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STANDARD FOUR

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VOLUME 2

MATHEMATICS
SCIENCE
SOCIAL SCIENCE

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MATHEMATICS

GEOMETRY

UNIT - 1

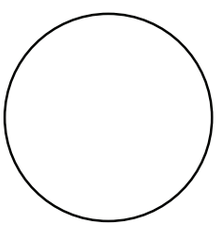
S7N5X8

1.1 Iterative patterns in shapes

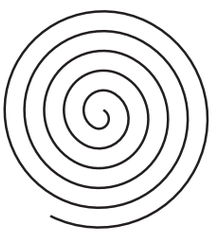
We see patterns in trees, rivers, mountains, shells, clouds, leaves and more. Iteration is the repeated application of a process. Here we are going to see how we use the shapes to form iterative patterns.

1.1.1 Able to draw circles, spirals, ovals.

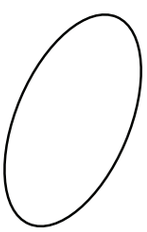
In he earlier class you have learnt to draw circles.



Circle



Spiral



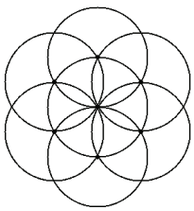
Oval

Activity

Draw the above shapes and colour it.

Using the above shapes we are going to form iterative patterns.

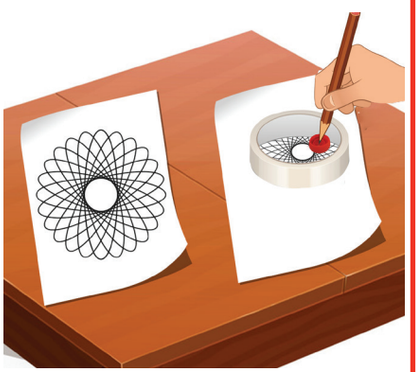
EXAMPLES



Activity

Required things: Paper, Pencil, unused bottle cap, Cellotape.

Take a sheet of paper, keep the cellotape on it. Make two or three holes in the bottle cap. Keep the bottle cap inside the cellotape and insert the pencil inside the hole, hold the cellotape firmly. Draw the spirograph by dragging the pencil here and there inside the cellotape. We will get the Spirograph.

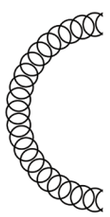


Teacher Note; Teacher can elicit the student to use bangles also instead of cellotape

Try This

Complete the patterns using the given Shapes and shade with your own colour.

i) 

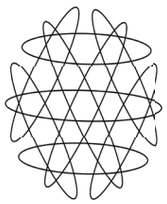
ii) 

iii) 

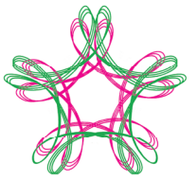
1.1.2 To differentiate and to compares the shapes drawn.

Students, "Prepare your own pattern of shapes using circles, spirals and ovals. Exchange it with your friend and discuss".

Pic: 1



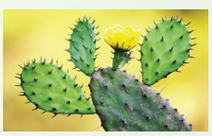
Pic: 2



1.1.3 To explore visual examples of repeating patterns

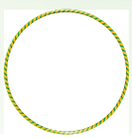
Do you know

Some visual examples are:



Cactus is the example for oval shaped pattern.

Shell of a Snail is the example for spiral shaped pattern.

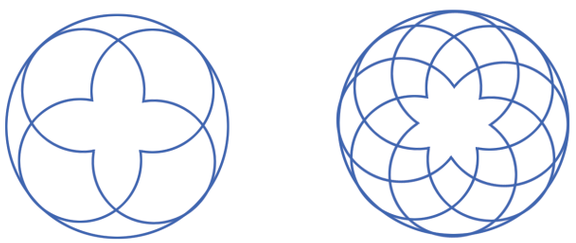


Bangle represents the Circle shaped Pattern.

Students see the visual examples in the surroundings like

Rangoli

Spirograph



Observe the patterns in the surroundings. Fill the rangoli with colours using your creativity. Use petals of flowers and fallen leaves from the trees to fill the Rangoli. Children prepare your circles, ovals and spirals

from the chart (or) colour paper (or) with threads. Colour the prepared patterns with the same.

Exercise 1.1

1) Write the Shapes of the Patterns present in the pictures given below

i)

ii)

2) Complete the patterns given below.

i. ○ ⌇ ○ ⌇ ○ ⌇ ___ ___

ii. ()○ ()○○ ()○○○ ___ ___

iii. ● ● ● ● ● ___ ___

iv. ⬮ ⬭ ⬮ ⬭ ⬮ ___ ___

B5G5I6

3) Draw Simple rangoli. Use your own Creativity to fill them.

2.1 Division: (up to 4 digit number by single digit number)

2.1.1 To divide a given number by another number in various ways.

There are many ways to divide a given number by another number. They are

(i) Equal sharing
(ii) Equal grouping
(iii) Repeated subtraction
(iv) Long division
(v) Short division

You have learnt already the type of divisions in previous class. Now we are going to see Equal sharing and short division.

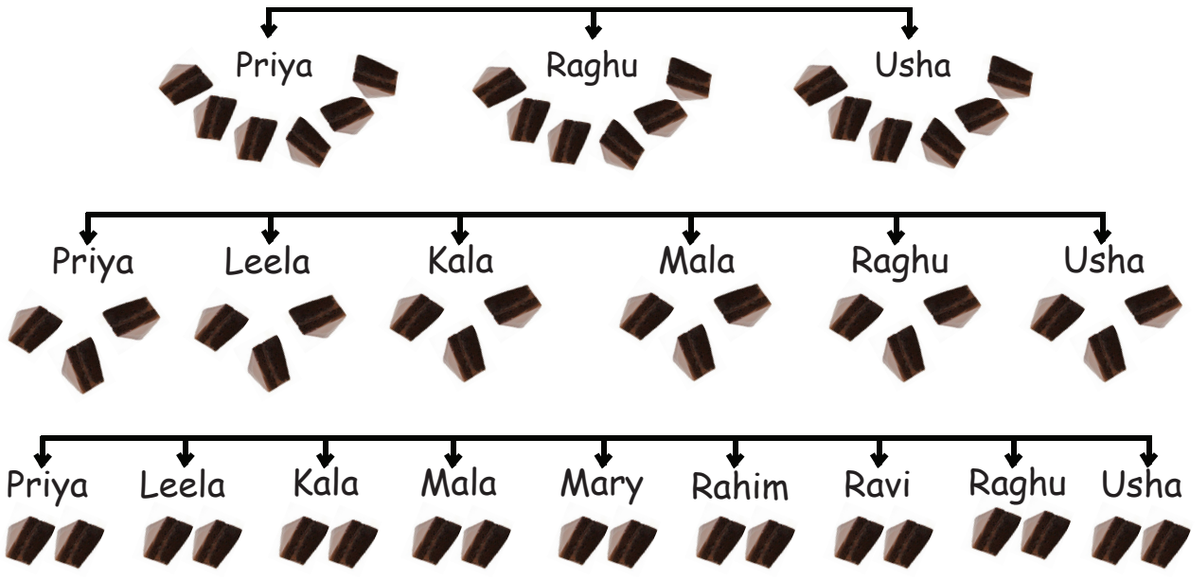
(i) Equal sharing

Priya wants to celebrate her birthday along with her Parents Raghu and Usha. Her father bought a cake for her. She makes the cake into 18 pieces and wants to divide it equally along with her parents, each of them got 6 pieces. At that time her friends Leela, Kala and Mala has come with their gifts. So, she wants to share the cake with her friends also, each of them got 3 pieces. After a few minutes three of her father and mother's friends Mary, Rahim and Ravi has come for

Note

In division, equal sharing leaves remainder also.

the party. Now she has decided to share the cake with them also. How much share would all get in total ?



Each gets 2 pieces of cake. Thus 18 pieces of cake is shared equally among 9 members with 2 pieces each.

