she remain out of home ?

17. Mona joined a company on 14th May, 2017 and left it on 25th July, 2018. How long did she work for the company ?

18. Roma started working in a factory from 11th February, 2018. She worked for a total of 48 days and left the factory. On which date did she leave the factory ?

19. Nikki fell sick on 21 February, 2018 and recovered on 2 March 2018. For how many days was he ill ?

20. Annual sports started on 27th October, 2018 in the school and ended on 8th November, 2018. For how many days did the sports last ?

Hots Questions



February has 29 days in a leap year. Every fourth year is a leap year. 2000, 2004, 2008 ... were leap years.

Anuj was born on 29 February 2000. He celebrates his birthday every fourth year, so in 2016 he will be 5 years old. Do you agree ? Why ?

Let's Recall

Multiple Choice Questions (MCQs) :

Tick (✓) the correct option :

- Whose emblem can be seen on a hundred rupee note ?
(a) J. L. Nehru (b) M. K. Gandhi
(c) R. N. Tagore (d) None of these
- Which bank is responsible for printing the notes ?
(a) SBI (b) RBI
(c) PNB (d) None of these
- Which one of the following is a leap year ?
(a) 2002 (b) 2005
(c) 2009 (d) 2012
- The number of years in a decade are _____ .
(a) 100 (b) 10
(c) 200 (d) 1000
- Aunt Polly's clock is shown here. If her niece is going to pick her up in 30 minutes, then what time will be shown on the clock ?
(a) 12 : 10 (b) 12 : 70
(c) 1 : 10 (d) 1 : 60
- A shampoo bottle costs ₹ 95. Anil gave one ₹ 50 note and three ₹ 20 notes. How much money should he get back ?
(a) ₹ 25 (b) ₹ 15
(c) ₹ 35 (d) None of these
- The cost of 8 pencils is ₹ 24. Find the cost of 5 pencils.
(a) ₹ 20 (b) ₹ 10
(c) ₹ 12 (d) ₹ 15
- 5 min. + 25 sec = _____ .
(a) 6 min 95 sec (b) 3 min 50 sec
(c) 3 min 65 sec (d) 4 min 85 sec
- A train departs from Delhi at 12 : 50. It reaches Agra at 16 : 05. How long does the train take to reach Agra from Delhi ?
(a) 3 hrs 55 min (b) 3 hrs 15 min
(c) 4 hrs 55 min (d) None of these
- Anjali loves ice cream. She buys a chocolate ice cream for ₹ 17.25, a vanilla ice cream for ₹ 12.50 and a strawberry ice-cream for ₹ 15.50. How much money has she spent in all ?
(a) ₹ 52.25 (b) ₹ 54.25
(c) ₹ 45.25 (d) ₹ 55.25



Length, Weight and Capacity

Learning Objectives :

- ✦ Length & Its Units Conversion
- ✦ Addition and Subtraction
- ✦ Mass and Its Units Conversion
- ✦ Addition and Subtraction
- ✦ Capacity and Its Unit Conversion
- ✦ Addition and Subtraction

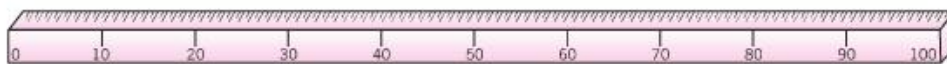
Length

In the International System of quantities, length is a any quantity with dimension distance. In other words, length is a measured dimension of an object. We often use the following units to measure length or distance.

Metre (m) : The **basic unit** of length is the metre.

This is normally used to measure distance between two places within a small compound. *For example,* the **distance** between your classroom and the Principal office is measured in metres.

The cloth we buy is generally measured in metre. You must have noticed the shopkeepers measuring the cloth with the help of metre rod.



Metre Rod

Centimetre (cm) : This is a unit used to measure the length of small objects or the distance between two neighbouring points.

For example, the length of your desk is measured in centimetres.

Millimetre (mm) : This is normally used for measuring small **length** or **thickness**.

For example, the thickness of a coin is given in millimetres.

Hectometre (hm) : This is usually used to measure length of fields and agriculture farms.

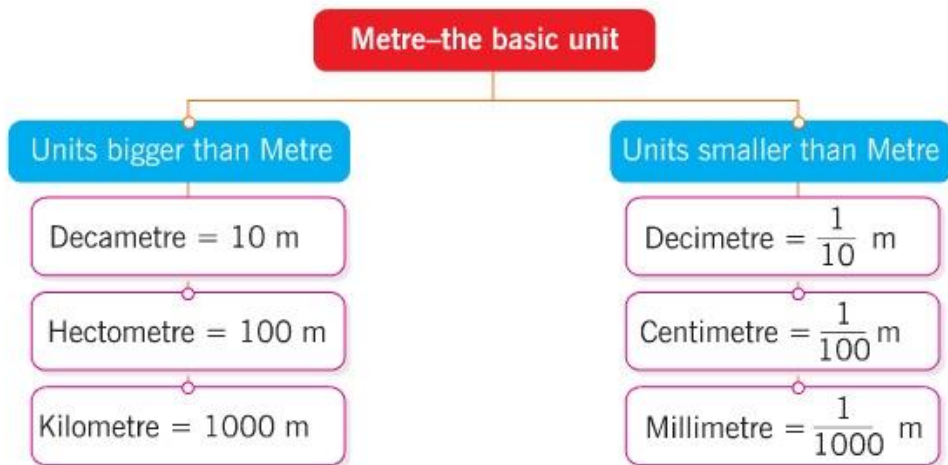
For example, the length of an industrial plot is measured in hectometres.

Kilometre (km) : This is used to measure distance between two places far away from each other.

For example, the distance between Patna and Chennai is measured in kilometres.

Besides the above, there are other units of measurement. All these units of measurement are related to each other.

The diagram given on next page gives us a comparative view of the various units of length.



Study the following table to know the relation among various units of length :

Units in descending order		Units in ascending order	
1 km	= 10 hm	10 mm	= 1 cm
1 hm	= 10 dam	10 cm	= 1 dm
1 dam	= 10 m	10 dm	= 1 m
1 m	= 10 dm	10 m	= 1 dam
1 dm	= 10 cm	10 dam	= 1 hm
1 cm	= 10 mm	10 hm	= 1 km

⇒ Conversion of Units of Length

The above given table makes conversion of units very easy.

For example,

Conversion of Metre

$$\begin{aligned}
 1 \text{ metre} \times 10 &= 10 \text{ decimetre (dm)} \\
 1 \text{ metre} \times 10 \times 10 \text{ or } 100 &= 100 \text{ cm} \\
 1 \text{ metre} \times 10 \times 10 \times 10 \text{ or } 1000 &= 1000 \text{ mm}
 \end{aligned}$$

Common Mistake

$$7 \text{ m } 5 \text{ cm } 75 \text{ cm} \quad \times$$

$$7 \text{ m } 5 \text{ cm} = 705 \text{ cm} \quad \checkmark$$



Conversion into Metre

$$\begin{aligned}
 1 \text{ decametre} \times 10 &= 10 \text{ metre} \\
 1 \text{ hectometre} \times 10 \times 10 \text{ or } 100 &= 100 \text{ metre} \\
 1 \text{ km} \times 10 \times 10 \times 10 \text{ or } 1000 &= 1000 \text{ metre}
 \end{aligned}$$

Common Mistake



3 km 15 m = 315 m ✗
3050 m = 30 km 50 m ✗

3 km 15 m = 3015 m ✓
3050 m = 3 km 50 m ✓



Exercise 14.1

Fill in the blanks :

- 1 km = _____ m
- 1 m = _____ cm
- 1 hm = _____ dam
- 1 decimetre = _____ cm
- 1 hectometre = _____ m

Convert the following into metres :

- 5 dam
- 1 dam
- 1 hm 1 dam
- 3 hm
- 2 km
- 5 km 5 hm

Convert the following :

- 1 km into dam
- 1 km into m
- 1 m into mm
- 1 dam into dm

Convert the following :

- 3 cm into mm
- 4 dm into cm
- 9 dam into m
- 1 km into hm

Addition and Subtraction

You have learnt in Class III how to add and subtract units of length by arranging them in columns.

For example,

m	cm
1	
14	37
+ 23	81
38	1 18

cm	mm
29	
30	18
- 14	9
15	9

Hots Questions



Romi has a 5 m long ribbon. How many times should she cut it to get 5 pieces, each of length 1 m?

Example 1 : Add 15 m 23 cm 5 mm and 12 m 47 cm 9 mm.

Solution :

m	cm	mm
15	23	5
+ 12	47	9
27	71	14



Exercise 14.2

☞ Add the following :

1. 427 km 372 m and 577 km 715 m
2. 660 km 610 m and 423 km 672 m
3. 273 km 160 m and 935 km 540 m
4. 516 m 25 cm and 372 m 85 cm
5. 241 m 70 cm and 560 m 93 cm
6. 524 m 53 cm and 465 m 48 cm
7. 30 cm 7 mm and 23 cm 9 mm
8. 15 cm 5 mm and 13 cm 8 mm
9. 7 hm 70 m and 9 hm 40 m
10. 854 km 700 m and 113 km 306 m
11. 266 km 526 m and 213 km 469 m
12. 72 cm 5 mm and 23 cm 4 mm
13. 21 hm 9 dam and 23 hm 5 dam
14. 15 hm 45 m and 14 hm 85 m
15. 3 hm 5 dam and 7 hm 7 dam

☞ Add the following :

16. 15 dam 9 m 25 cm and 23 dam 5 m 45 cm
17. 24 dam 8 m 46 cm and 15 dam 7 m 92 cm
18. 12 hm 3 dam 5 m and 23 hm 8 dam 7 m
19. 19 hm 8 dam 8 m and 21 hm 5 dam 5 m
20. 250 km 7 hm 5 dam and 320 km 9 hm 9 dam
21. 125 km 9 hm 9 dam and 521 km 5 hm 5 dam
22. 237 m 16 cm 9 mm and 122 m 76 cm 5 mm
23. 93 m 54 cm 5 mm and 34 m 73 cm 7 mm
24. 73 m 43 cm 3 mm and 53 m 74 cm 9 mm
25. 76 m 19 cm 2 mm and 65 m 92 cm 8 mm

☞ Subtract the following :

26. 3102 km 312 m from 4109 km 209 m
27. 2143 km 276 m from 4163 km 243 m
28. 7128 km 215 m from 8276 km 246 m
29. 101 km 109 m from 104 km 200 m
30. 1312 km 170 m from 1435 km 103 m
31. 6523 km 450 m from 7537 km 36m
32. 17 m 43 cm from 73 m 34 cm
33. 23 m 67 cm from 97 m 72 cm
34. 15 m 85 cm from 49 m 47 cm
35. 1711 km 333 m from 1954 km 122 m

☞ Answer the following word problems :

36. A car runs 2340 km 700 m in a week, then 2870 km 500 m in another week. How long does the car run altogether ?
37. A curtain seller has in his shop. 350 m 50 cm blue cloth; 450 m 70 cm red cloth; 505 m 10 cm green cloth. How much cloth does he have altogether ?
38. Jai bought 1218 m 85 cm nylon cord and 3243 m 75 cm jute cord. How much cord did he buy altogether ?
39. A shopkeeper has 2312 m 50 cm red wire, 1676 m 50 cm black wire and 1870 m 75 cm yellow wire. How much wire does he have altogether ?
40. A taxi ran 4506 km 500 m in January and 5240 km 200 m in February. How many more km did the taxi run in February than January ?
41. City 'A' is 1045 km 700 m from Delhi. City 'B' is 847 km 900 m from Delhi. How many more km is city 'A' from Delhi than city 'B' ?

⇒ Weight

The weight is an object that is related to the amount of force acting on the object, either due to gravity into a reaction force that hold it in.

We often use the following units to measure weight.

Gram : The basic unit of weight is the gram. This is normally used to weigh light objects.

For example, gold, silver, dyes, etc. are weighed in grams.

Milligram : Milligram is $\frac{1}{1000}$ part of a gram. This is used to weigh objects where accuracy is needed.

For example, chemists and scientists use it in preparation of drugs and experiments.

Kilogram : Kilogram is equal to 1000 gram. This unit of weight is most commonly used in our daily life.

For example, The fruit seller, the sweet merchant, the grocer, green grocer, everyone of them uses it frequently.

Metric tonne : This is equal to 1000 kg and is commonly known as mt.

For example, It is used to weigh heavy objects, like cement loads, iron bars, etc.

Besides the above, there are other units of weight. All these units are related to each other. The following tables may be studied in this context :

Table 1

Units	Abbreviation	Equivalent
gram	g	1,000 mg
milligram	mg	$\frac{1}{1000}$ or .001 g
centigram	cg	10 mg
decigram	dg	10 cg

decagram	dag	10 g
hectogram	hg	100 g
kilogram	kg	1,000 g
metric tonne	mt	1,000 kg

Table 2

Decreasing order		Increasing order	
1 kg	= 10 hg	10 mg	= 1 cg
1 hg	= 10 dag	10 cg	= 1 dg
1 dag	= 10 g	10 dg	= 1 g
1 g	= 10 dg	10 g	= 1 dag
1 dg	= 10 cg	10 dag	= 1 hg
1 cg	= 10 mg	10 hg	= 1 kg

Conversion of units of weight is worked out in the same way as conversion of units of length.

For example,

Conversion of gram

$$\begin{aligned}
 1 \text{ gram} \times 10 &= 10 \text{ dg} \\
 1 \text{ gram} \times 10 \times 10 \text{ or } 100 &= 100 \text{ cg} \\
 1 \text{ gram} \times 10 \times 10 \times 10 \text{ or } 1000 &= 1000 \text{ mg}
 \end{aligned}$$

Conversion into gram :

$$\begin{aligned}
 1 \text{ decagram} \times 10 &= 10 \text{ g} \\
 1 \text{ hectogram} \times 10 \times 10 \text{ or } 100 &= 100 \text{ g} \\
 1 \text{ kilogram} = 10 \times 10 \times 10 \text{ or } 1000 &= 1000 \text{ g}
 \end{aligned}$$

Hots Questions



1. Manoj has a red, blue and green marbles of the same size. But one of the marble is slightly heavier or lighter than the other two. Find that marble using the weighing balance only two times.
2. Which is heavier : 1 kg cotton or 1 kg wood ?



Exercise 14.3

Fill in the blanks :

1. 1 dg = _____ cg
2. 1 hg = _____ g
3. 1 kg = _____ g
4. 1 g = _____ cg



☞ Convert the following into grams :

5. 5 dag 6. 1 dag 7. 1 hg 1 dag 8. 3 hg
9. 2 kg 10. 5 kg 5 hg 11. 3000 cg 12. 100 dg

☞ Convert the following :

13. 1 kg into dag 14. 1 hg into g 15. 1 g into mg 16. 1 dag into dg

☞ Convert the following :

17. 3 cg into mg 18. 4 dg into cg 19. 9 dag into g 20. 1 kg into hg

Common Mistake



1 kg 15 g = 115 g	✗	2 kg 9 g = 2900 g	✗
1 kg 15 g = 1015 g	✓	2 kg 9 g = 2009 g	✓

➤ Addition and Subtraction

Addition and subtraction of the units of weight are worked out by arranging the units in their respectively columns.

For example,

$$\begin{array}{r}
 \text{g} \quad \text{cg} \\
 \begin{array}{r}
 1 \\
 14 \\
 + 23 \\
 \hline
 38 \quad 18
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 \text{cg} \quad \text{mg} \\
 \begin{array}{r}
 29 \\
 30 \\
 - 14 \\
 \hline
 15 \quad 9
 \end{array}
 \end{array}$$



Exercise 14.4

☞ Add the following :

1. 524 g 53 cg and 465 g 48 cg 2. 516 g 25 cg and 372 g 85 cg
3. 854 kg 700 g and 113 kg 306 g 4. 266 kg 526 g and 213 kg 469 g
5. 15 hg 45 g and 14 hg 85 g 6. 30 cg 7 mg and 23 cg 9 mg

☞ Subtract the following :

7. 15 g 85 cg from 49 g 47 cg 8. 17 g 43 cg from 73 g 34 cg
9. 101 kg 109 g from 104 kg 200 g 10. 1312 kg 170 g from 1435 kg 103 g

☞ Answer the following word problems :

11. Sahil bought 1 kg 500 g of potatoes and 1 kg 250 g of tomatoes. Find out their total weight.
12. Sita bought 250 g of tea, 500 g of sugar and 200 g of biscuits. Find their total weight.
13. A truck carries 7 mt 500 kg cement. Another truck carries 9 mt 400 kg cement. How much cement do the two trucks carry altogether ?
14. Reshu bought 12 g 3 dg of gold ornaments. Her sister bought 10 g 8 dg of gold ornaments. How much gold ornaments did they buy altogether ?

15. A truck with cement bags in it weight 16 mt 500 kg. The weight of the empty truck is 5 mt 300 kg. Find the weight of the cement bags.
16. Sania had 2 kg 500 g potatoes. She used 1 kg 700 g potatoes. How much potatoes were left with her ?

⇒ Capacity

The maximum amount or number that can be received or contained is called capacity. We usually use the following units of capacity.

Litre (L) : The **basic unit** of capacity is **litre**. This is commonly used to measure cold drink, milk, oil, juice, etc.

Millilitre (mL) : A millilitre is $\frac{1}{1000}$ part of a litre. This is used to measure small quantity of liquids, such as medicines.

Kilolitre (kL) : A kilolitre is equal to 1000 litre. This unit is used to measure the capacity of milk tankers, water tankers, oil tankers, etc.

Besides the above, there are other units of capacity. All these units are related to each other and are being given in the following table :

Decreasing order		Increasing order	
1 kilolitre	= 10 hL	10 mL	= 1 cL
1 hL	= 10 daL	10 cL	= 1 dL
1 daL	= 10 L	10 dL	= 1 L
1 L	= 10 dL	10 L	= 1 daL
1 dL	= 10 cL	10 daL	= 1 hL
1 cL	= 10 mL	10 hL	= 1 kL

Conversion of units of capacity is worked out in the same way as conversion of units of length and weight.

