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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



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 Cost of Pencil	₹ 7.50 ₹ 4.50
Total amount	₹ 12.00



Model problems.

Example 1:



carrying.

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
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
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.







Example 1 : From ₹ 79.80 subtract ₹ 69.90.

Rupee	Paise
7 9 [®]	80
(-) 6 9	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 180 Paise

100+80=180 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.

Answer : ₹78 - ₹69 = ₹09

Write ₹09 in rupee column

Example 2 : Subtract ₹114.48, form ₹125.47.

Rupee	Paise
125	47
(-) 114	48
010	99

Answer ₹ 10.99

9



Statement problems.

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

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

Amount with Salman Amount paid to T -shirt remaining amount



* Write rupee in rupee column. * Write paise in paise column. * 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	1 ⁴ D 7	→ 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

Subtract. I.







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 × 3 = ₹ 6

```
So the money to be given by Shanantha = \mathbf{E} \mathbf{6}
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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.

The cost of 1 pencil = ₹3.50The cost of 4 pencils = ₹4 × ₹ 3.50= ₹14.00

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

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

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

To find the value of a one object.

Suresh buys 3 chocolates in a shop for \mathbb{Z} 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.

₹1

You already know in your previous class	that division is
nothing but sharing equal parts.	3)6(2
So divide ₹6 by 3.	6
∴ ₹ 6 ÷ 3 ≠ ₹ 2	

 $\therefore \mathbf{E} \mathbf{6} \div \mathbf{3} = \mathbf{E} \mathbf{2}$

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 \gtrless 20. What is the cost of 1 cake of soap?

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

Cost of all the soaps

20

0

The cost of 1 cake of soap = No. of soaps

₹ <u>20</u> 4) 20 (5

₹5

Cost of 1 soap

2) The cost of 5 balls is $3amtering$ 50. What is the cost of 1 ball?
Answer: The cost of 5 balls = $₹50$ 5) 50(10
The cost of 1 ball $= 750 \div 550$
The cost of 1 ball $= ₹ 10$ 0
Exercise 10.4
1) If the cost of 6 dolls is \neq 42, What is the cost of 1
doll?
2) If the cost of 8 note books is ₹ 72, What is the cost of 1 note book?
V
x O
X
3) The cost of 4 pens is ₹40, What is the cost of 1 pen?

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

Price list and Receipt (Bill)

You might have observed the rate board displayed in shops. Inspite 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.

- 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 _____.
- 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
Nam	e of the cus	tomer : S	uma		
S1.	Details	Quantity	Cost (₹)	• Ć	Total
no					amountt (₹)
1	Sari		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	1211.00
		0		Amount	

In words : \mathbf{E} 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)



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 × cost

1 × 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 .







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



MEASUREMENT - LENGTH

After studying this chapter you can

• know the unit of length,

CHAPTER-11

- 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.



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.



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 m = 3×100 cm = 300 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 m	= 100 cm
5 m	= 5 × 100 cm
	= 500 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'.

А	В	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	. C
	(e) 400 cm	112

To convert centimetre into metre

You already know that 100 cm = 1 m. In 200 cm, how many equal parts of length100 cm will be there? In the same way in the length of 300 cm, how many equal parts of 100 cm will there be?

200 cm = 100 cm + 100 cm = 1 m + 1 m = 2 m In the same way 300 cm = 100 cm + 100 cm + 100 cm = 1 m + 1 m + 1 m = 3 m In the simplified form it can be written as, 200 cm = $\frac{200}{100}$ = 2m 300 cm = $\frac{300}{100}$ = 3m **Observe:** To convert centimetre into metre, divide by 100.



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
Total length of the thread used by both	=	17 m



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.



II. Solve these problems

- 1) Preethi has a red coloured tape of length 18 m and a blue coloured tape of length15 m. What is the total length of the tapes she has?
- 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?
- 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?
- 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?
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 measure-ing? 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

The length already threaded

= 45 cm = 32 cm

13 cm

=

Remaining length of the thread



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



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?

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?

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?

Know this:

- $\frac{1}{4}$ Metre = 25 cm
- $\frac{1}{2}$ Metre = 50 cm
- $\frac{3}{4}$ Metre = 75 cm
- 1 Metre = 100 cm

Using proper fundamental unit

Acitvity: 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 Kilometre = 1000 metre



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.



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
2)	Height of the wall of your class room.	Ċ	• 6	Nev
3)	Length of one side of your mathematics text book			2
4)	Distance from your village town to the next village/town	ver		
5)	Distance between your class room and the school kitchen			
		🏟 🏟 t		

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

		••••	••••	• • • • •			•••	••••	••••		•••					••••		•••			•	
		••••	••••	••••	••••	••••	•••	••••	••••	••••	•••	•••	••••	•••	••••	•••	••••	•••	•••	••••	••••	
••••	••••	••••	••••	••••	••••	••••	•••	••••	•••	••••	•••	••••	••••	•••	••••	•••	•••	•••	•••	•••	•••	

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 you answer?

500g + 200g + 200g + 100g = 1000g

It means 1000 g. Is it not?

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

1 kilogram= 1000 g



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.



In the simplest way this can also be expressed as

 $3 \text{ kg} = 3 \times 1 \text{ kg}$ $= 3 \times 1000 \text{ g}$

= 3000 g

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? 3 kg 500 g = 1 kg + 1 kg + 1 kg + 500 g = 1000 g + 1000 g + 1000 g + 500 g = 3500 g This can be done in a simple way as 3 kg = 3 × 1000g = 3 000g 3kg 500g = 3kg + 500g = 3000g + 500g = 3500g

Exercise 12.1
1) Convert 8 kg to gram.
2) Convert 9 kg to gram.
3) Convert 4 kg 600 g to gram.
χO
4) Convert 7 kg 850 g to gram.

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
Total weight of vegetables	31 kg 950 g



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?

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?



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.

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?

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?

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?

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?

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)	
55	

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	r U Y	
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.



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