G3R2V6

Note

Superscript means placing the number in the right side top of the given number as small. e.g. 3^2,6^3

(vi) Short division

Divide 670 ÷ 5

Here 670 is the dividend, 5 is the divisor

Here, 5(the divisor) divides 6(the first digit of the dividend) in 1 time, with the reminder of 1, place the quotient 1, above the long division bar. Place as small superscript 1 beside 6.

$5\overline{)\,6^{1}70}$

Combine it with the next dividend digit to the right. Now find out how many times the divisor divides the new two digit number 11. The divisor divides 11, 3 times, with the remainder of 2, place the quotient 3 above the division line, 2 as the superscript beside 7.

$\begin{array}{r} 13 \\ 5\overline{)\,6^{1}7^{2}0} \end{array}$

Now consider the last term of the dividend combine the remainder with next dividend to the right. We get a new 2 digit number 20. The divisor 5 divides 20, 4 times. Remainder 0 and the quotient becomes 134.

$\begin{array}{r} 134 \\ 5\overline{)\,6^{1}7^{2}0} \end{array}$

670 ÷ 5 = 134

Division of three digit number by one digit number:

Division without remainder

EXAMPLE 1

Divide 450 by 6.

	075	**Quotient**
6	450	
	42	
	30	
	30	
	0	**Remainder**

Step 1: Take 4 in the dividend, Which is not divisible by 6. Hence to combine the next digit in the dividend in the right. We have to put zero above the division line.

Step 2: Divide 45 by 6.

6 divides 45, 7 times, (ie) 6 x 7 = 42

place 42 belows 45,

Quotient = 7 and Remainder = 3

Step:3: Take 30, Divide 30 by 6,

Quotient = 5, Remainder = 0.

EXAMPLE 2

A fruit seller buys 531 apples. He arranges them equally in 9 boxes. How many apples does he put in each box?

Total number of apples = 531

Number of boxes = 9

Number of apples in each box = 531 ÷ 9

	59	**Quotient**
9	531	
	45	
	81	
	81	
	0	**Remainder**

Number of apples in each box = 59

Division with remainder:

EXAMPLE 3

Divide 369 by 7.

```
      52
   ------
7 | 369
    35
   ----
     19
     14
   ----
      5
   ----
```

Step 1: Take 3 in the dividend, 3cannot be divided by 7. Hence to combine the next digit in the dividend (369) in the right. We have to put zero above the division line. So take 36. Divide 36 by 7.

7 divides 6, 5 times (ie) 7 x 5 = 35

Quotient = 5 and Remainder = 1

Step:2

Take 19 ones. Divide 19 by7.

7 divides 19, 2 times (ie) 7 x 2 = 14

Quotient = 2, Remainder = 5.

Quotient = 52 **Remainder = 5**

Exercise 2.1

Simplify the following

1) 896 ÷ 5 **2)** 696 ÷ 6

3) 686 ÷ 7 **4)** 813 ÷ 8

5) 891 ÷ 8 **6)** 703 ÷ 2

7) Rahul has 192 toy cars. He put them equally in 6 boxes. How many toy cars will he put in each box? How many toy cars are left over?

8) Akila has 495 photographs to put in an album. She can put 9 photographs on each page. How many pages can she fill?

Divide 4 digit numbers by one digit number:

Divide without remainder:

You have already learnt the division steps in the three digit number

EXAMPLE 1

Divide 396 by 7.

```
      1236
   ---------
6 | 7416
    6
   ---
    14
    12
   ---
     21
     18
    ---
      36
      36
     ---
       0
```

Quotient = 1236

Remainder = 0

EXAMPLE 2

A Company called 8 workers to do the Painting work on one day. At the end of the day workers received an total amount of Rs 9689 as an daily wage. How much money did each one get?

```
      1211
   ---------
8 | 9689
    8
   ---
    16
    16
   ---
     08
      8
    ---
     09
      8
    ---
      1
```

Quotient = 1211

Remainder = 1

Exercise 2.2

Divide the following

1) 5632÷6 **2)** 7460÷7 **3)** 4964÷8 **4)** 8616÷6 **5)** 8645÷7 **6)** 5742÷9

7) In my school, there are 1115 students from class 1 to 8. If the number of students is same in all the classes, how many students are there in each class?

8) The height of a mountain is 7821 m. Raj took 9 days to reach the top. How many metres did he cover daily if he travelled equal distances every day?

9) A total of 1787 kg wheat has to be packed equally in 7 bags. What will be the weight of each bag?

2.1.2 To frame word problems (using four operations)

EXAMPLE 1

Observe the following pictures and let us see how questions has been framed.

i. What is the price of ooty apple? Why do you prefer this?

ii. Find the cost of 3kg of green banana?

iii. What is the total cost of 1kg of simla apple, Poovan banana and Peyan banana?

iv. Find out the difference between the cost of ooty apple and simla apple?

v. Mala had ₹ 70, how many kg of Peyan banana would she buy?

Exercise 2.3

S.No.	Name of the Item	Price Per Kg (in ₹)
1	Raw Rice	56
2	Boiled Rice	54
3	Wheat	40
4	Tamarind	180
5	Red chilly	100

What else could you frame some more questions based on this table?

_____

_____

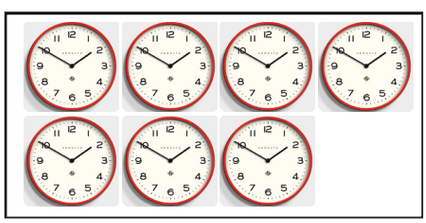
_____

_____

1) Frame word problems, using the picture given:

Cost of 1 Piece of Cake ₹ 25

2) Frame word problems, using the picture given:



Total Cost of the clocks ₹ 490

2.1.3 Estimating sums and differences:

C9T1N7

To estimate a number means to round of each number to its nearest tens, hundreds and then add or subtract.

Steps for estimation:

Nearest to tens: check the unit digit of the given number that is to be estimated.

i) if it is equal to (or) greater than 5, add 1 to previous digit, make the unit digit as zero. (e.g.) 85 is rounded to 90

ii) if it is less than 5, make the unit digit as zero. (e.g.) 63 is rounded to 60

Note

We can estimate a number nearest 1000 and more.

EXAMPLE 1

1) Estimate the sum.

	58	is rounded to tens →	60
(+)	73	is rounded to tens →	(+) 70
Total	131	Rounded sum →	130

2) Estimate the differnce

	33	is rounded to tens →	30
(–)	19	is rounded to tens →	(–) 20
	14	rounded difference	10

Exercise 2.4

Estimate the following numbers to nearest tens and then add or subtract.

1) 45 (+) 93 → ____

2) 42 (+) 38 → ____

3) 78 (–) 32 → ____

4) 91 (–) 75 → ____

Estimation in multiplication:

A tourism company collected ₹ 95 per head for a field trip. Estimate the amount collected from 28 persons?

		Actual	Estimated amount
Amount per head	=	₹ 95	₹ 100
Amount for 28 persons	=	₹ 2660	₹ 3000
Difference between, Estimated amount and actual amount	=	3000 – 2660	
	=	₹ 340	

TO TO	HTO TO
95 x 28	100 x 30
760	000
190	300
2660	3000

Exercise 2.5

Estimate and calculate:

S.No.	Multiplication fact	Actual value	Estimated value	Difference
1.	35 x 12	420	40 x 10 = 400	20
2.	82 x 28			
3.	16 x 12			
4.	23 x 27			

2.2 Mental Arithmetic

2.2.1 Able to add and subtract multiples of 10 and 100 mentally.

Multiples of 10 and 100 are useful in counting large number of items and objects (including money).

Multiples of 10

10, 20, 30, 40, 50....

R3B9S7

Adding with multiples of 10

(i)

	H	T	O
	2	2	3
		1	0
	2	3	3

(ii)

	H	T	O
	3	4	5
		1	0
	3	5	5

Here, one's place didn't change, when they are added to zero and hundreds Place also didn't change, only the tens place got changed.

i) 2 + 1 = 3 ii) 4 + 1 = 5

Now we add the following

EXAMPLE 1

Add 374 + 10

3(7)4 + (1)0

4 + 0 = 4

7 + 1 = 8

Therefore 374 + 10 = 384

EXAMPLE 2

Add 286 + 30

2(8)6 + (3)0

8 + 3 = 11

Here, 11 has two digits, in this keep 1 in the tens place, take the other 1 and add with the hundreds place digit.

