



**GOVERNMENT OF KARNATAKA**

# **MATHEMATICS**

**Text cum Workbook**

**(Revised)**

**ENGLISH MEDIUM**

**4**

**FOURTH STANDARD**

**Part - II**

**KARNATAKA TEXT BOOK SOCIETY (R.)**

100 Feet Ring Road, Banashankari 3rd Stage,  
Bengaluru - 560 085.

## Part - II

### CONTENTS

SL.NO.	CHAPTERS	PAGE NO.
10	Addition and Subtraction of Money	1 - 25
11	Measurement - length	26 - 42
12	Weight	43 - 56
13	Measurement of Volume	57 - 69
14	Time	70 - 89
15	Data collection and handling	90 - 98
16	Patterns and symmetry	99 - 114
17	Tangrams and t	115 - 120
18	Solid figures	121 - 134

## CHAPTER -10

## ADDITION AND SUBTRACTION OF MONEY

### After studying this chapter you can

- do addition and subtraction of money by regrouping,
- calculate total value of objects, value of one or more objects by using the fundamental operations of arithmetic,
- explain price list and bill.

In your previous class, you have already learnt to convert rupee to paise and paise to rupee. You have also learnt to add and subtract money.

### Recall the following

- 1 rupee is equal to 100 paise
- While converting rupee to paise, multiply rupee by 100.
- While converting paise to rupee, divide paise by 100.

### I. Fill in the blanks :

1) ₹10 = ..... Paise.

2) ₹15 = ..... Paise.

3) ₹6 25 Paise = ..... Paise.

4) 500 Paise = ₹ ..... Rupee

5) 657 Paise = ₹ ..... Rupee and ..... Paise

## II. Solve according to the instruction given

### A add

	Rupee	Paise
	26	50
(+)	23	50
Answer		

### B subtract

	Rupee	Paise
	49	50
(-)	30	25
Answer		

### Addition of Money

Through regrouping know how to add rupee and paise by writing in columns.

We purchase different things from the shop. While giving money we give in total. If the money given by us is more than the total money the shop owner returns the excess money.

In your previous class you have learnt addition of money with carrying. Recall it and solve the following problem.

#### Example : 1

Ravi purchased a note book for ₹ 7.50 and a pencil for ₹ 4.50 from a stationery shop. What is total amount he has to pay to the shop owner?

When ₹4.50 is added to ₹7.50, what is the total?

It is Rs12.00.

How did you find it as ₹12.00?

Cost of note book	₹ 7. 50 <sup>①</sup>
Cost of Pencil	₹ 4. 50
<hr/>	
Total amount	₹ 12.00
<hr/>	

**Step-** 1) 50 paise + 50 paise = 100 paise.

You know that 100 paise = 1 rupee.

So write '0' in the column of paise and write 1 rupee in the column of rupee

**Step-** 2) Add rupee to rupee

$$₹1 + ₹7 + ₹4 = ₹12$$

So the total money to be given to the shop keeper by Ravi is ₹ 12

**Example 2 :**

Add ₹75.80 and ₹125.90.

Rupee	Paise
75	80
125	90
201	70

$$80 + 90 = 170 \text{ paise}$$

80 paise

90 paise

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170 paise

170

Answer ₹201.70

Add Rupee column as you already know

**Observe :- While adding money**

- 1) Write rupee in rupee column.
- 2) Write paise in paise column.
- 3) Add paise to paise and write in paise column.
- 4) Add rupee to rupee and write in rupee column.
- 5) While adding paise to paise if the total is 100 paise or more than that, then convert it into rupee and continue the addition of rupee column.

## Model problems.

### Example 1 :

	Rupee	Paise	
	①		• Add paise to paise
(+)	29	61	• Add rupee to rupee
	76	45	• Carry out addition of numbers with borrowing.
	106	06	

Answer ₹ 106.06

### Example 2 :

	Rupee	Paise
	① ①	①
	3 6	54
	7 3	42
(+)	51	27
	161	23

Answer ₹ 161.23

### Example 3 :

Add ₹ 14.55, ₹ 22.17 and ₹ 8.34.

Rupee	Paise	
14	55	• Write the digits so that the point comes one below the other.
22	17	
8	34	• Do addition as addition of numbers with carrying.
45	06	

Answer ₹ 45. 06

## Statement problems

### Example 1 :

Amith bought a book for ₹18.50 and a colour pencil box for ₹19.50. How much money has he to pay in total ?

In your previous class you have learnt to find the total amount. You know which fundamental operation should we use for solving this? Recall the method of addition and solve the problem.

Money paid for the book	= ₹18.50
Money paid for colour pencil box	= ₹19.50
<hr/>	
∴ Total money that Amith has to pay	= ₹38.00

### Example 2 :

Radha has ₹15.00, Salman has ₹25.00, and Mary has ₹17.05. What is the total amount with them ?

Money with Radha	= ₹15.00
Money with Salman	= ₹25.00
Money with Mary	= ₹17.05
<hr/>	
Total money with them	= ₹57.05

### Observe :

- While solving statement problems.
- Write the given data in steps.
- When the total amount is asked do addition operation.

### Exercise 10.1

#### I. Add

1) ₹ 29.60  
₹ 61.75  
₹ 78.50  
\_\_\_\_\_  
\_\_\_\_\_

2) ₹ 50.50  
₹ 19.00  
₹ 44.50  
\_\_\_\_\_  
\_\_\_\_\_

#### II. C) Add ₹ 7 to ₹ 8.50.

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#### D) Add ₹ 45.35 to ₹ 33.29.

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#### III.

- 1) Amulya has ₹25.50. Her aunt will give her ₹50. What is the total amount Amulya has?

Amount with Amulya = ₹

Amount given by her aunt = ₹

\_\_\_\_\_  
Total amount with Amulya = ₹  
\_\_\_\_\_



2) The price list of the books in a book shop is like this.



₹ 7.50



₹14



₹5.50

Ravi purchased the three books from a book shop. What is the total amount to be paid to the shop keeper?

Name of the book	Rupee	Paise
Puzzles		
Panchatantra stories		
Entertainment stories		
Total cost		

Total amount Ravi has to pay ₹

3) Thomas purchases a mathematics book for ₹ 47. 50, a science book for ₹ 35.25 and a note book for ₹18. So what is the total amount to be paid to the shop keeper?

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- 4) Surekha purchases 3 balls for ₹ 30 , 5 pencils for ₹12.50 and 4 note books for ₹20. So what is the total amount she has to pay to the shop keeper?

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### Activity :

Observe the advertisement in a newspaper. Write the cost of any 4 articles. Find the total amount needed to purchase those articles.

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## Subtraction of Money

**Through regrouping know how to subtract rupee and paise by writing in column**

You have learnt in your previous class subtracting rupee and paise after writing them in columns in the same way, solve the following problems.

**Example 1 :** From ₹ 79.80 subtract ₹ 69.90.

Rupee	Paise
79 <sup>80</sup>	80
(-) 69	90
09	90

Answer : ₹ 9.90

### Steps :

- 1) Write paise in paise column.
- 2) Write rupee in rupee column.
- 3) Subtract paise from paise.

Is it possible to subtract 90 paise from 80 paise? Think. It is not possible.

Take ₹1 from rupee column and convert it into paise. Add 80 paise to 100 paise

$$100 + 80 = 180 \text{ Paise}$$

180 Paise

- 90 Paise

90 Paise

From 180 paise 90 paise can be subtracted.

Write 90 paise in paise column

Now from 79, 1 ₹ is taken to paise column. So how many rupee is left in rupee column? Think

$$₹79 - ₹1 = ₹78$$

Now subtract ₹69 from ₹78

Do the subtraction as the subtraction of numbers with borrowing.

$$\text{Answer : } ₹78 - ₹69 = ₹09$$

Write ₹09 in rupee column

**Example 2 :** Subtract ₹114.48, form ₹125.47.

Rupee	Paise
125 <sup>④</sup>	47
(-) 114	48
010	99

Answer ₹ 10.99

Do the subtraction as shown in. Example 1

$$\begin{array}{r} 1\cancel{7}^{\textcircled{1}}\textcircled{7} \text{ Paise} \\ - 48 \text{ Paise} \\ \hline 99 \text{ Paise} \end{array}$$

(Do the subtraction with borrowing)

$$\begin{array}{r} 2) \text{ ₹ } 124 - \text{ ₹ } 114 \\ \text{ ₹ } 124 \\ - \text{ ₹ } 114 \\ \hline \text{ ₹ } 010 \end{array}$$

### Observe :

- By regrouping do the subtraction of money as you do in the subtraction of number with borrowing.
- In our daily life while doing money transaction we do not use change like ₹ 3.47, ₹5.42 etc. While calculating interest amount in the bank, Tax amount, electricity bill, water bill etc if the amount of this type occurs, it will be approximated to the next rupee.

### Model problems.

1) Subtract ₹ 44.75 from ₹ 76.25.

$$\begin{array}{r} \text{₹ } 7\cancel{6}^{\textcircled{5}}.\textcircled{2}5 \\ - \text{₹ } 44.75 \\ \hline \text{₹ } 31.50 \end{array}$$

- Subtract paise from paise.
- Subtract rupee from rupee.
- Do subtraction as subtraction of numbers with borrowing.

2) Subtract ₹ 25.18 from ₹ 85.15.

$$\begin{array}{r} \text{₹ } 8\cancel{5}^{\textcircled{4}}.\textcircled{1}5 \\ - \text{₹ } 25.18 \\ \hline \text{₹ } 59.97 \end{array}$$

- Subtract paise from paise
- Do subtraction as subtraction of numbers with borrowing.

### Statement problems.

- 1) Salman has ₹ 97.50. If he buys a T-shirt for ₹ 85.75, then calculate amount remaining with him?

In your previous class you have learnt to find the remaining amount. By recalling the same, solve this problem.

	Rupee	Paise	
Amount with Salman	97	50	* Write rupee in rupee column.
Amount paid to T -shirt	85	75	* Write paise in paise column.
remaining amount	11	75	* Do subtraction as subtraction of numbers with borrowing.

Answer = ₹ 11.75

- 2) Poornima has ₹ 158.50 . She purchases bangles for ₹49.75 . What is the remaining amount with her?

	Rupee	Paise
Amount with Poornima	158	50
Amount paid for bangles	49	75
Remaining amount	₹108	75

Answer is ₹108.75

**Observe :** To find the remaining amount, carry out subtraction.

### Exercise 10.2

#### I. Subtract.

1) ₹ 76.25  
₹ 44.50  
\_\_\_\_\_

2) ₹ 98.50  
₹ 55.50  
\_\_\_\_\_

**II. C) Subtract ₹ 18.50 from ₹25.10.**

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**D) Subtract ₹30.50 from ₹75.50.**

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**III.**

- 1) Sonika has ₹50. She purchases bangles and rings for ₹45.50. What is the amount remaining with her?

Amount with Sonika	₹50.00
Amount spent on bangles and rings	₹45.50
The remaining amount with Sonika	₹

- 2) David wants to purchase shoes for ₹399.99. In his bank he has only ₹25.50. How much more money is needed to buy the shoes?

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- 3) Laxmeesha purchased stamps and post cards for ₹52.50. He gave a ₹100 note to the person in post office counter. What is the amount to be returned to Lakshmeesha?

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- 4) Sowmya has ₹ 52.50. She bought vegetables worth ₹23.50. What is the amount left with her ?

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**To find the value of one or more objects.**

Observe the objects and their cost in the given figures

		
₹ 5	₹ 2	₹ 3.50

Shanantha buys 3 chocolates. How much money he has to pay? What is the cost of 3 chocolates?

Will the value of these chocolates be more than the cost of 1 chocolate? or less? Which fundamental operation of arithmetic is used?

The cost of 1 chocolate is ₹2

Shall we add this three times?

$$₹2 + ₹2 + ₹2$$

In your previous class you have learnt that multiplication is the repeated addition of numbers.

By recalling multiplication operation, multiply

$$₹2 \times 3 = ₹6$$

So the money to be given by Shanatha = ₹6

**Observe :** If we know the cost of one object and if we want, to find the cost of more number of the same object, then we use the fundamental operation of multiplication.

- 2) Ravi buys 4 pencils. What is the total amount to be given by him?

Here which fundamental operation of arithmetic should be used?

Multiplication.

$$\text{The cost of 1 pencil} = ₹3.50$$

$$\begin{aligned}\text{The cost of 4 pencils} &= ₹4 \times ₹3.50 \\ &= ₹14.00\end{aligned}$$

**Observe :**

While doing the multiplication of money including paise, do the multiplication as that of numbers, keep the point after two digits from the right side in the product.



### Exercise 10.3

- 1) A playing doll costs ₹45. What is the total cost of 3 such dolls?

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- 2) A packet of cooking oil costs ₹82.50. What is the cost of 5 such packets?

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- 3) A man spends ₹ 95.50 for his daily food. Find the amount he spends on food for a week.

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- 4) The cost of a book is ₹ 23.75. What is the total cost of 5 books?

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### To find the value of a one object.

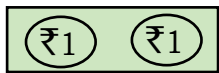
Suresh buys 3 chocolates in a shop for ₹ 6. What is the cost of one chocolate?

You know the cost of 3 chocolates.

How to find the cost of 1 chocolate?

Which fundamental operation of mathematics is used to find this?

Let us divide 6 into 3 equal parts



In every part we get 2.

You already know in your previous class that division is nothing but sharing equal parts.

So divide ₹ 6 by 3.

$$\therefore ₹ 6 \div 3 = ₹ 2$$

$$\begin{array}{r} 3 \overline{) 6} \quad 2 \\ \underline{6} \\ 0 \end{array}$$

**Observe :** To find the value of one object we use the fundamental operation division.

The division of money is done in the same way as the division of numbers.

### Model problems.

**1) The cost of 4 cakes of soap is ₹ 20. What is the cost of 1 cake of soap?**

**Answer :** The cost of 4 cakes of soap = ₹ 20

$$\text{The cost of 1 cake of soap} = \frac{\text{Cost of all the soaps}}{\text{No. of soaps}}$$

$$\begin{array}{rcl} & = & ₹ \frac{20}{4} \end{array} \quad \begin{array}{r} 4 \overline{) 20} \quad 5 \\ \underline{20} \\ 0 \end{array}$$
$$\text{Cost of 1 soap} = ₹ 5$$

**2) The cost of 5 balls is ₹ 50. What is the cost of 1 ball?**

**Answer :**      The cost of 5 balls      = ₹ 50      5) 50(10  
The cost of 1 ball      = ₹ 50 ÷ 5      50  
The cost of 1 ball      = ₹ 10      0

**Exercise 10.4**

1) If the cost of 6 dolls is ₹ 42, What is the cost of 1 doll?

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2) If the cost of 8 note books is ₹ 72, What is the cost of 1 note book?

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3) The cost of 4 pens is ₹ 40, What is the cost of 1 pen?

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- 4) The cost of 4 pencils is ₹ 16. What is the cost of 1 pencil?

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### **Price list and Receipt (Bill)**

You might have observed the rate board displayed in shops. In spite of this even you might have received the bills given by them. When the things are purchased collect the price list and bills. Verify the written statements in them.

In your previous class you have already learnt about price list and receipt. Price list helps to know the cost of required things to purchase. The bill helps to know the details of all the objects purchased in the shop. Recalling the same, fill up the next blanks.

- 1) The slip which consists of the details of the objects bought from the shop is called \_\_\_\_\_.
- 2) The display board in a shop which shows the cost of each item is called \_\_\_\_\_.
- 3) In a receipt, the total amount to be given is written both in numbers and \_\_\_\_\_.

**Observe the next example.**

**Example 1 :** Suma purchased some clothes from Naveen Textiles. The copy of the bill given by the shopkeeper is given below. Observe the details

Naveen Textiles,  
Bangalore- 57

NO : 5379

Date : 15-08-2013

Name of the customer : Suma

Sl. no	Details	Quantity	Cost (₹)	Total amountt (₹)
1	Sari	1	470.00	470 . 00
2	Shirt piece	2	150.00	300.00
3	Pant piece	2	189.00	378.00
				1148.00
				Vat 63.00
				Total Amount 1211.00

In words : ₹ One thousand two hundred and eleven only

Signature.

**Terms and Conditions:**

- ▲ Money will not be returned.
- ▲ The purchased item can be exchanged within 3 days.

Observe the above bill and identify the details. Make a list the details contained in the bill.

- 1) Name and address of the shop.
- 2) Receipt no.
- 3)
- 4)
- 5)
- 6)
- 7)

### Remember:

- ▶ A receipt is a proof for the purchased objects.
- ▶ This receipt can be used to exchange the items purchased by the customer and also to receive the amount according to the rules.

To get the bill for the items purchased is the right of customers.

- ▶ In some shops the bill is generated from the computers.

**Example 2 :** Ramesh has bought a few vegetables in a vegetable shop and the receipt is given below.

Komal vegetable shop		TIN : 12368943211		
Kamala nagar				
Number : 613		Date : 01-10-2013		
Name of the consumer: Ramesh				
Cash Bill				
Sl.no	Details	Quantity	Cost₹	Total amount
1	Beans	1 kg	40 . 00	40 . 00
2	Ladies finger	2 kg	30 . 00	60 . 00
3	Beetroot	2 kg	20 . 00	40 . 00
4	knol khol	1 kg	25 . 00	25 . 00
			Total amount	165 . 00
<b>In words: Rupee one hundred sixty five only.</b>				
				Signature.
<b>Terms and conditions</b>				
▲ Cash will not be returned.				
▲ Goods once sold will not be taken back.				

Observe the descriptions in the above bill.

How to calculate the total amount of each item bought?

Think

What is the cost of 1 kg of beans?

What is the total amount of beans bought?

Quantity  $\times$  cost

$$1 \times 40 = ₹ 40$$

Observe that the rate of each vegetable is calculated.

How do you calculate the total amount of all the items purchased? Think

**Observe :**

- ▶ Rate of each item is multiplied with its quantity to get the amount for that vegetable.
- ▶ The total amount is obtained by adding the sum of money for all items bought.

**Example 3 :**

You have learnt to calculate the total amount of all the items bought. Now complete the given below bill .

J.K . Bekary  
Pete Beedi, Thimma Sandra

TIN : 98456284350

No : 501

Date : 05-12-2013

Name of the consumer : Peter

Cash receipt

Sl.no	Details	Quantity	Cost (₹)	Total amount(₹)
1	Cake	2	10	-
2	Chocolate	10	5	50 . 00
3	Bun	5	-	25 . 00
4	Ice cream	10	5	50 . 00
			Total	

In words :

Signature.

**Terms and conditions**

- ▲ Cash will not be returned.
- ▲ Goods once sold will not be taken back or exchanged.