The standard unit for measuring volume is litre.





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







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.

	*								
	Quantity								
2 l	500 ml								
1 <i>l</i>	000 ml								
21	000 ml								
5 <i>l</i>	500 ml								
Observe : litre and Millilitre are given separately									
	2 l 1 l 2 l 5 l re and Millil								

Example 1 :

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



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





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.

Subtraction of the measurement of Volume

Rani purchased 2l 500 ml of milk. She used 2l 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 Quantity of milk used to prepare kheer	2 2	500 100
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 <i>l</i>
Quantity of water used for gardening	= 200 <i>l</i>
\therefore Remaining quantity of water in the tank	= 300 <i>l</i>



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

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

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:



I. Put a tick (1) mark on the correct option to show the estimated capacity of the following.

$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	200 ml 200 <i>l</i>		1 <i>l</i> 8 <i>l</i>
$\begin{array}{ c c c c c c } 500 \text{ ml} & \hline & 15 \text{ ml} \\ \hline & 500 \text{ ml} & \hline & 10 \text{ ml} \\ \hline & 6 l & \hline & 10 l \\ \hline \end{array}$	20 <i>l</i>		15 <i>l</i>
500 ml 10 ml 6 l 10 l	500 ml		15 ml
6 <i>l</i> 10 <i>l</i>	500 ml	di la	10 ml
	61	£	10 <i>l</i>



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.



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 calender.

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

Fel	oru	ary
-----	-----	-----

March

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	31				

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				

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
						1 1

un	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	V		

May

Sun Mon Tue Wed Thu Fri Sat 13 14 15

September

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

Sun Mon Tue Wed Thu Fri 16 17

23 24

30 31

 $\mathbf{7}$

Fri Sat

August

Sun Mon Tue Wed Thu Fri Sat Sat 11 12 13 14 20 21

Fri Sat

October

Sun Mon Tue Wed Thu

Sun Mon Tue Wed Thu

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

12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

7	2

Write the number of following table an	weeks and days in d add them.	every month in the
Months	Weeks	days
January		
February		
March		
April		
May	S	
June		
July	Y	
August		
September	0 X	
October	A C Y	
November	0	
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.



How many days are there in February 2012?

How many days are there in February 2013?

How many days are there in February 2014?

How many days are there in February 2015?

How many days are there in February 2016?

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 ÷ 4 =

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.



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?

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

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

4) How many minutes form an hour?

5) How many seconds form a minute?

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 meridien (a.m) and post meridien (p.m)

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



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

	Activities done in the morning period.	Activities done afternoon pe	e in the eriod.
1))	2
2)		?)	
3)		3)	
4)		-)	

What is ante meridien and post meridien?

Observe :

- The time between midnight 12 hour to midday 12 hour is called ante meridien (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 meridien (a.m) or post meridien (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 meridien (a.m) or post meridien (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, substract 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 meridien (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 meridien 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 trian = 15 - 12

3 p.m. (Post meridien 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 meridien or post meridien.

a) evening 4 : 50.

b) morning 7 : 00.



I			

d) 17:30

c) 13:00

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

	Anti Meridien	Post Meridien
 Lakshmi gets up in the morning at 6 O' clock. 		00
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	e de la companya de la	
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 Celebrating school annual day function. 1) 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. The time taken by you to 1minute/ 1) play with your friends hour The time taken to say 1minute/ 2) the prayer. hour The time required to 30 minute/ 3) have breakfast in the 2 hours morning The time required to days/ 4) build a house months.

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

Let us consider these examples.

 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 = 609 : 00 minutes

- (-)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.
- 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.



DATA HANDLING

After studying this chapter you can

CHAPTER- 15

- 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.

j	S1. No	Flowers	Numbers
10	1	Rose	
	2	Lotus	
	3	Sun flower	
	4	Hibiscus	



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.



- 3) What is the total weight of the flowers sold?
- 4) Which are sold less than 5 kg?
- 5) Which are sold less than 5 kg but more than 2 kg?

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





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.





- 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?







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 genaralise 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.

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

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



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.

1 + 2 = 3 4 + 5 + 6 = 7 + 8 9 + 10 + 11 + 12 = 13 + 14 + 1516 + 17 + 18 + 19 + 20 = 21 + 22 + 23 + 24

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



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





Activity : Work out the multiplicative pattern of different numbers.



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



The order to obtain nine

Observe the multiplication table of '9' given below.



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. - 90 9 0 + 9 18 9 = 1 + 8 = 279 = 2 + 7 = 36 = 3 + 6 = 9 45 5 9 4 = 9 54 5 4 63 6 3 72 = 9 7 81 9 = 90 = 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.





• 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)	$40 \div 10 = 4$	ii)	$200 \div 100 = 2$ i	ii) $90 \div 30 = 3$
	$400 \div 10 = 40$		$2000 \div 100 = 20$	$600 \div 20 = 30$
	$4000 \div 10 = 400$			$1400 \div 700 = 2$
-			-	

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.











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



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



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..



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.





CHAPTER - 18

SOLIDS

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.
- Indentify 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?









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



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.

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



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.



Number of facesShape of the facesNumber 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.









