



GOVERNMENT OF TAMIL NADU

STANDARD FOUR

**TERM - II
VOLUME II**

**MATHEMATICS
SCIENCE
SOCIAL SCIENCE**

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Department Of School Education

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MATHEMATICS

TERM - II

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E-BOOK



ASSESSMENT



UNIT-1

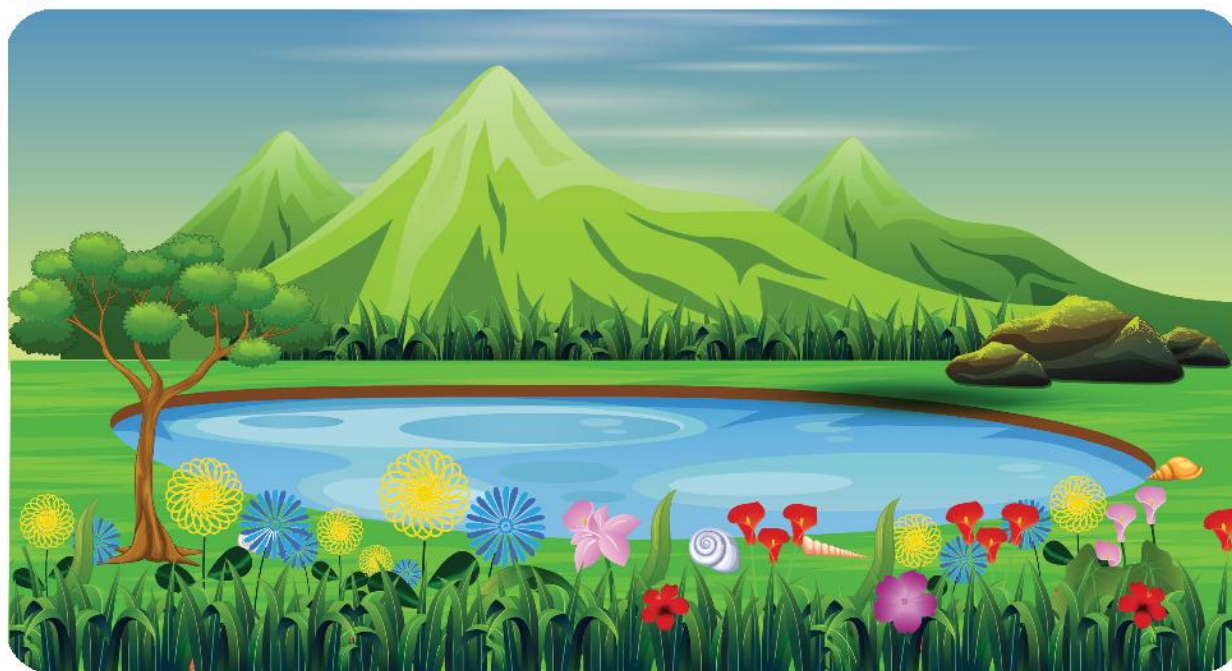
GEOMETRY



Difference between 2-D and 3-D objects:

2-D	3-D
Length and breadth	Length, height and width.
Square, rectangle, circle, triangle, rhombus, parallelograms, trapezium, quadrilateral	Cube, cuboid, cone, cylinder, pyramid.

1.1 Iterative patterns in shapes

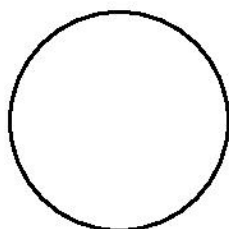




We see patterns in trees, rivers, mountains, shells, clouds, leaves and more. Iteration is the repeated application of a process. Here we are going to see how we use the shapes to form iterative patterns.

1.1.1 Able to draw circles, spirals, ovals.

In the earlier class you have learnt to draw circles.