*You know about the cash bill.*

- *You might have seen credit bill, quotation, Estimate etc.*
- *Know their meaning and when they are used from your teacher and elders.*

*Do all the items which we buy come under tax? Discuss with your teacher.*



### Exercise 10.5

#### 1. Complete the next bill.

Rahameth Grossery shop    TIN : 22448567539 Basavanahalli				
No : 63		Date: 10-12-2013		
Name of the consumer : Umesh				
Cash Receipt				
Sl.no	Details	Quantity	Cost (₹)	Total amount (₹)
1	Tur dal	1 kg	80 . 00	
2	Sugar	2 kg	36 . 00	72 . 00
3	Rice	2 kg	54 . 00	108 . 00
			Total	
In words : <div style="float: right; margin-top: 20px;">Signature.</div>				
<b>Terms and conditions</b> <ul style="list-style-type: none"> <li>▲ Cash will not be returned.</li> <li>▲ Goods once sold will not be taken back.</li> </ul>				

**2. Observe the price list given.**

Ahamadh fair price store Santha beedi, kodehalli			
Date : 27-01-2016			
Sl.no	Details	Quantity (₹)	Cost (₹)
1	Tur dal	1 kg	70.00
2	Sugar	1 kg	32.00
3	Gram dal	1 kg	60.00
4	Moong dal	1 kg	95.00
5	Urad dal	1 kg	70.00
6	Rava	1 kg	28.00
7	Joggery	1 kg	50.00
8	Coriander	1 kg	120.00

The details of the items purchased by Gowramma from Ahmed's shop on 27-01-2014 is given next.

- 1) Gram dal 1 kg
- 2) Tur dal 2 kg
- 3) Rava 2 kg
- 4) Sugar 1 kg

**Observe the price list from the shop and prepare a bill.**

**Activity :** Collect some bills from different shops. Verify the details given. Understand the given conditions in that.



## CHAPTER-11

## MEASUREMENT - LENGTH

### After studying this chapter you can

- know the unit of length,
- know the relation between metre and centimetre,
- convert meter into centimeter and centimetre into metre,
- do the addition of measurement of length,
- understand the method of finding difference of lengths.
- estimate the length of an object and distance between two locations.

### Length



When you are purchasing the cloth from a shop, what instrument will the shop keeper use to give you the required measurement of cloth? When you go to a shop to purchase the tape, the shop keeper will use the same measuring instrument. What is the name of that instrument ?

The instrument which he uses is a measuring scale. Ask for the measuring scale from the shop keeper and observe the markings on it.

The measuring tape used in textile shop is the metre scale. The model of the measuring scale is as shown below.



In this measuring scale how many equal divisions are there from 0 to 15? count

Equal divisions from 0 to 15 is 15. The measurement from one number to next number is 1 centimetre. In this way a scale measuring 100 centimetre equal to a metre is called metre scale.

1 Metre = 100 centimetre

**Note :** Centimeter is represented as 'cm' and metre is represented as 'm'.

**Activity:** Visit a tailor shop. get the tape used by the tailor by requesting him and observe the method of markings on both sides of the tape. Compare it with the metre scale. If you find any difference discuss it with your teacher.



In which of the situations are metre scale and measuring tapes used? List a few of them.

- 1)-----
- 2)-----
- 3)-----
- 4)-----

## Converting metre into centimeters

### Activity :

You know that 1 metre = 100 cm. Take two threads of length 100 cm each join both of them and find the total length of the thread with the help of a metre scale. What is your answer? In the same way take three threads of length 100 cm each, join them and find their total length. What is your answer? What do you learn by this?

This means, measurement of 200 cm is equal to 2 m and measurement of 300 cm is equal to 3 m.

Observe these examples

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

$$2 \text{ m} = 2 \times 100 \text{ cm} = 200 \text{ cm}$$

$$3 \text{ m} = 3 \times 100 \text{ cm} = 300 \text{ cm}$$

Similarly,  $4 \text{ m} = 4 \times 100 \text{ cm} = 400 \text{ cm}$

**Note:** To convert metre into centimetre multiply by 100.

### Model Sum :

1) Convert 5 metre into centimetre.

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

$$5 \text{ m} = 5 \times 100 \text{ cm}$$

$$= 500 \text{ cm}$$

### Exercise 11.1

#### I. Convert the given measurements into centimeter.

1) 9 m

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2) 12 m

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3) 14 m

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4) 10 m

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5) 20 m

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6) 33 m

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#### II. Fill up the blanks with correct answers.

1) 6 m = \_\_\_\_\_ cm

2) 11 m = \_\_\_\_\_ cm

3) 39 m = \_\_\_\_\_ cm

4) 12 m. 16 cm = \_\_\_\_\_ cm

5) 4 m. 70 cm = \_\_\_\_\_ cm

**III. The measurements in list 'A' are given in metre and the measurements in list 'B' are given in centimetre. Match 'B' to 'A'.**

A	B	Answer
1) 4 m	(a) 705 cm	_____
2) 7 m	(b) 450 cm	_____
3) 7 m. 20 cm	(c) 700 cm	_____
4) 4 m. 50 cm	(d) 720 cm	_____
	(e) 400 cm	

### **To convert centimetre into metre**

You already know that 100 cm = 1 m. In 200 cm, how many equal parts of length 100 cm will be there? In the same way in the length of 300 cm, how many equal parts of 100 cm will there be?

$$\begin{aligned}
 200 \text{ cm} &= 100 \text{ cm} + 100 \text{ cm} \\
 &= 1 \text{ m} + 1 \text{ m} \\
 &= 2 \text{ m}
 \end{aligned}$$

$$\begin{aligned}
 \text{In the same way } 300 \text{ cm} &= 100 \text{ cm} + 100 \text{ cm} + 100 \text{ cm} \\
 &= 1 \text{ m} + 1 \text{ m} + 1 \text{ m} \\
 &= 3 \text{ m}
 \end{aligned}$$

In the simplified form it can be written as,

$$200 \text{ cm} = \frac{200}{100} = 2\text{m}$$

$$300 \text{ cm} = \frac{300}{100} = 3\text{m}$$

**Observe:** To convert centimetre into metre, divide by 100.



**Model sum :** convert 500 cm into metre.

$$\therefore 500 \text{ cm} = \frac{500}{100} = 5\text{m}$$

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

### Exercise 11.2

#### I. Convert the next measurements into metre.

1) 800 cm

2) 900 cm

3) 600 cm

4) 1000 cm

5) 3000 cm

6) 300 cm

#### II. Fill up the blanks with correct answers.

1) 400 cm = \_\_\_\_\_ m

2) 900 cm = \_\_\_\_\_ m

3) 875 cm = \_\_\_\_\_ m \_\_\_\_\_ cm

4) 750 cm = \_\_\_\_\_ m \_\_\_\_\_ cm

#### III. Say True or False

1) 20 m = 1000 cm ☐

2) 5 m = 500 cm ☐

3) 150 cm =  $1\frac{1}{2}$  m ☐

4) 750 cm = 75m ☐

## Addition of length

You have learnt, the addition of numbers in your previous class. In addition the numbers are added according to their place value, in the same way, addition of length is done.

### Activity :



Radha has used a thread of length 5 m to prepare a toy telephone. Rita a thread of length 12 m to prepare a toy telephone. What is the total length of the thread used by them?

The length of the thread used by Radha and Rita are 5 and 12 metre. So add both the lengths in the same way as the addition of numbers.

Length of the thread used by Radha	=	5 m
Length of the thread used by Rita	=	12 m
<hr/>		
Total length of the thread used by both	=	17 m

### Activity :



For the Independence Day programme in his school Rahim used 15 m 40 cm length of white tape and 12 m 35 cm length of green tape. What is the total length of the tape used by him?

**Observe :** Here the length of both coloured tapes are given in metre and centimetre . So while finding the total length add centimetre to centimetre and metre to metre.

Length of the white tape = 15 m 40 cm

Length of the green tape = 12 m 35 cm

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Total length of the tape = 27 m 75 cm

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The total length of the tape used by Rahim is 27 m. 75 cm

### Exercise 11.3

#### I. Add the following.

1)  $\begin{array}{r} 150 \text{ m} \\ 75 \text{ m} \\ \hline \\ \hline \end{array}$

2)  $\begin{array}{r} 137 \text{ m} \\ 112 \text{ m} \\ \hline \\ \hline \end{array}$

3)  $\begin{array}{r} 250 \text{ m} \\ 114 \text{ m} \\ \hline \\ \hline \end{array}$

4)  $\begin{array}{r} 450 \text{ m} \\ 9 \text{ cm} \\ \hline \\ \hline \end{array}$

5)  $\begin{array}{r} 25 \text{ m} \\ 163 \text{ m} \\ \hline \\ \hline \end{array}$

6)  $\begin{array}{r} 80 \text{ m} \\ 146 \text{ m} \\ \hline \\ \hline \end{array}$

7)  $\begin{array}{r} 22 \text{ m } 10 \text{ m} \\ 14 \text{ m } 6 \text{ m} \\ \hline \\ \hline \end{array}$

8)  $\begin{array}{r} 20 \text{ m } 12 \text{ cm} \\ 13 \text{ m } 60 \text{ cm} \\ \hline \\ \hline \end{array}$

9)  $\begin{array}{r} 73 \text{ m } 47 \text{ cm} \\ 35 \text{ m } 18 \text{ cm} \\ \hline \\ \hline \end{array}$

10)  $\begin{array}{r} 25 \text{ m } 46 \text{ cm} \\ 5 \text{ m } 28 \text{ cm} \\ \hline \\ \hline \end{array}$

## II. Solve these problems

- 1) Preethi has a red coloured tape of length 18 m and a blue coloured tape of length 15 m. What is the total length of the tapes she has?

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- 2) Azad travels a distance of 800 m in rickshaw and 50 m on foot to reach the school. What is the total distance travelled by him?

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- 3) Mary has a white thread of length 10 m and a black thread of length 18 m 40 cm. What is the total length of the thread Mary has?

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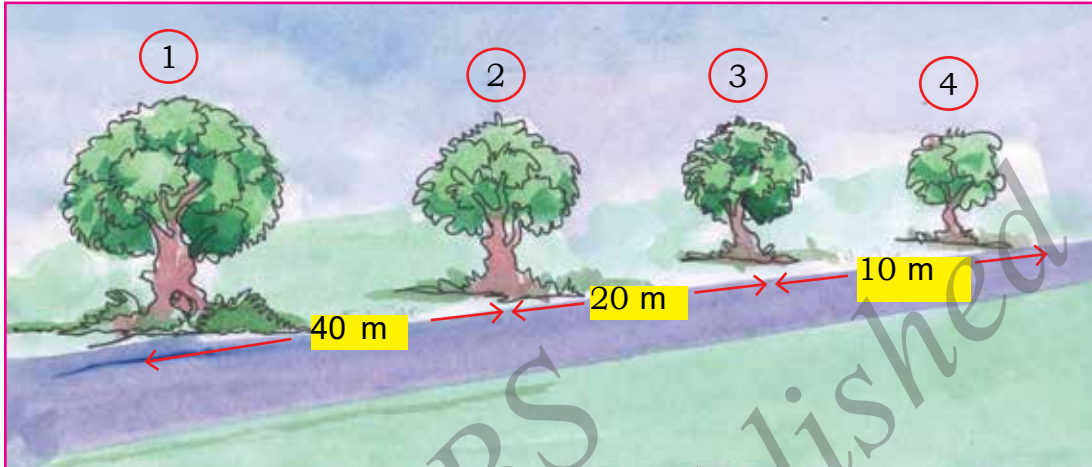
- 4) A shop keeper sells a wire of length 50 m 20 cm in the morning, 60 m 40 cm in the after noon and 5 m 30 cm in the evening. What is the total length of the wire sold by him?

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5) Observe the figure and fill up the blanks.



The distance between 1st and 2nd tree is \_\_\_\_\_

The distance between 1st and 3rd tree is \_\_\_\_\_

The distance between 1st and 4th tree is \_\_\_\_\_

### Subtraction of Lengths

**Activity :** Take a thread of length 80 cm. From that cut a length of 30 cm. Measure the length of the remaining thread with the help of a measuring scale. What is your answer? Can you find the remaining length even without measuring? Think.

What is the fundamental operation to be used?



**Observe the figure above.**

Rajani has to thread beads for a length of 45 cm. She has already threaded the beads for a length of 32 cm. What is the length of the thread not filled by the beads? Find out.

The length of the thread to be filled is in cm. The measurement of length is subtracted in the same way as the subtraction of numbers.

Total length of the thread = 45 cm

The length already threaded = 32 cm

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Remaining length of the thread = 13 cm



In the figure Gouri is drawing a figure in Janapada style on a wall, which is 5 m 50 cm in length. On the first day she draws the figure of length 2 m 20 cm. How do you find the remaining length of the wall to be filled by the figure? Think.

Here measurements are in metre and centimetre. while finding the remaining length of the wall, subtract centimetre from centimetre and metre from metre.

Length of the wall = 5 m 50 cm

Length of the wall on which figure is drawn = 2 m 20 cm

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Remaining length of the wall on which the figure has to be drawn = 3 m 30 cm

### Exercise 11.4

#### I. Solve the sums given below.

$$\begin{array}{r} 1) \quad 86 \text{ cm} \\ - 29 \text{ cm} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 2) \quad 94 \text{ cm} \\ - 88 \text{ cm} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 3) \quad 560 \text{ cm} \\ - 410 \text{ cm} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4) \quad 269 \text{ cm} \\ - 100 \text{ cm} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 5) \quad 9 \text{ m } 90 \text{ cm} \\ - 5 \text{ m } 60 \text{ cm} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 6) \quad 86 \text{ m } 70 \text{ cm} \\ - 68 \text{ m } 65 \text{ cm} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 7) \quad 97 \text{ m } 44 \text{ cm} \\ - 54 \text{ m } 32 \text{ cm} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 8) \quad 171 \text{ m } 82 \text{ cm} \\ - 145 \text{ m } 70 \text{ cm} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 9) \quad 224 \text{ m } 83 \text{ cm} \\ - 165 \text{ m } 75 \text{ cm} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 10) \quad 267 \text{ m } 87 \text{ cm} \\ - 167 \text{ m } 85 \text{ cm} \\ \hline \\ \hline \end{array}$$

#### II. Solve the following problems:

- 1) In a bundle of thread, measuring a length of 450 metre, the shop keeper sells 170 metre of thread. what is the remaining length of the thread in the bundle?

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- 2) Ahmed brings a wire of length 227 m 70 cm to fence a small garden. If, the wire used for fencing is 190 m 40 cm what is the remaining length of the wire with him?

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- 3) In a bundle of cloth measuring 125 m 80 cm, a length of 70 m 30 cm is cut and removed. What is the remaining length of the cloth?

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- 4) A hill climber climbs 475 m 60 cm in the first attempt and 300 m 40 cm in the second attempt. How much less height he has climbed in the second attempt than in the first?

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- 5) The length of a goods train is 242 m 60 cm. The length of a passenger train is 109 m 25 cm. Which train is more in length? And by how much?

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**Know this:**

$$\frac{1}{4} \text{ Metre} = 25 \text{ cm}$$

$$\frac{1}{2} \text{ Metre} = 50 \text{ cm}$$

$$\frac{3}{4} \text{ Metre} = 75 \text{ cm}$$

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



## Using proper fundamental unit

**Activity:** Measure and record the length of your class room by using the scale from your instrument box.

Next measure and record the same distance by using a metre scale.

In which situation was measuring and expressing the length easy? Think

To represent the length of an eraser, length of a pencil, length of a pin in metre is difficult. Then in which fundamental unit are these represented more easily? Think.

It is easy to say the length of all the above things in centimetre. In the same way it is easy to say the length of one side of a blackboard, the length, breadth, and height of a room, the length and breadth of playground in metres.

### **Activity:**

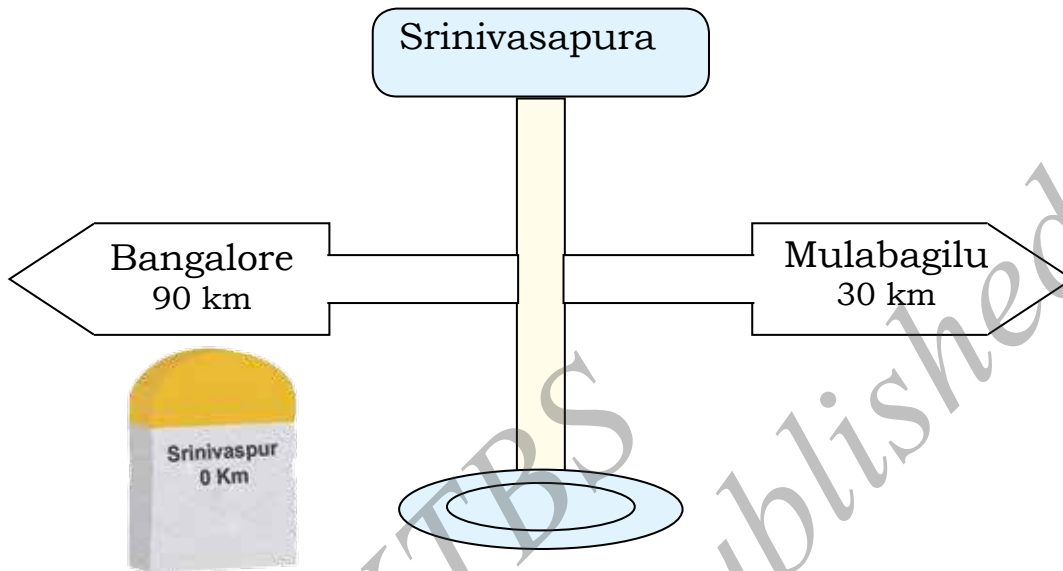
To calculate the length and breadth of your school playground, is it possible to express the measurement by any other fundamental unit other than metre? Discuss with your teacher and know about it.

The distance between two places, for example, the distance between Kolar and Bangalore, the distance between Bangalore and Mangalore. Is it easy to express these distances in centimetre or metre? In which fundamental unit are these measurements expressed easily?

The distance from one place to another place is expressed in kilometre. Kilometre is denoted by km.

$$1 \text{ Kilometre} = 1000 \text{ metre}$$

Observe the hand post. What does this indicate?



Observe the hand post in the figure. What does it indicate? Think.

The distance from Srinivasapura to Bangalore is .....km.

The distance from Srinivasapura to Mulabagilu is.....km.

**Activity :** Observe the kilometre stones by the side of the road for indicating the distance. What do you understand by this? make a list of the distances of surrounding places. By this know, which place is far and which place is nearer.

**Know this:**

1 Kilometre (km) = 1000 Metre(m)

$\frac{1}{4}$  Kilometre (km) = 250 Metre (m)

$\frac{1}{2}$  Kilometre (km) = 500 Metre (m)

$\frac{3}{4}$  Kilometre (km) = 750 Metre (m)

### To estimate the measurement of length

In many of our daily life situations you might have observed the circumstances where without expressing the actual measurement of length, we will express a little more or less than the actual length .

What is the distance between your school and your house? What is the distance between hospital and the bus station of your place?

Is it possible to answer these questions without measuring the distance? Try.

Here it is not possible to tell the measurement accurately So we estimate the measurement

Make a list some of the situations where the measurement is estimated.

- 1) -----
- 2) -----
- 3) -----
- 4) -----

#### Exercise 11.5

#### I. Fill up the blanks with estimated distance from your house / place.

- i) To the post office. ....
- ii) To the government hospital. ....
- iii) To Bangalore. ....