Therefore 286 + 30 = 316

Adding with multiples of 100

(i)

	H	T	O
	5	8	4
+	1	0	0
	6	8	4

(ii)

	H	T	O
	2	7	5
+	1	0	0
	3	7	5

Here, one's place and ten's place didn't change, when they are added to zero but in the hundreds place it is changed.

EXAMPLE 3

Add 682 + 100

(6)8 2 + (1)00

2 + 0 = 2

8 + 0 = 8

6 + 1 = 7

∴ 682 + 100 = 782

EXAMPLE 4

Add 835 with 100

(8)3 5 + (1)00

8 + 1 = 9

∴ 835 + 100 = 935

Subtracting by multiples of 10

Follow the same procedure of addition for subtraction also, instead of adding the numbers, subtract the numbers in the circle.

EXAMPLE 5

Subtract 10 from 625

6(2)5 - (1)0

5 - 0 = 5

2 - 1 = 1

∴ 625 - 10 = 615

EXAMPLE 6

Subtract 50 from 981

9 8 1 - 5 0

8 - 5 = 3

∴ 981 - 50 = 931

Subtracting by multiples of 100

EXAMPLE 7

Subtract 400 from 546

5 4 6 - 4 0 0

5 - 4 = 1

∴ 546 - 400 = 146

Exercise 2.6

Add and subtract the following problems using multiples of 10, 100 (Mentally)

1. $745 + 40 =$ _____
2. $328 + 30 =$ _____
3. $566 + 20 =$ _____
4. $475 + 100 =$ _____
5. $686 + 300 =$ _____
6. $345 + 600 =$ _____
7. $6348 - 10 =$ _____
8. $541 - 40 =$ _____
9. $495 - 300 =$ _____
10. $657 - 500 =$ _____
11. $895 - 500 =$ _____
12. $365 - 300 =$ _____

2.2.2 Complete multiplication facts by adding partial products mentally.

Now we break the following numbers, for example, 53 = 50 + 3, 98 = 90 + 8.

In 53, why should numbers to be parted into 50+3, because nearest multiples of 10 to 53 is 50 and add the remaining number 3 with it.

EXAMPLE 1

Complete the following multiplication facts by adding partial products.

$6 \times 45 = 6 \times (40+5)$

$= 6 \times 40 + 6 \times 5$

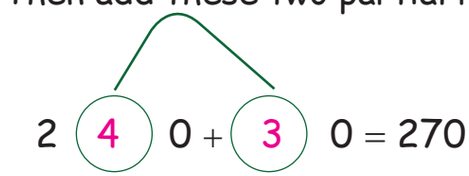
Break 45 into two parts $40 + 5$

Then multiply those two parts separately as:

$6 \times 40 = 240$

$6 \times 5 = 30$

Then add these two partial results.



$6 \times 45 = 270$

Exercise 2.7

Simplify the following multiplication facts by adding partial products.

1. 9×42 **2.** 3×78 **3.** 36×12 **4.** 18×19

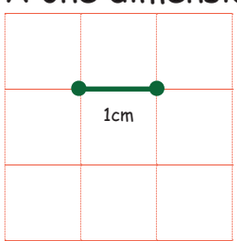
5. 68×31 **6.** 42×21

F8Y8U6

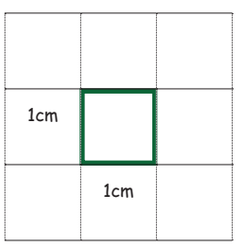
M9D8K8

Recall:

A one dimension quantity - length and it is represented as



Two dimension quantity - length and breadth. Whicn can be represented as

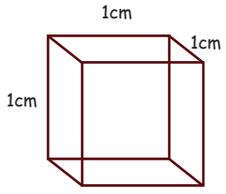


The space ocupied here: 1cm x 1cm = 1 cm^2.

Two dimensional quantity is called as **Area**.

Definition of volume

When we expand 1 cm from the surface of 2D, it forms 3D.



The space occupied here: 1cm x 1cm x 1cm = 1 cm^3.

Three dimensional quantity is called as volume.

So, volume is the space occupied by any 3D object (cone, cube, cuboid and cylinder).

3.1 Measuring volume of given liquid using containers marked with standard units.

Q9B3W5

Do you know

We can write millilitre as "*ml*" and litre as "*l*"

$\frac{1}{4}$ *l* (250 *ml*) | $\frac{1}{2}$ *l* (500 *ml*) | $\frac{3}{4}$ *l* (750 *ml*) | 1 *l* (1000 *ml*)

Activity

List out the measures used at your home for the following items.

Items	quantity (in litres)
Water	
Milk	
Oil	
Petrol	
Diesel	

Note:

Measures cannot be accurate if we use non-standard measures. To measure the liquids we use standard units millilitre and litre.

Activity

Let us find out how many litres and millilitres of water can be filled in this bucket. by using bottle. ($\frac{1}{2}$ litre, 1 litre)

1. 1 litre _____ times
2. $\frac{1}{2}$ l _____ times

Exercise 3.1

1. Rani had 1 litre coconut oil. She shared it equally among her 5 friends. How much does each person have ?
2. A teapot contains 2 litres, it is poured in cups with a capacity of 500 ml. How many cups can be filled ?
3. Ram has 1 litre of juice bottle if he gives his friend 100 ml of juice. How much is left with him?

4. Change litre into millilitre.

1. 1 *l* = 1000 *ml*
2. 7 *l* = _____ *ml*
3. 5 *l* = _____ *ml*
4. 9 *l* = _____ *ml*
5. 4 *l* = _____ *ml*

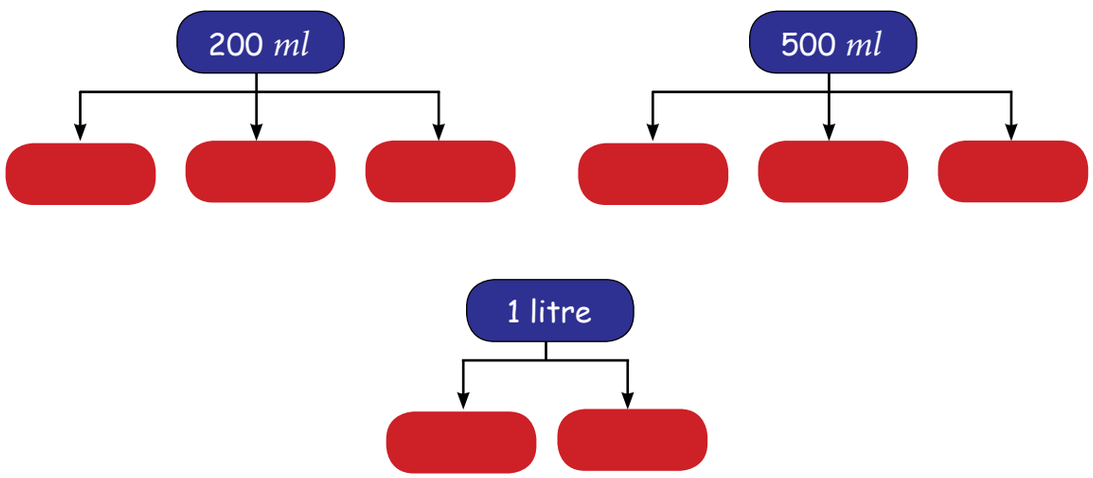
5. Change millilitre into litre

1. 6000 *ml* = 6 *l*
2. 2000 *ml* = _____ *l*
3. 8000 *ml* = _____ *l*
4. 9000 *ml* = _____ *l*

Note:
1000 *ml* = 1 litre

Activity

Fill in the red boxes below using 500 *ml*, 200 *ml*, 100 *ml* and 50 *ml*, to get the total in the blue boxes given above the red boxes.



Addition using standard units (litre and *ml*)

To add litre and *ml*, first convert the litre into *ml*.