For example,

Conversion of litre

$$\begin{aligned} 1 \text{ litre} \times 10 &= 10 \text{ dL} \\ 1 \text{ litre} \times 10 \times 10 \text{ or } 100 &= 100 \text{ cL} \\ 1 \text{ litre} \times 10 \times 10 \times 10 \text{ or } 1000 &= 1000 \text{ mL} \end{aligned}$$

Conversion into litre

$$\begin{aligned} 1 \text{ decalitre (daL)} \times 10 &= 10 \text{ litre (L)} \\ 1 \text{ hectolitre (hL)} \times 10 \times 10 \text{ or } 100 &= 100 \text{ litre (L)} \\ 1 \text{ kilolitre (kL)} \times 10 \times 10 \times 10 \text{ or } 1000 &= 1000 \text{ litre (L)} \end{aligned}$$



Exercise 14.5

☞ Fill in the blanks :

1. 1 dL = _____ cL

2. 1 hL = _____ L

3. 1 kL = _____ L

4. 1 L = _____ cL

☞ Convert the following into litres :

5. 5 daL 6. 1 daL 7. 1 hL 1 daL 8. 3 hL
9. 2 kL 10. 5 kL 5 hL 11. 3000 cL 12. 100 dL

☞ Convert the following :

13. 1 kL into daL 14. 1 hL into L 15. 1 L into mL 16. 1 daL into dL

☞ Convert the following :

17. 3 cL into mL 18. 4 dL into cL 19. 9 daL into L 20. 1 kL into hL

➤ Addition and Subtraction

Addition and subtraction of the units of capacity are worked out by arranging the units in their respective columns.

For example,

$$\begin{array}{r} \text{L} \quad \text{cL} \\ 14 \quad 37 \\ + 23 \quad 81 \\ \hline 38 \quad 118 \end{array}$$

$$\begin{array}{r} \text{cL} \quad \text{mL} \\ 29 \quad 18 \\ 30 \quad 18 \\ - 14 \quad 9 \\ \hline 15 \quad 9 \end{array}$$



Exercise 14.6

☞ Add the following :

1. 372 L 85 cL and 516 L 25 cL 2. 4651 L 48 cL and 5241 L 53 cL
3. 113 kL 306 L and 854 kL 700 L 4. 23 cL 9 mL and 30 cL 7 mL

☞ Subtract the following :

5. 15 L 85 cL from 48 L 47 cL 6. 3102 kL 312 L from 4109 kL 209 L
7. 101 kL 109 L from 104 kL 200 L 8. 1312 kL 170 L from 1435 kL 103 L

☞ Answer the following word problems :

9. My father took 30 L 500 mL petrol for his car on Monday and then 27 L 700 mL on Sunday. How much petrol did he take altogether ?
10. There was 700 L 500 mL of milk at a milk booth. 340 L 750 mL of milk was sold. How much milk was left over at the both ?
11. A milk van dropped 1250 L 500 mL of milk at one booth and 815 L 750 mL of milk at another booth. How much milk did the van drop altogether ?
12. If the tank of a bus can hold 120 L 300 mL of diesel and there is 30 L 700 mL already in it, then how much more diesel can be filled in the tank ?
13. Sonia bought 2 L 300 mL of cold drink. Her sister bought 5 L 200 mL of cold drink. Find the difference between the cold drink each one bought.

**Learning Objectives :**

- ◆ Fundamental Geometrical Constructions ◆ Angle ◆ Measure of an Angle ◆ The Protractor (D)
- ◆ To Construct an Angle of a Given Measure ◆ Types of Angles

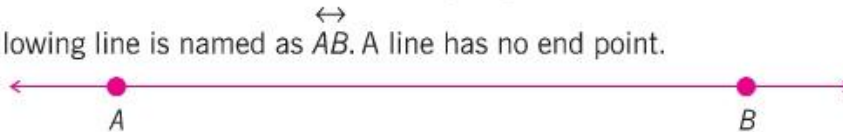
Fundamental Geometrical Constructions

A point is the smallest space imagined. But practically a point has no length, width or thickness. A point has a certain position. We mark a dot (.) to show a point. Points can be indicated by $A, B, C, \dots M, N, O, \dots X, Y, Z$, etc.

Line Segment : If we join two points with a ruler, we get a line segment. It is part of a line. It has two end points. The following line segment is named as AB .



Line : If a line segment is extended in both the directions endlessly, it is called a line. A line cannot be drawn on a piece of paper. We put an arrow on each end of a line segment to show a line. The arrow denotes that the line is going on in the direction of the arrow with no end. The following line is named as AB . A line has no end point.

**Fact File**

A line is always straight. There is nothing like a curved line. It is totally false to think a line of two types : straight line and curved line. Instead we have lines and curves separately.

Ray : A ray has one end point and extends endlessly in the other direction. A ray is named as AB . Rays AB and BA are entirely different rays. They are opposite in direction. A ray has one end point.

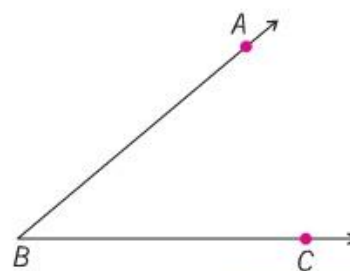
**Angle**

A figure formed by two rays beginning from a common point is called an angle.

For example, \overrightarrow{BA} and \overrightarrow{BC} are two rays beginning from a common point B .

The common beginning point of these two rays is called the **vertex** of the angle. The two rays making the angle are called the **sides** or **arms** of the angle. The symbol for an angle is \angle .

The angle is named by the names of its two sides. As one point is common, so it has three letters. The letter of the vertex is always written in the middle. The name of the angle in the above side figure is $\angle ABC$ or $\angle CBA$.



Fact File

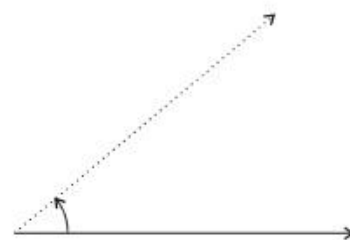
Sometimes the angle is named by the letter of its vertex only. Thus the angle in the above side figure is named as $\angle B$.

Angle is Formed by the Rotation of a Ray :

The movement of a ray with its end point remaining stationary is called its **rotation**. This rotation forms an angle. The initial position of the ray forms one side and the final position forms another side of the angle.

Examples of Angles in Daily Life

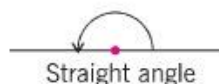
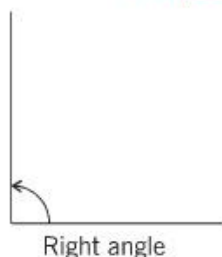
1. Angle between two legs of table.
2. Angle between two walls.
3. Angle between the two hands of a clock.
4. Angle between the two arms of a compass or divider.



⇒ Measure of an Angle

The amount of rotation by a ray about its end point is called the **measure of the angle** thus formed.

If a ray, after making a complete rotation coincides with the initial position, the angle formed is called a **complete angle**.



If a ray, after making a half rotation becomes just opposite to the initial position, the angle formed is called a **straight angle**.

If a ray makes a quarter rotation to reach the final position, the angle formed is called a **right angle**.

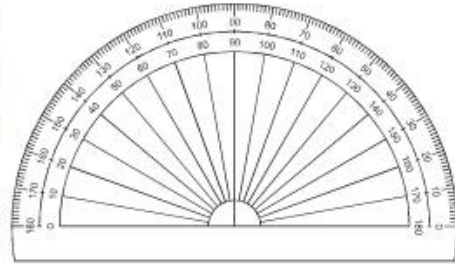
Right angle is also a big measure, so **we divide a right angle into 90 equal parts**. Each part is called a **degree**. Degree is the basic unit for measuring an angle. We write 1 degree as 1° .

Thus, a complete angle has 360° and a straight angle 180° .

➤ The Protractor (D)

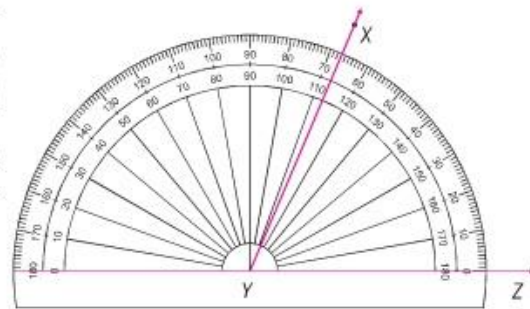
We use the protractor to measure the angle. It is D-shaped (semi-circular) disc. The semi-circular edge is divided into 180 equal parts, each pointing to the **centre** of the protractor. The line 0° - 180° is called the **base line** and its mid-point is called the **centre of the protractor**.

To measure the angles formed on either side of the middle point, degrees 0° to 180° are marked starting from each end of the semi-circle.



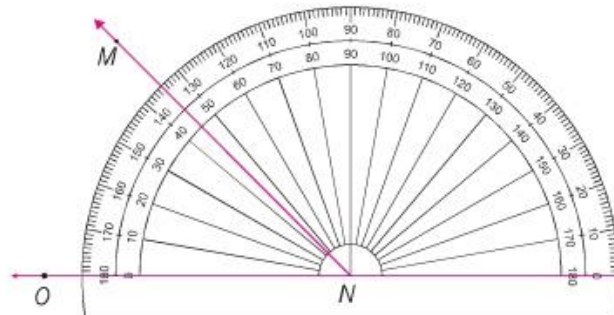
To Measure a Given Angle with a Protractor

Let $\angle XYZ$ is the given angle. Put the protractor in such a way that the centre of the protractor falls on the vertex Y of the angle and the base line on the side YZ . We count from the 0° starting from YZ side of the protractor. Read the degree measure on the protractor at the point where it meets the other side YX .



In the above figure, YX cuts at 67° , so $\angle XZY = 67^\circ$.

In the following figure $\angle MNO = 45^\circ$. We counted from the 0° of the scale starting from NO side of the angle.



Read the degree measure on the protractor at the point where it meets the other side NM .



Exercise 15.1

☞ Name the line, line segment and ray :

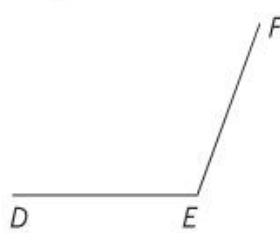


☞ Name the vertex and the sides of each angle :

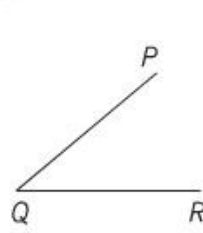
4.



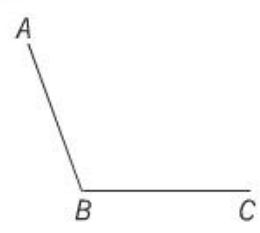
5.



6.

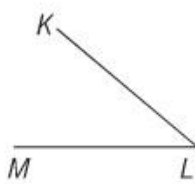


7.

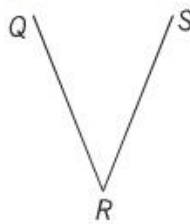


☞ Name each angle in two ways :

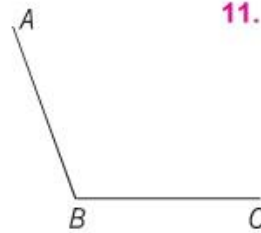
8.



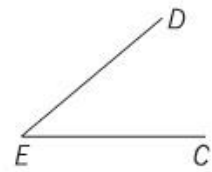
9.



10.



11.

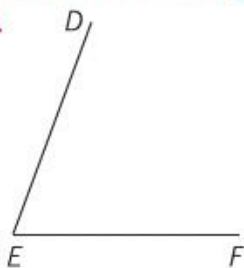


☞ Fill in the blanks :

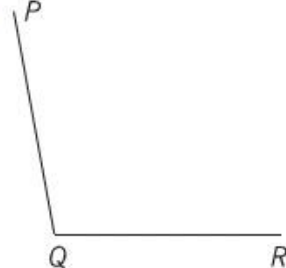
12. A _____ has one end-point.
13. A _____ has two end-points.
14. The common point of the two rays in an angle is called the _____.
15. A line has _____ end-point.
16. A right angle measures _____ degrees.
17. An angle has _____ sides.

☞ Measure the following angles :

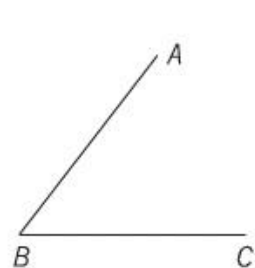
18.



19.

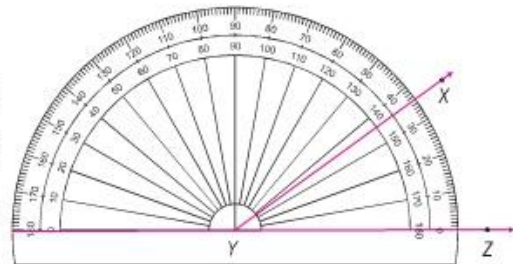


20.



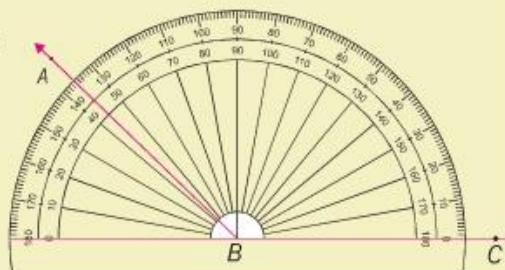
☞ To Construct an Angle of a Given Measure

Let us draw an angle of 36° . Draw a ray YZ. Now place the protractor such that its centre falls on Y and the base line falls on YZ. Press the protractor with the left hand. Now we count from 0° starting from YZ and mark a point X just near the edge marked 36° .



We remove the protractor and draw the ray YX . Then $\angle XYZ$ (or $\angle ZYX$) is the required angle of 36° .

- Example 1** : Draw an angle of 136° .
Solution : We count from 0° of BC side to 146° .
 $\angle ABC$ (or $\angle CBA$) = 136° .



Types of Angles

Angles are called of different types measuring less than or more than a right angle or straight angle.

1. **Acute angle** : Measuring less than 90° but or than 0° .
2. **Right angle** : Measuring exactly 90° .
3. **Obtuse angle** : Measuring more than 90° but less than 180° .



4. **Straight angle** : Measuring exactly 180° .
5. **Reflex angle** : Measuring more than 180° but less than 360° .



Exercise 15.2

With the help of a ruler and protractor, draw the angles of the following measures :

- | | | | | |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1. 25° | 2. 30° | 3. 38° | 4. 45° | 5. 60° |
| 6. 64° | 7. 80° | 8. 90° | 9. 100° | 10. 103° |
| 11. 112° | 12. 150° | 13. 168° | 14. 180° | 15. 200° |

Write the type of each angle :

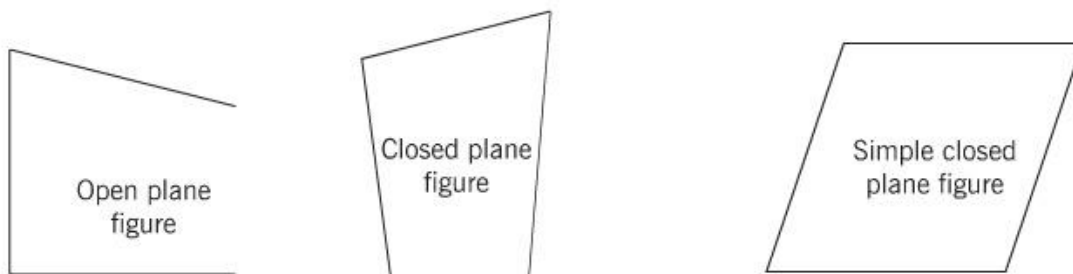
- | | | | | |
|----------------|-----------------|-----------------|-----------------|----------------|
| 16. 60° | 17. 112° | 18. 179° | 19. 205° | 20. 90° |
| 21. 79° | 22. 181° | 23. 89° | 24. 180° | 25. 91° |

Learning Objectives :

- ❖ Simple Closed Plane Figure ❖ Polygon ❖ Triangle and Its Types According to Sides and According to Angles
- ❖ Special Quadrilaterals (Parallelogram, Rhombus, Rectangle, Square) ❖ 3-D Shapes and their Nets
- ❖ View of 3-D Objects

Simple Closed Plane Figure

Any figure in a plane which begins and ends **at the same point** and do not cross itself is called a **simple closed plane figure**.



Simple closed plane figures are basically of two types : polygons and circles.

Polygon

A polygon is a plane figure that is bounded by a finite chain of straight line segments closing in a loop to form a closed polygonal chain or circuit. These segments are called its edges or sides, and points where two edges meet are the polygon's vertices or corners.

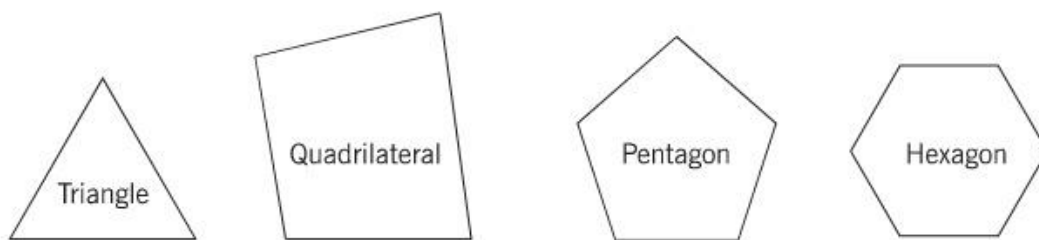
Triangle : A polygon having three sides is called a **triangle** (*tri* means three, so triangle means 'three angles'. Three angles require at least three sides).

Quadrilateral : A polygon having four sides is called a **quadrilateral** (*quadri* means four and *lateral* means side).

Pentagon : A polygon having five sides is called a **pentagon** (*penta* means five).

Hexagon : A polygon having six sides is called a **hexagon** (*hexa* means six).

The lengths of the sides of polygons may or may not be equal to each other. So polygons are of many types.