Circle



Spiral



Oval

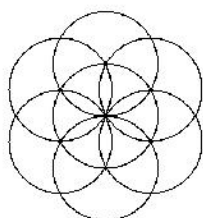


Activity

Draw the above shapes and colour it.

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

EXAMPLES

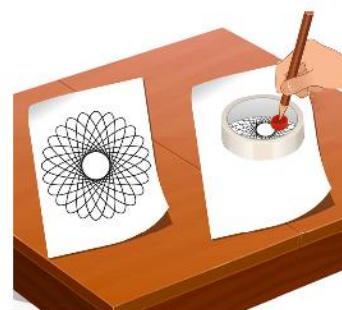


Activity

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 suggest the student to use bangles also instead of cellotape



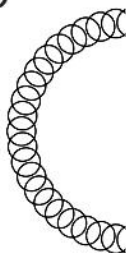
Try This

Complete the patterns using the given shapes and shade with colours of your choice.

i)



ii)

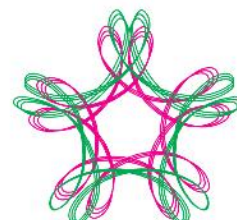
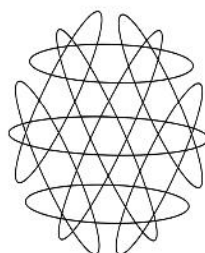


iii)



1.1.2 Differentiate and compare the shapes drawn.

Prepare patterns of shapes of your choice using circles, spirals and ovals. Discuss about it with your friends.



1.1.3 Explore visual examples of repeating patterns

Look at the examples given below:



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.

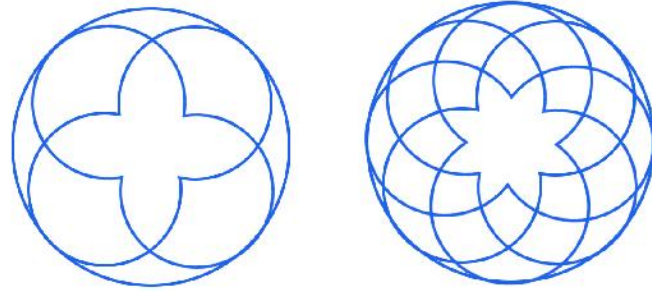


Here, few visual examples of patterns in the surroundings are given.

Rangoli



Spirograph



Observe the patterns in the surroundings. Rangoli is filled with colours using petals of flowers and fallen leaves from the trees according to creativity. Spirographs are prepared with circles, ovals and spirals in a chart or colour paper or with threads. These patterns can also be coloured.

Exercise 1.1

1) Write the shapes of the patterns present in the pictures given below

i)

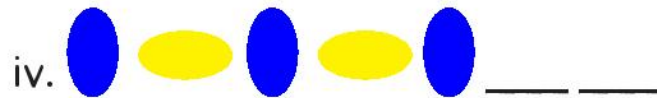
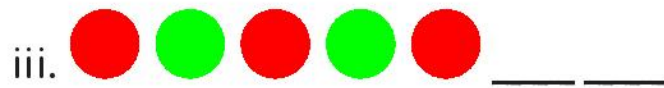


ii)





2) Complete the patterns given below.



3) Draw simple rangoli. Use your own creativity to fill them.

UNIT-2

NUMBERS



2.1 Multiplication:

If a box contains 6 chocolates, how many chocolates are there in 10 such boxes? Shall we calculate the number of chocolates in boxes?

Number of chocolates,

One box	6	$6 \times 1 = 6$
Two boxes	$6 + 6$	$6 \times 2 = 12$
Three boxes	$6 + 6 + 6$	$6 \times 3 = 18$
Four boxes	$6 + 6 + 6 + 6$	$6 \times 4 = 24$
:	:	:
:	:	:
:	:	:
Ten boxes	$6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6$	$6 \times 10 = 60$

Multiplication is the shortest form of repeated addition.

EXAMPLE

If 6 fans are needed for one room. How many fans are needed for 9 rooms?