EXAMPLE 1

Add: 1 *l* + 345 *ml*

1 l + 345 ml = (1 x 1000 *ml*) + 345 *ml*

= 1000 *ml* + 345 *ml*

= 1345 *ml*

Note:
1000 *ml* = 1 litre

EXAMPLE 2

Add: 7 *l* + 9 *ml*

7 *l* + 9 *ml* = (7 x 1000 *ml*) + 9 *ml*

= 7000 *ml* + 9 *ml*

= 7009 *ml*.

EXAMPLE 3

Add: 63 *l* 380 *ml* and 14 *l* 175 *ml*

	l	*ml*
	63	380
(+)	14	175
	77	**555**

Step 1:
Start from millilitres.
380 *ml* + 175 *ml* = 555 *ml*

Step 2:
Then add litres. 63 *l* + 14 *l* = 77 *l*

Exercise 3.2

1. Complete the following. First one is done for you.

i) 5 *l* + 376 *ml* = 5000 *ml* + 376 *ml* = 5376 *ml*

ii) 3 *l* + 735 *ml* = _____ *ml* + _____ *ml* = _____ *ml*

iii) 4 *l* + 43 *ml* = _____ *ml* + _____ *ml* = _____ *ml*

iv) 8 *l* + 6 *ml* = _____ *ml* + _____ *ml* = _____ *ml*

v) 6 *l* + 800 *ml* = _____ *ml* + _____ *ml* = _____ *ml*

2. Match the following measurements given in the bottels with the measurements in the boxes given below the bottels

3609 *ml*	3400 *ml*	1010 *ml*	2573 *ml*

Subtraction using standard units (litre and ml)

EXAMPLE 1

Subract 8 *l* 450 *ml* from 28 *l* 750 *ml*.

	l	*ml*	
	28	750	Step 1: Subtract 450 *ml* from 750 *ml*
(-)	8	450	Step 2: Subtract 8 *l* from 28 *l*
	20	**300**	Therefore 28 *l* 750 *ml* - 8 *l* 450 *ml* = 20 *l* 300 *ml*

Life related problems

EXAMPLE 2

Sharma family have 2 buckets in their house. The capacity of one bucket is 4 *l* 450 *ml* and the other one is 5 *l* 180 *ml*. What is the total capacity of two buckets?

Answer:

		l	*ml*
Capacity of first bucket	=	4	450
Capacity of second bucket	=	(+) 5	180
Total capacity of two buckets	=	**9**	**630**

Total capacity is 9 *l* 630 *ml*.

EXAMPLE 3

A motor car consumed 188 *l* of petrol and 145 *l* 375 *ml* in the Month of January and February. What is the difference in the petrol consumption?

Answer:

		l	*ml*
		(7)	(9)(9)(10)
Petrol consumed in the month of January	=	188	000
Petrol consumed in the month of February	=	(-) 145	375
Difference	=	**42**	**625**

Petrol consumed more in the month of January is 42 *l* 625 *ml*.

Exercise 3.3

I **Add the following:**

1.

l	*ml*
25	830
(+) 42	126

2.

l	*ml*
13	645
(+) 54	143

3.

l	*ml*
13	250
(+) 32	140

II **Subtract the following:**

1.

l	*ml*
15	400
(-) 7	300

2.

l	*ml*
29	910
(-) 21	500

3.

l	*ml*
63	560
(-) 34	230

III Solve the following.

1. Ramu filled the petrol in his two cars. The first one hold the capacity of 23 *l* 500 *ml* and the second one hold the capacity 15 *l* 750 *ml*. Find the total quantity of petrol .

2. Kannan has some cows. They give milk in the first week 48 *l* 480 *ml* and in the second week 57 *l* 530 *ml*. Find the total capacity of milk.

3. The fruit juice used in a function are given below.

S. No	Cool drinks	capacity
1.	Apple juice	16 *l* 500 *ml*
2.	Mango juice	23 *l* 160 *ml*
3.	Grapes juice	19 *l* 650 *ml*
4.	Lemon juice	20 *l* 350 *ml*

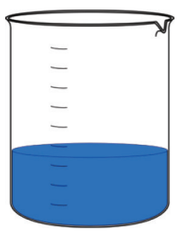
Find the total quantity of juice used in the above table.

1. Apple juice + Lemon juice = ---------- *l* ----------*ml*
2. Mango juice + Grapes juice = ---------- *l* ----------*ml*
3. Lemon juice + Mango juice = ---------- *l* ----------*ml*

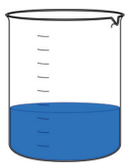
4. The shop keeper had 43 *l* 750 *ml* of groundnut oil. He sold 24 *l* 350 *ml*. How much oil was left with him?

5. A bucket contains 15 *l* 500 *ml* of water. Gopi poured out 5 *l* 200 *ml* to water the plants. How much water is left in the bucket?

6. I purchased 73 *l* of milk. My sister has taken 34 *l* 500 *ml* of milk. So how much milk is left for me?

7. 

30 *l* 500 *ml*



22 *l* 300 *ml*

Find the difference between these two cans.

3.2 Estimation of the volume of a liquid contained in a vessel and verification by measuring.

Situation

Sheela's mother prepared an orange juice for her daughter's friends. Sheela wants to share the juice with her four friends equally. But before that they want to know how much juice does the bottle contain. They have given an estimated measurement of 950 ml. They want to mesure the juice in a 200 ml glass through that they want to verify. They found that the bottle juice fills the five 200 ml glasses completely. From this they have come to know that the bottle 1000 ml of juice.

W3Y5K1

Activity

Measure your daily consumption of water for drinking, washing and bathing. If you don't have marker, you can use bottles to do rough calculation. For which you are using more water and give reason to reduce water.

Exercise 3.4

Z1J2G4

1) Estimate how much liquid each object can hold.
(Hint: 500 ml, 100 ml, 50 ml, 25 ml, 20l)

i)  Can hold (l/ml) _____ of Milk.

ii)  Can hold (l/ml) _____ of Water.

iii)  Can hold (l/ml) _____ of Syrup.

iv)  Can hold (l/ml) _____ of Ink.

v)  Can hold (l/ml) _____ of Water.

4.1 Estimate the duration of Familiar Events

Observe the table below which shows the time duration of the following activities at your home.

S.No.	Work	Starting Time	Finishing Time	Duration
1	Brushing teeth	6.30 am	6.35 am	5 Minutes
2	Bathing	6.35 am	6.45 am	10 Minutes
3	Cooking	6.45 am	7.30 am	45 Minutes
4	Washing Clothes	7.30 am	7.50 am	20 Minutes
5	Cleaning Vessels	7.50 am	8.20 am	30 Minutes

From the above table duration of the time intervals are seen.

Activity

Prepare a table for time duration to chop vegetables, Cleaning the room at your home.

4.2 Can you Compute the number of days between two given dates.

In one week there are 7days.

If one week over another one week begins.

If Sunday = 1, Monday = 2, Tuesday = 3, Wednesday = 4,Thursday = 5, Friday = 6, and Saturday = 7.

If today is 6, What day was Yesterday, day before yesterday? and what will be tomorrow and day after tomorrow?

Finding the day in previous or upcoming week.

E.g. Day 14 denotes Saturday. Can you guess what is 21st day?

You have already learnt in the previous class, that how many weeks are there in a month and year.

Note:

Two weeks make a fortnight, that is, 14 days make a fortnight.

Computing the number of days between two given dates:

To compute days between two given dates, count the number of days in between the given dates. If month falls in between two dates, calculate the number of days in month.

Note:
Note: Generally, 1 month = 4 weeks.

EXAMPLE

Calculate the number of days between Independence day and Gandhi Jayanthi day?

Solution:

Independence day= 15th August

Gandhi Jeyanthi = 2nd October

Note:
In the August month we have 31 days, Independence day falls on 15th August, so, we have to subtract 15 from 31.

S. No	Name of familiar events	Month	Days
1	Independence Day	August	16 (31 – 16 = 16)
		September	30
2	Gandhi Jayanthi	October	1
		Total	47

Try These

1. Calculate the number of days between Christmas and Republic day?
2. Calculate the number of days between Pongal and May day?
3. Calculate the number of days between Teacher's day and Children's day?