**IV. Estimate the distance between the places / lengths of using suitable unit given in the tabular column.**

Sl.no	Object/place	cm	Metre	Kilometre
1)	Length of a pencil			
2)	Height of the wall of your class room.			
3)	Length of one side of your mathematics text book			
4)	Distance from your village town to the next village/town			
5)	Distance between your class room and the school kitchen			



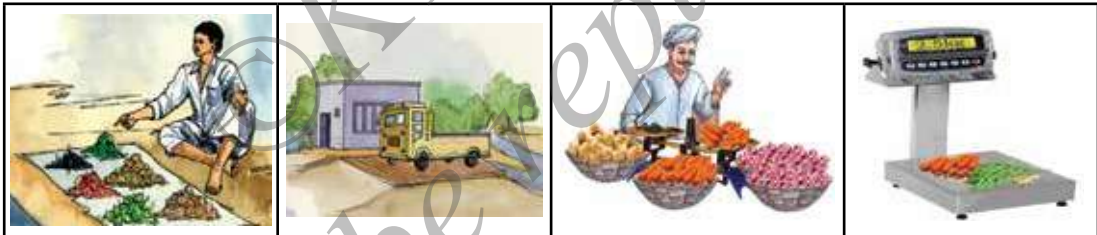
## CHAPTER - 12

## MEASUREMENTS (WEIGHT)

**After studying this chapter you can**

- recognise different measurements of weighing,
- know the method of using a beam balance,
- know the different units of measuring weight,
- convert kilogram into gram,
- add and subtract the measurement of weights,
- learn the method of measuring accurate measurement and estimated measurement of weight.

### Weight



Observe the given figures. What do you observe in these?

You have observed (recognized) the different situations of weighing and different methods of weighing.

List some of the situations in daily life where weighing is done

- 1) .....
- 2) .....
- 3) .....
- 4) .....

What is used for weighing things ? In which unit is weight expressed?



Have you observed the simple device used for weighing vegetables?

It is beam balance.

Observe both the sides of a beam balance.

What will be placed in the left plate and right plate of the beam balance ?

Weighing stones are placed in left side and the object to be weighed is placed in right side of the beam balance.

Observe the weighing units given in the figure . What is mentioned on that?



Here how many types of weighing units are there? Observe, is there any difference between them.

On some of the weighing units Kg and on the other gram(g) is mentioned.

What do you know by this? What is your conclusion?

Weight of an object is expressed in kilogram and gram.

Kilogram is represented by kg and gram is represented by g.

**Activity:** Collect the information from your teacher, about the quantity of rice and dal used for mid day meals in any one day in your school. Which of them are in kg and g? verify

Remember the substances whose quantity can be expressed in kilogram and gram . Make a list of at least two such substances.

- 1) Substances that can be weighed in gram :  
\_\_\_\_\_
- 2) Substances that can be weighed in kilo gram :  
\_\_\_\_\_

**Activity :** Have you observed the method of weighing without using weighing units? What type of simple machine is used there? What is its name? Discuss with your teacher.

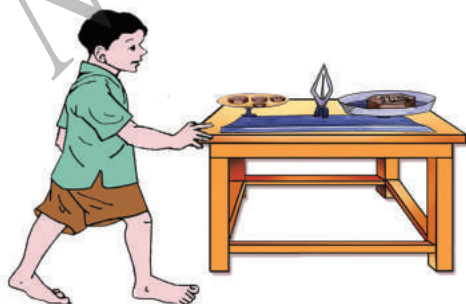
You know that weight is expressed in kg and g. Why is weight expressed in two units?

Do you know?

If the quantity of an object is less it is expressed in grams and if it is more then it is expressed in kilograms.

**Note :** Now a days in shops, to weigh the objects electronic devices are used . This shows the weight in kilogram and gram

**How many gram make one kilogram?**



Already you know the weighing units used for weighing.

Take a beam balance and the weighing units in your school. Keep the weighing unit of 1 kg on the left pan of the balance. You should keep the weighing units mentioned in grams on the right pan of the balance. Try as indicated.

Write Yes / No in the blank space.

First place weighing unit measuring 500 g. Is the weight equal on both the sides of balance? .....

Then add weight of 200 g and weigh. Is the weight equal? .....

Then add weight of 200 g and weigh. Is the weight equal? .....

Then add weight of 100 g and weigh. Is the weight equal? .....

Now you will observe that the weights on both the sides of the balance is equal. Is it not?

What is the sum of the weights of all weighing stones kept on right side? How will you find the sum? Think.

Already you know the addition of numbers. In the same way add all the weights mentioned on weighing stones. What is your answer?

$$500\text{g} + 200\text{g} + 200\text{g} + 100\text{g} = 1000\text{g}$$

It means 1000 g. Is it not?

What do you observe by this? what is your conclusion?

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



### Converting kilogram into gram

You know that 1 kg is equal to 1000 g.

How many kilogram are equal to 2 kg? How to find?

2 kg is obtained by adding 1 kg two times.

$$\begin{aligned}\therefore 2 \text{ kilogram} &= 1 \text{ kg} + 1 \text{ kg} \\ &= 1000 \text{ g} + 1000 \text{ g} \\ &= 2000 \text{ g}\end{aligned}$$

$$\begin{aligned}\text{In the same way } 3 \text{ kg} &= 1 \text{ kg} + 1 \text{ kg} + 1 \text{ kg} \\ &= 1000 \text{ g} + 1000 \text{ g} + 1000 \text{ g} \\ &= 3000 \text{ g}\end{aligned}$$

In the simplest way this can also be expressed as

$$\begin{aligned}3 \text{ kg} &= 3 \times 1 \text{ kg} \\ &= 3 \times 1000 \text{ g} \\ &= 3000 \text{ g}\end{aligned}$$

To convert kilogram in to gram multiply kilogram by 1000

### Converting into gram when the measurement is in both kilogram and gram

**Sunil :** I have 1 kg 200 g of sugar. I have more quantity of sugar than David has



**David:** I have 1200 g of sugar. I have more quantity of sugar than sunil has



Sunil and David are friends. After buying sugar from a shop keeper both of them have given the statement as shown in the figure.

Is the statement given by them true? Verify.

What is the quantity of sugar that Sunil has?

1 kg 200 g

You know that 1 kg is equal to 1000 g. That means he has 1000 g and 200 g of sugar

What is the total quantity of sugar he has?

How will you find?

Add 1000 g and 200 g following the same method of addition which you follow in addition of numbers. What is your answer?

1200 g.

What is the quantity of sugar David has?

1200 g

What do you know by this? What is your conclusion?

Both of them have the same quantity of sugar and the quantity 1 kg 200 g is equal to 1200 g

In the same way how many gram is equal to 3 kg 500 g?

$$\begin{aligned} 3 \text{ kg } 500 \text{ g} &= 1 \text{ kg} + 1 \text{ kg} + 1 \text{ kg} + 500 \text{ g} \\ &= 1000 \text{ g} + 1000 \text{ g} + 1000 \text{ g} + 500 \text{ g} \\ &= 3500 \text{ g} \end{aligned}$$

This can be done in a simple way as

$$\begin{aligned} 3 \text{ kg} &= 3 \times 1000\text{g} \\ &= 3000\text{g} \\ 3\text{kg } 500\text{g} &= 3\text{kg} + 500\text{g} \\ &= 3000\text{g} + 500\text{g} \\ &= 3500\text{g} \end{aligned}$$

### Exercise 12.1

1) Convert 8 kg to gram.

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2) Convert 9 kg to gram.

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3) Convert 4 kg 600 g to gram.

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4) Convert 7 kg 850 g to gram.

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### Addition of Weights.



#### Observe this Figure :

A vegetable seller has 9 kg 450 g of potato, 10 kg 300 g of onion and 12 kg 200 g of carrot. What is the total weight of vegetable he has? How to find?

Observe that the weight of vegetables is expressed in kg and g

Now how to add the weights of these vegetables?

Add the weights in gram to gram and kg to kg. Find the total weight.

Write down the vegetable and its weight as shown, below and add the numbers according to their place value. Now find the total weight.

Vegetable	Weight
Potato	9 kg 450 g
Onion	10 kg 300 g
Carrot	12 kg 200 g
<b>Total weight of vegetables</b>	<b>31 kg 950 g</b>

### Exercise 12.2

#### I. Add the following.

$$\begin{array}{r} 1) \ 42 \text{ kg} \\ \quad 58 \text{ kg} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 2) \ 120 \text{ kg} \\ \quad 45 \text{ kg} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 3) \ 150 \text{ kg} \\ \quad 240 \text{ kg} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4) \ 57 \text{ kg } 126 \text{ g} \\ \quad 39 \text{ kg } 245 \text{ g} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 5) \ 136 \text{ kg } 240 \text{ g} \\ \quad 27 \text{ kg } 126 \text{ g} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 6) \ 324 \text{ kg } 360 \text{ g} \\ \quad 112 \text{ kg } \quad 6 \text{ g} \\ \hline \\ \hline \end{array}$$

#### II. Solve the following problems.

- 1) Weight of Anil is 45 kg. Aslam weighs 3 kg more than him. What is the weight of Aslam?

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- 2) Reena buys 10 kg of mangoes, 15 kg of apples and 12 kg of sweet lemon for a function. Find the total weight of fruits she bought.

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- 3) A sweet shop merchant sells 3kg 200 g of sweet in the morning and 6 kg 600 g in the afternoon. What is the total weight of sweet sold?

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- 4) A flower merchant has 7 kg 300 g of jasmine, 5 kg 450 g of rose and 10 kg of champak flowers. What is the total weight of flowers he has?

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### Subtraction of Weights



Rani bought 5 kg 500 g of wheat from a co-operative society. It was observed that a small quantity of wheat was leaked out from the bag. What is the weight of wheat leaked out? How to find this? Think.

Is it possible to collect the wheat which is leaked out and find its weight? It is not possible.

Then by which other method can it be found?

Weigh the remaining wheat in the hand bag.

What is its weight? This weight is less compared to the weight when bought. Is it not?

For example let the weight be 5 kg 300 g. Then how much quantity of wheat is leaked out?

The weight of wheat leaked out is the difference of initial and final weights of wheat.

How to find the difference of weights?

Already you know the method of finding the difference of numbers. Follow the same method and find the difference according to the place value.

Subtract the weight in gram from gram.  
and kilogram from kilogram

Weight of the wheat bought	5 kg 500 g
Weight of the wheat left after leakage	5 kg 300 g
Weight of the wheat which is leaked out	0 kg 200 g

### Exercise 12.3

I. Find the difference of weights given below.

- 1    34 kg    2    249 kg    3    542 kg    4    36 kg 27 g  
      -12 kg       -136 kg       -299 kg       -24 kg 12 g





- 5    94 kg 174 g    6    298 kg 248 g  
      -39 kg 098 g       -149 kg 248 g

## II. Solve these problems.

- 1) Abdul bought 30 kg of rice. From this if 19 kg of rice was used, what is the quantity of rice remaining?

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- 2) In the morning there was 550 kg of firewood in the godown. In the evening if 200 kg of fire wood was left. What is the quantity of fire wood sold?

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- 3) Weight of Anand is 30 kg 750 g. Weight of suresh is 28 kg 250 g. Whose weight is more and by how much?

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- 4) 20 kg 250 g of sweet was bought for the naming ceremony of a child. From this 13 kg of sweet was distributed. What is the quantity of sweet undistributed?

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### Estimated weight and Accurate weight

In our daily life in most of the situations the weight of the objects is more or less guessed than saying its real weight. Have you observed?

For example what is the weight of your mathematics text book? What is the weight of plastic chair?

While answering in these situations will you measure its weight and then answer?

NO. Then how will you answer?

You will answer in such a way that its weight is little more or less than its real weight. What do you call the weights expressed in this way?

This is called estimated weight.

List some objects and write its estimated weight

Objects	Estimated weight
Example: Duster	150 g
1) .....	.....
2) .....	.....
3) .....	.....

Is the weight of all objects, which you have listed equal to its real weight? How do you know?

The real weight is known when these objects are weighed using a balance. Real weight is also called the accurate weight.

### Exercise 12.4

As given in sl no (1) find out the estimated weight and accurate weight of objects and fill in the blanks given in the tabular column. Take the weighing machine available in your school and use it with the help of your teacher.

Sl no	Objects	Estimated weight	Accurate weight
1.	Hammer	1 kg	1 kg 200 g
2.	Meals plate		
3.	Box filled with pieces of chalk		
4.	Lock		
5.	Your school bag		
6.	Globe		

**Activity :** You know the method of finding the accurate weight of objects. In the same way how do you find the accurate weight of vehicles? Discuss the problem with your teacher.



## CHAPTER- 13

## MEASUREMENT OF VOLUME

### After studying this chapter you can

- Identify the capacity of the given container,
- Relate litre to millilitre, know the relationship between litre and millilitre
- Add the given volume,
- Subtract the given volume,
- Estimate the volume and then verify the accurate volume by measuring.

In our daily life we purchase milk. This is known to you. Have you noticed the container used by milk vendors to measure milk? You would have noticed that the milk vendors use smaller and bigger capacity of measuring containers. In your previous class you have learnt that the quantity of liquids is measured in litre and also you know about the containers used to measure volume.

Recall 1 litre(l) = 1000 millilitre (ml)

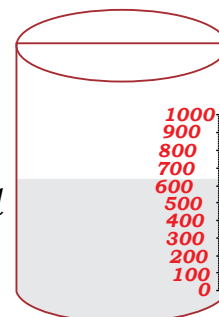
### Observe the figure:

How much quantity of liquid can be fill in this container?

1000 ml?

Observe this container. It contains 600 ml of liquid.

The quantity of liquid a container holds is called the '**Capacity**' of that container.



The quantity of liquid in a container is called the **volume** of the liquid.

The standard unit for measuring volume is litre.



The capacity of this container is one litre.



The capacity of this container is 5 litres.

**Activity :** A Milkman has one 200 ml container. He has to give 1 litre of milk to Rajiv's house.

Can you help him to distribute milk?

He has to use 200 ml container 5 times for measuring.

So,  $5 \times 200 \text{ ml} = 1000 \text{ ml} = 1 \text{ l}$

Can we measure quantity of water in a bucket using 200 ml container? Try

It is not an easy measurement.

So we use a larger unit, litre to measure large quantity and smaller unit, millilitre to measure small quantity of liquid.

**Note :** The symbol '*l*' is used for litre and '*ml*' for millilitre

**Remember :**

1 litre (l)	=	1000 millitre (ml)
$\frac{1}{2}$ litre (l)	=	500 millitre (ml)
$\frac{1}{4}$ litre (l)	=	250 millitre (ml)
$\frac{3}{4}$ litre (l)	=	750 (millitre (ml)

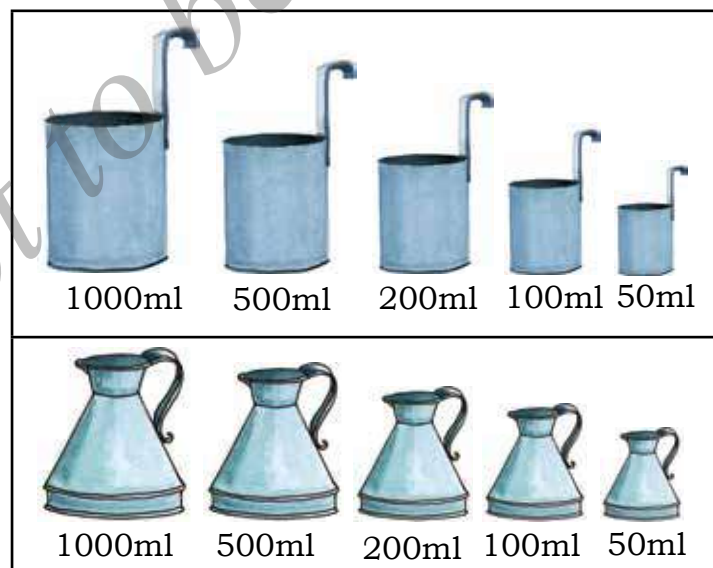
**Make a list of at least two situations where we use millilitre in our daily life.**

- 1) .....
- 2) .....

**Make a list of any two situations where we use litre to measure.**

- 1) .....
- 2) .....

Observe the different containers used to measure quantity of liquids.



Think, where we use these containers.

### To convert litre into millilitre

We know that 1 litre = 1000 millilitre. Using this relation is it possible to convert litre to millilitre? Try.

#### Observe the following examples

$$1\text{ l} = 1000\text{ ml}$$

$$2\text{ l} = 2 \times 1000 = 2000\text{ ml}$$

$$5\text{ l} = 5 \times 1000 = 5000\text{ ml}$$

So **to convert litre to millilitre multiply by 1000.**

**Example 1 :** Convert 8 litre to millilitre

$$8\text{ l} = 8 \times 1000$$

$$= 8000\text{ ml}$$

**Example 2 :** Convert 3 litre 20 ml to millilitre

$$3\text{ l } 20 = 3 \times 1000 + 20$$

$$= 3000 + 20$$

$$= 3020\text{ ml}$$

#### Exercise 13.1

**I. Write the suitable unit of measurement used in the situations given below.**

- 1) Kerosene in a drum \_\_\_\_\_
- 2) Milk in a cup \_\_\_\_\_
- 3) Bottle of ink \_\_\_\_\_
- 4) Water in a bucket \_\_\_\_\_
- 5) Syrup in a bottle \_\_\_\_\_

**II. Convert the following litre / measurements to millilitre.**

- 1) 3 l = \_\_\_\_\_
- 2) 7 l = \_\_\_\_\_
- 3) 2 l 500 ml = \_\_\_\_\_
- 4) 6 l 250 ml = \_\_\_\_\_

**III. Match the quantity of liquid in column 'A' with column 'B' and write the answers in the blank space provided.**

'A'	'B'	Ans
1) 4 l	a) 3100 ml	1) _____
2) 9 l	b) 5050 ml	2) _____
3) 1 l 250 ml	c) 4000 ml	3) _____
4) 5 l 50 ml	d) 9000 ml	4) _____
5) 3 l 100 ml	e) 1250 ml	5) _____

**To convert millilitre into litre**

**You know that 1 litre is equal to 1000 millilitre. Is it possible to convert millilitre to litre. Observe the following.**

$$1000 \text{ millilitre} = 1 \text{ litre}$$

$$2000 \text{ ml} = \frac{2000}{1000} = 2l$$

$$3000 \text{ ml} = \frac{3000}{1000} = 3l$$

From the above examples identify the mathematical operation used.

To convert millilitre into litre divide by 1000

**Example 1 :** Convert 8000 millilitre to litre

$$8000 \text{ ml} = \frac{8000}{1000} = 8l$$

**Example 2 :** Convert 6860 millilitre to litre

$$\begin{aligned} 6860 \text{ ml} &= 6000 \text{ ml} + 860 \text{ ml} \\ &= \frac{6000}{1000} + 860 \text{ ml} \\ &= 6 \text{ l } 860 \text{ ml} \end{aligned}$$

**Exercise 13.2**

**I. Convert to litre.**

- 1) 5000 ml = \_\_\_\_\_
- 2) 9000 ml = \_\_\_\_\_
- 3) 6000 ml = \_\_\_\_\_

**II. Fill up the blanks with suitable words.**

- 1) 7250 ml = \_\_\_\_\_ l + \_\_\_\_\_ ml
- 2) 3000 ml = \_\_\_\_\_ l + \_\_\_\_\_ ml
- 3) 7025 ml = \_\_\_\_\_ l + \_\_\_\_\_ ml

**Addition of Volume :**

Sujatha purchases different kinds of oil from a oil retailer. She purchases 2l, 500 ml of sunflower oil, 1l 000 ml coconut oil and 2l 000 ml of groundnut oil. Find the total quantity of oil purchased by her.