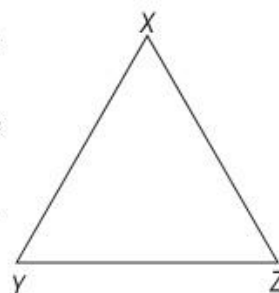


☞ Triangle

A simple closed figure bounded by three line segments is called a **triangle**.

XYZ is a triangle. It has **three vertices** X, Y and Z. XY, YZ and ZX are its three sides. It has three angles $\angle X$, $\angle Y$ and $\angle Z$.

A triangle is represented by the symbol Δ . XYZ is read as 'triangle XYZ'.



☞ Types of Triangles (According to Sides)

Triangles are of three types with respect to its sides :

1. **Scalene triangle** : A triangle with *no equal sides* is called a **scalene triangle**.
2. **Isosceles triangle** : A triangle having *two sides equal* is called an **isosceles triangle**.
3. **Equilateral triangle** : A triangle with *all the three sides equal* is called an **equilateral triangle**.

☞ Types of Triangles (According to Angles)

Triangles are of three types with respect to its angles :

1. **Acute-angled triangle** : If *all the three angles* of a triangle are acute (less than 90°), then we call it an acute-angled triangle.
2. **Right-angled triangle** : If *one angle* of a triangle is a right angle (90°), then we call it a right-angled triangle.
3. **Obtuse-angled triangle** : If *one angle* of a triangle is obtuse (more than 90°), then we call it an obtuse-angled triangle.



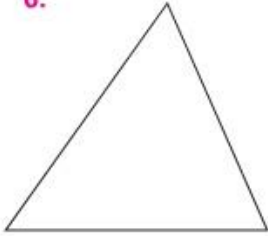
Exercise 16.1

☞ Tick (✓) the correct word :

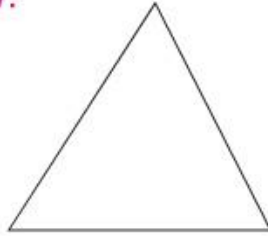
1. In a right angled triangle one angle is *more than/less than/equal to* 90° .
2. In an obtuse angled triangle one angle is *more than/less than/equal to* 90° .
3. In an isosceles triangle *no/two/three* sides are equal.
4. In an equilateral triangle *no/two/three* sides are equal.
5. In a scalene triangle *no/two/three* sides are equal.

☞ Measure all the sides of the following triangles and write near the sides. Then write the type of triangle :

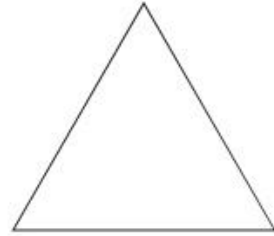
6.



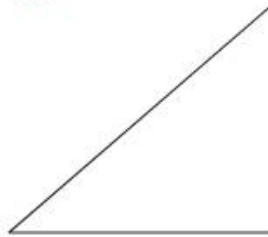
7.



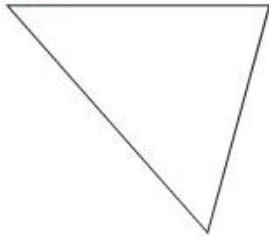
8.



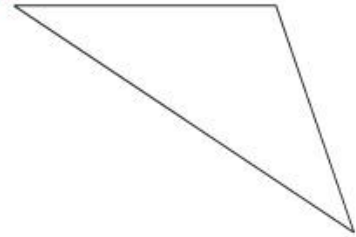
9.



10.

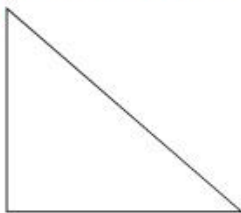


11.

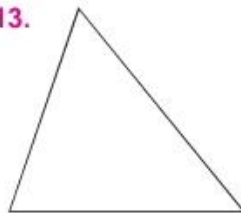


☞ Measure all the angles of the following triangles and write their degrees near the vertices. Then write the type of triangle :

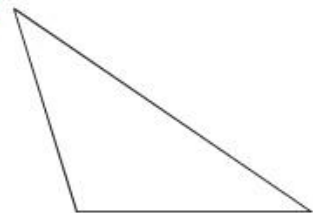
12.



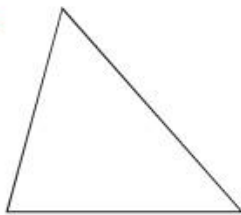
13.



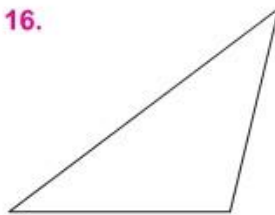
14.



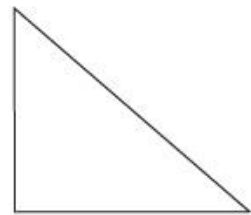
15.



16.



17.



➤ Special Quadrilaterals

Parallelogram

A quadrilateral in which the *opposite sides* are equal and parallel is called a **parallelogram**. Its *opposite angles* are also equal.

Rhombus

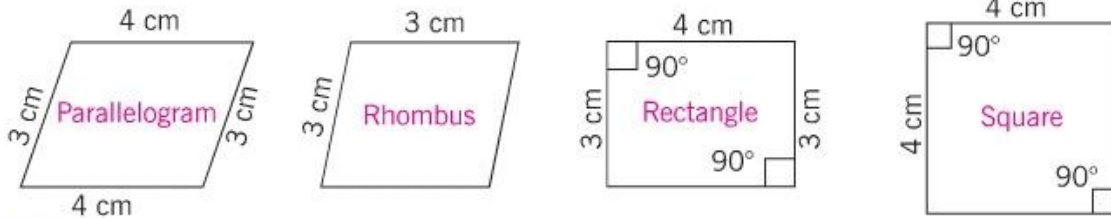
A parallelogram in which *all the sides* are equal is called a rhombus. Its *opposite angles* are also equal.

Rectangle

A parallelogram in which *each angle* is 90° is called a rectangle. *Opposite sides* of a rectangle are equal and parallel.

Square

A rectangle in which *all the four sides* are equal is called a **square**. Each angle of a square is 90° .



Exercise 16.2

Fill in the blanks :

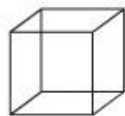
1. In a rectangle _____ angles are equal.
2. The measure of each angle of a square is _____.
3. A quadrilateral has _____ sides and _____ angles.
4. In a parallelogram _____ sides are equal.
5. In a rhombus _____ sides are equal.
6. In a parallelogram _____ angles are equal.
7. The measure of each angle of a rectangle is _____.
8. A rhombus has _____ vertices.
9. A _____ is a parallelogram in which all sides are equal.
10. A _____ is a parallelogram in which each angle is 90° .

Find which quadrilaterals are these having :

11. Opposite sides equal and 4 right angles
12. Opposite sides equal but no right angles
13. Each side 3.2 cm
14. 4 equal sides and 4 right angles
15. 4 equal sides but no right angles

3-D Shapes and their Nets

A **cube** is a cuboid with all equal sides. It has six faces.



A **cuboid** looks like a rectangular box. It has six faces.



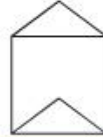
A **cylinder** looks like a pipe. It has a round base.



A **cone** has a shape of an ice cream or a birthday cap.



A **prism** is just like a cylinder but with a triangle base.



A **pyramid** has shape of a tent. It has a square base.



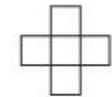
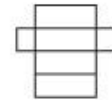
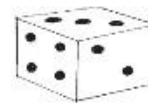
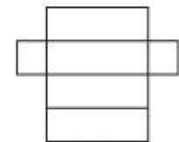
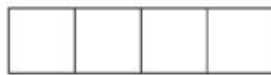
The net of a 3-D shape is what it looks like if you open it flat. On folding the net, we get the 3-D shape again.

For example, if we open a toothpaste box which is a cuboid it will appear as given here :

The net of a cube looks like :

The net of a box open from the top looks like :

The net of a box open from the top and bottom looks like :



Exercise 16.3

Tick (✓) the correct answer :

1.  has a shape of _____ .

(i) cube

(ii) cuboid

(iii) cylinder

2.  has a shape of _____ .

(i) cube

(ii) cuboid

(iii) cylinder

3.  has a shape of _____ .

(i) cube

(ii) pyramid

(iii) prism

4.  has a shape of _____ .

(i) cuboid

(ii) cube

(iii) pyramid

5. Draw the net of a box open from the top.
6. Take a pastrybox and open it flat. Highlight the net formed with a black sketch colour. Draw a net representing it.

➤ Views of 3-D Objects

Things look different when we look at them from different places.
Let us see what this car will look like when seen from front.



Front view



Top view



Side view



Car



Exercise 16.4

1. Draw the top and side views of this geometry box.



2. Draw the top view and bottom view of this bottle.



Learning Objectives :

- What is perimeter ?
- Perimeter of a Polygon, a Triangle, an Equilateral Triangle, a Rectangle, and a Square

What is Perimeter ?

A perimeter is a path that surrounds a two-dimensional shape. The term may be used either for the path or its length. It can be thought of as the length of the outline of a shape.

Perimeter of a Polygon

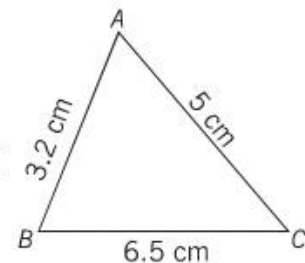
Perimeter of a polygon is the sum of the lengths of its sides.

Perimeter of a Triangle

Perimeter of a triangle is the sum of the lengths of its three sides.

For example, If the 3 sides of a triangle are 6.5 cm, 5 cm and 3.2 cm, then its perimeter will be

$$(6.5 + 5 + 3.2) \text{ cm} = 14.7 \text{ cm}$$



Perimeter of an Equilateral Triangle

All the sides of an equilateral triangle are equal. So the perimeter of an equilateral triangle will be thrice the side.

For example, If the side of an equilateral triangle is 6 cm, then its perimeter will be

$$6 + 6 + 6 = 18 \text{ cm}$$

We can write it as

$$3 \times 6 = 18 \text{ cm}$$

Perimeter of an equilateral triangle = $3 \times \text{side}$

Side of an equilateral triangle = $\text{perimeter} \div 3$

Perimeter of a Rectangle

The opposite sides of a rectangle are equal, so its perimeter

$$= \text{length} + \text{breadth} + \text{length} + \text{breadth}$$

$$= 2 \times \text{length} + 2 \times \text{breadth}$$

$$= 2 \times (\text{length} + \text{breadth})$$

Example 1 : The sides of a rectangle are 15.68 m and 13.45 m respectively. Find its perimeter.

Solution : Perimeter of a rectangle = $2 \times (\text{length} + \text{breadth})$
 $= 2 \times (15.68 + 13.45) \text{ m}$
 $= 2 \times 29.13 \text{ m}$
 $= 58.26 \text{ m}$

Example 2 : An athlete runs around a rectangular field 180 m long and 120 m broad. How many rounds of the field will be made for covering a distance of 3 kilometres?

Solution : Distance covered in one around = Perimeter of the field
 $= 2 \times (\text{length} + \text{breadth})$
 $= 2 \times (180 + 120) = 2 \times 300 = 600 \text{ m}$
 3 kilometres = $3 \times 1000 \text{ m} = 3000 \text{ m}$
 Number of rounds = $3000 \div 600 = 5$

➤ Perimeter of a Square

All the four sides of a square are equal.

Perimeter of a square = side + side + side + side
 $= 4 \times \text{side}$

Side of a square = $\text{perimeter} \div 4$

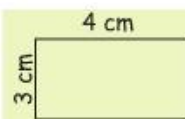
Example 3 : The length of a square field is 438 m. How much wire is required for fencing it around?

Solution : Side of the square field = 438 m
 Perimeter of the square field = $4 \times \text{side}$
 $= 4 \times 438 \text{ m} = 1752 \text{ m}$
 Length of wire required for fencing it around = **1752 m**

Example 4 : The perimeter of a square field is 2400 m. Find the length of its side.

Solution : Side of a square = $\text{Perimeter} \div 4$
 $= 2400 \text{ m} \div 4 = 600 \text{ m}$

Common Mistake



Perimeter
 $= 4 \text{ cm} + 3 \text{ cm}$ ✗
 $= 7 \text{ cm}$

Perimeter
 $= 4 \text{ cm} + 3 \text{ cm} + 4 \text{ cm} + 3 \text{ cm}$ ✓
 $= 14 \text{ cm}$



Exercise 17

- Find the perimeter of a rectangle in which length is 4.37 m and breadth is 2.19 m.
- Find the perimeter of a triangle having sides 5.3 cm, 7.9 cm and 4.7 cm. _____
- A square has a perimeter of 84.8 cm. What is the length of each side? _____
- Find the perimeter of a square having its side 1.243 kilometre. _____

5. A girl athlete runs a race of 1600 m around a rectangular field. The length of this field is 120 m and the breadth is 80 m. How many times does the girl run around the field ? _____
6. The perimeter of an equilateral triangle is 20.4 m. Find the length of one side of it. _____
7. Every side of a square park is 125 m. If the cost of wire is ₹ 2.10 per metre, then find the cost of 5 rounds of fence around it. _____
8. A girl walks on the boundary of a triangular park, each side of which is 30 m. If she covers 60 cm in each step, then how many steps will she take to make one round of the park ? _____
9. A triangular park of sides 210 m, 190 m and 150 m has to be fenced. How many metres of fencing is needed ? If the cost of fencing is ₹ 1.50 a metre, then find the cost of fencing. _____
10. A boy runs 3 times around a rectangular field. The length of this field is 320 m and the breadth is 210 m. Find the distance covered by him. _____
11. A triangle has a perimeter of 53 cm. Its two sides are of lengths 16 cm and 18 cm. What is the length of its third side ? _____
12. A carpet is 5 m 20 cm long and 3 m 20 cm broad. It is bound by a tape around its edges. How much of the tape is used ? Find the cost of the tape at ₹ 2 a metre. _____
13. A garden is 50.5 m long and 31 m wide. A boundary is constructed all around it leaving 1.5 m each for entry gates on two sides. Find the total length of the boundary. _____
14. Mona covers 100 m while going once round a rectangular field 28 m long. What is the width of the field ? _____
15. Shalu runs around a square field. Each side of it is 250 m. Meenu runs around a rectangular field. Its length is 350 m and breadth 170 m. Find the difference of the distance run by them in three rounds. _____

Let's Recall

Multiple Choice Questions (MCQs)

Tick (✓) the correct option :

1. The area and perimeter of a square will be same when its side is _____ .

<input type="checkbox"/> (a) 8 cm	<input type="checkbox"/> (b) 4 cm
<input type="checkbox"/> (c) 15 cm	<input type="checkbox"/> (d) 10 cm
2. The perimeter of a square having side as 15 cm is _____ .

<input type="checkbox"/> (a) 25 cm	<input type="checkbox"/> (b) 60 cm
<input type="checkbox"/> (c) 60 cm ²	<input type="checkbox"/> (d) 45 cm

3. The perimeter of an equilateral triangle whose side is 100 cm is _____ .
- (a) 300 cm (b) 300 cm^2
- (c) 10000 cm (d) None of these
4. The perimeter of a square having side as 10 m is _____ .
- (a) 100 m (b) 100 m^2
- (c) 40 m (d) None of these
5. What is the next number in the pattern below ?
125, 150, 175, 200, _____ .
- (a) 205 (b) 215
- (c) 225 (d) 250
6. 4.75 m can be written as _____ .
- (a) 4 m 75 cm (b) 40 m 75 cm
- (c) 4 m 750 cm (d) 470 m 5 cm
7. The sum of 3 kg 170 g and 12 kg 475 g is _____ .
- (a) 15 kg 635 g (b) 15 kg 655 g
- (c) 15 kg 645 g (d) None of these
8. 4 km 79 m equals _____ .
- (a) 4.079 km (b) 40.79 km
- (c) 0.4079 km (d) 407.9 km
9. Which one of the following is an acute angle ?
- (a) 60° (b) 110°
- (c) 180° (d) 170°
10. Which one of the following forms a straight angle ?
- (a) $90^\circ, 80^\circ$ (b) $110^\circ, 30^\circ$
- (c) $50^\circ, 110^\circ$ (d) $120^\circ, 60^\circ$
11. An angle whose measure is 90° , is known as _____ .
- (a) right angle (b) straight angle
- (c) obtuse angle (d) acute angle

Learning Objectives :

- ❖ What is Pattern ? ❖ Line of Symmetry ❖ Tiling of Floor Pattern

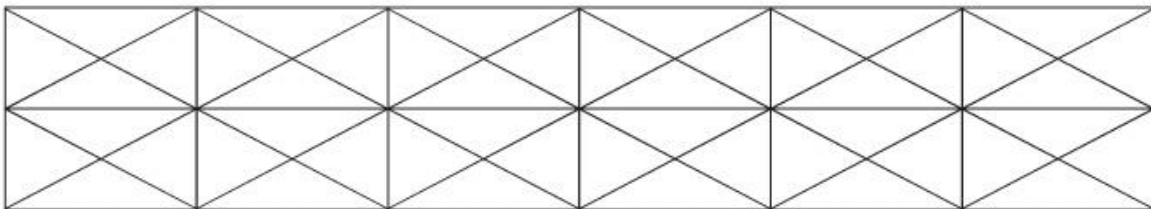
What is Pattern ?

A pattern is a regulating in the world or a manmade design. As such, the elements of a pattern repeat in a predictable manner. A geometric pattern is a kind of pattern formed of geometric shapes and typically repeated like a wallpaper design.

Line of Symmetry

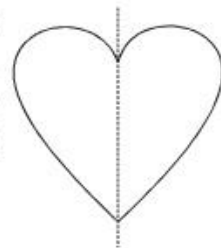
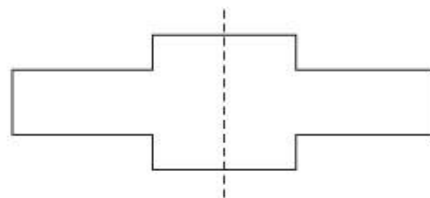
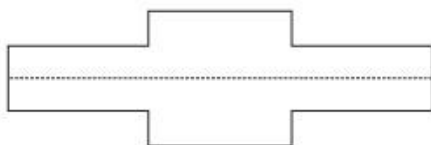
When a basic shape repeats itself many times a pattern is formed. For example, the following shape is a pattern.