4.3 Use calendar (interlinking with patterns)

Now we will learn how 60 is used in time

60 seconds = 1 minute

60 minutes = 1 hour

1 hour = 60 × 60 = 3600 Seconds

24 hours = 1 day

Normally 12 hours is used . But in Railways, airlines, armed forces and TV channels 24 hours are used.

Now, learn the patterns in the Calendar.

JANUARY 2020						
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	

Consider 2 X 2 square in the nearby month

Add the numbers in the following way so that you will get the same total as 18

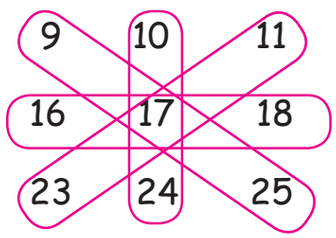
X8B1Q2

5 + 13 = 18

12 + 6 = 18

See the patterns in 3 X 3 square in the nearby month

Add the numbers in the following way so that you will get the same total as 51



Note:

Calendar can teach us many things

1. In a row, number increases by 1
2. In a column, number increases by 7

9 + 17 + 25 = 51

23 + 17 +11 = 51, 16 + 17 + 18 = 51, 10 + 17 + 24 = 51

Activity

Select any month and try to find 3 X 3 square and 2 X 2 square.

Let us see some more patterns in the following month.

Consider the line: 5 6 7 8 9 10 11

JANUARY 2020

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	

Middle number is 8

JANUARY 2020						
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	

Sum of 5 and 11 is double the middle number (2x8) = 16

Sum of 6 and 10 is double the middle number (2x8) = 16

Sum of 7 and 9 is double the middle number (2x8) = 16

Try This

1. Select any month in a year. Find out the sum of any row and column. You wonder that the sum doubles the middle number.

Exercise 4.1

1. Find out the days between manufacturing and expiry date of a medicine given below.

C1T9U2

2. Select a month in the calendar and find out any creative pattern of your own in the numbers.

5.1 Convert rupees to paise:

Our government of India indicates money as the symbol of ₹.

Sankar is preparing to go for an Excursion. He asks his father ₹ 400 as his pocket money. Father sees that ₹ 2000 notes only in the purse. Soon father goes to shop to get change for ₹ 2000.

Father : Sir, (I need change for ₹ 2000) give me change for ₹ 2000.

Merchant : I have following varieties of combination which are as follows:

Which one do you prefer?

Father : Ok sir. I select the third variety of combination. That is

Merchant : Ok sir. I will give you the same.

Father : Thank you sir.

Father : Sankar, here is your ₹ 400, get it.

Sankar : Father, shall I get the change as one ₹ 50 note, one ₹ 20 note, two ₹ 10 notes, one ₹ 5 note and 5, ₹ 1 coins.

Father : Ok.

Do you know?

Our fore father had used various kinds of coins. Among them 1 paise, 2 paise, 5 paise, 10 paise, 20 paise, 25 paise, 50 paise. But they are not in use now.

Denomination

₹ 2865 = | ₹ 2000 | ₹ 500 | ₹ 200 | ₹ 100 | ₹ 50 | ₹ 10 | ₹ 5 |

₹ 2865

₹ 2000 × 1 = 2000

₹ 500 × 1 = 500

₹ 200 × 1 = 200

₹ 100 × 1 = 100

₹ 50 × 1 = 50

₹ 10 × 1 = 10

₹ 5 × 1 = 5

Total ₹ 2865

₹ 565 = | | | | | | ◯

₹ 200 x _____ =

₹ 100 x _____ =

₹ 50 x _____ =

₹ 10 x _____ =

₹ 5 x _____ =

Total _____

Try This

2 × 

× 

× 

×

Activity

Fill in the box with model notes.

₹ 20

₹ 20

₹ 10

Activity

Take a sheet of paper and cut out the model notes (₹ 10, ₹ 20, and ₹ 100). Affix it below the boxes provided to get the total of ₹ 200. One is done for you.

50 + 50 + 50 + 50

Have you ever gone to petrol bunk?
The price of 1 litre petrol is ₹78.12. Have you ever notice?

Although paise is not in circulation in the form of currency, but the cost of goods in paise are in use.

₹1 = 100 paise

Conversion of rupees into pasie.

This conversion is useful while you are bargaining in the vegetable shop and so on.

To convert rupees into paise, multiply the rupees by 100.

EXAMPLE 1

Convert ₹ 2 into paise

₹ 1 = 100 paise

So ₹ 2 = 2 x 100 = 200 paise

EXAMPLE 2

Convert ₹ 8.50 into paise

₹ 1 = 100 paise

8 is in rupees and 50 is in paise.

So we multiply by ₹ 8 with 100 and add 50 paise.

$\therefore$ ₹ 8.50 = 8 × 100 + 50

= 800 paise + 50 paise

= 850 paise

EXAMPLE 3

Ravi's father went to the shop and bought 1 kg of dhal for ₹ 38.70. Convert the cost of dhal into paise.

Cost of 1 kg dhal = ₹ 38.70

₹ 38.70 = 38 × 100 paise + 70 paise

= 3800 paise + 70 paise

Cost of dhal = 3870 paise.

Conversion of paise into rupees,

To convert paise into rupees, divide the paise by 100.

EXAMPLE 1

Convert 900 paise into rupees

To change the paise into rupees, divide the paise by 100.

900 paise = 900 ÷ 100

900 paise = ₹ 9

M2U5D2

EXAMPLE 2

Convert 1950 paise into rupees

To change the paise into rupee, divide the paise by 100.

1950 paise = 1950 ÷ 100

= 19.50

= ₹ 19.50

Exercise 5.1

1. In ₹ 1000 How many ₹ 500 notes are there? ☐

   How many ₹ 200 notes are there? ☐

   How many ₹ 100 notes are there? ☐

   How many ₹ 50 notes are there? ☐

2. Kamala had a change of ₹ 100, ₹ 50, ₹ 20 and ₹ 10 notes. How many rupees did she have in each to get the total of rupees 500?

3. Convert the following rupees into paise

   i. ₹ 7.50 ii. ₹ 18.75 iii. ₹54.68 iv. ₹ 102.50

   v. ₹ 129.45 vi. ₹ 308.61

4. (i) Write the denomination for the following amount.

₹ 466 = ₹ 200 ₹ 100 ₹ 100 ₹ 50 ₹ 10 ₹ 5 ₹ 1

₹ 200 x _____ =

₹ 100 x _____ =

₹ 50 x _____ =

₹ 10 x _____ =

₹ 5 x _____ =

₹ 1 x _____ =

Total = ₹ _____

(ii) Use and fill in the boxes with the amounts given below, to get the given amount (₹ 845)

₹ 845 = ☐ ☐ ☐ ☐ ☐


5.  +  = ₹100

 +  = ₹50

 =?

6.  +  +  = ₹75

 +  = ₹45

 +  = ?

5. Convert the following paise into rupees.

i. 800 paise ii. 500 paise iii. 2075 paise iv. 6860 paise

v. 200 paise vi. 150 paise vii. 1000 paise viii. 2000 paise

5.2 Addition and Substraction on Money

To add and subtract simple amounts of money in denominations of rupees and paise which are multiples of ten using column addition and subtraction with regrouping

Addition without conversion

Sankar purchased 1kg rice for ₹ 45.50 and 1kg of dhal for ₹ 78.60

Correct method

Cost of 1 kg of rice = ₹ 45.50

Cost of 1 kg of dhal = ₹ 78.60

Total cost ₹ 124.10

Addition with conversion

A groundnut burfi seller uses many ingredients to prepare it. So, he sells the burfi along with the ingredients. Original price of burfi is Rs.20 and he includes ingredients cost as 0.75 paise. Find the cost of burfi.

Correct method

Original cost of burfi = ₹ 20.00
Cost of ingredients = ₹ 0.75
Cost of burfi = ₹ 20.75

EXAMPLE

Irusan went to electronic shop and bought 100 watts, 120 watts, 150 watts bulbs for amount ₹12.50, ₹14.70 and ₹18.50. What is the total amount he spent in all?