**Tabulate the quantity of oil she purchased.**

Oil		Quantity
Sunflower Oil	2 l	500 ml
Coconut Oil	1 l	000 ml
Groundnut Oil	2 l	000 ml
Total	5 l	500 ml
Observe : litre and Millilitre are given separately		



### Example 1 :

Abhijith used three different colour paints for his house. He used 12 l 500 ml of white paint, 3 l 000 ml of brown paint and 1 l 000 ml of black paint. Find the total quantity of paint used by him.

$$\begin{array}{rcl} \text{Volume of white colour paint} & = & 12 \text{ l } 500 \text{ ml} \\ \text{Volume of brown colour paint} & = & 3 \text{ l } 000 \text{ ml} \\ \text{Volume of black colour paint} & = & 1 \text{ l } 000 \text{ ml} \\ \hline \therefore \text{Total volume of paint} & = & 16 \text{ l } 500 \text{ ml} \end{array}$$

### Exercise 13.3

#### I. Add the following.

- 1)  $\begin{array}{r} 250 \text{ ml} \\ 500 \text{ ml} \\ \hline \end{array}$  2)  $\begin{array}{r} 400 \text{ ml} \\ 500 \text{ ml} \\ \hline \end{array}$  3)  $\begin{array}{r} 125 \text{ ml} \\ 220 \text{ ml} \\ \hline \end{array}$  4)  $\begin{array}{r} 3 \text{ l } 500 \text{ ml} \\ 5 \text{ l } 200 \text{ ml} \\ \hline \end{array}$

#### II. Solve these problems.

- 1) A milk man delivered 85 l 250 ml of milk to dairy on Monday and 97 l 500 ml of milk on Tuesday. Find the total quantity of milk he delivered in those two days.

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- 2) Hari has 3 buckets of capacities, 9 l, 15 l and 20 l. How much water can be stored in the three containers ?

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3. A ration shopkeeper has three drums of capacities 100 l, 150 l, and 50 l. filled with kerosene. What is the total quantity of kerosene he has stored?

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- 4) A shopkeeper sold 12 l, 250 ml of groundnut oil, 5 l, 500 ml, of coconut oil and 2 l, of gingely oil. How many litres of oil did he sell altogether?

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- 5) Bangalore city received rainfall of 150 ml in the month June, 320 ml in July and 240 ml in August. Find the total rainfall in these three months.

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### Subtraction of the measurement of Volume :

Rani purchased 2 l 500 ml of milk. She used 2 l 100 ml of it to prepare kheer and remaining milk to prepare curd. Find the quantity of milk she used to prepare curd.

Let us find the quantity of milk used for curd

	l	ml
Total quantity of milk	2	500
Quantity of milk used to prepare kheer	2	100
Quantity of milk used to prepare curd	0	400

### Example 1:

A school tank has the capacity of 500 l. 200 l of water is used for school gardening. So how much of water is remaining in the tank.

Quantity of water in the tank = 500 l

Quantity of water used for gardening = 200 l

∴ Remaining quantity of water in the tank = 300 l

### Exercise 13.4

#### I. Subtract the following.

$$\begin{array}{r} 1) \ 800 \text{ ml} \\ - 500 \text{ ml} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 2) \ 500 \text{ ml} \\ - 350 \text{ ml} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 3) \ 181 \text{ ml} \\ - 81 \text{ ml} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4) \ 29 \text{ l } 870 \text{ ml} \\ - 14 \text{ l } 600 \text{ ml} \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 5) \ 169 \text{ l } 870 \text{ ml} \\ - 25 \text{ l } 450 \text{ ml} \\ \hline \\ \hline \end{array}$$

#### II. Solve :

- 1) Sarita bought  $3 \text{ l } 500 \text{ ml}$  of kerosene. She used  $2 \text{ l } 250 \text{ ml}$  of kerosene. How much quantity of kerosene remains?

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- 2) The capacity of the milk cooker is  $2 \text{ l } 500 \text{ ml}$ . This contains  $1 \text{ l } 200 \text{ ml}$  of milk. How much more milk can be filled in the vessel?

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- 3) The capacity of a water tank is  $500 \text{ l}$ . The tank contains  $375 \text{ l}$  of water. How much water should be poured to fill the tank to its capacity?

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- 4) In 500 ml of cold drink bottle only 320 ml of cold drink is left. How much cold drink is consumed?

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- 5) Rajiv fills 12 l 800 ml of petrol to his car. After travelling a certain distance only 3 l 500 ml of petrol is remaining in the tank. How much petrol was used for the journey?

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### Estimating Volume :

Take a mug and a bucket. Fill the bucket with water using the mug. How many mugs of water is required to fill the bucket?

Can you say it accurately?

Most of the time we cannot say it accurately.

What method do we adopt in such cases?

We tell approximately 15 mugs of water is required to fill the bucket.

When we actually do it using measuring jars we find the accurate measurement.

### Observe the following situations.

- How many buckets of water can a sump hold?
- How much water does a child drink everyday? Can we guess these properly?







When we cannot tell the exact measurement, we guess nearer to the exact value. This is called estimation.

Recall any three situations in your daily life where estimation is used and write them below:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

### Exercise 13.5

I. Put a tick (✓) mark on the correct option to show the estimated capacity of the following.

	200 ml			1 l
	200 l			8 l
	20 l			15 l
	500 ml			15 ml
	500 ml			10 ml
	6 l			10 l

## II. Fill up the blanks by estimating volume.

- 1) Volume of water in a school tank \_\_\_\_\_
- 2) Volume of water in a water jug \_\_\_\_\_
- 3) Volume of water a cow drinks per day \_\_\_\_\_
- 4) Volume of water an adult drinks per day \_\_\_\_\_

## III. Write the estimated volume and actual volume of the following by measuring with standard unit of measurement. (Take the help of your teacher, if necessary)

	Examples	Estimated Volume	Actual Volume
1	Water in a water filter		
2	Water in a bottle		
3	Water in the sump		



## CHAPTER- 14

## TIME

### After learning this chapter you will :

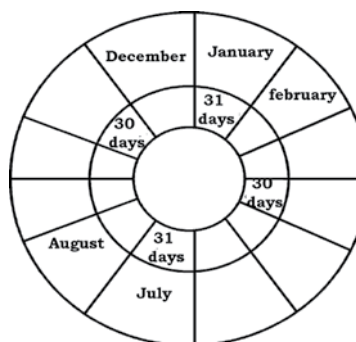
- calculate the number of days and weeks in a year.
- mention the reason for a leap year,
- read the time in a clock to the nearest hour and minute.
- express the time in a.m and p.m.
- approximate the duration of familiar events.
- calculate the number of days between two dates.

In your previous class you have learnt about days in a week, months in a year and the number of days in every month. By recalling them do the following activity.

Rama has not written the names of certain days while writing the name of days in a week. Help her to write the name of those days which are not written.

Sunday
Tuesday
Wednesday
Friday

In your previous class you have learnt the months in a year and the number of days in every month. By remembering them after completing the words wheel with suitable answers can you say how many days are there in every month?





**Observe :**

How many days are there in every month? It can be easily known in this way. Hold your fist as shown in the figure. The raised part on the fist represents 31 days in a month. The lowered part on the fist represents 30 days in a month. Observe in which two months there are 31 days.

**Know the number of weeks in a year.**

In your previous class you have learnt to read the day and date in a calendar.

Answer these.

How many days are there in a week?

How many days are there in a month?

How many days are there in a year?

From these how can you calculate the number of weeks in a year? Think.

## 2017 CALENDAR

### January

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

### February

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

### March

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

### April

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

### May

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

### June

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

### July

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

### August

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

### September

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

### October

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

### November

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

### December

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Write the number of weeks and days in every month in the following table and add them.

Months	Weeks	days
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		
Total		

**Observe :** When weeks and days of all months of a year are added it becomes 48 weeks, 29 or 30 days. When 29 or 30 days is converted into weeks it becomes 4 weeks.

So the total number of weeks in a year is  $48 + 4 = 52$  weeks. 1 Year = 52 weeks.

### Leap Year

You know the number of days in every month. How many days are there in every month? Which month has minimum number of days Think about the number of days in February.

**Observe the above calendar**

Feb - 2012, 2013, 2014, 2015, 2016, 2017 calendar

February 2012						
Mon	Tue	Wed	Thur	Fri	Sat	Sun
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29				

February 2013						
Mon	Tue	Wed	Thur	Fri	Sat	Sun
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

February 2014						
Mon	Tue	Wed	Thur	Fri	Sat	Sun
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

February 2015						
Mon	Tue	Wed	Thur	Fri	Sat	Sun
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

February 2016						
Mon	Tue	Wed	Thur	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29						

February 2017						
Mon	Tue	Wed	Thur	Fri	Sat	Sun
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	28

How many days are there in February 2012?

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How many days are there in February 2013?

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How many days are there in February 2014?

---

How many days are there in February 2015?

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How many days are there in February 2016?

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So how many days are there in the month of February? In February there are 28 or 29 days. In which years has February 29 days?

February 2012, February 2016. Once in how many years is this repeated?

This is repeated once in 4 years.

What do you learn from this?

**Observe :** The year in which February month has 29 days, is called the Leap year. The Leap year repeats once in four years.

How do you find that the given year is a leap year or not?

Observe 2012 and 2016.

These are repeated once in 4 years.

Divide the last two digits taken together by 4. What is the remainder?

The remainder is zero.

That means 2012 and 2016 are completely divisible by 4

What do you know from this?

**Observe :** If the last two digits of a year gets divided completely by 4 it is a leap year.

In 1904, the last two digits are 04

$$04 \div 4 = \dots\dots$$

In 1904, the last two digits taken together is divided completely by 4, So it is a leap year 2008, 2012, 2016 are leap years.

**Know this:** If the century year is completely divided by 400, then only it is called leap year.

Example : 1900th year is not a leap year. It is divisible by 4 but not divisible by 400.

Remember :

1 Week - 7 days.

1 Month - 30 or 31 days.

12 Months - 1 year.

1 Year - 52 Weeks.

In february there are 28 days. In leap year, February has 29 days.

What is the reason for leap year? Think.

We know that there are 365 days in a year. To say accurately one year has 365 days 6 hours. That means  $365 \frac{1}{4}$  day. 1 year is considered as 365 days.

But  $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1$  day This one day is added in every four years. In that year there will be 366 days. In that year February month has 29 days. This is called leap year.

### Exercise 14.1

I. If 365 days are there in a year which is not a leap year, how many days are there in a leap year?

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II. Examine whether the following years are leap year or not.

a) 1908	
b) 2003	
c) 1972	
d) 1990	
e) 2013	

III. How many leap years are there from 2013 to 2025?

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IV. How many days are there in 2014?

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V. how many years once in can the birthday be celebrated for those who are born on the February 29th date in the leap year?

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## Calculation of Time.

In your previous class you have learnt that the clock will show the time and also you have learnt to read the time. By recalling these answer the following.



### I Observe the figure of a clock.

1) How many equal parts are there in the dial of a clock?

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2) What does the bigger needle in a clock indicate?

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3) What does the smaller needle in a clock indicate?

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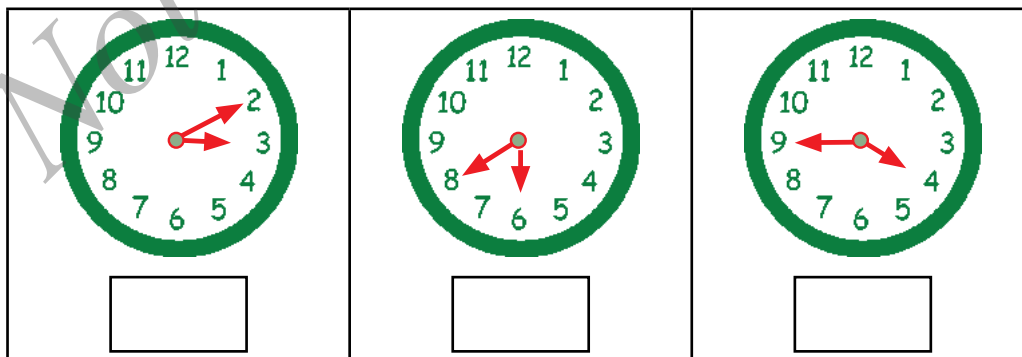
4) How many minutes form an hour?

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5) How many seconds form a minute?

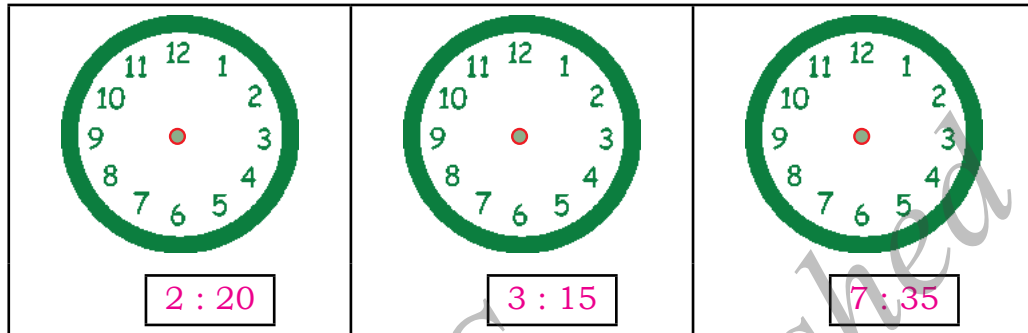
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### II Read the time shown by the following clocks. Write the time in the blocks shown each in the given blank space.





**III Time of each clock is given below. According to that time draw the small and big needles.**



To read the time in a clock to the nearest hour and minute.

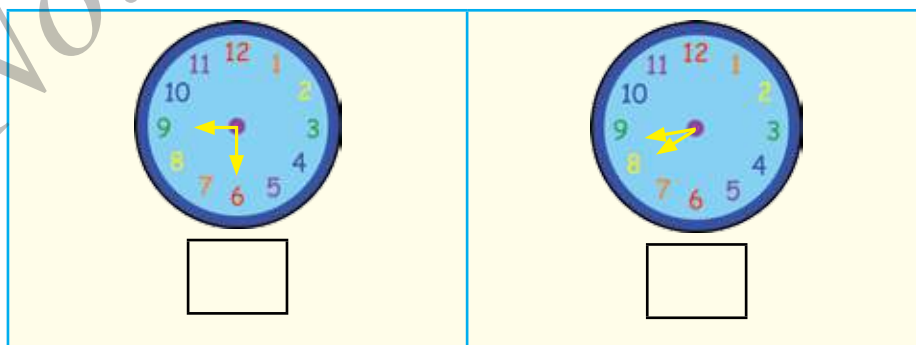


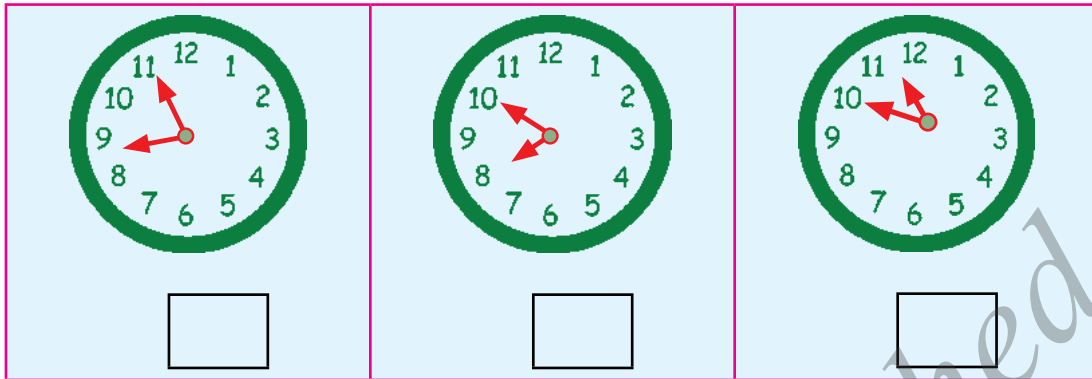
Read and write the time shown by the above clock.

We read as 10 hour 15 minutes. You already know about fraction. So how can you say 10 hours 15 minutes using the idea of fraction.

$10\frac{1}{4}$ ..... hour [We read as 10 and a quarter hour]

In the same way write the time shown by the following clocks.





Write the time shown in the clocks above

How to express time to their nearest hour? Think.

The time shown in the first clock is 8.55

To which hour is the hour hand nearer? It is nearest to 9 hour.

So while expressing this to the nearest hour we say that the time is 5 minutes to 9.

Write the time shown by the remaining two clocks to their nearest hour.

**To express the time in ante merdien (a.m) and post merdien (p.m)**

**Activity :** From morning to evening you do many activities. Write a few activities you do before and after coming to school.

- 1)
- 2)
- 3)
- 4)
- 5)
- 6)

Classify the activities which you have listed according to the given tabular column

Activities done in the morning period.	Activities done in the afternoon period.
1)	1)
2)	2)
3)	3)
4)	4)

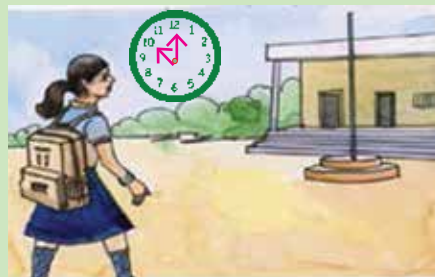
**What is ante merdien and post merdien?**

**Observe :**

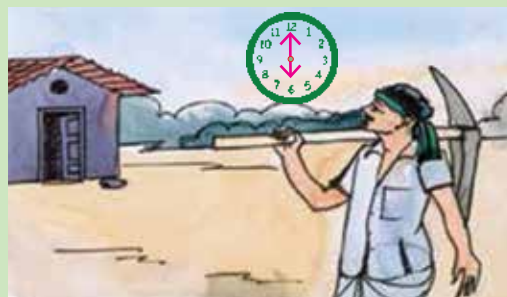
- The time between midnight 12 hour to midday 12 hour is called ante merdien (a.m)
- The time between midday 12 hour to midnight 12 hour is called post meridian (p.m)

**Activity 1 :** Observe the following figure. In the figure the clock is showing the time of Anita going to school.

Write ante merdien (a.m) or post merdien (p.m)

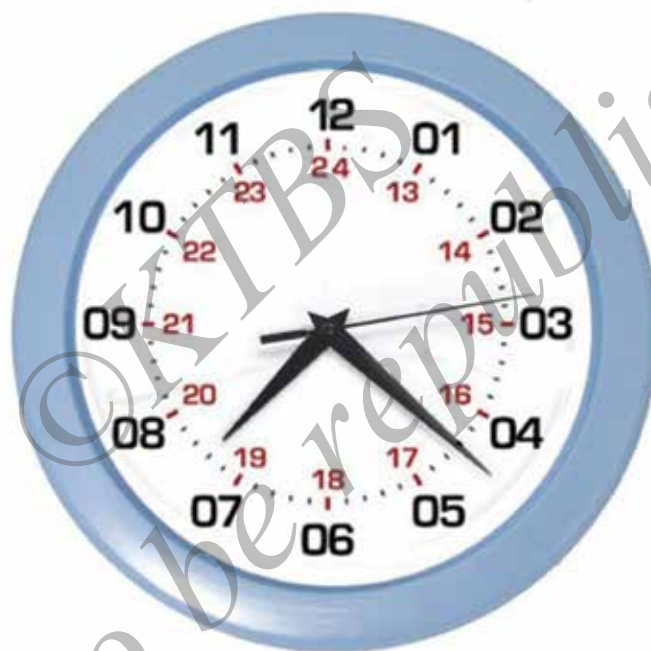


**Activity 2 :** Ramaiah is a farmer. Observe the following figure in which he is going home after completing his work. The time is shown in the clock. It is ante merdien (a.m) or post merdien (p.m) write.