Solution:

To find the total fans we have to multiply 9 by 6.

$$9 \times 6 = 54$$

54 fans are needed for 9 rooms.

Exercise 2.1

- $4 \times 6 = \square$
- $7 \times 6 = \square$
- $8 \times 6 = \square$
- In a shirt there are 6 buttons, how many buttons will there be in 8 shirts?
- In a carton, there are 9 rows with 6 eggs in each row. How many eggs are there in all?

Complete the 7th table:

	$7 \times 1 = 7$
	$7 \times 2 = 14$
	$7 \times 3 = 21$
	$7 \times 4 = \underline{\hspace{2cm}}$
	$7 \times 5 = 35$
	$\underline{\hspace{2cm}}$
	$7 \times 7 = \underline{\hspace{2cm}}$
	$7 \times 8 = 56$
	$\underline{\hspace{2cm}}$
	$7 \times 10 = 70$

Exercise 2.2

- $3 \times 7 = \square$
- $6 \times 7 = \square$
- $9 \times 7 = \square$
- There are 7 pens in a box. How many pens will be there in 5 boxes?
- One week has 7 days. Calculate the number of days in 10 weeks?



Complete the 8th table: Number of legs in spider



$8 \times 1 = 8$



$8 \times 2 = 16$



$8 \times 3 = 24$



$8 \times 4 = 32$



$8 \times 5 = 40$



$8 \times 6 = \underline{\hspace{2cm}}$



$8 \times 7 = 56$



$8 \times 8 = \underline{\hspace{2cm}}$



$8 \times 9 = \underline{\hspace{2cm}}$



$8 \times 10 = 80$

Exercise 2.3

1. $8 \times 4 = \underline{\hspace{2cm}}$ 2. $8 \times 6 = \underline{\hspace{2cm}}$ 3. $8 \times 10 = \underline{\hspace{2cm}}$

4. One packet contains 8 pencils, how many pencils are there in 9 such packets?

5. The price of one ball is ₹ 10. Find the cost of 8 such balls?

Complete the 9th table:

9

$9 \times 1 = 9$

$9 + 9$

$9 \times 2 = 18$

$9 + 9 + 9$

$9 \times 3 = 27$

$9 + 9 + 9 + 9$

$9 \times 4 = 36$

$9 + 9 + 9 + 9 + 9$

$9 \times 5 = 45$

$9 + 9 + 9 + 9 + 9 + 9$

$9 \times 6 = \underline{\hspace{2cm}}$

$9 + 9 + 9 + 9 + 9 + 9 + 9$

$9 \times 7 = \underline{\hspace{2cm}}$

$9 + 9 + 9 + 9 + 9 + 9 + 9 + 9$

$9 \times 8 = \underline{\hspace{2cm}}$

$9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9$

$9 \times 9 = \underline{\hspace{2cm}}$

$9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9$

$9 \times 10 = \underline{\hspace{2cm}}$





$$9 \times 1 = \underline{\quad}$$



$$9 \times 2 = \underline{\quad}$$



$$9 \times 3 = \underline{\quad}$$



$$9 \times 4 = \underline{\quad}$$



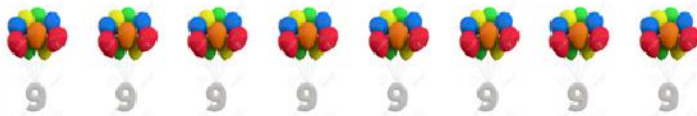
$$9 \times 5 = \underline{\quad}$$



$$9 \times 6 = \underline{\quad}$$



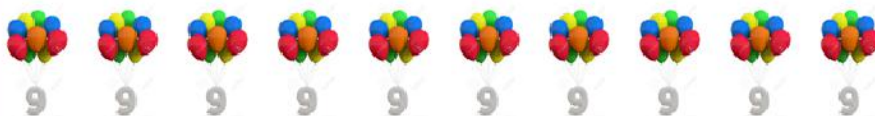
$$9 \times 7 = \underline{\quad}$$



$$\underline{\hspace{2cm}}$$



$$9 \times 9 = \underline{\quad}$$



$$9 \times 10 = \underline{\quad}$$





Exercise 2.4

- $9 \times 3 = \boxed{}$
- $9 \times 6 = \boxed{}$
- $9 \times 10 = \boxed{}$
- A sports team has 9 persons. How many persons will there be in 9 teams?
- Number of rods in a window is 9. Find the number of rods in 7 windows.

Complete the 10th table:

From the tables 1 to 9 we get to know the following:

Practice the following:

$10 \times 1 = 10$	$10 \times 1 = 10$	$10 \times 1 = \underline{\hspace{2cm}}$
$10 \times 2 = 20$	$10 \times 2 = 20$	$10 \times 2 = \underline{\hspace{2cm}}$
$10 \times 3 = 30$	$10 \times 3 = 30$	$10 \times 3 = \underline{\hspace{2cm}}$
$10 \times 4 = 40$	$10 \times 4 = 40$	$10 \times 4 = \underline{\hspace{2cm}}$
$10 \times 5 = 50$	$\underline{\hspace{2cm}}$	$10 \times 5 = \underline{\hspace{2cm}}$
$10 \times 6 = 60$	$\underline{\hspace{2cm}}$	$10 \times 6 = \underline{\hspace{2cm}}$
$10 \times 7 = 70$	$\underline{\hspace{2cm}}$	$10 \times 7 = \underline{\hspace{2cm}}$
$10 \times 8 = 80$	$\underline{\hspace{2cm}}$	$10 \times 8 = \underline{\hspace{2cm}}$
$10 \times 9 = 90$	$10 \times 9 = 90$	$10 \times 9 = \underline{\hspace{2cm}}$
$10 \times 10 = 100$	$\underline{\hspace{2cm}}$	$10 \times 10 = \underline{\hspace{2cm}}$

Exercise 2.5

Fill in the boxes by multiplying with 10, 100, 1000.

- $10 \times 7 = 70$
- $100 \times 16 = \boxed{}$
- $1000 \times 9 = 9000$





4. $10 \times 696 =$

5. $100 \times 96 = 9600$

6. $1000 \times 6 =$

Note:

When a number is multiplied by 10, 100, 1000, it is enough to write one zero, two zeros, three zeros respectively

Multiply by 1

$$10 \times 1 = 10$$

$$1 \times 7 = 7$$

$$136 \times 1 = 136$$

$$1 \times 9936 = 9936$$

$$2000 \times 1 = 2000$$

$$1 \times 789 = 789$$

The product of one and any number is the number itself.

Multiply by 0

$$10 \times 0 = 0$$

$$0 \times 6 = 0$$

$$276 \times 0 = 0$$

$$0 \times 7936 = 0$$

$$3000 \times 0 = 0$$

$$0 \times 675 = 0$$

The product of zero and any number is zero.