Cost of 100 watts bulb = ₹12.50

Cost of 120 watts bulb = ₹14.70

Cost of 150 watts bulb = ₹18.50

The total amount he spent in all = ₹45.70

Let us try

₹ 24.60	₹ 44.50
₹ 23.30	₹ 22.20
₹ 39.80	₹ 48.35
₹ 64.70	₹ 54.67

Exercise 5.2

I. Add the following Rupees (without conversion)

1. ₹38.40 + ₹41.25
2. ₹19.27 + ₹10.31
3. ₹28.50 ₹20.14 + ₹41.32
4. ₹34.20 ₹13.18 + ₹12.11

II. Add the following rupees (with conversion)

1. ₹19.56 + ₹23.64
2. ₹64.75 + ₹36.25
3. ₹28.37 ₹18.43 + ₹17.65
4. ₹64.15 ₹38.27 + ₹41.18

III.
1. Elangovan bought a bat for ₹105.15 and a ball for ₹24. How much money did he spend in all?
2. Sadham went to vegetable shop and bought 1 kg of brinjal for ₹28.50, 1 kg of ladies finger for ₹10.50, 1 kg of pumpkin for ₹11.50. Find the total amount he spent in all.
3. Kanmani bought pad and pen for her daughter at the cost of ₹65.50 and ₹48.75. How much money did she pay for the things?
4. Ramya bought Vegetable rice, Idly and Dosai for ₹74.50, ₹28.50 and ₹60.50. Find the total amount he spent in all.

Subtraction

EXAMPLE

Ramu bought chocolate in his trip at the cost of ₹60.75 and has given ₹70 to the shopkeeper. How much money did he get back?

Amount given to the shopkeeper = ₹70.00 –
Cost of chocolate = ₹60.75
Balance amount he got back = ₹9.25

∴ The balance amount get by Mr. Ramu in ₹ 9.25 subtract the following:

Let us try

Subtract the following

₹ 85.45	₹ 94.27	₹ 58.45	₹ 74.50
- ₹ 65.75	- ₹ 36.18	- ₹ 49.15	- ₹ 55.50

Exercise 5.3

1. Subtract the following:

i. ₹83.50	ii. ₹63.50	iii. ₹74.00
- ₹24.00	- ₹27.50	- ₹43.50
iv. ₹98.67	v. ₹78.50	
- ₹58.49	- ₹69.50	

2. Cost of a pen from shop A is ₹7.50 and from shop B is ₹5.50. What is the difference between the cost from two shops.

3. Mala went to textile shop and had bought chudithar for ₹58.70 and gave ₹100 to the shopkeeper. How much money did the shopkeeper return to Mala.

Introduction

To learn to use Operations to find totals, change, multiple costs and unit cost.

Panneerselvam and his three friends went to seashore. They played and took rest. By that time they bought 4 packets of cereals from the seller for ₹20. Panneer does not know the cost of one packet then he asked his friend.

His friend explained him to find out the cost.

4 packets of cereals = ₹20

∴ 1 packet of cereals = ₹20 ÷ 4

So, 1 packet of cereals = ₹5.

Panneer and his friends have eaten cereals and went to a tea shop. The price of tea was 5 rupees. Panneer and his friends drunk tea and gave ₹20 to the seller.

Panneer does not know the total cost of tea. He asked his friend to explain him,

Cost of one tea = ₹5

Cost of four tea = ₹5 × 4

Cost of four tea = ₹20

Let us try

Find the cost per item, if the total cost is given. One is done for you.

Items	Number of Items	Total cost of the item	Cost per item
Book	5	₹250	₹250 ÷ 5 = ₹50
Bulb	9	₹1350	
Clock	6	₹1500	

Fill in the following:

S.No.	Items	Cost per item	Number of items	Total cost of the item
1.	Top	₹8	25	₹8 × 25 = ₹200
2.	Marble	—	30	— x 30 = ₹210
3.	Ball	₹9	23	—
4.	Ring Ball	₹11	—	₹11 × — = ₹200
5.	Doll	₹6	18	—

Panneer and his friends spent the amount for cereals ₹20 and another for tea ₹20. Also they spent ₹40 for horse – riding. They went home happily. After he went home he calculated the amount left in ₹100.

Let us help Panneer,

Cost of cereals	=	₹20 +
Cost of tea	=	₹20
The amount spent for horse – riding	=	₹40
Total expenditure		₹80
Total amount with Panneer	=	₹100
Amount Spent by Panneer and his friends	=	- ₹80
Balance amount	=	₹20

Activity

1. Make the students to form a model market to display the price list of the things to learn addition and subtraction.
2. Write the value of currency in the paper, make a student to act like a shopkeeper and the other students are like customer, calculate the cost of things to learn addition and subtraction.

EXAMPLE 1

Nandhakumar spent the amount of ₹750 for 10 *l* petrol. What is the cost of 1 *l* petrol.

Nandhakumar spent the amount for petrol = ₹750

∴ Cost for 1 *l* petrol = ₹750 ÷ 10

= ₹75

EXAMPLE 2

Madhumitha bought 8 sweet packets. If one packet costs ₹65, find the cost of 8 packets.

Cost of one packet = ₹65

∴ Cost of eight packets = ₹65 × 8

∴ Cost of eight packets = ₹520

EXAMPLE 3

Selvam went to vegetable market and bought onion for ₹10.50 and cucumber for ₹8.75. If he has given ₹20 to the shopkeeper then find the balance amount received by selvam.

Cost of onion	= ₹ 10.50
∴ Cost of cucumber	= ₹ 8.75
The amount spent for vegetables	= ₹ 19.25
The amount given to the shopkeeper	= ₹ 20.00
The amount spent for vegetables	= ₹ 19.25
Balance amount	= ₹ 0.75

Exercise 5.4

1. Priya bought 20 balloons. If the cost of one balloon is ₹6, then find the cost of 20 balloons.
2. Chinthamani bought 28 chocolate for her birthday. If the cost of a chocolate is ₹7 then find the total cost of 28 chocolates?
3. Ashok purchased 9 decorative papers at the cost of ₹450 for his town festival. Find the cost of a decorative paper?
4. Geethanjali bought 10 pencils at the cost of ₹70 from the supermarket. Find the cost of a pencil?
5. Kuppan bought pencil and pen for ₹24.50 and ₹6.50 from his total amount ₹50. Find the total cost of things that he bought. Also find the balance amount?
6. A teacher went to the science exhibition with their student.The entry fee is ₹250 and the teacher bought some materials for the school for ₹320, she had the balance amount of ₹330, find the amount that she had?

Finding the estimation of the total cost

Tharun went to footwear shop with his father. A pair of footwear cost ₹99.50 in the price tag.

Note:
If the paise is more than 50 or equal to 50 add 1 to the previous digit, if it is less than 50 keep the previous digit as it is.

Tharun : Appa, what is the cost of the footwear?

Appa : ₹100

Tharun : Appa, the price tag shows ₹99.50 but you said ₹100.

Appa : Yes tharun. The amount ₹99.50 is difficult to tell. So I rounded off to ₹100.

M4X7R8

Tharun : Appa, why don't you say ₹99 instead of ₹100?

Appa : Yes, here the amount is ₹99.50. If the amount is more than or equal to 50 paise, round to the nearest value.

Tharun : Appa, Suppose if the amount is less than 50 paise, then keep the value as it is leaving the 50 paise?

Appa : Yes Tharun, you are correct. (They bought, footwear and went happily)

To measure the money accurately, we can use the approximation

Rate	Estimated value	Reason
₹27.60	₹28	60 paise is greater than 50 paise.
₹12.30	₹12	30 paise is smaller than 50 paise.

The approximate value of ₹1 is the whole number of before or after.

Let us try

Rate	Estimated value	Reason
₹ 8.50 ₹ 7.30 ₹ 4.60 ₹45.70 ₹34.50	₹9	The estimated value of 50 paise or above 50 paise rounded off to the next nearest rupees.

Estimate the following rupees (before or after) using the multiples of ₹10.