### Can you tell the time in a 24 hour clock?

Santosh purchased a ticket to travel to Tumkur. In the ticket the departure time of the train was written as 14:00 hours. He felt scared because he knew only to read the time in 12 hours. How do we express the departure time of the train in 24 hour clock?



Observe the clock given above

We observe 14 hour = afternoon 2 o' clock.

So how to convert 24 hour clock time to 12 hour clock time?

**Observe :** If the time is more than 12 hour, subtract it from 12 and write the remaining time as post meridian (p.m) If the time is less than 12 hour, Write the time as it is and write as ante meriden (a.m).

**Example 1 :** In the railway time table, the departure time of the train is written as 18 hour. What is the departure time of the train in a 12 hour clock?

Departure time of the train =  $18 - 12$

= 6 p.m (Post merdien 6 hour)

**Example 2 :** In the railway time table, the arrival time of the train is written as 15 hour. What is the time in a 12 hour clock?

Arrival time of the train =  $15 - 12$

= 3 p.m. (Post merdien 3 hour)

You will learn more information about this in your next class.

**Activity:**

Observe any 2 situations where 24 hour clock is used to indicate the time

**Exercise 14.2**

**I. Write the following time in anti merdien or post merdien.**

a) evening 4 : 50.

b) morning 7 : 00.

c) 13 : 00

d) 17 : 30

**II Lakshmi's daily activity is given. Write in ante meridien / post meridien. Convert the time to 24 hour clock.**

	Anti Meridien	Post Meridien
1) Lakshmi gets up in the morning at 6 O' clock.		
2) Takes bath in the morning at 6.30		
3) She helps her mother to do the house hold work from 7 : 00 to 8 : 30		
4) She goes to school in the morning at 8: 30		
5) She takes lunch at 12 : 30		
6) She goes to play at 5 : 30		
7) She sleeps at 9 O' clock in the night.		

**III Solve :**

- 1) In the railway timetable the departure time is written as 19 : 30 hour. Write this as per a 12 hour clock time.


- 2) The arrival time of an aeroplane is written as 20 : 00 hour. Write this as per a 12 hour clock time.


**To approximate the period of familiar events.**

In our daily life we are involved in many activities. Some activity is done in less time and some activity will be completed in a longer period of time. Make a list of the following activities according to the period they take.

**The following activities are done in seconds.**

- 1) blinking of eye lashes.
- 2) \_\_\_\_\_  
\_\_\_\_\_
- 3) \_\_\_\_\_  
\_\_\_\_\_

**The following activities are done in minutes**

- 1) Heating milk.
- 2) \_\_\_\_\_  
\_\_\_\_\_
- 3) \_\_\_\_\_  
\_\_\_\_\_

**The following activities are done in hours**

- 1) Celebrating school annual day function.
- 2) \_\_\_\_\_  
\_\_\_\_\_
- 3) \_\_\_\_\_  
\_\_\_\_\_

**The following activities require days**

1) Aspahlting tar on the road.

2) \_\_\_\_\_

3) \_\_\_\_\_

**These activities require months.**

1) Change of one season to another season.

2) \_\_\_\_\_

3) \_\_\_\_\_

**Observe :** In our daily life the time taken by some events can be approximated and some events can be told accurately.

**Exercise 14.3**

**I. Mark the correct answer.**

1) The time taken by you to play with your friends	1minute/ hour	<input type="checkbox"/>
2) The time taken to say the prayer.	1minute/ hour	<input type="checkbox"/>
3) The time required to have breakfast in the morning	30 minute/ 2 hours	<input type="checkbox"/>
4) The time required to build a house	days/ months.	<input type="checkbox"/>



**II. Write any 4 Activities that you do daily and the time required to complete them.**

- 1) \_\_\_\_\_  
\_\_\_\_\_
- 2) \_\_\_\_\_  
\_\_\_\_\_
- 3) \_\_\_\_\_  
\_\_\_\_\_
- 4) \_\_\_\_\_  
\_\_\_\_\_

**III. Make a list of any 2 activities for which the time can be said accurately.**

- 1) \_\_\_\_\_  
\_\_\_\_\_
- 2) \_\_\_\_\_  
\_\_\_\_\_

**To calculate the time taken to complete a work or an event.**

**Let us consider these examples.**

- 1) Rahul leaves his house at 7 : 30 am and reaches his school at 9 : 00 am. So what is the time taken by him to reach the school?

The time at which Rahul left his house = 7 : 30 a.m

The time when he reached the school = 9 : 00 a.m

So the time taken to reach the school = 9.00 - 7.30

hour	:	minutes	Borrow 1 hour from 9 hour	1 hour = 60 minutes
9	:	00		
(-)7	:	30	60 minutes - 30 minutes = 30 minutes	
1	:	30	8 hour - 7 hour = 1 hour.	

∴ The time taken by Rahul to reach the school = 1 hour 30 minutes.

- 2) A school was closed on October 3rd for Dasara vacation. It was reopened on October 31st. How many days was the mid term vacation?

The school reopened on : 31st October

The school was closed on : 3rd october.

So the period of half mid Term vacation is 27 days.

### Exercise 14.4

- 1) An exhibition was arranged from 07-9-12 to 10-9-12. How many days was the exhibition arranged?

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- 2) For Ahmed's school, the holidays were announced for 14 days from 2-10-12. After the vacation on which date did the school reopen?

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- 3) Suresh went on a trip from his school from 3-10-11 to 7-10-11 For how many days was he away from the school?

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- 4) Malathi attended the preparatory examination in her school from 20-02-12 for 6 days. On which date did she complete her examination?

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- 5) Ramu did not attend the school from 01-3-12 to 3-3-12. How many days was he absent?

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## CHAPTER- 15

## DATA HANDLING

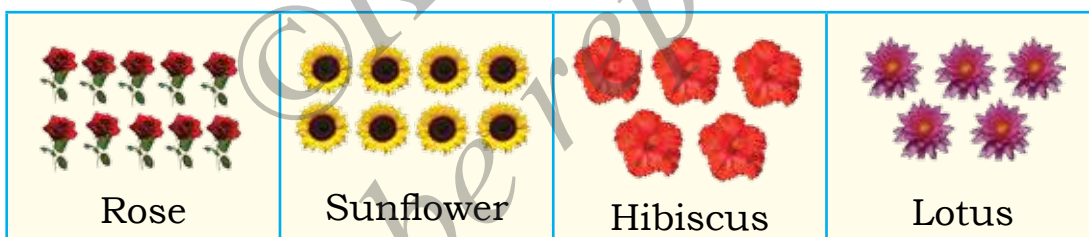
### After studying this chapter you can

- collect information and write in the form of a table,
- represent data in a bar graph,
- explain the information given in the bar graph.

In the previous class you have learnt the collection of data, writing it in the form of a table and representing data through pictures in a Pictorial graph.

Observe the next activity.

Here is a picture chart with different coloured flowers.



By observing this picture chart, complete the table.

Sl. No	Flowers	Numbers
1	Rose	
2	Lotus	
3	Sun flower	
4	Hibiscus	

**Observe the table and answer the following questions.**

1) Which flowers are more in number?

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2) Which flowers are less in number?

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3) Which flowers are of the same number?

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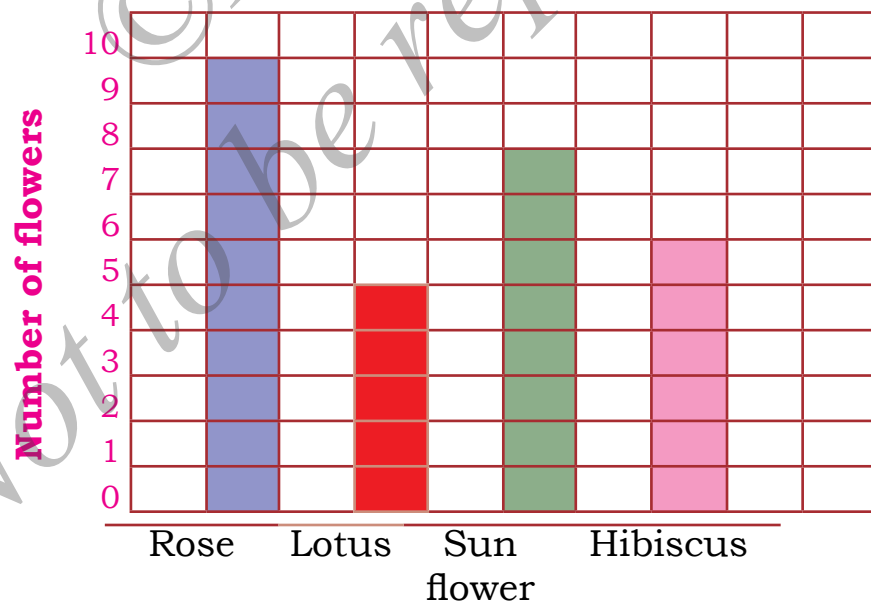
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4) What is the total number of flowers?

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To answer these questions you observed the table of flowers and their number. Is there any other easy method other than observing the table to know this? Think.



→ **Types of flowers**

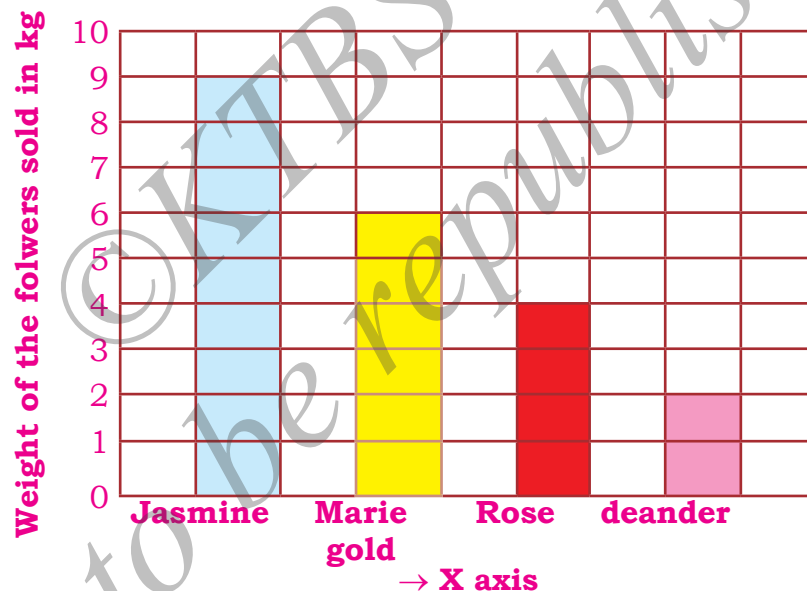
Observe the graph constructed according to the data given in the table.

In this graph the data is represented by straight bars. This is called 'bar graph'. Make a list the items given in the bar graph

The name of the flowers are represented along horizontal line and number of flowers are represented along the vertical line.

**Observe:** The data represented by the bars of same breadth, then the chart is called a bar chart.

**Example 1 :**



**With the help of the above bar chart, answer the following questions.**

1) Which flowers are sold maximum?

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2) Which flowers are sold minimum?

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3) What is the total weight of the flowers sold?

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4) Which are sold less than 5 kg?

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5) Which are sold less than 5 kg but more than 2 kg?

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**Observe :**

By observing the height of the bars we can find the details.

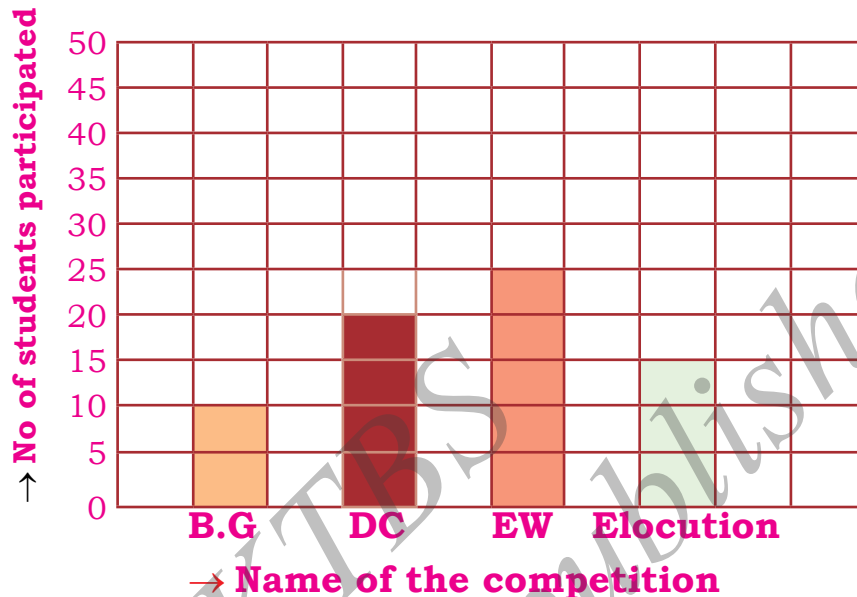
**Example 2:**

The details of the students participated in different cultural competitions for the annual day celebrations in a school are given in the following table.

How to represent these data in a bar graph? Think.

Name of the competition	Number of students participated
Bhava geethe	10
Debate	20
Essay Writing	25
Elocution	15

**Scale : 1 cm = 5 students**



Compare the numbers given in the data in example (1) and (2). In example (1) the data is represented on a single sheet. In the same way is it possible to represent the data in example(2) on a single sheet? Think.

**Observe :** If the numbers given in the data is less, then the graph can be constructed on a single sheet. If the numbers given in the data is more, then a suitable scale is used to represent this data. In example (2) it is, 1 cm = 5 students.

**Observe the above bar graph and answer the following questions.**

1) What is explained in the bar graph?

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2) In which competition did the maximum number of students participate?

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3) In which competition did the minimum number of students participate?

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4) How many students participated in the competitions?

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5) Among debate and elocution, in which one did more number of students participated?

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You already know how to represent data in a picture chart and bar graph. Think about the advantages of a bar graph and in which situation a bar graph is used.

**Observe :**

1) If more number of data is to be represented in a graph then we use bar graphs.

**Use of bar graph :**

- 1) The data can be represented pictorially in an attractive way.
- 2) More number of data can be represented and can be understood easily.
- 3) More inferences can be drawn easily just by observing the graphs.

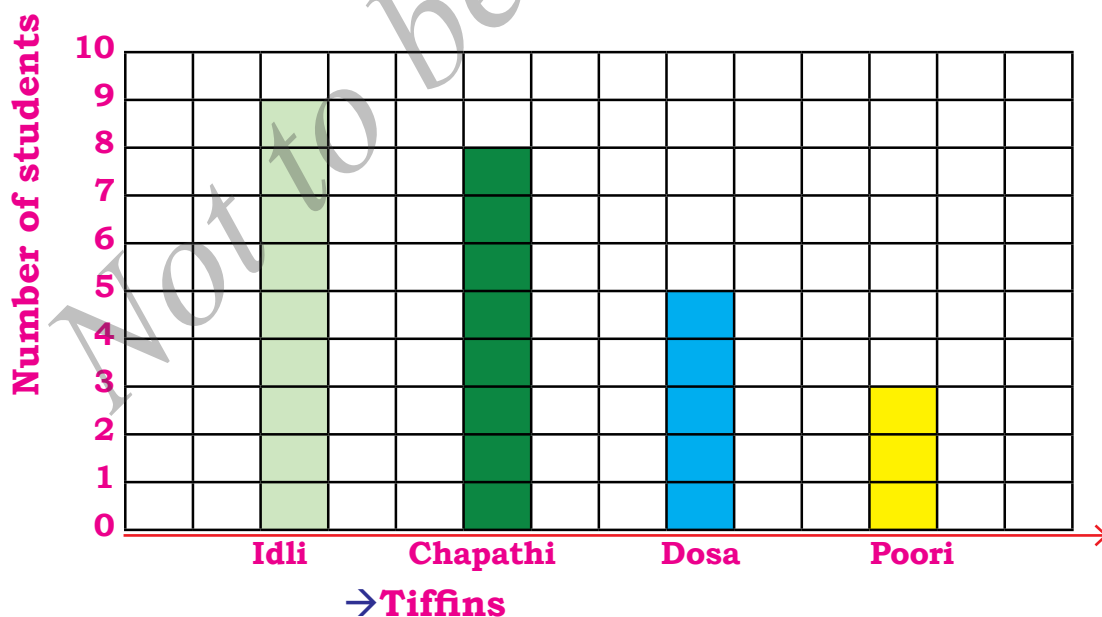
**Think :** How to represent the data in a bar graph?

**Observe :**

- 1) Write the details of the data below on the horizontal line leaving one square in between.
- 2) Write the numbers of the given data on the vertical line according to the scale taken.
- 3) When the number in the data is less, write 1,2,3 on the horizontal line in an order
- 4) When the number in the data is more, decide the scale and write the data number on the vertical line.
- 5) The Horizontal line is called 'x' axis and the vertical line is called y axis. You will learn more regarding this in your next class.

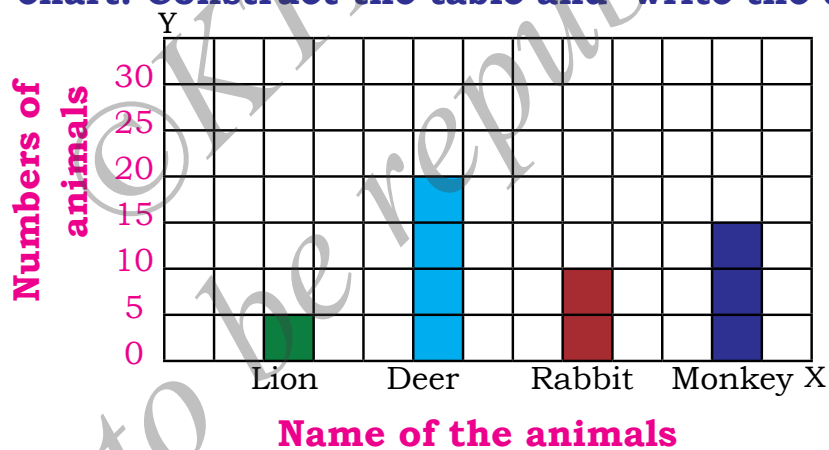
**Exercise 15.1**

- I. The bar chart of favourite food items liked by 25 Students of a class is given. Observe this and answer the following questions.**



- 1) Which food item is liked by maximum number of students?  
\_\_\_\_\_
- 2) Which food item is liked by more than 6 students but less than 8?  
\_\_\_\_\_
- 3) Which food item is liked by more than 4 students but less than 7?  
\_\_\_\_\_
- 4) Which food item is liked by very few students?  
\_\_\_\_\_

**II. The number of animals in a Zoo are represented in a bar chart. Construct the table and write the details.**




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**III. Collect the information regarding four activities of Pratibha Karanji Programme in your school and the number of students who participated in them. Construct the table. Draw a bar chart and explain.**




## CHAPTER -16

## PATTERNS AND SYMMETRY

### After studying this chapter you can

- find the patterns in multiplication and division,
- find the given numbers as factors of 9,
- recognise the number pattern,
- divide and multiply numbers by 10 and 100,
- recognise geometrical pattern on the basis of symmetry.