It has a rectangle (with a diagonal) repeated to generate a shape. The shape has been repeated to get a pattern.



If we divide a pattern or any geometrical figure into two equal halves and if both the parts are mirror images of each other, the pattern is called a **symmetrical pattern** or **symmetrical figure**. If we fold the pattern along the dividing line, both the parts overlap exactly with each other. The dividing line is called **the line of symmetry** (see the adjoining figure of heart).

Look at the following figure :

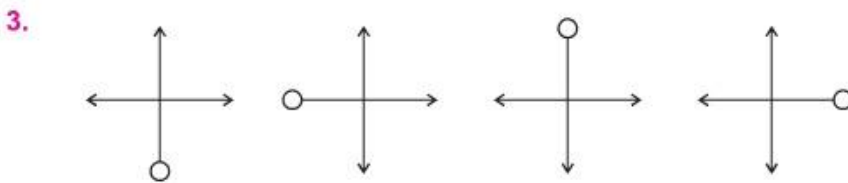
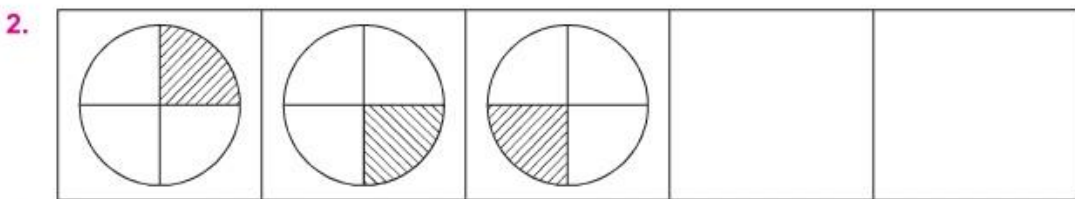
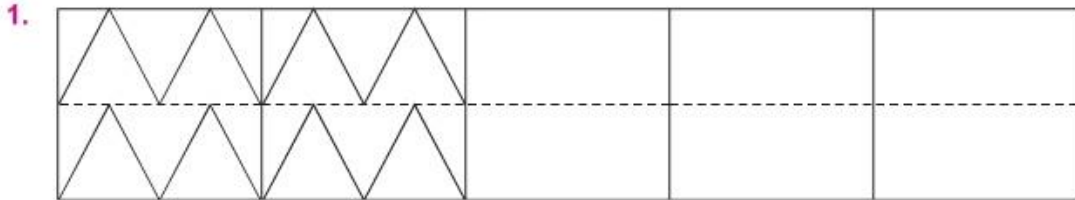


The pattern is symmetrical along a horizontal line as well as a vertical line. Hence this cross-shaped pattern has two different lines of symmetry.

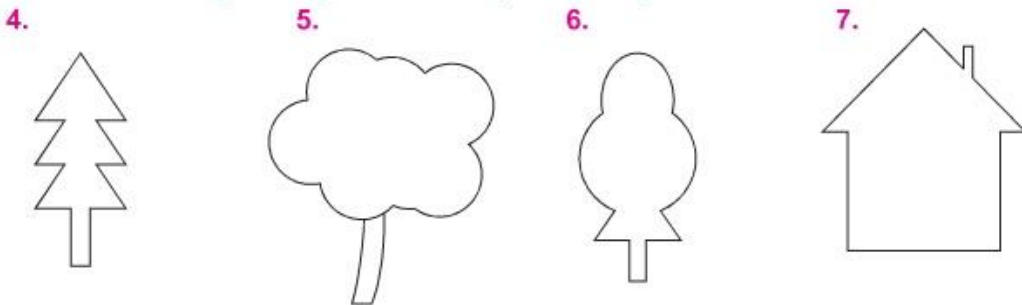


Exercise 18.1

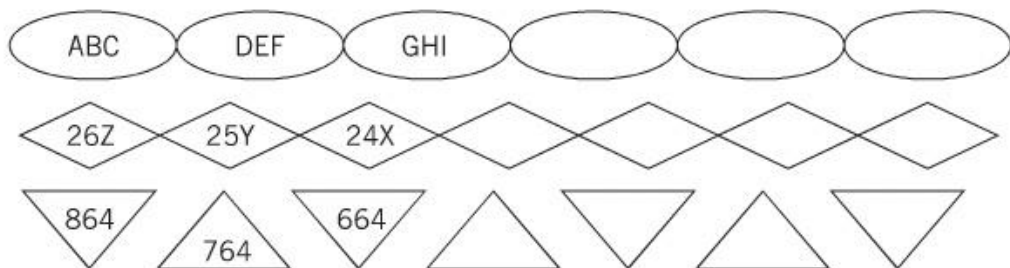
Complete the following pattern :



Draw the line of symmetry for each shape that is symmetrical :



8. Patterns can also be made with numbers and letters. Below are a few examples. Take them forward :



➤ Tiling or Floor Patterns

Tiles are the geometrical shapes which can cover a given shape completely without leaving a gap. These can be used to cover floor, roofs, walls, showers or objects like table tops, etc.

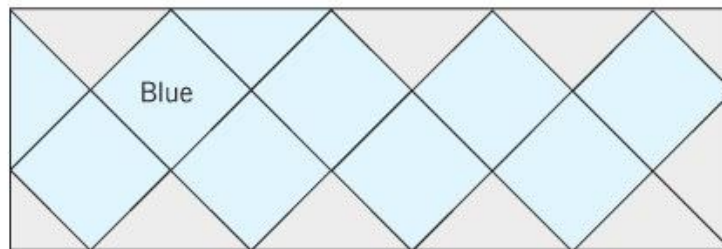
Any geometrical figure can be extended one after the other, without leaving a gap in between. *For example*, look at the following figure.



We can extend tiles indefinitely to form a pattern such as :

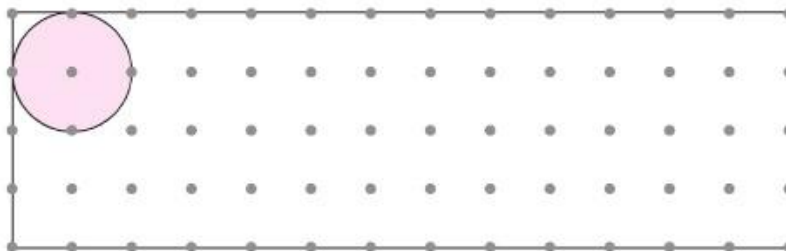


Sometimes, we can use two or more geometrical patterns to form a tile. In the tile given below, a rectangle and a triangle are extended to form a pattern.

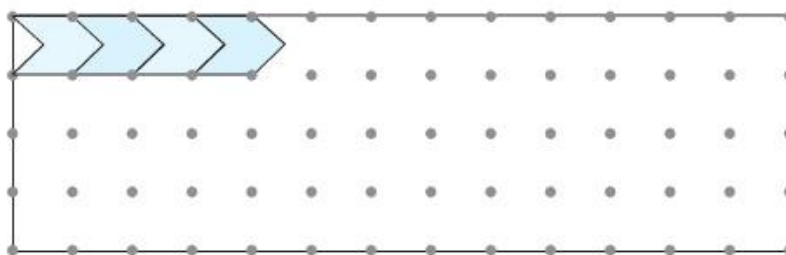


Exercise 18.2

1. Try with this red tile without leaving a gap. Could you do it? Discuss with your friends :

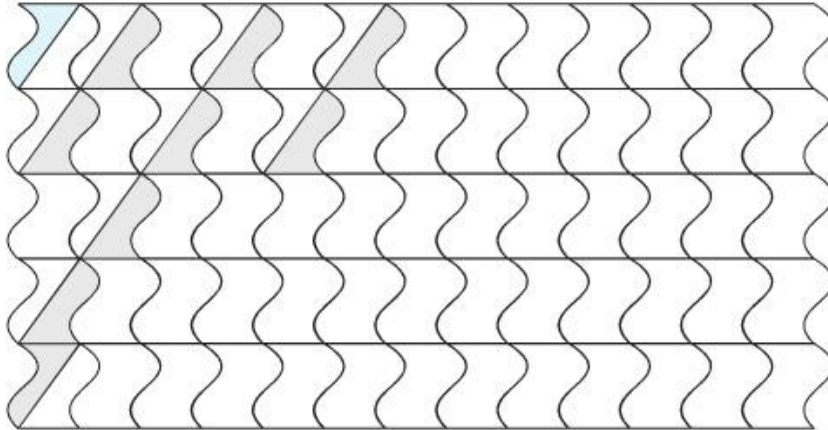


2. You cover this floor with this tile :

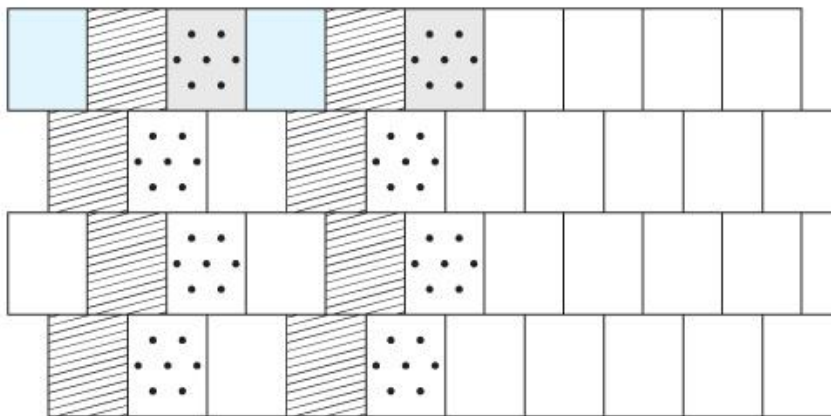


Can you make such a floor design with a tile like a circle?

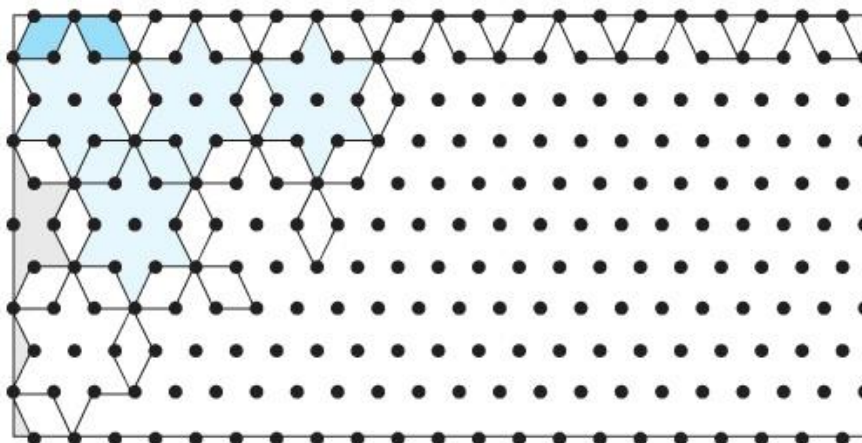
3. Mona began to paint this all. Now you help her to complete it :



4. Ramaiya has made a wall with his blocks. Can you complete this for him ?



5. Complete this tiling pattern :



Learning Objectives :

- ❖ Data and Its Types ❖ To Display Data ❖ To Interpret Data ❖ Chapati Chart or a Pie Chart

⇒ Data and its Types

In computing, data is information that has been translated into form that is efficient for movement or processing. Relative to today's computers and transmission media, data is information converted into binary digital form. Data are of two types :

1. **Primary data** : Collected by a person from a direct source.
For example, the information collected by the person by conducting surveys or interviews.
2. **Secondary data** : Collected by a person through another source.
For example, the information based on some kind of research that has been done in the part or collected from the newspapers.






⇒ To Display Data

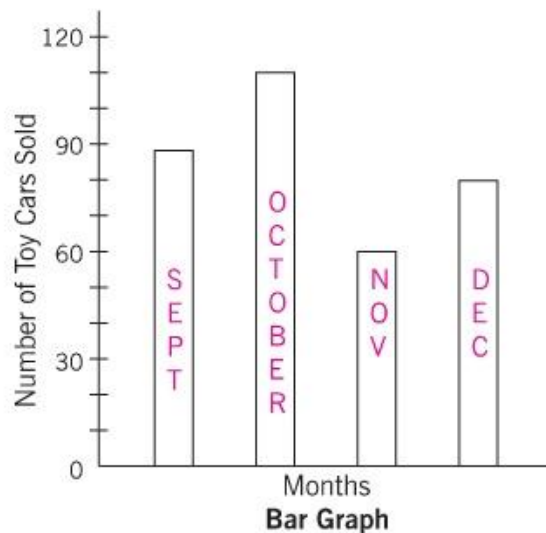
The data can be organized and represented in different ways : pictographs and bar graphs.

1. **Pictograph** : Pictograph is a way to represent data using pictures or symbols. Each symbol conveys how many times a data occur. The symbol can take different values.
2. **Bar Graph** : It is graph with rectangular bars. The length of the bars represent the corresponding value.

For example, let us look at the data given below. It is represented in the form of a pictograph and a bar graph.

A shop sells toy cars. The monthly sale (September-December) is represented as shown in table :

	Each toy car  represents 10 toy cars
Sept.	
Oct.	
Nov.	
Dec.	



Fact File

All bars of the bar graph have the same thickness and are equally spaced. The height of each bar represents the corresponding value.



Exercise 19.1

- A survey of 100 students was conducted to find about their favourite season of the year. The data is given below. Display the data in the form of a bar graph :
Summer-35 Autumn-19 Winter-36 Spring-10
- A survey of 100 students was conducted to find how they commute to school. The data is given below. Display the data in the form of a bar graph :
Bus-36 Cycle-47 Walk-12 Car-5
- The given data shows the sale of different items during a week in a shop.
Shirts-30 Trousers-35 Jackets-25 Ties-35 Belts-40
Display the data in the form of a bar graph.
- The given data shows the number of stamps collected by four friends. Display the data in the form of pictograph :
Shubham-150 Neetu-210 Agrim-180 Sheweta-120

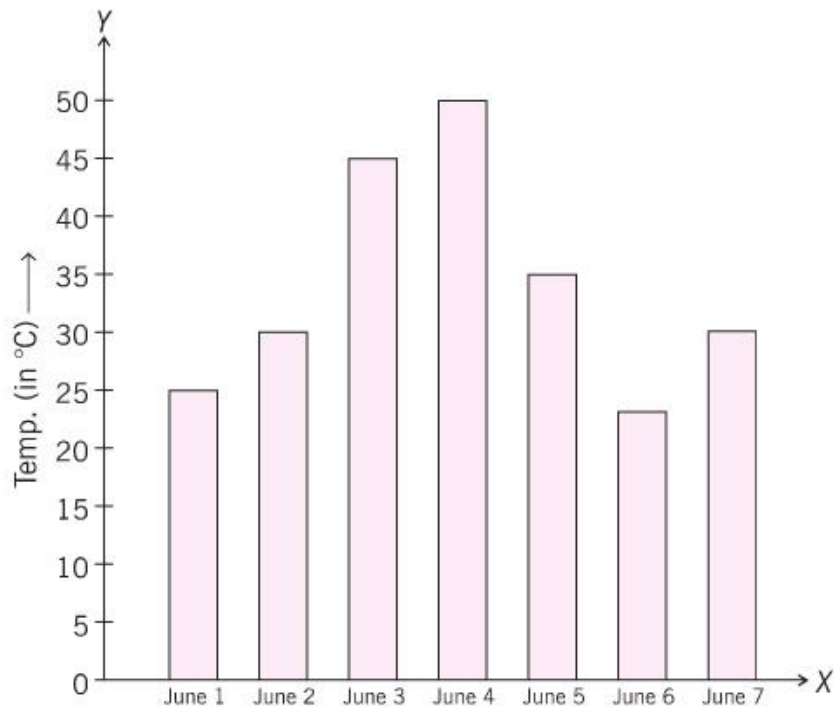
⇒ To Interpret Data

The next step after the display of a data set is to interpret the graph and answer questions.

To study a graph, the following steps should be followed :

- ⊙ Look at the axes and understand the given categories of data.
- ⊙ Look at the axes and know the scale used to create the data.
- ⊙ Analyse the graph to answer the question.

For example, read the graph before and find the hottest day of the week for the first week of June.



Observe the graph above; the scale used in the vertical axis is of 5 units. If we look at the length of rectangular bars, the following data is recorded.

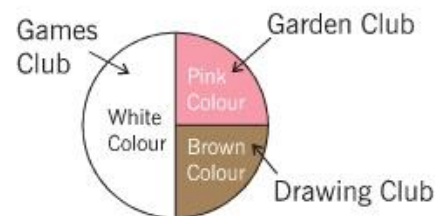
June 1 = 25 °C, June 2 = 30 °C, June 3 = 45 °C, June 4 = 50 °C,
 June 5 = 35 °C, June 6 = 23 °C, June 7 = 30 °C

Compare the values for all temperatures to conclude that June 4 is the hottest day of the week.

➤ Chapati Chart or a Pie Chart

All children of a school take part in different clubs as shown in the table and in *Chapati* Chart.

The Games Club	100 students
The Garden Club	50 students
The Drawing Club	50 students



From the table and the *chapati* chart we can see that

- Half the children in the class take part in the Games Club.
- One-fourth of the children are members of the Garden Club.
- The Drawing Club has one-fourth of the children of the class.

If there are 500 students in the school, look at the above *Chapati* chart and tell the number of members in each club.

1. The Games Club has _____ members.
2. The Garden Club has _____ members.
3. There are _____ members in the Drawing Club.