Actual Price	Estimated Price
₹53 ₹67 ₹48 ₹24 ₹97	₹50

Deepak bought groundnut cookies for ₹24.40, Dhal mixture for ₹34.60 and murukku for ₹28.75. He prepared to estimate the value to the nearest rupees.

Things	Actual price	Estimated price	Difference in paise
Groundnut	₹24.40	₹24	40 paise
Dhal mixture	—	₹35	40 paise
murukku	₹28.75	₹29	—
Total	₹87.75	₹88	25 paise

Exercise 5.5

1. Meera went to vegetable shop. He bought brinjal for ₹29.75, drumstick for ₹14.60, raddish for ₹34.50 and carrot for ₹42.80. Find the total amount and estimate to the nearest one rupee?

X8W1Y5

2. Vasu bought car toy for ₹37, Bear toy for ₹24, monkey toy for ₹86. Find the estimated cost and find the difference in estimation close to nearest 10 rupees.

3. In the book fair Manibalan bought Bharathiyar book for ₹26.40, Gandhi book for ₹18.60, Abdul kalam book for ₹43.70 and Kumaran book for ₹51.90. Find the estimated cost and difference in estimation closes to nearest one rupee.

4. Geetha bought Jasmine for ₹37, Rose for ₹58, Mullai for ₹26 and Marigold for ₹82. Find the estimated cost and difference in estimation, close to the nearest ten rupees.

6.1 Symbolic Representation of Simple Fraction:

- Relating parts to whole eg: filling up water in a measured bottle partially, fixing up, puzzels circularly, vertically, horizontally in places and completes the whole.

Introduction

Part and parts:


Rani and

Gowri wants equal share from 4 dosas. Could you please suggest an idea?

How many dosas are there?

How many people are there?

Two

So, how many shares have to be done for each?

So, Rani will get 2 out of 4 dosas and Gowri will get 2 out of 4 dosas.

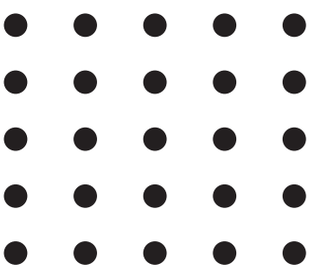
Activity 1

Divide the following figure into different segments. (either vertically or horizontally)

There are _____ equal parts.

Shade as many parts as you wish. It can be written as _____ out of _____ parts are shaded.

Activity 2



Draw lines using the dots above. It could be vertically/horizontally/ diagonally.

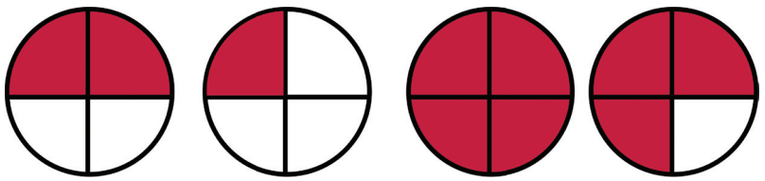
There are equal parts. Shade as many parts as you wish. It can be written as _____ out of _____ parts are shaded.

Activity 3

(The four equal parts of a circle)

A Circle which is divided into four equal parts are given to Arun, Tharun, sankar and Gopi, to colour it.

They could complete the task of colouring in two minutes, which is given below.



Arun Tharun Sankar Gopi

In the above pictures one fourth (quarter) portion was coloured by tharun.

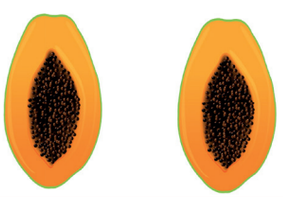
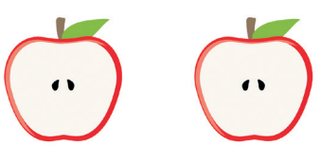
1/2 portion was coloured by _____

Whole portion was coloured by _____

Three fourth of the portion was coloured by _____

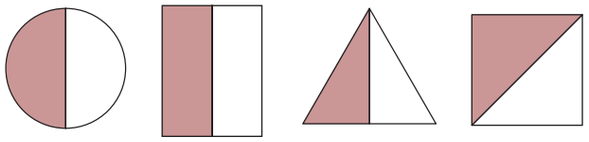
Identify half, one fourth, and three fourths of a whole.

Half

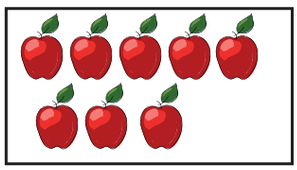
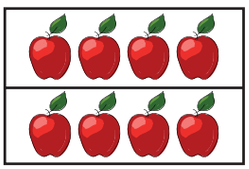
Whole	Two halves
	
	
	

B1L4X9

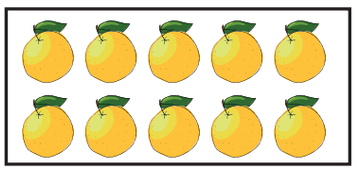
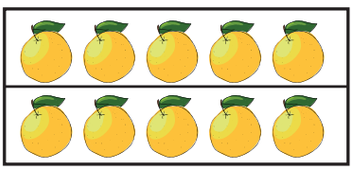
The above pictures were divided into two equal halves.



The above shapes are divided into two equal parts. In the two equal parts, one part was shaded. The shaded portion was one half and the unshaded part was another half.

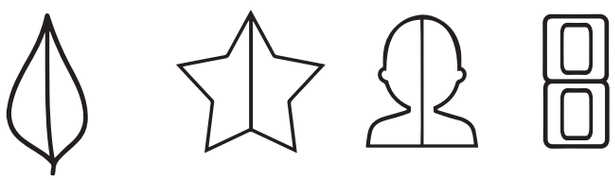
Half of 8 is 4.

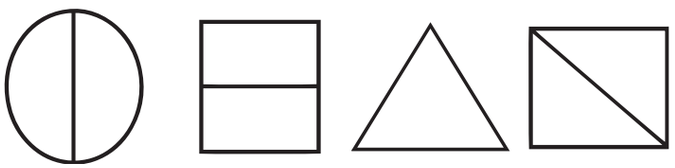



The above collection of whole was divided into two equal parts.

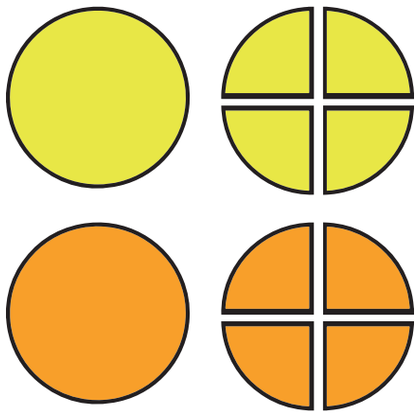
Exercise 6.1

I. Shade the half portion of the given pictures

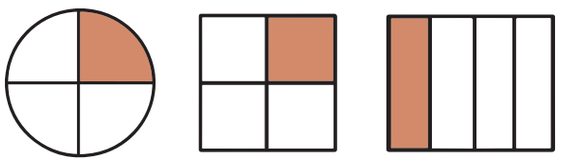




One fourth (quarter)



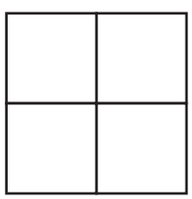
Each fruit was divided into four equal quarters.

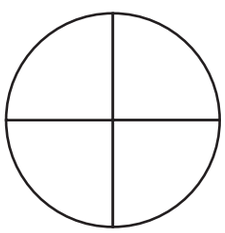


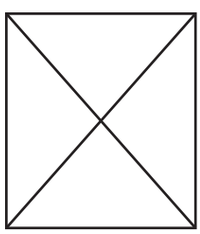
Every pictures was divided into four equal parts. And shaded portion represent quarter or one fourth.

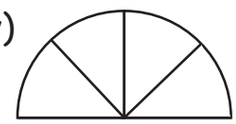
Exercise 6.2

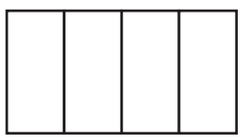
Shade the quarter portion in the following figures.