Recall the meaning of pattern as it helps to generalise the results of number pattern. Observe carefully the shapes and size of things required to identify the patterns. Recall, the patterns you have learnt in the previous class.

### A) Observe the simple symmetric shapes and pattern.



Here you can find the following figure/graph that comes next.

### B) Observe the following number pattern.

- 1) 1, 2, 4, 8, 16, .....
- 2) 100, 80, 60, 40, .....
- 3) 10, 11, 13, 16, 20, .....

### C) Addition of odd numbers.

$$\begin{aligned}1 + 3 &= 4 = 2 \times 2 = 2^2 \\1 + 3 + 5 &= 9 = 3 \times 3 = 3^2 \\1 + 3 + 5 + 7 &= 16 = 4 \times 4 = 4^2 \\1 + 3 + 5 + 7 + 9 &= 25 = 5 \times 5 = 5^2\end{aligned}$$

It is clear by observing the above pattern, that 2 or more consecutive number are added, in an order from 1 then their sum will be the consecutive square numbers.

### D) Addition of even numbers.

$$\begin{aligned}2+4 &= 6. \\2+4+6 &= 12. \\2+4+6+8 &= 20\end{aligned}$$

$\vdots$   
 $\vdots$   
 $\vdots$

Observe the above pattern, when two or more consecutive even numbers are added the pattern will be as above and the sum will be an even number.

### E) Sum of Natural numbers.

$$\begin{aligned}1 + 2 &= 3 \\4 + 5 + 6 &= 7 + 8 \\9 + 10 + 11 + 12 &= 13 + 14 + 15 \\16 + 17 + 18 + 19 + 20 &= 21 + 22 + 23 + 24 \\&\vdots \qquad \qquad \qquad \vdots\end{aligned}$$

An arrangement of a definite sequence or order of shapes or numbers is called a pattern.

## Pattern in multiplication

Observe these examples.

**Example 1 :**  $2 \times 1 = 2$   
 $2 \times 2 = 4$   
 $2 \times 3 = 6$   
 $2 \times 4 = 8$   
.....

Hey! This is multiplication table of 2



This can also be written as follows

$2 \times 1 = 2 + 0$
$2 \times 2 = 2 + 2$
$2 \times 3 = 2 + 4$
$2 \times 4 = 2 + 6$
.....

Oh! see the magic



Add consecutive even numbers starting from '0' for number '2'. This is multiplication table of '2'.

**Example 2 :**  $5 \times 1 = 5 \rightarrow 5 + 0$   
 $5 \times 2 = 10 \rightarrow 5 + 5$   
 $5 \times 3 = 15 \rightarrow 5 + 10$   
 $5 \times 4 = 20 \rightarrow 5 + 15$   
 $5 \times 5 = 25 \rightarrow 5 + 20$   
.....

Oh! I discovered the pattern. In this pattern the difference is a multiple of 5.



**Activity:** Observe multiplication in table '6' Pattern and complete the pattern.

$$\begin{array}{lcl}
 6 \times 1 = 6 & \longrightarrow & 1 + 2 + 3 \\
 6 \times 2 = 12 & \longrightarrow & 3 + 4 + 5 \\
 6 \times 3 = 18 & \longrightarrow & 5 + 6 + 7 \\
 6 \times 4 = 24 & \longrightarrow & 7 + 8 + 9 \\
 6 \times 5 = 30 & \longrightarrow & 9 + 10 + 11 \\
 6 \times 6 = 36 & \longrightarrow & 11 + \boxed{\phantom{00}} + \boxed{\phantom{00}} \\
 6 \times 7 = 42 & \longrightarrow & \boxed{\phantom{00}} + 14 + \boxed{\phantom{00}} \\
 6 \times 8 = 48 & \longrightarrow & \boxed{\phantom{00}} + \boxed{\phantom{00}} + 17 \\
 6 \times 9 = 54 & \longrightarrow & \boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} \\
 6 \times 10 = 60 & \longrightarrow & \boxed{\phantom{00}} + 20 + 21
 \end{array}$$

The pattern of table six is the sum of three consecutive numbers. which starts with odd numbers.

that is (1+2+3), (3+4+5), (5+6+7), (7+8+9),.....

**Activity :** Observe this pattern and complete it.

$$\begin{array}{lcl}
 (1+8) \times 1 & = & 9 + 0. \\
 (2+7) \times 2 & = & 9 + 9. \\
 (3+6) \times 3 & = & 9 + 9 + 9. \\
 (4+5) \times 4 & = & 9 + 9 + 9 + 9. \\
 (5+4) \times 5 & = & \\
 (6+3) \times 6 & = & \\
 (7+2) \times 7 & = & \\
 (8+0) \times 8 & = & \\
 (9+0) \times 9 & = &
 \end{array}$$



### Exercise 16.1

I. Observe the example and fill up the missing numbers.

**Example :**

$$(1 \times 1) - (0 \times 0) = 1 - 0 = 1.$$

$$(2 \times 2) - (1 \times 1) = 4 - 1 = 3.$$

$$(3 \times 3) - (2 \times 2) = 9 - 4 = 5.$$

$$(4 \times 4) - (3 \times 3) = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

$$(5 \times 5) - (4 \times 4) = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

$$(6 \times 6) - (5 \times 5) = \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

2)  $(5 \times 5) - (4 \times 4) = 5 + 4 = 9.$

$$(6 \times 6) - (5 \times 5) = 6 + 5 = 11.$$

$$(7 \times 7) - (6 \times 6) = 7 + 6 = 13.$$

$$(8 \times 8) - (7 \times 7) = \boxed{\phantom{00}} + \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

$$(9 \times 9) - (8 \times 8) = \boxed{\phantom{00}} + \boxed{\phantom{00}} = \phantom{00}$$

3)  $9 \times 1 = 09 \longrightarrow 0 + 9 = 9$

$$9 \times 2 = 18 \longrightarrow 1 + 8 = 9$$

$$9 \times 3 = 27 \longrightarrow 2 + 7 = 9$$

$$9 \times 4 = \boxed{\phantom{000}}$$

$$9 \times 5 = \boxed{\phantom{000}}$$

$$9 \times 6 = \boxed{\phantom{000}}$$

$$9 \times 7 = \boxed{\phantom{000}}$$

$$9 \times 8 = \boxed{\phantom{000}}$$

$$9 \times 9 = \boxed{\phantom{000}}$$

$$9 \times 10 = \boxed{\phantom{000}}$$

**Activity :** Work out the multiplicative pattern of different numbers.

### Pattern in division

Observe this Example:

2	÷	2	=	1
4	÷	2	=	2
6	÷	2	=	3
8	÷	2	=	4
10	÷	2	=	5
12	÷	2	=	6
14	÷	2	=	7
16	÷	2	=	8
18	÷	2	=	9
20	÷	2	=	10

Oh! What a trick these consecutive numbers are!



When continuous even numbers are divided by '2'. We get continuous natural numbers.

**Example 2 :**

4	÷	1	=	4
8	÷	2	=	4
12	÷	3	=	4
16	÷	4	=	4
20	÷	5	=	4
24	÷	6	=	4
28	÷	7	=	4
32	÷	8	=	4

Think! What have you observed in this pattern?

The continuous product of 4 when divided by continuous natural number, the quotient obtained each time is 4.

**Example 3 :**

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

Hey! This is  
the pattern of  
division of 9.

**Exercise 16.2**

I) Do this on your own, observe and write the pattern:

1)  $4 \div 2 = \square$

$6 \div 3 = \square$

$8 \div 4 = \square$

$10 \div 5 = \square$

$12 \div 6 = \square$

3)  $10 \div \square = 10$

$20 \div \square = 10$

$30 \div \square = 10$

$40 \div \square = 10$

$50 \div \square = 10$

2)  $9 \div \square = 9$

$18 \div \square = 9$

$27 \div \square = 9$

$36 \div \square = 9$

4)  $9 \times 1 = \square \div \square = 1$

$9 \times 2 = \square \div \square = 2$

$9 \times 3 = \square \div \square = 3$

$9 \times 4 = \square \div \square = 4$

$9 \times 5 = \square \div \square = 5$

### The order to obtain nine

Observe the multiplication table of '9' given below.

$9 \times 1 =$	09	↑↓
$9 \times 2 =$	18	↑↓
$9 \times 3 =$	27	↑↓
$9 \times 4 =$	36	↑↓
$9 \times 5 =$	45	↑↓
$9 \times 6 =$	54	↑↓
$9 \times 7 =$	63	↑↓
$9 \times 8 =$	72	↑↓
$9 \times 9 =$	81	↑↓
$9 \times 10 =$	90	↑↓

Observe each product in the table. Write how the numbers in unit place and tens place are arranged.

If we observe the product in the unit place is in the descending order and the tens place is in the ascending order.

### Observe the products of 9.

$$09 = 0 + 9 = 9$$

$$18 = 1 + 8 = 9$$

$$27 = 2 + 7 = 9$$

$$36 = 3 + 6 = 9$$

$$45 = 4 + 5 = 9$$

$$54 = 5 + 4 = 9$$

$$63 = 6 + 3 = 9$$

$$72 = 7 + 2 = 9$$

$$81 = 8 + 1 = 9$$

$$90 = 9 + 0 = 9$$

What have you observed in the above pattern?

If the sum of the digits of any number is a multiple of 9, that number is divisible completely by 9.

The sum of the digits of all multiples of 9 is nine only.

The method of finding the multiples of '9' is by taking the sum of the digits of the number.

#### **Activity :**

- 1) Write the Multiplication table of 10 and 11. Find out the pattern.
- 2) Write the multiplication table of '2'. Observe the digits in the place. Observe the pattern in this.

## Multiplication and division of a number by 10 and 100 :

### A) Multiplication of a number by 10 and 100.

Observe the following products.

i) $3 \times 10 = 3$	0	When we multiply any number by 10, write the multiplicand and write one zero to the right.
ii) $47 \times 10 = 47$	0	
iii) $103 \times 10 = 103$	0	

**Note :** In the above products, when a number is multiplied by 10 each number will be shifted by one place to the left and zero is written next to the unit place.

Try to solve these:

- i)  $55 \times 10 =$        ii)  $123 \times 10 =$    
iii)  $306 \times 10 =$

Similarly, let us multiply numbers by 100.

i) $7 \times 100 = 7$	00	When we multiply any number by 100, write the multiplicand and write two zero to the right.
ii) $36 \times 100 = 36$	00	

**Note :**

In the above products, when a number is multiplied by 100 each number increases by two places to the left and zero is written in to the unit place and in the tens place.

Solve the following :

- i)  $7 \times 100 =$        ii)  $81 \times 100 =$

**Multiplication of numbers using multiples of 10 and 100. Observe the following products**

- i)  $12 \times 20 = 12 \times (2 \times 10) = 24 \times 10 = 240$   
 ii)  $15 \times 50 = 15 \times (5 \times 10) = 75 \times 10 = 750$   
 iii)  $11 \times 200 = 11 \times (2 \times 100) = 22 \times 100 = 2200$   
 iv)  $15 \times 300 = 15 \times (3 \times 100) = 45 \times 100 = 4500$

**Try to solve these**

i)  $38 \times 40$

ii)  $72 \times 80$

**Special type of products.**

**Observe the following examples:**

i) $3 \times 10 = 30$ $30 \times 10 = 300$ $300 \times 10 = 3000$	ii) $4 \times 20 = 80$ $40 \times 20 = 800$ $400 \times 20 = 8000$
iii) $5 \times 100 = 500$ $50 \times 100 = 5000$ $500 \times 100 = 50000$	iv) $8 \times 300 = 2400$ $80 \times 3000 = 24000$ $800 \times 300 = 240000$

**In the above products:**

- the numbers are multiplied excluding zero.
- the sum of zeros in the multiplicand and the multiplier is equal to the number of zeros in the product.

**Division of a number by 10 and 100.**

**Observe the given examples:**

i) $40 \div 10 = 4$ $400 \div 10 = 40$ $4000 \div 10 = 400$	ii) $200 \div 100 = 2$ $2000 \div 100 = 20$	iii) $90 \div 30 = 3$ $600 \div 20 = 30$ $1400 \div 700 = 2$
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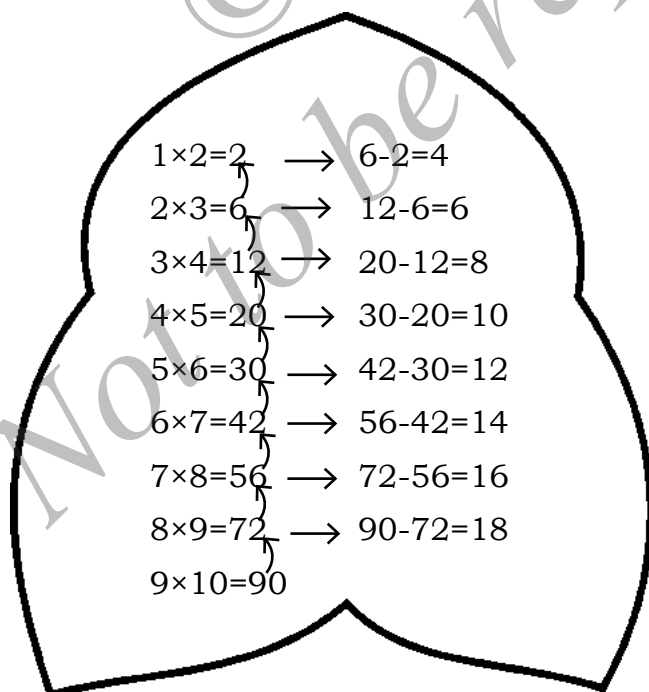
**Note :** When numbers are divided by 10 or 100, remove the same number of zero's from the dividend and divisor and then continue the division.

**Try this:**

- i)  $20 \div 10 =$   ii)  $600 \div 20 =$    
iii)  $900 \div 300 =$   iv)  $1400 \div 200 =$    
v)  $8000 \div 200 =$

### Exercise 16.3

**I. Examine the table given below and decide, whether it is in a pattern or not? colour the right answer:**



$1 \times 2 = 2$	$\rightarrow$	$6 - 2 = 4$
$2 \times 3 = 6$	$\rightarrow$	$12 - 6 = 6$
$3 \times 4 = 12$	$\rightarrow$	$20 - 12 = 8$
$4 \times 5 = 20$	$\rightarrow$	$30 - 20 = 10$
$5 \times 6 = 30$	$\rightarrow$	$42 - 30 = 12$
$6 \times 7 = 42$	$\rightarrow$	$56 - 42 = 14$
$7 \times 8 = 56$	$\rightarrow$	$72 - 56 = 16$
$8 \times 9 = 72$	$\rightarrow$	$90 - 72 = 18$
$9 \times 10 = 90$		

$\rightarrow$  Yes | No



**II. Fill up the blanks. Check whether they form any pattern. Mark '✓' to the correct answer.**

1)  $1 \times 2 \times 3 =$  \_\_\_\_\_

$1 \times 4 \times 5 =$  \_\_\_\_\_

$1 \times 6 \times 7 =$  \_\_\_\_\_

→ 

Yes	No
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2)  $1 \times 3 = 03$  }  $15 - 3 =$  \_\_\_\_\_  
 $3 \times 5 = 15$  }  $35 - 15 =$  \_\_\_\_\_  
 $5 \times 7 = 35$  }  $63 - 33 =$  \_\_\_\_\_  
 $7 \times 9 = 63$  }  $99 - 63 =$  \_\_\_\_\_  
 $9 \times 11 = 99$  }

→ 

Yes	No
-----	----

**III Fill up the blanks and observe the pattern.**

1)  $60 \div 5 =$

$60 \div 10 =$

$60 \div 15 =$

$60 \div 20 =$

2)  $2 + 0 \div 2 =$

$2 + 1 \div 3 =$

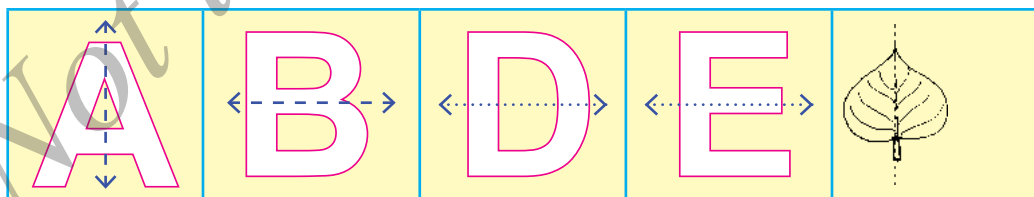
$2 + 2 \div 4 =$

$2 + 3 \div 5 =$

$2 + 4 \div 6 =$

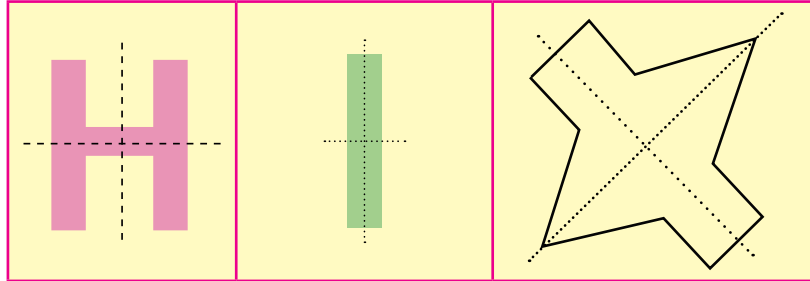
**Geometrical pattern having symmetry**

**Observe the figures.**



We get two symmetrical figures if we fold the figures on the dotted line.

The above figures have only "one line of symmetry".

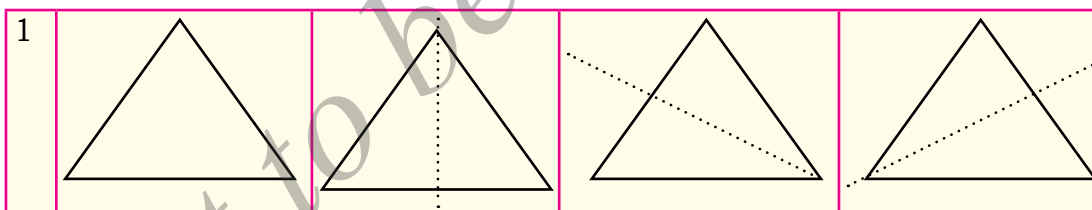


If we fold these figures in two ways or by drawing the two types of dotted lines, we get two symmetrical figure, These figures have "**two lines of symmetry**".

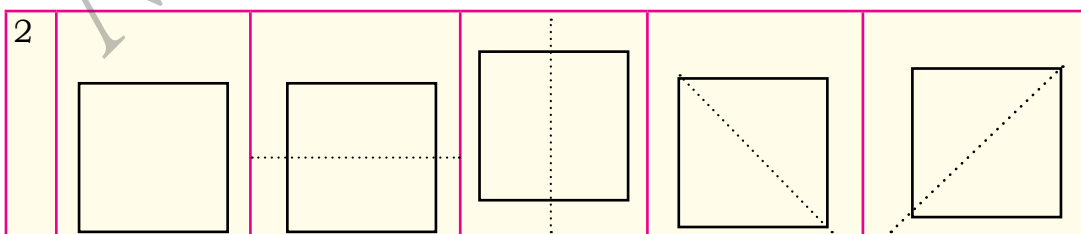
A regularly identical, systematic structure which lie on either side of a line is called symmetry. The line of symmetry is called the axis of symmetry . A line which divides a plane figure into 2 consequent identical parts is called axis of symmetry. And when the figure is folded on this Axis of symmetry they completely overlap and coincide each other.