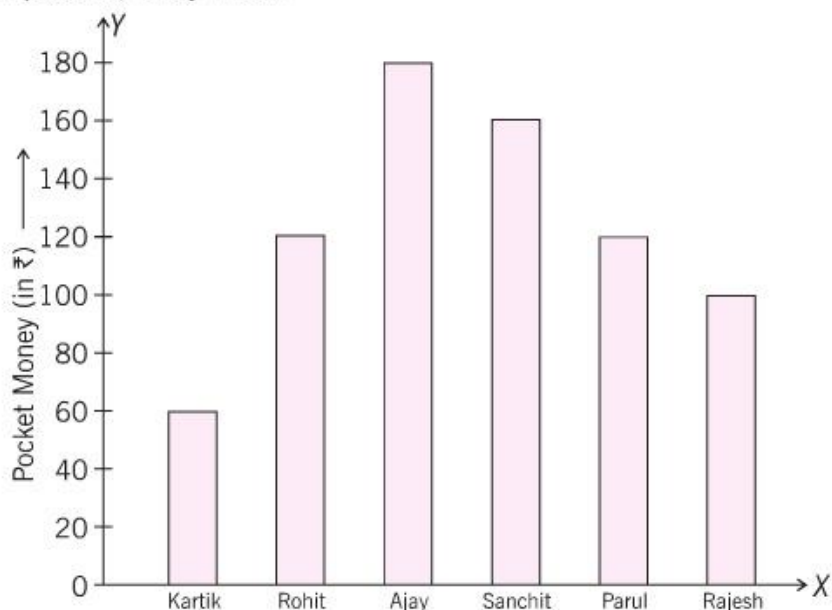
Solution :

1. $\frac{1}{2} \times 500 = 250$ members
2. $\frac{1}{4} \times 500 = 125$ members
3. $\frac{1}{4} \times 500 = 125$ members



Exercise 19.2

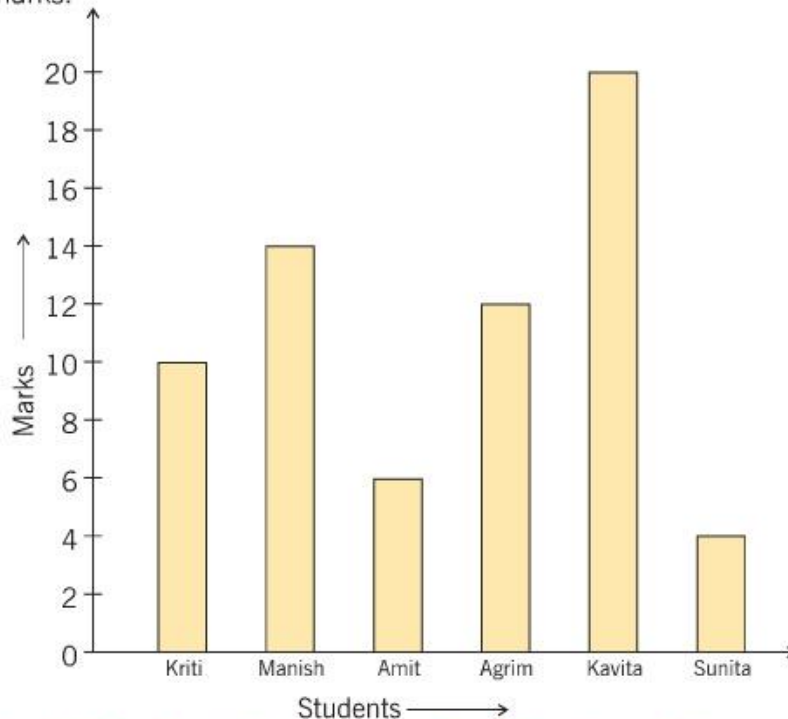
1. The bar graph given below shows the pocket money received by some friends from their parents, every week.



Now look at the bar graph and answer the following questions :

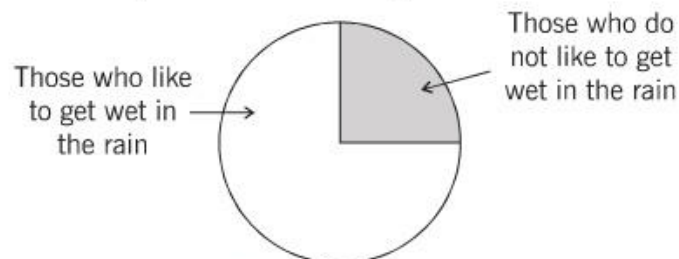
- (a) Who gets least pocket money every week ?
- (b) Who gets maximum pocket money every week ?
- (c) How many less rupees does Rohit get than Sanchit every week ?
- (d) How many more rupees does Parul get than Rajesh every week ?
- (e) Name the two who get same pocket money every week ?

2. The bar graph given below shows the marks obtained by students in a class test of 20 marks.



Now look at the bar graph and answer the following questions :

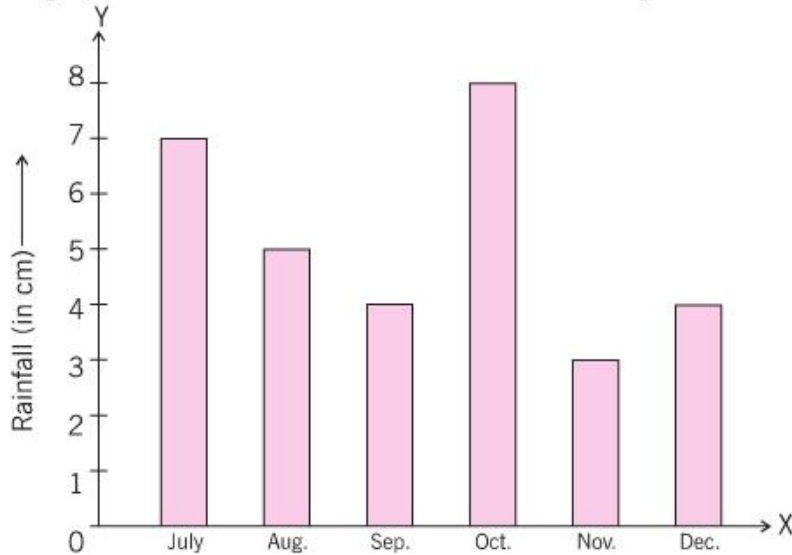
- Who scored least marks ?
 - Who scored highest marks ?
 - How many more marks did Manish score than Kriti ?
 - How many students scored more than sixteen marks ?
 - How many less marks did Amit score than Agrim ?
3. A child made this *chapati* chart after asking his friends. Who likes to get wet in the rain?



See the *chapati* chart and tell :

- How many children like to get wet in the rain ?
 (a) Half (b) One-fourth (c) Three-fourth
- How many children do not like to get wet in the rain ?
 (a) Half (b) One-fourth (c) Three-fourth

- (iii) If the number of children in the class is 36, then tell the number of children
- Who like to get wet in the rain ?
 - Who do not like to get wet in the rain ?
4. The bar graph below shows the rainfall in cm in the city Nasik from July to Dec.



Now look at the bar graph and answer the following questions :

- In which month was the second highest rainfall recorded ?
- In which month did it rain least ?
- How many months did it rain more than 5 cm ?
- How much more cm did it rain in July than in Aug ?
- What was the total rainfall in Aug and Sept ?

Let's Recall

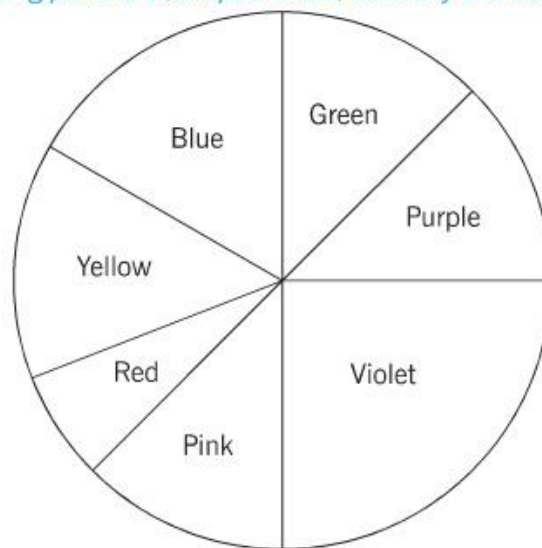
Multiple Choice Questions (MCQ's)

- A. Observe the given pictograph related to the sale of ice-cream on Sunday and answer the questions :



- The total sale of ice creams on Sunday is :
 (a) 260 (b) 240 (c) 340 (d) 160
- Which flavour has the highest sale on Sunday ?
 (a) Mango (b) Chocolate (c) Pista (d) Vanilla
- Which flavour has the lowest sale on Sunday ?
 (a) Pista (b) Mango (c) Chocolate (d) Vanilla
- Which flavour has the second highest sale on Sunday ?
 (a) Vanilla (b) Pista (c) Mango (d) Chocolate

B. Read the following pie-chart (*Chapati* chart) carefully and tick (✓) the correct options :



Favourite Colours of Children of Navkaar Society

- Which colour is most liked by children ?
 (a) Green (b) Violet (c) Blue (d) Yellow
- Which colour is least liked by children ?
 (a) Yellow (b) Green (c) Purple (d) Red
- Which two colours have the highest portion liked by children ?
 (a) Red and Pink (b) Blue and Green
 (c) Pink and Violet (d) Violet and Purple

**HALF YEARLY Test Paper**

(Based on Chapter From 1 to 10)

Time : _____

Marks : _____

Note : All questions are compulsory.

- Write the predecessor of each :
(a) 18960 _____ (b) 405300 _____
- Write the following in expanded form :
(a) 34519 = _____
(b) 104695 = _____
- Rearrange the digits of the number 135027 to form the smallest and the largest possible number.
- Place these numbers in Indian periods and write their names :
(a) 880107 _____
(b) 819909 _____
- Write the number names in International way :
(a) 680515 = _____
(b) 592067 = _____
- Find the sum of 1,09,819; 3,59,590 and 87,987. _____
- Find the number 2979 less than 1,00,000. _____
- Multiply :
(a) 5870×9 (b) 7064×67 (c) 126×243
- 255 persons donated ₹ 1125 each for the earthquake affected persons. What is the total amount to donation ? _____
- Divide and check your answer :
(a) $5678 \div 4$ (b) $2235 \div 16$ (c) $5604 \div 12$
- Delicious apples are packed in boxes of 48 each. How many boxes will be required for 2304 apples ? _____
- A car runs 285 km on 15 litre of petrol. How many km can it run on 10 litre of petrol ? _____
- A train travels 219 km distance in 3 hours. How many kilometres will it travel in 8 hours ? _____
- Find all the factors of each and separate prime factors from them :
(a) 12 (b) 14 (c) 18 (d) 40

15. Test whether each of the following numbers are divisible by 3 ?
 (a) 95 (b) 72 (c) 1006 (d) 105 (e) 1182
16. What smallest number should be added to 545 to make it divisible by 9 ?

17. Find the prime factors by division method :
 (a) 24 (b) 28 (c) 40 (d) 64 (e) 108
18. Write all the factor of the following numbers and find their highest common factor :
 (a) 12, 18 (b) 24, 30 (c) 25, 35 (d) 10, 15, 25
19. Find the HCF of the following numbers using division method of prime factorization :
 (a) 16, 20 (b) 27, 36 (c) 63, 91 (d) 12, 28, 44
20. Anju has 40 blue marbles, 32 yellow marbles and 24 red marbles. She wants to make them in separate heaps of equal numbers. What is the greatest number of marbles in each group ?

21. Find the LCM of the following numbers :
 (a) 12, 16 (b) 14, 21 (c) 26, 39 (d) 24, 36, 54
22. Two schools are facing each other. Their bells ring at intervals of 30 and 40 minutes. If they ring together at 7 : 30 am. When will they ring again together ?

23. Change the following into mixed numbers :
 (a) $\frac{26}{10}$ (b) $\frac{41}{7}$ (c) $\frac{16}{9}$ (d) $\frac{17}{5}$ (e) $\frac{59}{18}$
24. Compare the fractions by changing to like fractions :
 (a) $\frac{3}{5}, \frac{5}{7}$ (b) $\frac{1}{2}, \frac{3}{4}$ (c) $\frac{11}{12}, \frac{4}{5}$
25. Compare the fractions by cross multiplying :
 (a) $\frac{3}{4}$ $\frac{5}{6}$ (b) $\frac{8}{9}$ $\frac{11}{12}$ (c) $\frac{7}{8}$ $\frac{5}{7}$
26. Change to improper fractions and add :
 (a) $1\frac{3}{4} + 3\frac{1}{2} + 5\frac{1}{8}$ (b) $\frac{1}{4} + 2\frac{1}{6} + 1\frac{1}{24}$ (c) $4\frac{1}{2} + 2\frac{1}{6} + \frac{5}{12}$
27. Lalit eats $1\frac{1}{3}$ bars of chocolates on his way to school and $2\frac{1}{4}$ bars on the way back. How much chocolate bars did he eat in all ?

Note : All questions are compulsory.

- Write the predecessor of each :
(a) 2,12,350 _____ (b) 4,05,300 _____
- Write in expanded form :
(a) 1,04,695 _____ (b) 1,25,735 _____
- Arrange in ascending order :
7,48,550; 4,78,505; 8,47,055; 4,78,550
- Add :
(a) $4023 + 14,123 + 21,232$ (b) $1,31,234 + 11,345 + 9,607$
- Arrange in columns and subtract :
(a) $10,003 - 7,675$ (b) $3,93,910 - 2,96,497$
- Multiply :
(a) $432 \times 567 =$ _____ (b) $4,579 \times 47 =$ _____
- There are 5266 glass marbles in a sack. How much glass marbles will be there in 124 such sacks ? _____
- Write first five multiples of the following :
(a) 8 (b) 12 (c) 17 (d) 20 (e) 25
- Find all the factors of each and separate prime factors from them :
(a) 10 (b) 12 (c) 14 (d) 18 (e) 22
- Test whether each of the following numbers are divisible by 2?
(a) 54 (b) 132 (c) 445 (d) 1,003 (e) 1,278
- Find the highest common factor of the following numbers :
(a) 12, 18 (b) 7, 49 (c) 80, 100 (d) 384, 512 (e) 21, 35, 77
- separate teams are to be made from 112 boys and 96 girls. Each team has equal number of boys or girls. What is the greatest number of children in each team ? _____
- Find the lowest common multiple of the following numbers :
(a) 24, 30 (b) 52, 104 (c) 25, 40 (d) 18, 27 (e) 24, 36, 54
- Three bicycle riders cycle a field in 30, 45 and 75 seconds respectively. If they start cycling together, after how much minimum time will they meet again ? _____

15. A frog leaped $\frac{2}{3}$ m, $\frac{3}{4}$ m and $\frac{4}{5}$ m in three jumps respectively. How many metres did it leap in all ? _____
16. Anjali drank $17\frac{1}{10}$ litre of milk in February. She drank $18\frac{3}{10}$ litre of milk in March. How much more milk did she drink in March ? _____
17. What time was it 3 hours before these timings :
- (a) 8 : 15 pm (b) 12 mid-night (c) 2 : 10 am
18. Change to 24-hour clock times :
- (a) 5 : 50 am (b) 12 : 30 am (c) 11 : 05 pm
19. Change to 12-hour clock time using am and pm :
- (a) 0520 hours (b) 1238 hours (c) 1908 hours
20. Priyanka went to school at 7 : 15 am and returned after 6 hours 30 minutes. When did she reach home ? _____
21. An aeroplane leaves Bengaluru at 0625 hours and reaches Mumbai at 0910 hours. How long does it take to reach Mumbai ? _____
22. The schools were closed on 21st May and opened on 8th July. For how many days did the school remain closed ? _____
23. Write the type of each angle :
- (a) 60° (b) 112° (c) 179° (d) 205° (e) 180°
24. Draw the angles of the following measures :
- (a) 64° (b) 80° (c) 45° (d) 100° (e) 168°
25. Draw a square with side 4.4 cm. _____
26. A carpet is 5 m 20 cm long 3 m 20 cm broad. It is bound by a tape around its edges. How much of tape is used ? Find the cost of the tape at ₹ 2 a metre. _____

Answersheet

Revision

1. (a) 99 (b) 1000 (c) 999 (d) 1000 (e) 9999 2. (a) Two thousand nine hundred thirty (b) Three thousand three hundred (c) Five thousand thirty 3. (a) 3802 (b) 6471 (c) 7120 4. (a) 4 thousands 3 tens 8 ones (b) 8 thousands 7 hundreds 1 ten 2 ones 5. (a) 7259 (b) 9120 6. 4699, 4698, 4697, 4696 7. 5536, 6536, 7536, 8536, 9536 8. 2476, 8295, 8327, 9992 9. (a) 500 (b) 5000 (c) 90 10. 1382, 1482, 1582, 1682, 1782 11. (a) IV (b) XI (c) XIX (d) XXV (e) XV (f) XXVIII 12. (a) 4 (b) 16 (c) 14 13. (a) 9419 (b) 9710 (c) 7502 14. 6589 15. (a) 4335 (b) 4509 (c) 2105 (d) 0 (e) 2959 (f) 5983 16. (a) first line 2, second line 1, third line 4 (b) first line 0, second line 4 (c) first line 1, second line right to left 1, 2, third line 9 17. (a) 1333 (b) 937 18. (a) 135 (b) 1724 (c) 48 (d) 0 (e) 6400 (f) 700 19. (a) 7992 (b) 1350 (c) 8775 20. 191 groups 21. (a) 115 R 4 (b) 834 R 2 (c) 245 R 9 22. 1702 bags 23. (a) Four-ninths (b) Three-eighths (c) Nine-tenths (d) Six-elevenths 24. (a) $\frac{3}{4}$ (b) $\frac{5}{7}$ (c) $\frac{7}{10}$ (d) $\frac{4}{11}$ 25. (a) 45 (b) 5 (c) 56 26. $\frac{10}{16}$, $\frac{15}{24}$, $\frac{20}{32}$, $\frac{25}{40}$, $\frac{30}{48}$ 27. $\frac{5}{8}$ 28. (a) $250 \div 5 = 50$ (b) $60 \div 4 = 15$ 29. Raina 30. $\frac{6}{20}$ 31. (a) $\frac{3}{11}$, $\frac{5}{11}$, $\frac{6}{11}$, $\frac{9}{11}$ (b) $\frac{10}{21}$, $\frac{10}{19}$, $\frac{10}{17}$, $\frac{10}{11}$ 32. (a) ₹ 42.60 (b) ₹ 68.85 33. ₹ 60.50 34. (a) ₹ 131.95 (b) ₹ 291.20 (c) ₹ 1837.20 35. ₹ 57.88 36. (a) 22; 1 (b) 45; 6 (c) 19; 5 37. 9 : 00 at night 38. half past 6 39. (a) 5 : 40 pm (b) 5 : 45 am (c) 12 : 01 am (d) 11 : 45 pm 40. (a) December (b) 31 (c) 28 41. 148 hours 42. (a) 100 (b) $\frac{1}{10}$ (c) 10 (d) $\frac{1}{100}$ (e) 1000 (f) $\frac{1}{1000}$ 43. (a) 8685 (b) 7; 210 (c) 905 (d) 27; 5 44. 5 m 85 cm 45. 1 m 65 cm 46. (a) 10 km 954 m (b) 75 km 194 m 47. mine, 11 km 780 m 48. (a) 4587 (b) 2; 85 (c) 3050 (d) 8; 5 49. (a) 7 kg 370 g (b) 50 kg 56 g (c) 7L 20 mL (d) 10 L 370 mL 50. (a) 1 kg 87 g (b) 2 L 825 mL 51. 1 kg 625 g 52. (a) 42 kg 680 g (b) 58 L 410 mL 53. (a) 1 kg 539 g (b) 1 L 203 mL 54. 11 kg 880 g 55. 2 L 120 mL 56. 1 kg 600 g 57. 375 mL 58. 48 m 59. (a) no, no (b) one, one (c) two (d) four (e) equal parallel