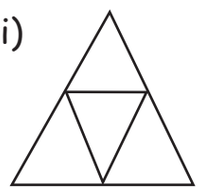
(i) 

(ii) 

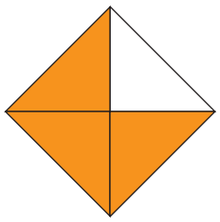
(iii) 

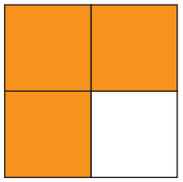
(iv) 

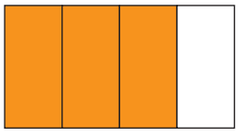
(v) 

(vi) 

Three Fourth

(i) 

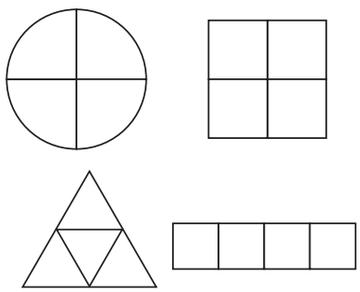
(ii) 

(iii) 

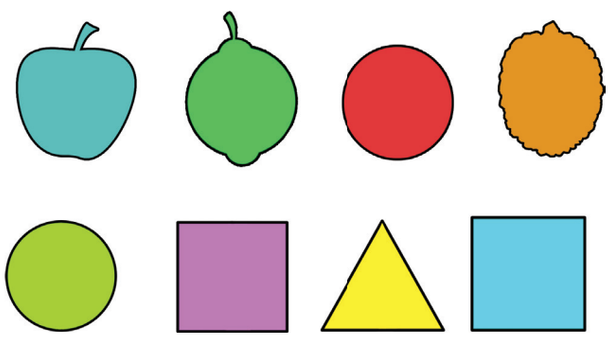
Each picture is divided into 4 parts. In this 3 parts are shaded. Shaded portion is called as 'three fourth'.

Exercise 6.3

I. Colour three fourth of the following pictures



Whole



The shaded portion of the above pictures or things represents (1) whole, whole means complete portion of a thing or collection of similar things.

Identifies the symbols $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$

Agriculture

Anitha had a vegetable garden which was rectangular shape. It was divided into four equal parts. In one part she planted brinjal, another part she planted pumpkin and in the remaning two parts she planted ladies finger.

She used all the 4 equal parts. Which means 1 whole.

The portion of brinjal planted out of the whole = 1/4, we call this as '**quarter**' or '**one-fourth**'.

The portion of Pumpkin planted out of the whole = 1/4, we call this as '**quarter**' or '**one-fourth**'.

The portion of Pumpkin and brinjal planted out of the whole = 1/2, we call this as '**half**'.

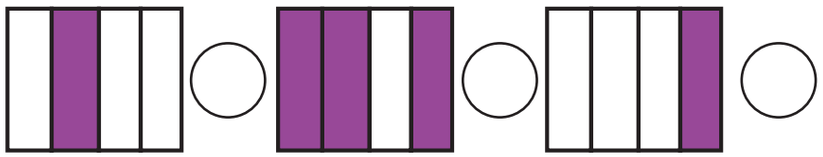
The portion of Ladies finger and Pumbkin planted out of the whole = 3/4, this is called as **three fourth**

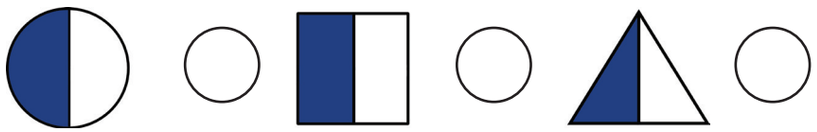
Can we try this:

1. Anitha's rectangular garden was divided into _____ parts.
2. Portion of brinjal planted part = _____
3. Portion of Ladies finger planted part = _____
4. Portion of pumpkin planted part = _____

Exercise 6.4

I. Write suitable fractions as $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ in the circle given below against the pictures.





Explains the meaning of $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$

Activity

Take an old newspaper.

1. The game is that you should occupy it with yourself. Can you try it out.

   [hint: sit]

2. Fold it into two equal halves. What is your plan to occupy this space?

   [hint: stand]

3. Fold it further into two equal halves. Could you try it?

   [hint: stand in one leg]

4. Fold it further into two equal halves. Can... you..?

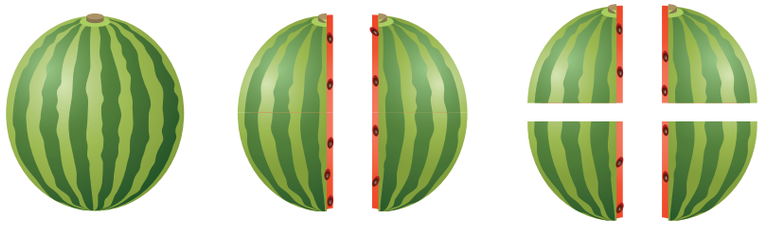
   [hint: stand on your toe]

Do you want to do it further.

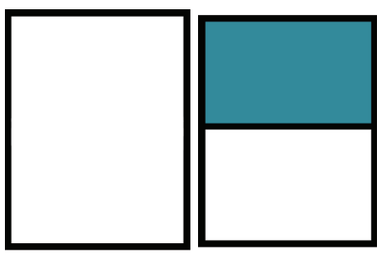
Understanding the equivalences of $\frac{2}{4}$ and $\frac{1}{2}$ and of $\frac{2}{2}$, $\frac{3}{3}$, $\frac{4}{4}$ and 1

Four friends were walking in a Sunny day. All are became thirsty so they went to a fruit vendor and bought a watermelon. They sliced it into four equal parts and ate it. how they shared their parts with themselves

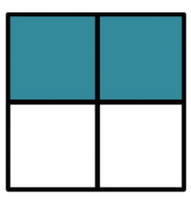
U8Y6M8



- Take a square sheet of paper and fold it into two equal parts. Colour one part of the paper

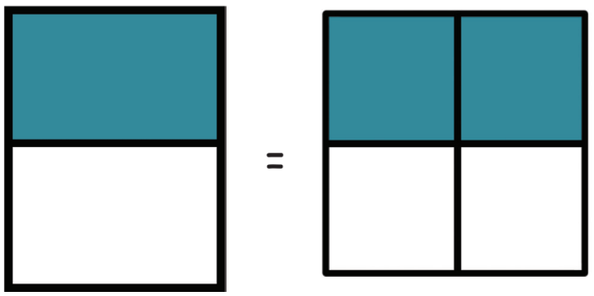


Fraction of coloured portion = $\frac{1}{2}$



- Now observe keenly, the fraction of coloured portion = $\frac{2}{4}$

  There is no change in the paper



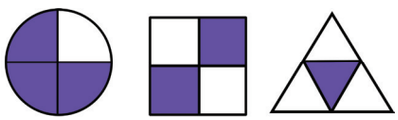
$\frac{1}{2}$ = $\frac{2}{4}$

Two parts become four parts and the coloured one part changed into two parts

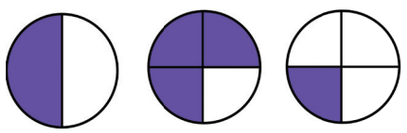
Thus it represent both $\frac{2}{4}$ and $\frac{1}{2}$ are equal it is said to be equivalence.

Exercise 6.5

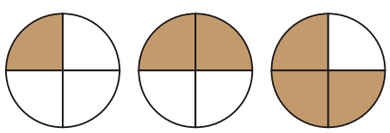
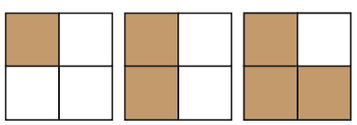
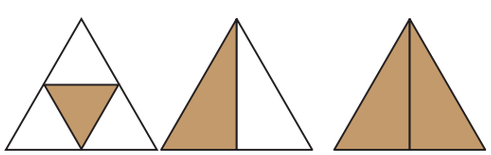
I. Choose the appropriate picture given below for the fraction $\frac{2}{4}$.



II. Choose the appropriate picture given below for the fraction $\frac{1}{2}$.



III. Choose the equivalence according to the fraction given against the pictures

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

Y2W7U7