### Symmetry in Geometrical Shapes

1. Name the shapes.
2. Count the line of symmetry in the following figures.

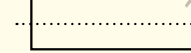
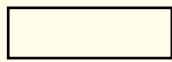


There are 3 lines of symmetry in an equilateral triangle.



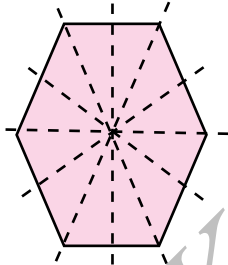
A square has 4 lines of symmetry.

3



A rectangle has 2 lines of symmetry.

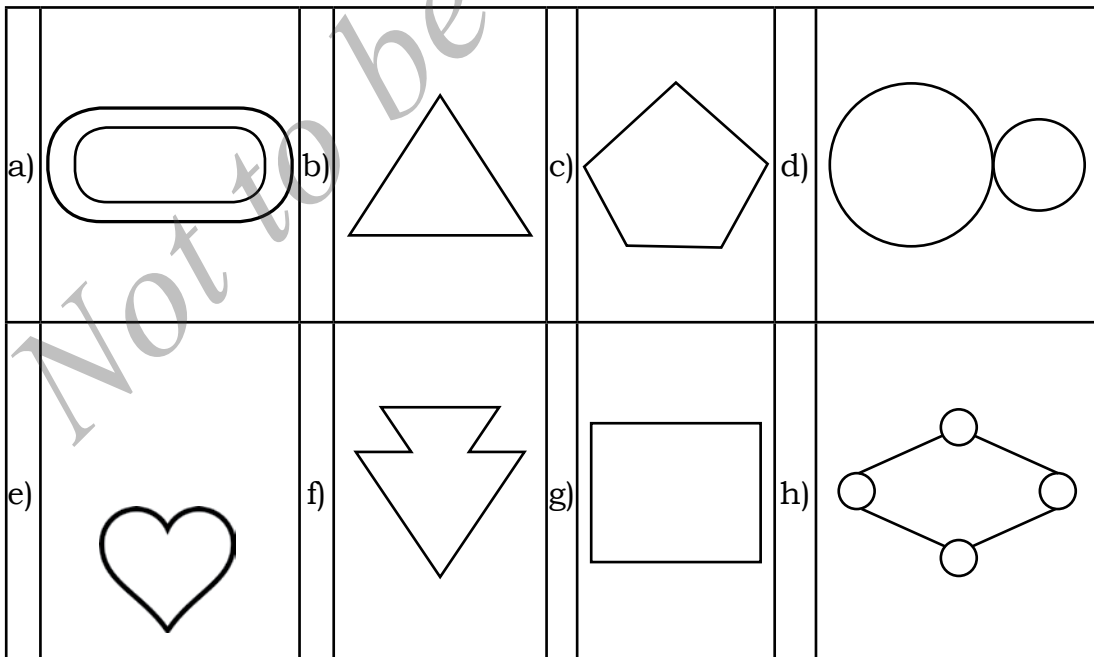
4.



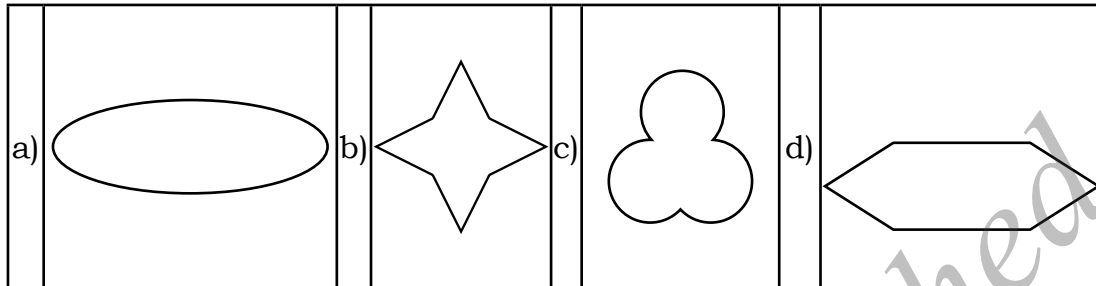
A Regular Hexagon has 6 lines of symmetry

### Exercise 16.4

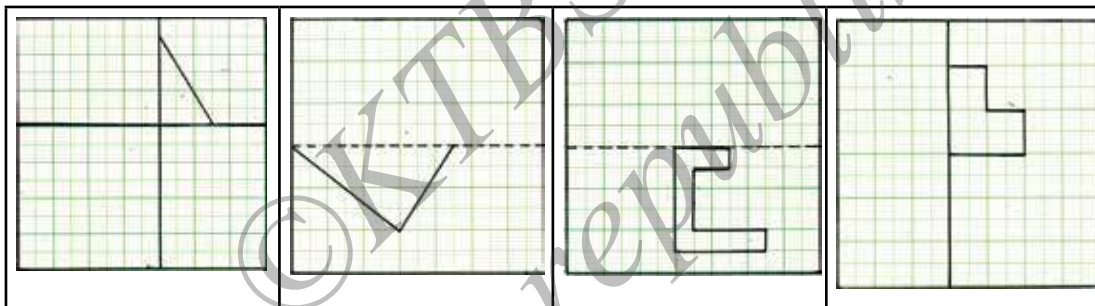
I. Draw the axis of symmetry to the following Figures.



**II. How many axis of symmetry are there for each of these shapes?**



**III. Complete the shape on the graph sheet using the Axis of symmetry.**



**IV. Draw the next below letters in big size in a note book and draw all possible axis of symmetry.**

- |       |       |       |       |        |
|-------|-------|-------|-------|--------|
| (a) C | (b) M | (c) X | (d) V | (e) A  |
| (f) D | (g) O | (h) W | (i) N | (j) B. |

**V. Write any two english alphabets which have no axis of symmetry.**

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## CHAPTER - 17

# TANGRAMS AND DESIGNS

### After studying this chapter you can

- draw simple shapes using tangrams,
- know the perimeter and area of simple shapes,
- draw different patterns of designs using known shapes,
- draw different patterns of designs using hexagonal and triangular shapes.

Tangram is a problematic puzzle. Already you have learnt to draw tangram using 5 pieces in 3rd standard. Now let us learn how to draw tangrams using 7 pieces.

Take a square graph sheet. Cut this in the form of a square having 36 squares in it. Paste this on a thick paper. Mark 7 parts using pencil as shown in the figure

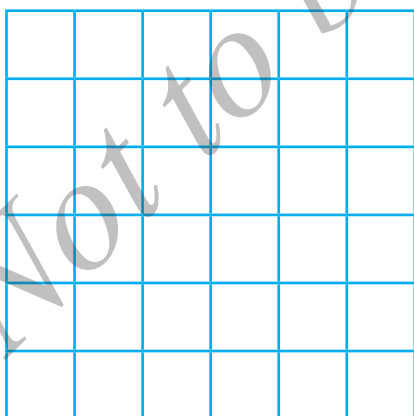


fig -1

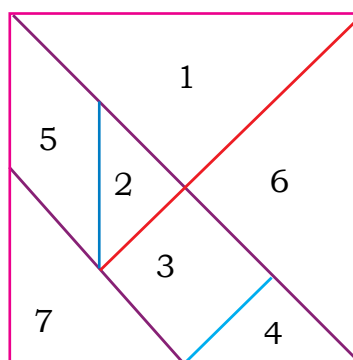
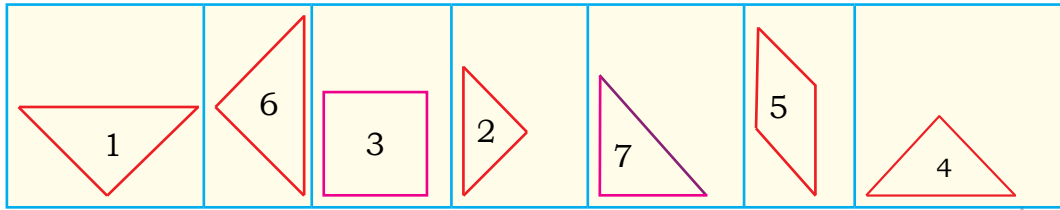
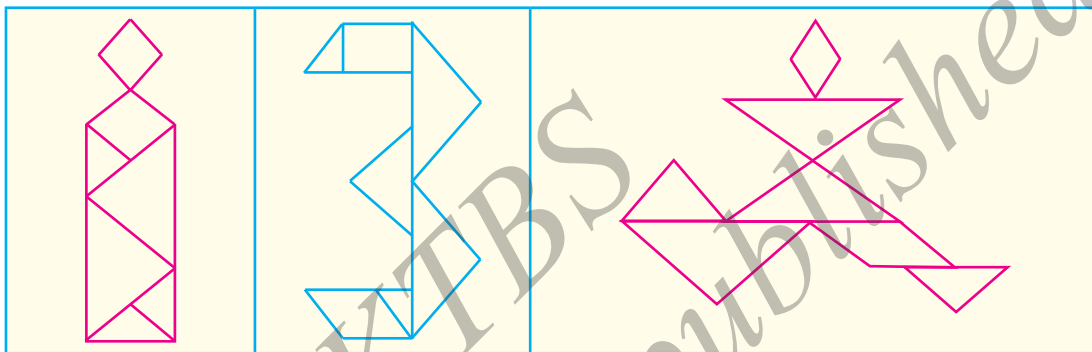


fig -2

Cut all the 7 Pieces. This is called 7 pieces tangram. Observe that each piece has a shape.



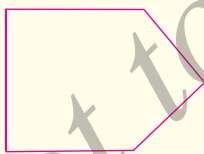
**Activity :** Form different shapes using the 7 tangram Pieces as shown below.



### Exercie 17.1

**I. Draw the shapes as indicated in the figure using tan gram pieces.**

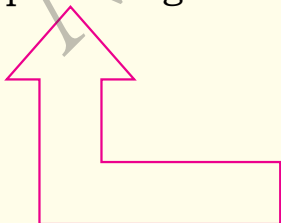
1. use only triangles



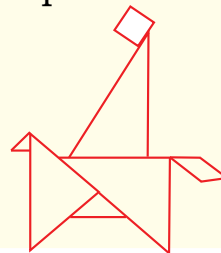
2. use only two triangles.



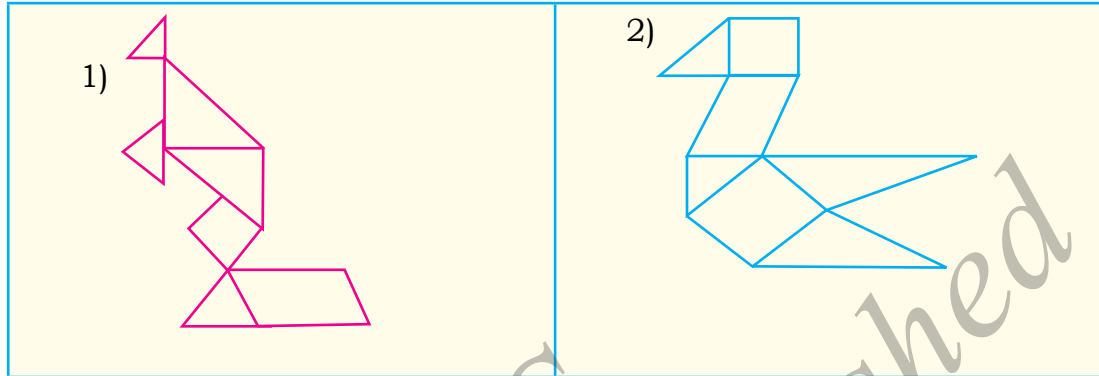
3. use only triangle and parallelograms .



4. use only triangles and square.



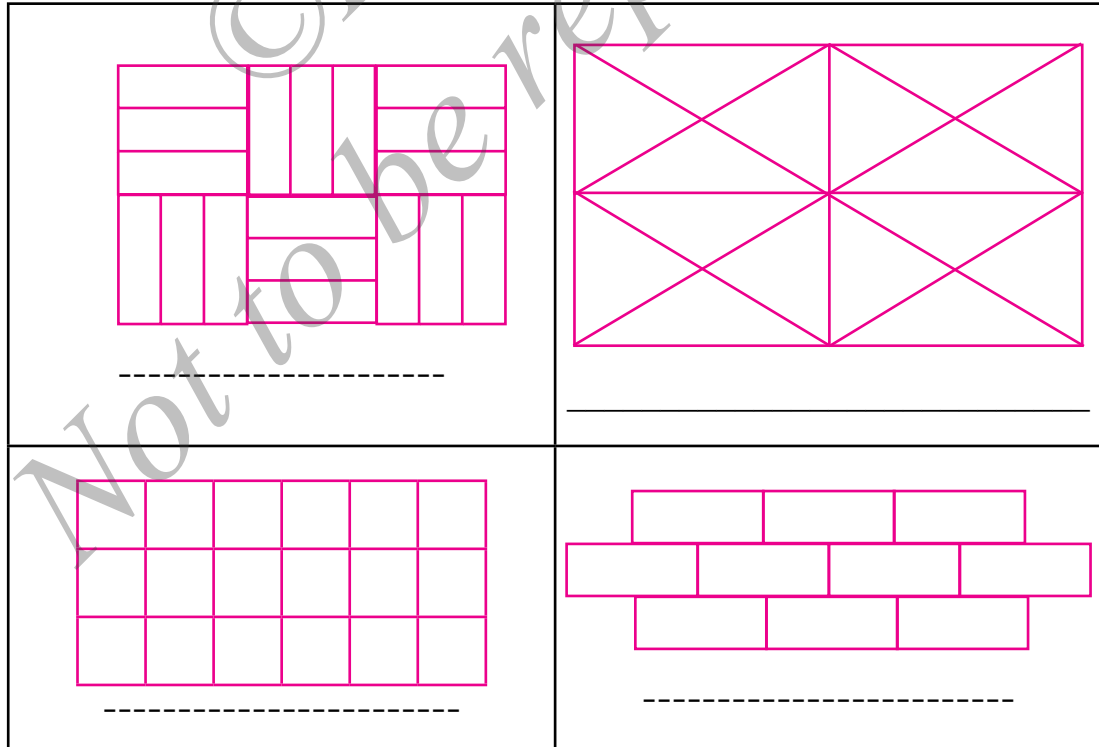
## II. Do the following shapes using 7 piece Tangram pieces .



### Designs:

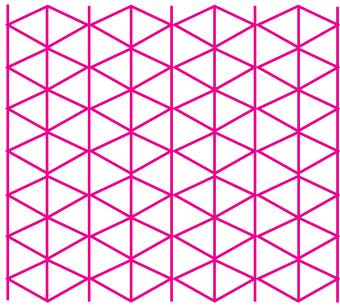
You have learnt how to design the pattern using the shapes like triangles, squares and rectangles in your previous class.

Observe the examples related to this. Identify and name the shapes used in the designs given below.



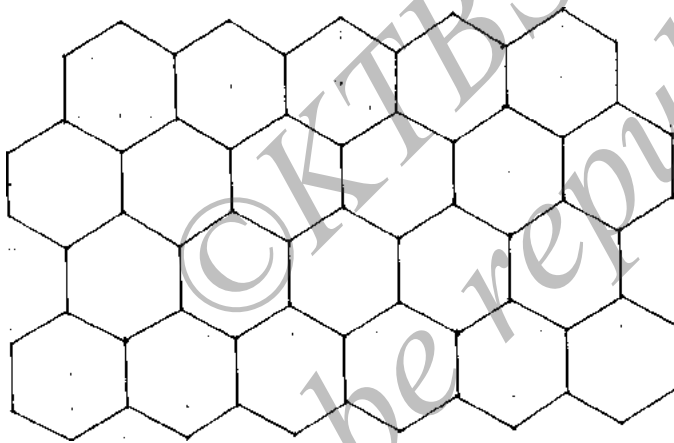
### Observe the Pattern of the designs:

- 1) The geometrical shape used in this pattern of design is an equilateral triangle..



**Note :** If all the sides of a triangle are equal, then it is called an equilateral triangle.

2)



**The Geometrical shape used in this pattern of design is a 'Hexagon'.**

**Note :**

A regular hexagon is a geometrical shape bounded by '6' equal line segments.

OR

A plane figure bounded by 6 congruent line segments is called a regular hexagon.

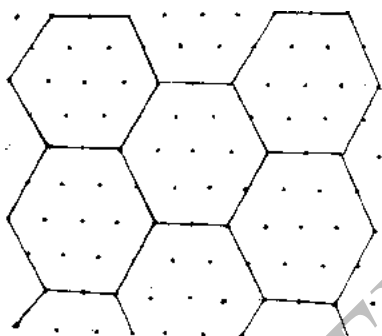
**Polygon:** A plane figure bounded by three or more line segments is called a polygon.