1. 5 and 6-Digit Numbers

Exercise 1.1

1. 18,960 2. 90,098 3. 60,000 4. 15,131; fifteen thousand one hundred thirty one 5. 22,000; twenty two thousand 6. 30,500; thirty thousand five hundred 7. 55,999; fifty five thousand nine hundred ninety nine 8. 32,351 9. 59,809 10. 70,099 11. 62100 12. 80001 13. 30000 14. 40219 15. 41350 16. 90100 17. 55207 18. 90096 19. 49999 20. 56199 21. 18959 22. 23457 23. 4,000 24. 70,000 25. 90 26. 100 27. 700 28. 60

Exercise 1.2

1. 1,62,802; one lakh sixty two thousand eight hundred two 2. 3,00,698; three lakh six hundred ninety eight 3. 8,20,036; eight lakh twenty thousand thirty six 4. 8,00,052; eight lakh fifty two 5. 4,09,051, 6. 8,22,084 7. 5,19,302, 8. 9,02,516 9. 5,10,938 10. 7,08,870 11. 4,82,561 12. 1,05,900 13. 9,90,000 14. 8,21,000 15. 5,10,067 16. 2,12,349, 17. 4,06,730 18. 4,05,299 19. 8,19,999 20. 4,99,999 21. 9,01,051; 9,01,052; 9,01,053; 9,01,054 22. 5,00,630; 5,00,631; 5,00,632; 5,00,633 23. 5,10,069; 5,10,070; 5,10,071; 5,10,072 24. 4,82,559; 4,82,560; 4,82,561; 4,82,562 25. 3,01,847; 3,01,848; 3,01,849; 3,01,850 26. 1,05,990; 1,05,991; 1,05,992; 1,05,993 27. 3000 28. 10,000 29. 40,000 30. 400000 31. 5 32. 9000 33. 400 34. 20

Exercise 1.3

1. 90 2. 9000 3. 90000 4. 900 5. 90 6. 90000 7. 10000 + 6000 + 500 + 40 + 3 8. 30000 + 4000 + 500 + 10 + 9 9. 40000 + 6000 + 700 + 40 + 3 10. 400000 + 30000 + 6000 + 10 + 4 11. 600000 + 80000 + 8000 + 800 + 8 12. 25738 13. 46457 14. 87020 15. 560579 16. 895908 17. ten thousands 18. hundreds 19. 10 times 20. 0 21. 0 22. 5 23. 4 24. 2 25. 4 26. 3 27. 60,000; 600 28. to 30. Do Yourself

Exercise 1.4

1. (a) < (b) > (c) > (d) < 2. (a) 8664 (b) 87609 3. (a) 49307 (b) 89760 4. (a) 85220 (b) 306789 5. (a) 4921; 5015; 12576; 12756 (b) 6606; 60666; 66066; 66606; (c) 5500; 50055; 75231; 78801 6. (a) 28036; 27005; 12871; 3426 (b) 79760; 79076; 77609; 7806 (c) 99900; 99009; 90909; 90099 7. (a) 4, 3, 5, 7, 1, 4 (b) 2, 9, 0, 5, 6, 7 8. (a) 60 (b) 7,00,000 (c) 40,000 (d) 9000 (e) 30 (f) 8,00,000 9. (a) 2,00,000 + 10,000 + 2,000 + 300 + 50 (b) 1,00,000 + 4000 + 600 + 90 + 5 (c) 1,00,000 + 20,000 + 5000 + 700 + 30 + 5 (d) 1,00,000 + 7,000 + 900 + 8 (e) 5,00,000 + 10,000 + 8000 + 300 + 6 10. (a) 4,49,326 (b) 1,07,918 (c) 3,90,576 (d) 5,38,054 (e) 8,63,100 11. (a) lakhs (b) thousands (c) 10 times (d) 6 digits (e) 0 12. 5,00,000; 500. 13. Do yourself 14. (a) 1,03,478; 8,74,310 (b) 3,04,789; 9,87,430 (c) 2,33,488; 8,84,332 (d) 1,01,126; 6,21,110 15. (a) descending (b) ascending (c) ascending (d) descending 16. (a) 1,01,321; 1,10,123; 1,11,032; 1,11,203 (b) 6,69,699; 6,69,996; 6,96,669; 6,96,999 (c) 4,78,505; 4,78,550;

7,48,550; 8,47,055; (d) 8,99,980; 9,89,908; 9,98,098; 9,99,808 **17.** (a) 2,49,946; 2,49,496; 2,49,406; 2,49,046 (b) 6,66,606; 6,66,066; 6,60,666; 66,606 (c) 8,26,331; 8,26,301; 8,26,113; 8,26,103 (d) 9,06,513; 9,05,613; 9,03,516; 9,01,563.

Exercise 1.5

1. (a) 212,350 (b) 435,714 (e) 300,698 (d) 210,068 (e) 725,000 (f) 823,600 **2.** (a) 400,028 (b) 642,003 (c) 500,629 (d) 124,832 (e) 280,009 (f) 818,808 **3.** (a) 1,24,832 (b) 8,08,818 (c) 9,30,143 (d) 2,40,682 (e) 4,06,731 (f) 1,96,021 **4.** (a) One hundred thirty seven thousand six hundred eighty four (b) Four hundred seventeen thousand five hundred thirty four (c) Six hundred eighty thousand five hundred fifteen (d) Five hundred ninety two thousand sixty seven (e) Eight hundred ninety six thousand nine hundred thirty **5.** (a) 230,118 (b) 361,243 (c) 606,660 (d) 400,951 (e) 822,084 **6.** (a) $800,000 + 70,000 + 2,000 + 100 + 70 + 9$ (b) $200,000 + 40,000 + 3,000 + 10 + 8$ (c) $600,000 + 6,000 + 60 + 6$ (d) $200,000 + 50,000 + 1,000 + 30 + 4$ (e) $900,000 + 9,000 + 900 + 90 + 9$ **7.** (a) 515,106 (b) 840,254 (c) 102,108 (d) 899,090 (e) 357, 057 **8.** (a) 458,431; 642,589; 824,941; 824,951 (b) 709,900; 750,006; 760,420; 770,750 (c) 457,254; 480,100; 482,400, 593,000.

Let's Recall

1. (c) **2.** (b) **3.** (a) **4.** (a) **5.** (c) **6.** (a) **7.** (b) **8.** (c) **9.** (b) **10.** (c)

2. Addition

Exercise 2.1

1. 28,106 **2.** 88,953 **3.** 26,795 **4.** 85,341 **5.** 5,86,124 **6.** 3,05,851 **7.** 1,82,444 **8.** 68,403 **9.** 2,38,083, **10.** 2,10,578 **11.** 1,24,675 **12.** 1,58,403 **13.** 5,34,218 **14.** 10,521 **15.** 16,564

Exercise 2.2

1. 94,333 **2.** 58,730 **3.** 4,57,391 **4.** 7,44,370 **5.** 5,13,552 **6.** 4,52,361 **7.** 8,57,440 **8.** 5,08,706 **9.** 6,77,269 **10.** 3,43,000 **11.** 74,500 **12.** 25,750 **13.** 78,120 **14.** 1,42,540 **15.** 33,249 **16.** 1,09,998 **17.** 74,701 **18.** 1,52,186 **19.** 30,359 **20.** 45,488 **21.** 79,228 **22.** 6,95,000 **23.** 9,26,555 **24.** 86,665 **25.** 70,001 **26.** 1,14,487 **27.** 5,57,396

Exercise 2.3

1. 67,161 books **2.** 92,984 **3.** 72,779 **4.** 89,054 bags **5.** 63,067 vehicles **6.** ₹ 32,990 **7.** 8,21,421 **8.** ₹ 8,32,512 **9.** ₹ 3,42,940; ₹ 5,78,405 **10.** 1,01,074 bags **11.** 8,97,806 litre **12.** 88,826 animals

Exercise 2.4

1. 1 **2.** 4529 **3.** 23 **4.** 14 **5.** 1 **6.** 64 **7.** 1740 **8.** 10000 **9.** 485 **10.** 1000 **11.** 37808 **12.** 58753 **13.** 97030 **14.** 89875 **15.** $60 + 70, 130, 128$ **16.** $300 + 400, 700, 740$ **17.** $4000 + 5000, 9000, 9272$ **18.** $70 + 50, 120, 116$ **19.** $500 + 300, 800, 733$ **20.** $4000 + 6000, 10000, 10670$ **21.** 69 **22.** 51 **23.** 361 **24.** 373 **25.** 859 **26.** 1232 **27.** 539 **28.** 942 **29.** 847

3. Subtraction

Exercise 3.1

1. 1,82,424 **2.** 28,006 **3.** 82,334 **4.** 87,943 **5.** 1,75,124 **6.** 2,94,851 **7.** 25,785 **8.** 88,403 **9.** 1,34,570 **10.** 1,58,393 **11.** 1,16,564 **12.** 3,34,218 **13.** 2,27,983 **14.** 1,27,906

Exercise 3.2

1. 8179 **2.** 28,878 **3.** 17,689 **4.** 17,957 **5.** 20,769 **6.** 42,486 **7.** 36,523 **8.** 15,864 **9.** 12,546 **10.** 21,848 **11.** 31,209 **12.** 4354 **13.** 6298 **14.** 8878 **15.** 18,988 **16.** 97,413 **17.** 1,88,594 **18.** 3,17,406 **19.** 2,80,984, **20.** 97,864 **21.** 2,87,969

Exercise 3.3

1. 2328 **2.** 26,796 **3.** 11,249 **4.** 25,258 **5.** 31,229 **6.** 45,637 **7.** 16,786 **8.** 9,760 **9.** 29,009 **10.** 68,889 **11.** first line 8; second line 7, 7 **12.** 1,76,738 **13.** 36,868 **14.** 97,021 **15.** 4872 **16.** 18,180 **17.** 16,493 **18.** 10,244 **19.** 10,500 **20.** 6,64,400 **21.** 3940 **22.** 4600 **23.** 16,600

Exercise 3.4

1. 14,789 **2.** 3046 **3.** 28,988 **4.** 44,795 **5.** 20,626 **6.** 5599 **7.** ₹ 16,550 **8.** ABC, ₹ 59,170 **9.** 10,797 **10.** 1,10,348 **11.** 1,62,438

Let's Recall

1. (b) **2.** (b) **3.** (c)

4. Multiplication

Exercise 4.1

1. 0 **2.** 12,789 **3.** 427 **4.** 6 **5.** 10 **6.** 1,50,000 **7.** 200 **8.** 546 **9.** 4,52,000 **10.** 76,450 **11.** 63,280 **12.** 28,070 **13.** 50,800 **14.** 60,070 **15.** 29,000 **16.** 55,590 **17.** 50,000 **18.** 6,40,000 **19.** 5,90,000



Exercise 4.2

1. 12,300 2. 17,600 3. 72,000 4. 8,000 5. 97,500 6. 2,40,000 7. 1,71,500 8. 20,000 9. 9,12,000 10. 10,000
11. ₹ 48,000 12. ₹ 31,000 13. 7,50,000 peanuts 14. ₹ 30,750 15. 43,200 minutes 16. ₹ 5000

Exercise 4.3

1. 1904 2. 18,012 3. 71,145 4. 63,674 5. 3,27,164 6. 1,10,852 7. 3,18,848 8. 4,46,042 9. 61,056 10. 1,34,136
11. 5,05,932 12. 3,22,968 13. 34,737 14. 4,73,288 15. 4,87,930 16. 3,05,232 17. 63,114 18. 1,40,883 19. 30,618
20. 98,440 21. 86,801 22. 2,79,840

Exercise 4.4

1. 1,88,145 kg 2. 9,84,900 kg 3. 12,240 4. 25,125 5. ₹ 1,54,125 6. 7,05,600 7. ₹ 1,49,975 8. 43,549 kg
9. 5,50,800 10. 2,28,960 11. ₹ 7,18,200 12. ₹ 3,93,750 13. 22,500 km 14. ₹ 1,67,700 km 15. ₹ 2,57,950

Exercise 4.5

1. 1263 2. 936 3. 4056 4. 5490 5. 13685 6. 36306 7. 30320 8. 16524 9. 10195 10. 3200 11. 2400 12. 2100 13. 1200
14. 54600 15. 903200 16. 56100 17. 144900

Let's Recall

1. (a) 2. (c) 3. (d) 4. (b)

5. Division

Exercise 5.1

1. 1 2. 0 3. 0 4. 10,748 5. 4329 6. 1 7. 50,040 8. 3040 9. 12,451 10. 3 11. 1 12. 0 13. 170 14. 1240 15. 90; 15
16. 2,576; 16 17. 57; 2 18. 380; 6 19. 163; 4 20. 4,980; 7 21. 275; 661

Exercise 5.2

1. 507 2. 462 3. 242 4. 240, R 4 5. 232, R 3 6. 841 7. 752 8. 754, R 3 9. 1419 R 2 10. 1446, R 1 11. 1369 R 2
12. 574, R 6 13. 544, R 1 14. 445, R 5 15. 367, R 1

Exercise 5.3

1. 133 R 35 2. 137 R 21 3. 159 R 4 4. 171 R 18 5. 40 6. 23 R 7 7. 37 R 7 8. 28 R 2 9. 163 R 20 10. 113 R 37 11. 137 R
40 12. 134 R 55 13. 124 R 54 14. 102 R 31 15. 122 R 19 16. 155 R 20 17. 113 R 55 18. 101 19. 109 R 56 20. 105 R 33
21. 108 R 4 22. 130 R 52 23. 127 R 48 24. 103 R 47 25. 112 R 48 26. 105 R 53 27. 111 R 57 28. 118 R 76

Exercise 5.4

1. 51 trees 2. ₹ 191 3. 109 books 4. 72 trucks 5. 83 hours 6. 923 km 7. ₹ 326 8. 43 rolls 9. 83; 0 10. 125 wagons 11. 63
students 12. 103 sacks 13. ₹ 265 14. 105 R 24 15. 357 R 6 16. 31 17. 416 notes 18. 30 days 19. 2, R 8 bananas 20. 60 notes
21. 572 books 22. 63 toys 23. ₹ 121, R 2

Exercise 5.5

1. 50 2. 25 3. 30 4. 18 5. 17 6. 21 7. 18 8. 0 9. 41 10. 7 11. 50 mangoes 12. ₹ 51 13. ₹ 140 14. 200 flowers

Let's Recall

1. (b) 2. (d) 3. (a)

6. Unitary Method

Exercise 6

1. ₹ 136 2. ₹ 60 3. ₹ 48 4. 203 kg 5. ₹ 110 6. ₹ 150 7. ₹ 36 8. 21 km 9. ₹ 15 10. 135 km 11. 584 km 12. ₹ 48 13. 186 toys
14. ₹ 280 15. ₹ 124 16. 240 bottles 17. 880 km 18. 26,250 screws 19. 1750 bags 20. ₹ 600 21. 750 rubber bands 22. 190 km

Let's Recall

1. (c) 2. (b) 3. (a) 4. (b) 5. (b) 6. (c) 7. (d) 8. (a) 9. (c) 10. (a)

7. Characteristics of Multiples and Factors

Exercise 7.1

1. (a) 8, 16, 24, 32, 40 (b) 12, 24, 36, 48, 60 (c) 17, 34, 51, 68, 85 (d) 20, 40, 60, 80, 100 (e) 25, 50, 75, 100, 125
2. (a) 20, 24, 28 (b) 30, 36, 42 (c) 45, 54, 63 (d) 70, 84, 98 3. 6, 12, 14, 36, 58, 94 4. (a) yes, (b) yes (c), no (d) yes (e) yes (f) no
(g) yes (h) no 5. 32, 34, 36, 38, 40, 42, 44, 46, 48, 50 6. 7, 15, 21, 55 7. (a) 12, 24 (b) 15, 30 (c) 20, 40 8. 41, 43, 45, 47, 49,
51, 53, 55, 57, 59 9. yes, 6 is a multiple of 2 10. (a) 2 (b) 10 (c) 100 (d) odd (e) even (f) 1 (g) 15 (h) 60 (i) 32, 40, 48; (j) itself

Exercise 7.2

1. (a) 1; 30 (b) 1; 49 (c) 1; 59 (d) 1; 80 (e) 1; 95 2. (a) 3 (b) 2 (c) 1 (d) 4 (e) 6 3. (a) composite (b) composite (c) prime
(d) prime (e) composite (f) composite (g) prime (h) prime (i) composite (j) prime 4. (a) no (b) no (c) yes (d) yes (e) no 5. (a) 3; 4 (b)
2; 8 (c) 5; 5 (d) 6; 7 (e) 8; 10 6. (a) 1, 2, 3, 4, 6, 12, (b) 1, 3, 5, 15 (c) 1, 2, 3, 4, 6, 8, 12, 24 (d) 1, 2, 3, 4, 5, 6, 10, 12, 15,
20, 30 60 (e) 1, 2, 4, 19, 38, 76 7. no; 9, 15 and 21 have more than 2 factors, so they are not prime. 8. (a) 1, 2, 5, 10; 2, 5 (b)

1, 2, 3, 4, 6, 12; 2, 3 (c) 1, 2, 7, 14; 2, 7 (d) 1, 2, 3, 6, 9, 18; 2, 3 (e) 1, 2, 11; 22; 2, 11 **9.** 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37 **10.** (a) 1 (b) 2 (c) 2 (d) 4 (e) 2 (f) itself (g) 1 (h) 0 (i) only 2 (j) more than 2.