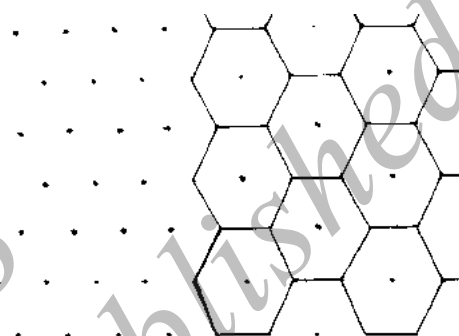
### Exercies 17.2

I. Complete the patterns using the line segments. By joining the dots in an order.

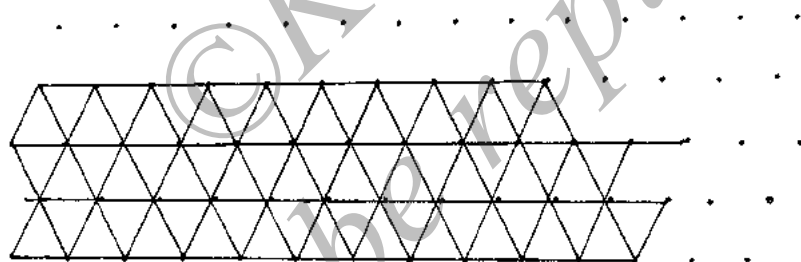
1)



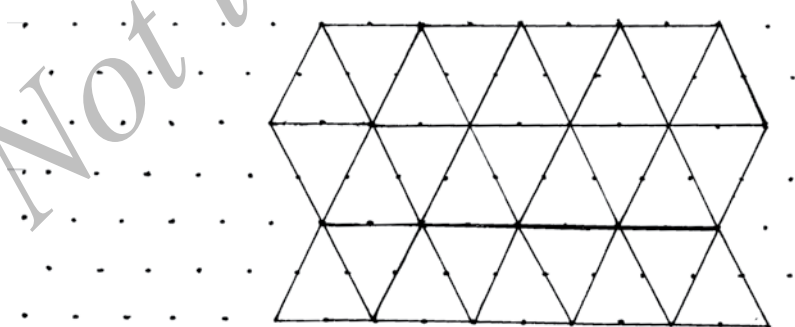
2)



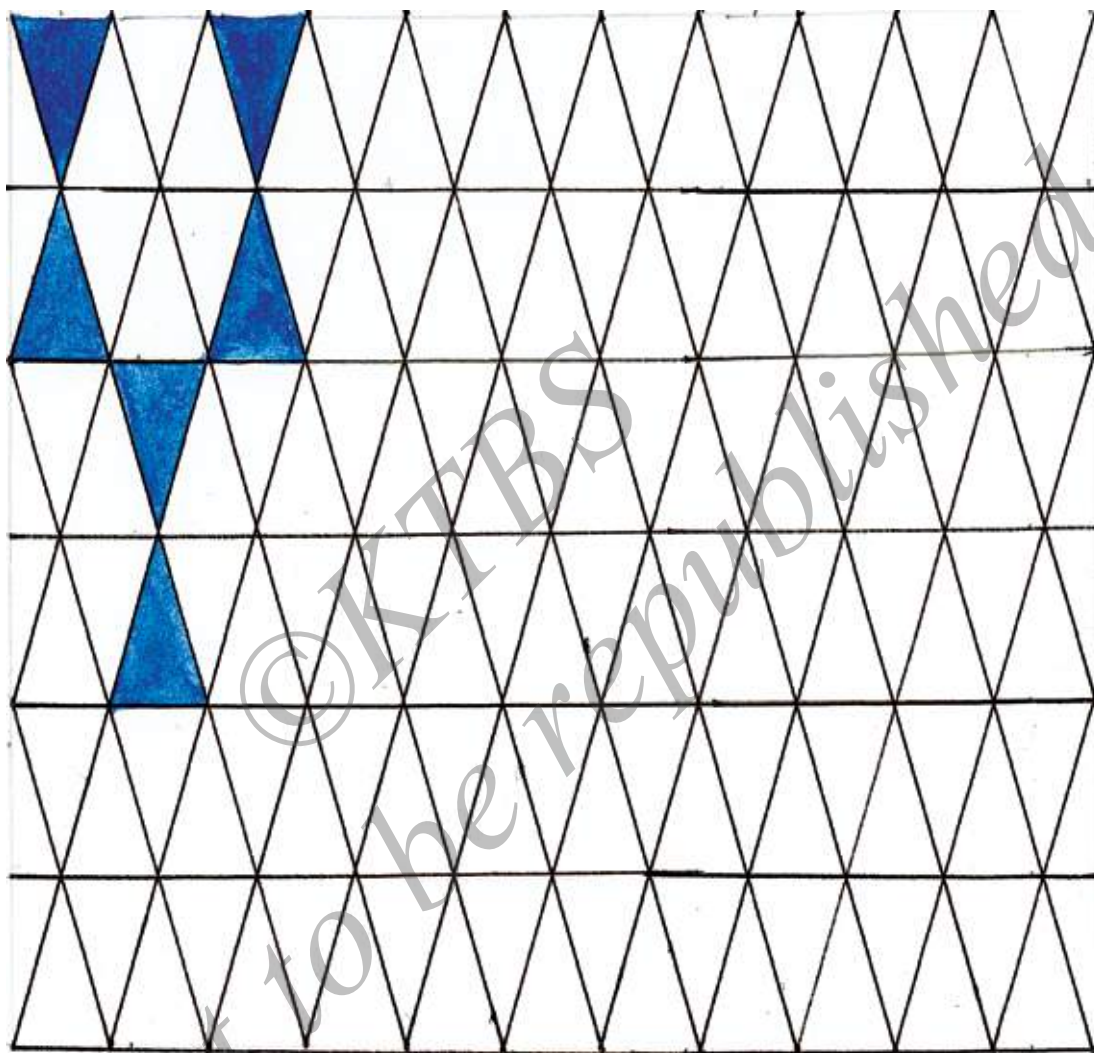
3)



4)



**II. Complete the pattern by colouring.**



**After studying this chapter you can**

- Identify different geometrical shapes and compare those with the shapes that, we see in day to day life,
- identify the faces, edges and vertices of solids,
- understand the differences between plane geometrical figures and solid geometrical figures,
- draw three dimensional shapes,
- create a shape by rotating a coin,
- make solid figures having 4 faces, 5 faces and 6 faces using specially formed nets.
- Identify 2 dimensional plane figures & 3 dimensional solid figures.

You have learnt to draw simple 3 dimensional geometrical shapes in your previous class. You know how to form a solid cylinder by arranging coins one above the other. In this unit let us learn to draw 3 dimensional geometrical shapes.

**Cuboid**

How many faces are there in this brick? Count and say

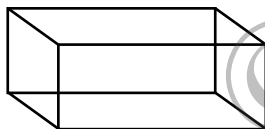
.....

What is the name given to the line segment which meets the two adjacent faces of a cuboid?

Two adjacent faces meet in a line segment is called an edge.  
 What is the name given to the meeting point of three edges?  
 The meeting point of three edges is called a vertex  
 List any four things in your surrounding which resemble cuboid in shape.

1 ..... 2 ..... 3 ..... 4 .....

Objects which resemble cuboid in shapes.



Count the number of faces in the cuboid.

How many edges are there?

How many vertices are there?

List the above with the help of the teacher.

Cuboid	Faces	6
	edges	12
	vertices	8

### Cube

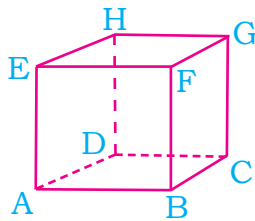
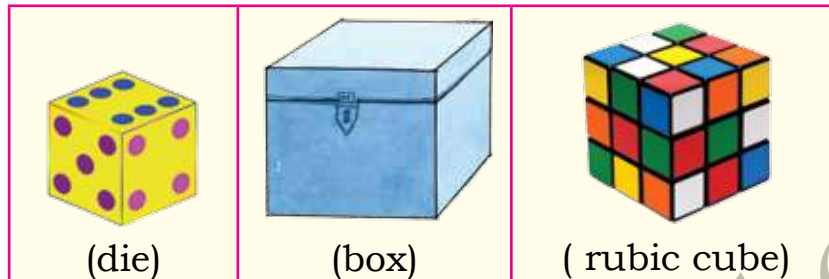
Count the number of faces in a die.

Observe the shape of these faces.

Make a list of any four objects which resemble cubical in shape around you.

1 ..... 2 ..... 3 ..... 4 .....

Objects which resemble cube in shape.

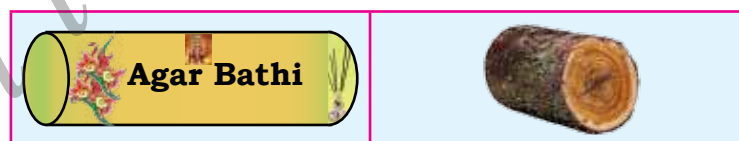


Count the number of faces in the cube.  
 How many edges are there?  
 How many vertices are there?

Make a list of the above with the help of your teacher.

Cube	Faces	6
	Edges	12
	Vertices	8

## Cylinder

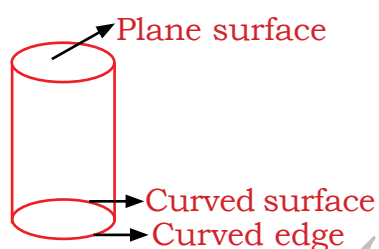


Observe these shapes. How many faces this shape has?  
 Observe the shape of the faces and name them.

Make a list of some objects which resemble cylinder in shape around you.

1 ..... 2 ..... 3 ..... 4 .....

Objects which resemble cylinder in shape



How many edges are there? How many vertices are there? Make a list of with the help of teacher.

Cylinder	Faces	3
	edges	2
	vertices	No

#### 4 Cone



Count the number of faces the Joker cap has  
Observe the shape of the faces and name it.

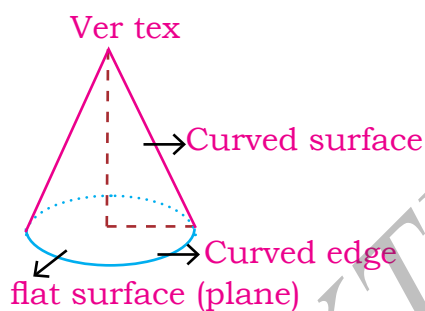
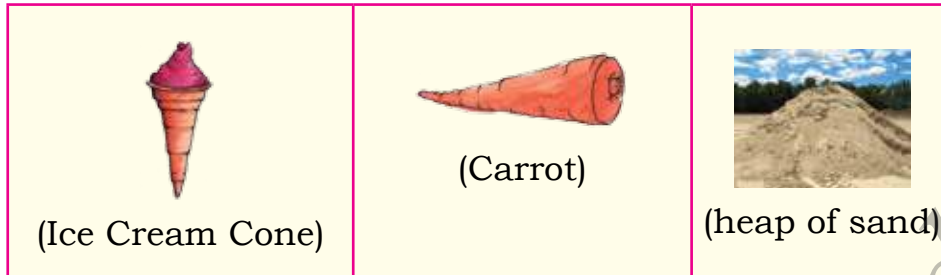
Make a list of any four objects which are conical in shape.

1 ..... 2 ..... 3 ..... 4 .....

Make a list of any four objects which resemble the cone in shape around you.

Objects which resemble cone in shape

1 ..... 2 ..... 3 ..... 4 .....



Count the number of faces in the cone

How many edges are there?

How many vertices are there?

Make a list of with the help of teacher.

Cone	Faces	2
	Edges	1
	Vertices	1

A cone has two faces. A plane surface and a curved surface. It has a curved edge and a vertex.

## 5 Sphere



Observe this ball.

How many faces has it?

What is the shape of its face?

Make a list of any four objects around us which resemble sphere in shape.

1 ..... 2 ..... 3 ..... 4 .....

Objects which resemble sphere in shape.



Cricket ball



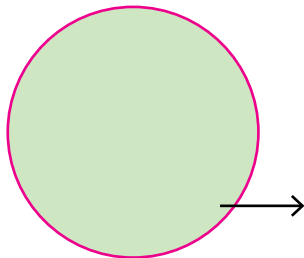
Foot ball



Marble



Globe



Count the number of faces the above sphere has.

How many edges are there?

How many vertices are there?

Take the help of your teacher and tabulate.

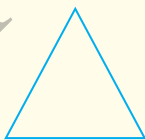
Sphere	Faces	1
	Edges	No
	Vertices	No

A sphere has only a curved surface.

**The difference between plane figures and solid figures.**

In the previous class you have learnt plane figure.

In this chapter you have learnt solid shapes.



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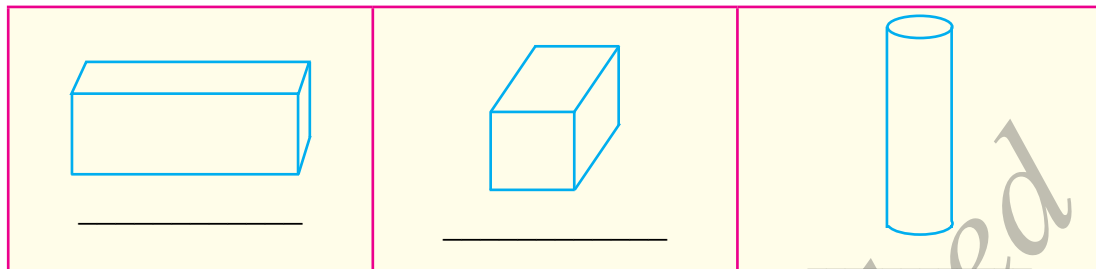


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Identify the above plane figures and name them.



Identify the following solids and name them.



Make a list of the properties of plane figures and solid figures.

Plane figures	Solid figures

Make a list of the differences between plane figures and solid figures.

plane figure	solid figures

A plane figure has two dimensions namely length and breadth. A solid figure has three dimensions namely length, breadth and height. Take a solid figure and identify length, breadth, height.

**Activity :**



- Hold a coin gently as show in fig 1
- Rotate the coin from your fore finger as in fig 2
- Observe the rotation of the coin as in fig 3
- Observe the Geometrical shape generated by the rotation coin



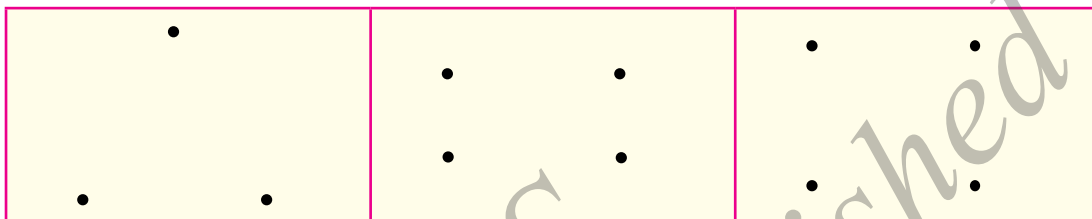
- 1) Place bangles of equal diameters one above the other. Name the shape obtained.



- 2) Name the shape obtained by the arrangement of bangles one above the other in the descending order as shown in the figure.

## Developing four faced, 5 faced, 6 faced solid figures using specially formed nets.

You have learnt to draw figures and shapes by joining dots in the previous class.



Join the dots given above in an order and name the figure obtained from it.

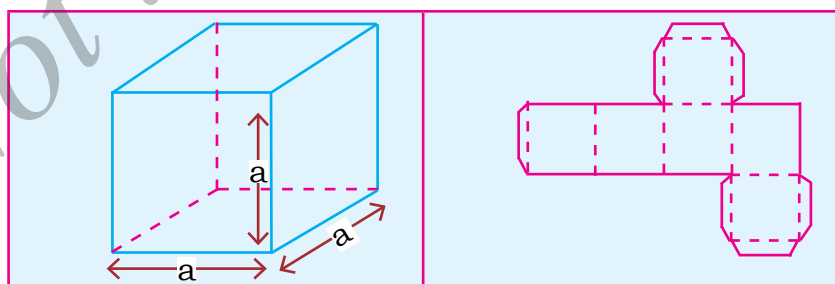
### Six faced solid figure.

In the previous class you have learnt to identify and name solid.



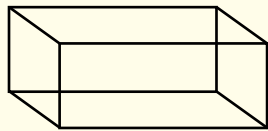
Identify and name the shape, and make a list of the number of faces, edges and vertices in the table.

Number of faces	
Shape of the faces	
Number of edges	
Number of vertices	

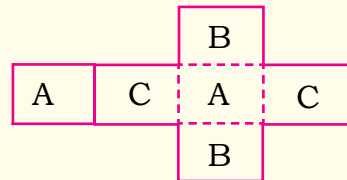


Observe the 3 dimensional cube drawn in two dimensional form. Similarly observe the following 3 dimensional shapes drawn in two dimensional form.

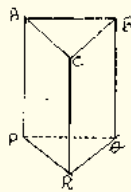
The line segments joining the group of points in pairs is called a network.



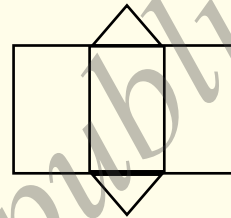
Cuboid



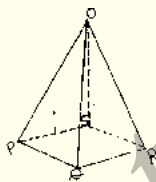
Net of cuboid



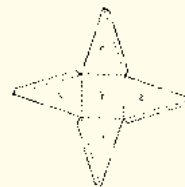
Triangular base prism



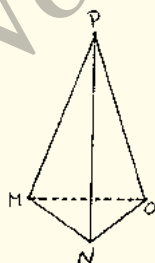
Net work of triangular base prism



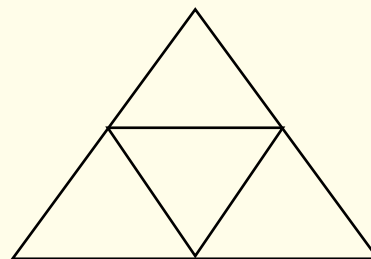
Square pyramid



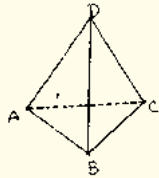
Net work of square pyramid



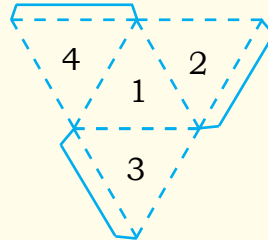
Triangular pyramid



Net of triangular pyramid



Equilateral pyramid



Net of Equilateral triangular pyramid

### Exercise 18.1

#### I. Identify the plane figures and solid figures.

<p>1)</p> <p>_____</p>	<p>2)</p> <p>_____</p>	<p>3)</p> <p>_____</p>	<p>4)</p> <p>_____</p>
<p>5)</p> <p>_____</p>	<p>6)</p> <p>_____</p>	<p>7)</p> <p>_____</p>	<p>8)</p> <p>_____</p>

**II. Write the Geometrical names of the these shapes.**

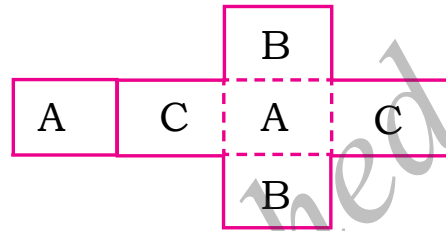
<p>1</p>  <p>.....</p>	<p>2</p>  <p>.....</p>	<p>3</p>  <p>.....</p>	<p>4</p>  <p>.....</p>
<p>5</p>  <p>.....</p>	<p>6</p>  <p>.....</p>	<p>7</p>  <p>.....</p>	<p>8</p>  <p>.....</p>

**III. Write whether the following statements are true/ false.**

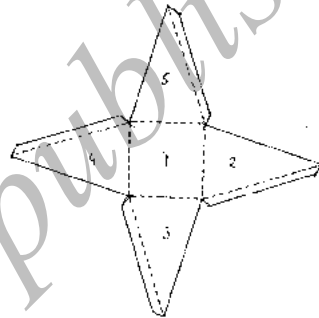
- 1) A cube has 8 vertices, 12 edges and 6 faces (    )
- 2) A cuboid has 8 vertices 6 edges and 12 faces (    )
- 3) A cone has 1 vertex, 1 plane surface, 1 curved edge and 1 curved surface (    )
- 4) A cylinder has 2 plane surfaces 1 curved surface, 2 curved edges and with out any vertices (    )
- 5) A sphere has 2 curved surfaces (    )

**Match the solid shapes with their network.**

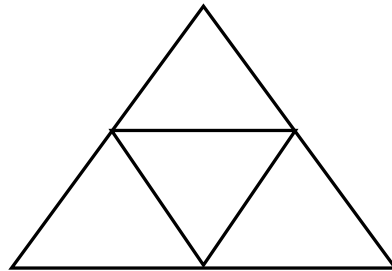
1. Cube



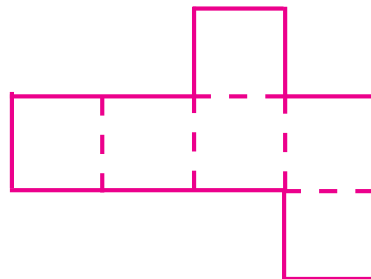
2. Triangular pyramid



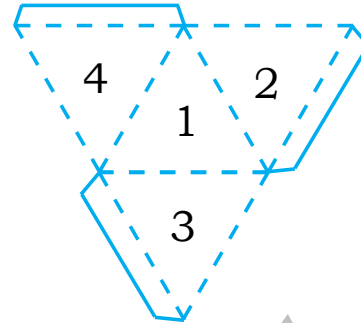
3. Triangular prism



4. Square base pyramid



5. Cuboid



6. Tetrahedron or equilateral triangular based pyramid