Exercise 7.3

1. yes **2.** no **3.** no **4.** no **5.** yes **6.** no **7.** yes **8.** no **9.** yes **10.** no **11.** yes **12.** no **13.** no **14.** yes **15.** no **16.** yes **17.** no **18.** yes **19.** yes **20.** no **21.** no **22.** yes **23.** yes **24.** no **25.** 2 **26.** 1 **27.** even **28.** 5, 15, 25, 35, 45 **29.** no **30.** 8

Exercise 7.4

1. yes **2.** no **3.** no **4.** no **5.** yes **6.** yes **7.** no **8.** yes **9.** yes **10.** no **11.** no **12.** no **13.** yes **14.** yes **15.** yes **16.** no **17.** no; 12, 15, 21 **18.** 4 **19.** yes; 18, 27 **20.** (a) 1 (b) 2 (c) 0 (d) 3 (e) 2.

8. Highest Common Factor (HCF)

Exercise 8.1

1. $2 \times 2 \times 2 \times 2 \times 3$ **2.** $2 \times 2 \times 2 \times 7$ **3.** $2 \times 2 \times 3 \times 5$ **4.** $2 \times 2 \times 2 \times 2 \times 2$ **5.** $2 \times 2 \times 2 \times 3$ **6.** $2 \times 3 \times 5$ **7.** $2 \times 2 \times 2 \times 5$ **8.** $2 \times 2 \times 3 \times 3$ **9.** $2 \times 2 \times 3 \times 7$ **10.** $2 \times 2 \times 5 \times 5$ **11.** $2 \times 7 \times 7$ **12.** $2 \times 2 \times 2 \times 2 \times 3$ **13.** $2 \times 2 \times 2 \times 5$ **14.** $2 \times 2 \times 11$ **15.** $2 \times 3 \times 5$ **16.** $2 \times 2 \times 3 \times 3$ **17.** $2 \times 7 \times 7$ **18.** $2 \times 2 \times 5 \times 5$ **19.** $2 \times 2 \times 2 \times 13$ **20.** $2 \times 2 \times 3 \times 3 \times 3$ **21.** $2 \times 2 \times 2 \times 2 \times 7$ **22.** $2 \times 2 \times 2 \times 3 \times 5$ **23.** $2 \times 2 \times 2 \times 2 \times 2 \times 2$ **24.** $2 \times 2 \times 3 \times 11$ **25.** $2 \times 2 \times 2 \times 3 \times 7$ **26.** $2 \times 3 \times 3 \times 11$ **27.** $2 \times 2 \times 2 \times 3 \times 3 \times 3$ **28.** $2 \times 2 \times 2 \times 2 \times 2 \times 7$ **29.** $2 \times 3 \times 3 \times 3 \times 3$ **30.** $2 \times 2 \times 2 \times 5 \times 5$ **31.** $3 \times 3 \times 5 \times 5 \times 3$ **32.** $3 \times 3 \times 3 \times 3 \times 3$

Exercise 8.2

1. 6 **2.** 4 **3.** 4 **4.** 5 **5.** 7 **6.** 5 **7.** 4 **8.** 8 **9.** 5 **10.** 4 **11.** 5 **12.** 4 **13.** co-prime **14.** co-prime **15.** co-divisible **16.** co-prime **17.** co-prime **18.** co-divisible **19.** co-divisible **20.** co-prime

Exercise 8.3

1. 6 **2.** 4 **3.** 5 **4.** 3 **5.** 1 **6.** 7 **7.** 8 **8.** 9 **9.** 8 **10.** 16 **11.** 12 **12.** 12 **13.** 8 **14.** 4 **15.** 7 **16.** 7 **17.** 20 **18.** 18 **19.** 20 **20.** 25 **21.** 24 **22.** 16 **23.** 12 **24.** 128 **25.** 4 **26.** 7 **27.** 27 **28.** 4

Exercise 8.4

1. 7 **2.** 6 **3.** 1 **4.** 1 **5.** 25 **6.** 1 **7.** 100 **8.** 128 **9.** 16, composite **10.** 18, even **11.** 16 **12.** 9 **13.** 17 **14.** 4 litres **15.** 8 students **16.** 3 metre **17.** 16 children **18.** 2 metre **19.** ₹ 27 **20.** 15m

9. Lowest (Least) Common Multiple (LCM)

Exercise 9.1

1. 99 **2.** 35 **3.** 100 **4.** 90 **5.** 80 **6.** 105 **7.** 120 **8.** 210 **9.** 120 **10.** 80 **11.** 36 **12.** 150 **13.** 36 **14.** 48 **15.** 24 **16.** 54 **17.** 100 **18.** 144 **19.** 42 **20.** 168 **21.** 168 **22.** 78 **23.** 104 **24.** 192 **25.** 600 **26.** 216 **27.** 600 **28.** 360

Exercise 9.2

1. 120 **2.** 360 **3.** 614 **4.** 120 **5.** 1 minute 30 seconds **6.** 2 hours **7.** 1 pm **8.** 360 **9.** 67 **10.** 150 **11.** 9 : 30 am **12.** 90

Let's Recall

1. (c) **2.** (c) **3.** (d) **4.** (b) **5.** (c) **6.** (c) **7.** (b) **8.** (a) **9.** (b) **10.** (b)

10. Common Fractions

Exercise 10.1

1. $\frac{1}{4}, \frac{2}{8}, \frac{3}{12}, \frac{4}{16}, \frac{5}{20}$ **2.** $\frac{3}{4}, \frac{6}{8}, \frac{9}{12}, \frac{12}{16}, \frac{15}{20}$ **3.** $\frac{2}{5}, \frac{4}{10}, \frac{6}{15}, \frac{8}{20}, \frac{10}{25}$ **4.** $\frac{1}{3}, \frac{2}{6}, \frac{3}{9}, \frac{4}{12}, \frac{5}{15}$ **5.** $\frac{2}{3}, \frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}$ **6.** $\frac{5}{9}, \frac{10}{18}, \frac{15}{27}, \frac{20}{36}, \frac{25}{45}$ **7.** $\frac{6}{11}, \frac{12}{22}, \frac{18}{33}, \frac{24}{44}, \frac{30}{55}$ **8.** $\frac{8}{15}, \frac{16}{30}, \frac{24}{45}, \frac{32}{60}, \frac{40}{75}$ **9.** $\frac{3}{7}, \frac{6}{14}, \frac{9}{21}, \frac{12}{28}, \frac{15}{35}$ **10.** $\frac{1}{8}, \frac{2}{16}, \frac{3}{24}, \frac{4}{32}, \frac{5}{40}$ **11.** $\frac{12}{20}, \frac{15}{25}, \frac{18}{36}, \frac{21}{35}$ **12.** $\frac{20}{32}, \frac{25}{40}, \frac{30}{48}, \frac{35}{56}$ **13.** $\frac{16}{36}, \frac{20}{45}, \frac{24}{54}, \frac{28}{63}$ **14.** $\frac{4}{16}, \frac{5}{20}, \frac{6}{24}, \frac{7}{28}$ **15.** $\frac{4}{24}, \frac{5}{30}, \frac{6}{36}, \frac{7}{42}$ **16.** $\frac{4}{28}, \frac{5}{35}, \frac{6}{42}, \frac{7}{49}$ **17.** 18 **18.** 5 **19.** 9 **20.** 5 **21.** 2 **22.** 9 **23.** 12 **24.** 35 **25.** 36 **26.** 6 **27.** 40 **28.** 4 **29.** $\frac{8}{18}$ **30.** $\frac{9}{18}$ **31.** $\frac{15}{18}$ **32.** $\frac{12}{18}$ **33.** $\frac{9}{24}$ **34.** $\frac{12}{32}$ **35.** $\frac{18}{48}$ **36.** $\frac{8}{12}$ **37.** $\frac{12}{18}$ **38.** $\frac{6}{9}$

Exercise 10.2

1. yes **2.** no **3.** no **4.** yes **5.** no **6.** no **7.** yes **8.** no **9.** no **10.** yes **11.** $\frac{7}{8}$ **12.** $\frac{4}{5}$ **13.** $\frac{2}{5}$ **14.** $\frac{2}{3}$ **15.** $\frac{4}{5}$ **16.** $\frac{3}{4}$ **17.** $\frac{5}{9}$ **18.** $\frac{15}{16}$ **19.** $\frac{1}{3}$ **20.** $\frac{3}{4}$ **21.** $\frac{1}{3}$ **22.** $\frac{1}{2}$ **23.** $\frac{2}{3}$ **24.** $\frac{1}{2}$

Exercise 10.3

1. (a) unlike (b) unit (c) proper, (d) like (e) proper, whole 2. $\frac{4}{9}, \frac{3}{15}, \frac{15}{7}, \frac{20}{8}, \frac{7}{6}$ 4. $\frac{1}{5}, \frac{1}{7}, \frac{2}{3}, 5\frac{1}{2}, 7\frac{3}{10}$ 6. (a) like (b) like
(c) unlike 7. (a) $\frac{35}{30}$ (b) $\frac{8}{3}$ (c) $\frac{15}{7}$ (d) $\frac{6}{12}$ (e) $\frac{15}{20}$ 8. (a) $48 + 12$ (b) $15 + 20$ (c) $6 + 5$ (d) $9 + 8$ (e) $10 + 21$ 9. (a) $9\frac{1}{3}$ (b) $3\frac{2}{5}$ (c) $3\frac{5}{7}$
(d) $2\frac{6}{10}$ (e) $8\frac{1}{4}$ (f) $6\frac{1}{8}$ (g) $5\frac{6}{7}$ (h) $8\frac{1}{10}$ (i) $1\frac{7}{9}$ (j) $3\frac{5}{18}$ 10. (a) $\frac{157}{10}$ (b) $\frac{7}{2}$ (c) $\frac{16}{3}$ (d) $\frac{9}{4}$ (e) $\frac{26}{3}$ (f) $\frac{94}{17}$ (g) $\frac{13}{7}$ (h) $\frac{49}{8}$ (i) $\frac{63}{20}$ (j) $\frac{106}{9}$

Exercise 10.4

1. $< 2. > 3. > 4. > 5. < 6. < 7. \frac{49}{84}, \frac{36}{84} 8. \frac{35}{40}, \frac{24}{40} 9. \frac{8}{12}, \frac{9}{12} 10. \frac{6}{10}, \frac{7}{10} 11. \frac{3}{8}, \frac{10}{8} 12. \frac{6}{9}, \frac{7}{9} 13. \frac{13}{14} > \frac{11}{12} 14. \frac{5}{8} < \frac{7}{10}$
15. $\frac{3}{5} < \frac{5}{7} 16. \frac{4}{5} < \frac{11}{12} 17. \frac{1}{2} < \frac{3}{4} 18. \frac{3}{4} > \frac{2}{6} 19. \frac{7}{12}, \frac{11}{18}, \frac{5}{6} 20. \frac{7}{10}, \frac{3}{4}, \frac{4}{5} 21. \frac{3}{10}, \frac{2}{3}, \frac{4}{5} 22. \frac{5}{6}, \frac{2}{3}, \frac{3}{5} 23. \frac{2}{3}, \frac{11}{18}, \frac{4}{9} 24. \frac{3}{4}, \frac{9}{16}, \frac{1}{2} 25. >$
26. $< 27. < 28. > 29. < 30. < 31. \text{Pihu } 32. \text{Rao's}$

11. Operations in Common Fractions

Exercise 11.1

1. 1 2. $\frac{15}{17}$ 3. $\frac{11}{13}$ 4. $\frac{5}{9}$ 5. $\frac{7}{4}$ 6. $\frac{3}{4}$ 7. $\frac{7}{9}$ 8. $\frac{25}{31}$ 9. $\frac{8}{9}$ 10. $1\frac{1}{3}$ 11. 2 12. $1\frac{3}{19}$ 13. $1\frac{5}{9}$ 14. $1\frac{2}{9}$ 15. $1\frac{3}{22}$ 16. $1\frac{17}{42}$ 17. $1\frac{9}{28}$ 18. $1\frac{7}{12}$ 19. $5\frac{5}{6}$
20. $1\frac{5}{12}$ 21. $1\frac{1}{15}$ 22. $\frac{7}{16}$ 23. $1\frac{1}{5}$ 24. $1\frac{9}{16}$ 25. $\frac{23}{36}$ 26. $1\frac{1}{2}$ 27. $\frac{11}{56}$

Exercise 11.2

1. $4\frac{1}{6}$ 2. $4\frac{1}{4}$ 3. $3\frac{7}{24}$ 4. 11 5. 7 6. $9\frac{9}{20}$ 7. $6\frac{3}{14}$ 8. $3\frac{29}{36}$ 9. $6\frac{11}{28}$ 10. $7\frac{1}{60}$ 11. $8\frac{11}{60}$ 12. $4\frac{7}{16}$ 13. $10\frac{3}{8}$ 14. $3\frac{11}{24}$ 15. $6\frac{17}{30}$
16. $8\frac{1}{12}$ 17. $9\frac{3}{5}$ 18. $7\frac{1}{12}$

Exercise 11.3

1. $1\frac{1}{12}$ hour 2. $3\frac{1}{4}$ rupees 3. $\frac{9}{10}$ part 4. $12\frac{3}{4}$ rupees 5. $4\frac{1}{4}$ hours 6. $3\frac{5}{8}$ m 7. $4\frac{1}{10}$ m 8. $2\frac{13}{60}$ m 9. $3\frac{3}{8}$ kg 10. $15\frac{7}{8}$ kg 11. $3\frac{7}{12}$ bars

Exercise 11.4

1. $\frac{7}{31}$ 2. $\frac{11}{25}$ 3. $\frac{4}{15}$ 4. $\frac{2}{5}$ 5. $\frac{2}{7}$ 6. $\frac{4}{11}$ 7. $\frac{4}{7}$ 8. $\frac{3}{8}$ 9. $\frac{7}{9}$ 10. $\frac{1}{18}$ 11. $\frac{5}{16}$ 12. $\frac{5}{12}$ 13. $\frac{1}{10}$ 14. $\frac{1}{12}$ 15. $\frac{1}{20}$ 16. $\frac{1}{56}$ 17. $\frac{11}{48}$ 18. $\frac{1}{20}$ 19. $\frac{1}{24}$ 20. $\frac{1}{30}$
21. $\frac{11}{24}$ 22. $\frac{1}{6}$ 23. $\frac{1}{4}$ 24. $\frac{1}{15}$ 25. $\frac{1}{6}$ 26. $\frac{1}{4}$ 27. $\frac{13}{48}$

Exercise 11.5

1. $3\frac{2}{9}$ 2. $2\frac{1}{3}$ 3. $6\frac{2}{11}$ 4. $2\frac{1}{5}$ 5. $\frac{1}{3}$ 6. $7\frac{1}{4}$ 7. $\frac{9}{10}$ 8. $2\frac{1}{2}$ 9. $1\frac{2}{9}$ 10. $1\frac{1}{4}$ 11. $\frac{1}{10}$ 12. $1\frac{1}{6}$ 13. $\frac{3}{4}$ 14. $1\frac{3}{4}$ 15. $\frac{7}{9}$ 16. $\frac{11}{24}$ 17. $2\frac{1}{2}$

Exercise 11.6

1. Neha, $\frac{3}{20}$ m 2. $4\frac{2}{5}$ kg 3. $2\frac{3}{10}$ seconds 4. $1\frac{1}{4}$ litre 5. $\frac{3}{5}$ litre 6. Pihu, $\frac{4}{5}$ km 7. $8\frac{13}{20}$ litre 8. $\frac{5}{6}$ hours 9. $\frac{11}{20}$ litre 10. Riya, $3\frac{1}{2}$ cm
11. $2\frac{9}{20}$ litre 12. eight-ninth

Let's Recall

1. (a) 2. (b) 3. (b) 4. (c) 5. (a) 6. (b) 7. (b) 8. (a) 9. (a)

12. Money

Exercise 12.1

1. 1800 2. 1500 3. 35 4. 10750 5. 22358 6. 52486 7. 35.25 8. 89.90 9. 43.90 10. 759; 65 11. 169; 30 12. 129; 70

Exercise 12.2

1. ₹ 103 2. ₹ 368 3. ₹ 67.71 4. ₹ 781.62 5. ₹ 740.25 6. ₹ 771.65 7. ₹ 782.26 8. ₹ 44 9. ₹ 100 10. ₹ 1850 11. ₹ 2825
12. ₹ 89.25 13. ₹ 345.50 14. ₹ 654.72 15. ₹ 284.80

Exercise 12.3

1. 98 2. 4 3. ₹ 30.75 4. ₹ 10.10 5. ₹ 6.75 6. ₹ 15 7. ₹ 90.85, ₹ 9.15 8. ₹ 437.74, ₹ 62.26 9. ₹ 250, ₹ 167.50, ₹ 82.50
10. ₹ 54.25 11. ₹ 47.04 12. ₹ 2.40 13. ₹ 58.75 14. ₹ 25.50 15. ₹ 600 16. 16 pencils ₹ 4 17. ₹ 50

13. Clock and Calendar

Exercise 13.1

1. quarter past twelve; 12 : 15 2. 20 minutes past 11; 11 : 20 3. 5 minutes past 7; 7 : 05 4. quarter to 7; 7 : 05 5. 10 minutes to 7; 6 : 50 6. 10 minutes past 5; 5 : 10 7. half past 4; 4 : 30 8. 8 minutes past 12; 12 : 08 9. 5 minutes to 6; 5 : 55 10. 12 minutes past 8; 8 : 12 11. 22 minutes past 1; 1 : 22 12. 23 minutes to 4; 3 : 37

Exercise 13.2

1. 6 : 45 2. 12 : 30 3. 10 : 15 4. 4; 15 5. 2 : 45 6. 4 : 28 7. 12 : 45 8. 1 : 45 9. 8 : 50 10. 7 : 50 11. 3 : 40 12. 12 : 33 13. 12 : 50 14. 9 : 53 15. 5 : 08 16. 3 : 04 17. quarter past five 18. quarter to eight 19. quarter past eight 20. half past nine 21. 17 minutes past 5 22. 17 minutes to 4 23. 8 minutes to 9 24. 20 minutes to 2 25. 17 minutes to 9 26. half past six 27. 8 minutes past 11 28. 5 minutes past 10 29. 4 : 55 30. 7 : 35 31. 8 : 00 32. 1 : 00 33. 6 : 05 34. 10 : 15 35. 20 minutes to 6 36. quarter to 4 37. 5 minutes to 8 38. 25 minutes to 5

Exercise 13.3

1. 10 : 05 pm 2. 12 : 30 am 3. 7 : 15 am 4. 8 : 15 pm 5. 1 : 20 pm 6. 3 : 45 am 7. 12 : 30 pm 8. 5 : 30 pm 9. 5 : 30 am 10. 11 : 45 pm 11. 10 : 15 am 12. 3 : 00 pm 13. 9 : 00 am 14. 9 : 00 pm 15. 11 : 10 pm 16. 10 : 30 am 17. 10 : 00 pm 18. 11 : 25 am 19. 1 : 30 pm 20. 4 : 00 pm 21. 8 : 30 am 22. 11 : 05 pm 23. 4 : 00 am 24. 6 : 05 am 25. 3 : 50 pm 26. 3 : 00 am

Exercise 13.4

1. 1235 hours 2. 1200 hours 3. 2400 hours 4. 1820 hours 5. 1205 hours 6. 0030 7. 0315 hours 8. 2305 hours 9. 1100 hours 10. 12 mid-night 11. 12 : 10 am 12. 1 : 05 am 13. 5 : 20 am 14. 12 mid-night 15. 12 noon 16. 12 : 01 pm 17. 12 : 45 am 18. 7 : 08 pm 19. 9 : 15 pm 20. 1630 hours

Exercise 13.5

1. 84 hours 2. 56 hours 3. 138 hours 4. 96 hours 5. 214 hours 6. 269 hours 7. 1 day 21 hours 8. 1 day 13 hours 9. 2 days 20 hours 10. 3 days 8 hours 11. 12 days 12 hours 12. 4 days 4 hours 13. 191 minutes 14. 135 minutes 15. 341 minutes 16. 546 minutes 17. 730 minutes 18. 617 minutes 19. 1 hour 40 minutes 20. 1 hour 15 minutes 21. 3 hours 7 minutes 22. 6 hours 36 minutes 23. 13 hours 20 minutes 24. 3 hours 27 minutes 25. 135 seconds 26. 180 seconds 27. 347 seconds 28. 490 seconds 29. 1505 seconds 30. 557 seconds 31. 1 minute 36 seconds 32. 1 minute 18 seconds 33. 1 minute 45 seconds 34. 3 minutes 20 seconds 35. 10 minutes 30 seconds 36. 9 minutes 37. 7800 seconds 38. 3900 seconds 39. 4260 seconds

Exercise 13.6

1. 5 h 2. 6 h 55 min 3. 12 h 20 min 4. 14 h 15 min 5. 32 h 40 min 6. 13 h 30 min 7. 1 h 29 min 8. 50 min 9. 3 h 47 min 10. 2 h 50 min 11. 12 h 30 min 12. 6 h 30 min

Exercise 13.7

1. 6 : 05 pm 2. 7 : 25 am 3. 1 : 45 pm 4. 0110 hours 5. 2220 hours 6. 11 h 59 min 7. 1 : 45 pm 8. 7 h 10 min 9. 2200 hours 10. 9 h 30 min 11. 40 min 12. 2 h 45 min 13. 12 : 15 pm 14. 6 : 50 am 15. 2 h 40 min

Exercise 13.8

1. 7 months : January, March, May, July, August, October, December 2. 4 months : April, June, September, November 3. 365 days 4. One : February 5. 8th, 15th, 22nd, 29th 6. 52 7. (a) Friday (b) Wednesday (c) Thursday (d) Wednesday (e) Thursday 8. (a) 9th (b) 4th (c) 31st 9. (a) 1st (b) 22nd August (c) 16th October (d) 29th December (e) 18th December 10. 2004, 1996 2008.

Exercise 13.9

1. 50 months 2. 41 months 3. 66 months 4. 3 years 6 months 5. 1 year 6 months 6. 2 years 3 months 7. 17 years 8. 14 years 3 months 9. 3 years 4 months 10. 2 years 9 months 11. 91 days 12. 46 days 13. 2nd February 2016 14. 13 days 15. 1 year 4 months 26 days 16. 17 days 17. 1 year 2 months 13 days 18. 30 March, 2018 19. 10 days 20. 13 days

Let's Recall

1. (b) 2. (b) 3. (d) 4. (b) 5. (c) 6. (b) 7. (d) 8. (d) 9. (b) 10. (c)

14. Length, Weight and Capacity

Exercise 14.1

1. 1000 2. 100 3. 10 4. 10 5. 100 6. 50 7. 10 8. 110 9. 300 10. 2000 11. 5500 12. 100 dam 13. 1000 m 14. 1000 mm 15. 100 dm 16. 30 mm 17. 40 cm 18. 90 m 19. 10 hm

Exercise 14.2

1. 1005 km 87 m 2. 1084 km 282 m 3. 1208 km 700 m 4. 889 m 10 cm 5. 802 m 63 cm 6. 990 m 1 cm 7. 54 cm 6 mm 8. 29 m 3 mm 9. 17 hm, 10 m 10. 968 km 6 m 11. 479 km 995 m 12. 95 cm 9 mm 13. 45 hm 4 dam 14. 30 hm, 30 m 15. 11 hm 2 dam 16. 39 dam 4 m 70 cm 17. 40 dam 6 m 38 cm 18. 36 hm 2 dam 2 m, 19. 41 hm 4 dam 3 m 20. 571 km 7 hm 4 dam 21. 647 km 5 hm 4 dam 22. 359 m 93 cm 4 mm 23. 128 m 28 m 2 mm 24. 127 m 18 cm 2 mm 25. 142 m 12 cm, 26. 1006 km 897 m 27. 2019 km 967 m 28. 1148 km 31 m 29. 3 km 91 m 30. 122 km 933 m 31. 1013 km 586 m 32. 55 m 91 cm 33. 74 m 5 cm 34. 33 m 62 cm 35. 242 km 789 m 36. 5211 km 200 m 37. 1306 m 30 cm 38. 4462 m 60 cm 39. 5859 m 75 cm 40. 733 km 700 m 41. 197 km 800 m

Exercise 14.3

1. 10 cg 2. 100 g 3. 1000 g . 100 cg 5. 50 g 6. 10 g 7. 110 g 8. 300 g 9. 2000 g 10. 5500 g 11. 30 g 12. 10 g 13. 100 dag
14. 100 g 15. 1000 mg 16. 100 dg 17. 30 mg 18. 40 cg 19. 90 g 20. 10 hg

Exercise 14.4

1. 990 g 1 cg 2. 889 g 10 cg 3. 968 kg 6 g 4. 479 kg 995 g 5. 30 hg 30 g 6. 54 cg 6 mg 7. 33 g 62 cg 8. 55 g 91 cg 9. 3 kg
91 g 10. 122 kg 933 g 11. 2 kg 750 g 12. 950 g 13. 16 mt 900 kg 14. 23 g 1 dg 15. 11 mt 200 kg 16. 800 g

Exercise 14.5

1. 10 L 2. 100 L 3. 1000 L 4. 100 L 5. 50 L 6. 10 L 7. 110 L 8. 300 L 9. 2000 L 10. 5500 L 11. 30 L 12. 10 L 13. 100 daL
14. 100 L 15. 1000 mL 16. 100 dL 17. 30 mL 18. 40 cL 19. 90 L 20. 10 hL

Exercise 14.6

1. 889 L 10 cL 2. 990 L 1 cL 3. 968 kL 6 L 4. 54 cL 6 mL 5. 32 L 62 cL 6. 1006 kL 897 L 7. 3 kL 91 L 8. 122 kL 933 L 9. 58
L 200 mL 10. 359 L 750 mL 11. 2066 L 250 mL 12. 89 L 600 mL 13. 2 L 900 mL

15. Angle

Exercise 15.1

1. line segment \overline{PQ} 2. ray \overrightarrow{OC} 3. line \overleftrightarrow{AB} 4. K ; JK , KL 5. E ; FE , DE 6. Q ; PQ , RQ 7. B ; AB , CB 8. \angle ; $\angle KLM$ 9. $\angle R$; $\angle QRS$
10. $\angle B$; $\angle ABC$ 11. $\angle E$; $\angle DEC$ 12. ray 13. line-segment 14. vertex 15. no 16. 90° 17. two

Exercise 15.2

16. Acute 17. Obtuse 18. Obtuse 19. Reflex 20. Right 21. Acute 22. Reflex 23. Acute 24. Straight 25. Obtuse.

16. Polygon

Exercise 16.1

1. equal to 2. more than 3. two 4. three 5. no.

Exercise 16.2

1. all 2. 90° 3. 4; 4 4. opposite 5. all 6. opposite 7. 90° 8. 4 9. rhombus 10. rectangle 11. rectangle 12. parallelogram
13. rhombus 14. square 15. rhombus

Exercise 16.3

1. Cylinder 2. Cuboid 3. Pyramid 4. Cube

17. Perimeter

Exercise 17

1. 13.12 m 2. 17.9 cm 3. 21.2 cm 4. 4.972 km 5. 4 times 6. 6.8 m 7. ₹ 5250 8. 150 steps 9. 550 m; ₹ 825 10. 3180 m
11. 19 cm 12. 16.80 m; ₹ 33.60 13. 160 m 14. 22 m 15. 120 m

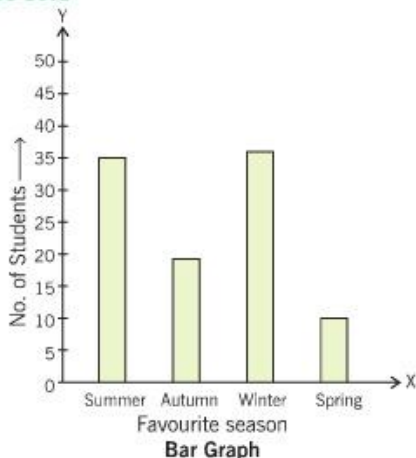
Let's Recall

1. (b) 2. (b) 3. (a) 4. (c) 5. (c) 6. (a) 7. (c) 8. (a) 9. (a) 10. (d) 11. (a)

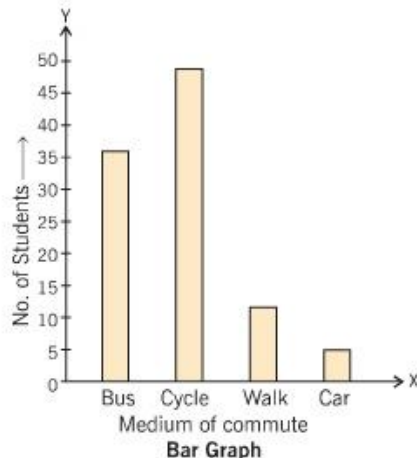
19. Data Handling

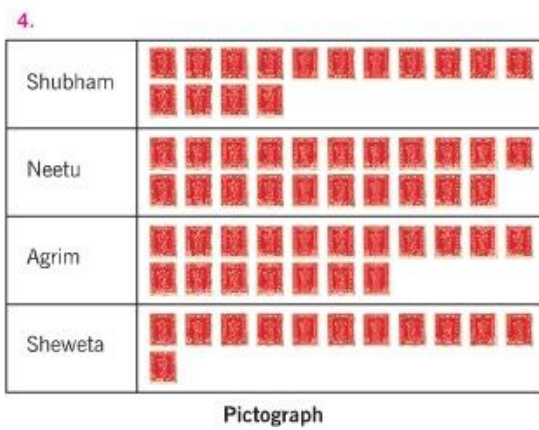
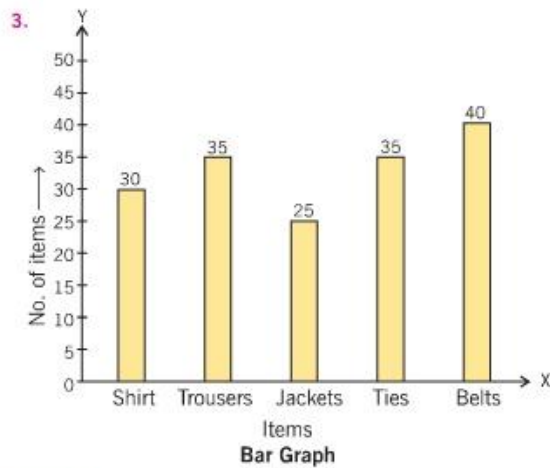
Exercise 19.1

1.



2.





Exercise 19.2

1. (a) Kartik; (b) Ajay; (c) ₹ 40; (d) ₹ 20; (e) Rohit and Parul 2. (a) Sunita; (b) Kavita; (c) four; (d) One; (e) 4 marks 3. (i) (c); (ii) (b); (iii) (a) 27, (b) 9. 4. (a) July; (b) Nov; (c) 2 months

Let's Recall

A. 1. (a) 2. (b) 3. (d) 4. (c) B. 1 (b) 2. (d) 3. (d)

Half-yearly Test Paper

1. (a) 18,959 (b) 4,05,299 2. (a) $30,000 + 4000 + 500 + 10 + 9$ (b) $1,00,000 + 4000 + 600 + 90 + 5$
 3. 1,02,357; 7,53,210 4. (a) 8,80,107; eight lakh eighty thousand one hundred seven (b) 8,19,909; eight lakh nineteen thousand nine hundred nine. 5. (a) Six hundred eighty thousand five hundred fifteen (b) Five hundred ninety two thousand sixty seven 6. 5,57,396 7. 97,021 8. (a) 52,830 (b) 4,73,288 (c) 30,618 9. ₹ 2,86,875 10. (a) 1419 R 2 (b) 139 R 11 (c) 467 11. 48 12. 190 km 13. 584 km 14. (a) 1, 2, 3, 4, 6, 12; 2, 3 (b) 1, 2, 7, 14; 2, 7 (c) 1, 2, 3, 6, 9, 18; 2, 3 (d) 1, 2, 4, 5, 8, 10, 20, 40; 2, 5 15. (a) no (b) yes (c) no (d) yes (e) yes 16. 4 17. (a) $2 \times 2 \times 2 \times 3$ (b) $2 \times 2 \times 7$ (c) $2 \times 2 \times 2 \times 5$ (d) $2 \times 2 \times 2 \times 2 \times 2 \times 2$ (e) $2 \times 2 \times 3 \times 3 \times 3$ 18. (a) 6 (b) 6 (c) 5 (d) 5 19. (a) 4 (b) 9 (c) 7 (d) 4 20. 8 21. (a) 48 (b) 42 (c) 78 (d) 216 22. 9:30 am 23. (a) $2\frac{3}{5}$ (b) $5\frac{6}{7}$ (c) $1\frac{7}{9}$ (d) $3\frac{2}{5}$ (e) $3\frac{5}{18}$ 24. (a) $\frac{3}{5} < \frac{5}{7}$ (b) $\frac{1}{2} < \frac{3}{4}$ (c) $\frac{11}{12} > \frac{4}{5}$ 25. (a) $<$ (b) $<$ (c) $>$ 26. (a) $10\frac{3}{8}$ (b) $3\frac{11}{24}$ (c) $7\frac{1}{12}$
 27. $3\frac{7}{12}$ bars

Annual Paper

1. (a) 2,12,349 (b) 4,05,299 2. $1,00,000 + 4,000 + 600 + 90 + 5$ (b) $1,00,000 + 20,000 + 5,000 + 700 + 30 + 50$ 3. 4,78,505; 4,78,550; 7,48,550; 8,47,055 4. (a) 39,378 (b) 1,52,186 5. (a) 2328 (b) 97,413 6. (a) 2,44,944 (b) 2,15,213 7. 6,52,984 8. (a) 8, 16, 24, 32, 40 (b) 12, 24, 36, 48, 60 (c) 17, 34, 51, 68, 85 (d) 20, 40, 60, 80, 100 (e) 25, 50, 75, 100, 125 9. (a) 1, 2, 5, 10; 2, 5 (b) 1, 2, 3, 4, 6, 12; 2, 3 (c) 1, 2, 7, 14; 2, 7 (d) 1, 2, 3, 6, 9, 18; 2, 3 (e) 1, 2, 11, 22; 2, 11 10. (a) yes (b) yes (c) no (d) no (e) yes 11. (a) 6 (b) 7 (c) 20 (d) 128 (e) 7 12. 16 13. (a) 120 (b) 104 (c) 200 (d) 54 (e) 216 14. 7 minutes 30 seconds 15. $2\frac{13}{60}$ m 16. $1\frac{1}{5}$ litre 17. 5 : 15 pm (b) 9 : 00 pm (c) 11 : 10 pm 18. (a) 0550 hours (b) 1230 hours (c) 2305 hours 19. (a) 5 : 20 am (b) 12 : 38 pm (c) 7 : 08 pm 20. 1 : 45 pm 21. 2 h 45 min 22. 48 days 23. (a) acute (b) obtuse (c) obtuse (d) reflex (e) straight 26. 16.80 m; ₹ 33.60