Order of multiplication

$$4 \times 6 = 24 = 6 \times 4$$

$$796 \times 9 = 7164 = 9 \times 796$$

$$136 \times 15 = 2040 = 15 \times 136$$

$$1326 \times 6 = 7956 = 6 \times 1326$$

$$1000 \times 9 = 9000 = 9 \times 1000$$

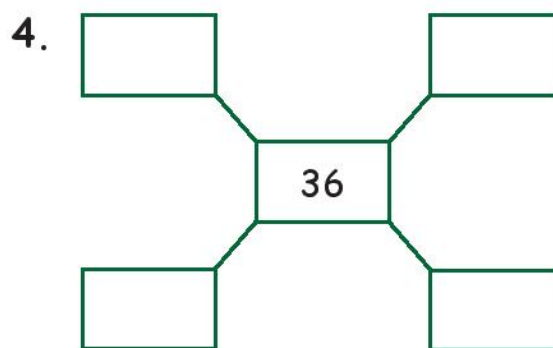
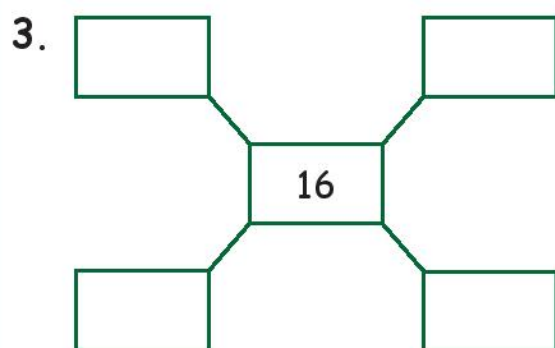
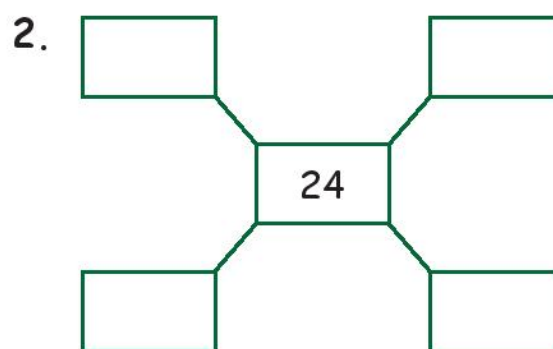
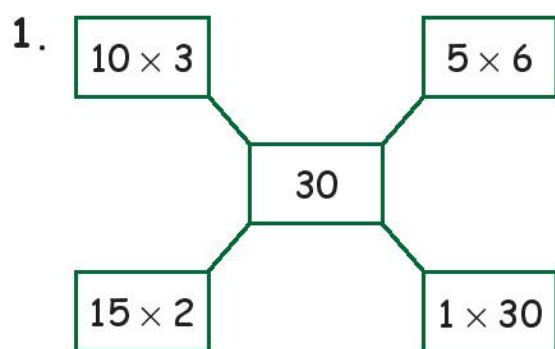
$$26 \times 24 = 624 = 24 \times 26$$

The product of two number does not change, if we interchange the order of numbers.



Exercise 2.6

Complete the following. One is done for you.



2.2 Multiplication by lattice algorithm (up to 2 digit number by 2 digit number and 3 digit number by single digit number)

2.1.1 Able to do elementary multiplication of 2 digit by 2 digit and 3 digit by single digit numbers using lattice algorithm and the standard (column) algorithm.

Multiplication of 2 digit by a 2 digit number:

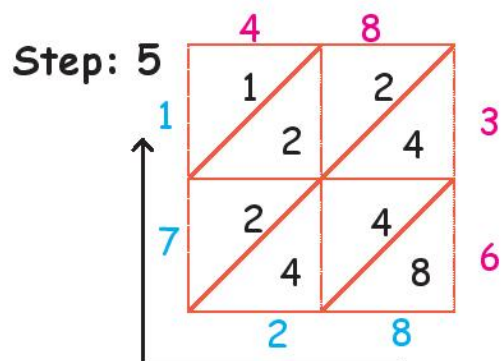
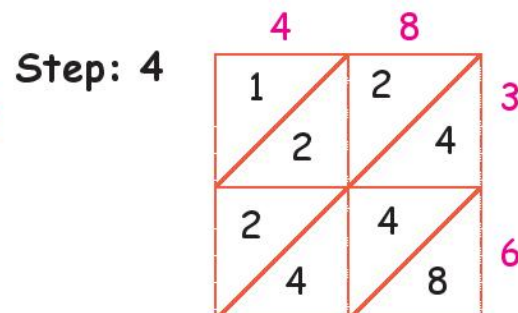
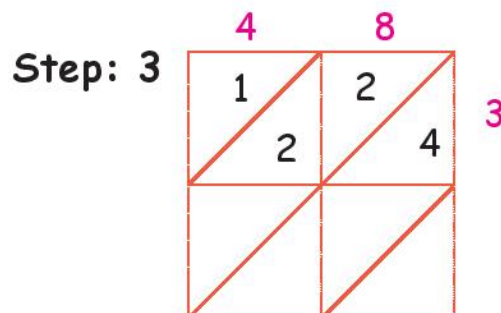
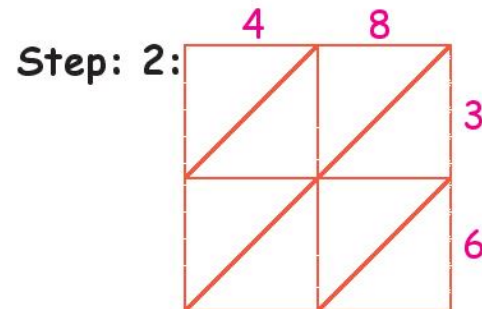
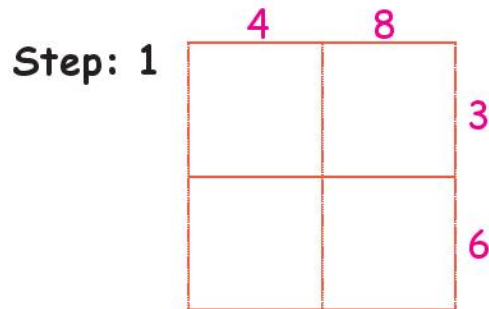


Lattice Algorithm:-



EXAMPLE 1

$$48 \times 36$$

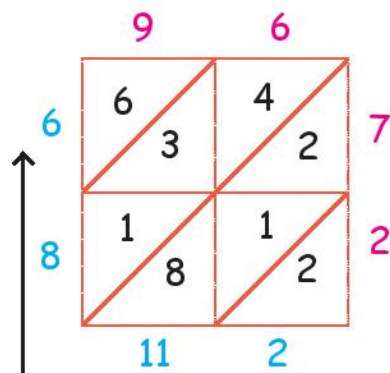


$$48 \times 36 = 1728$$



Multiply: 96×72

EXAMPLE 2



$$96 \times 72 = 6912$$

Standard Algorithm:

Multiply: 48×36

$$36 = 30 + 6$$

$$\begin{array}{r} 48 \times 36 \\ \hline 288 \\ 144 \\ \hline 1728 \end{array}$$

Step 1:	48×6 288 ones
Step 2:	48×30 1440 ones
Step 3:	$288 + 1440$ 1728 ones

EXAMPLE 3

In a school there are 24 desks in each class room. If there are 18 class rooms in the school, Find the total number of desks.



Solution:

Number of desks in each class rooms = 24

Number of desks in 18 class rooms = 18×24

$$24 = 20 + 4$$

Standard Algorithm:

Multiply: 18×24

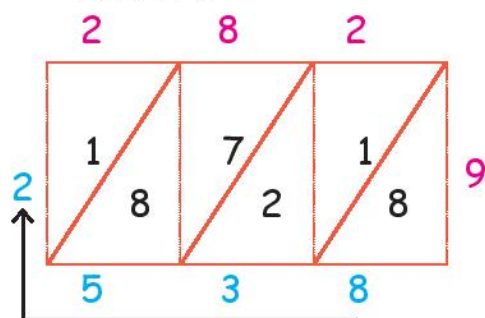
$$\begin{array}{r} 18 \times 24 \\ \hline 72 \\ 360 \\ \hline 432 \end{array}$$

Step: 1	Step: 2	Step: 3
18	18	72
$4 \times \text{ones}$	$20 \times \text{ones}$	$360 +$
72 ones	360 ones	432

Multiply 3 digit number by 1 digit number: Lattice Algorithm:

EXAMPLE 1

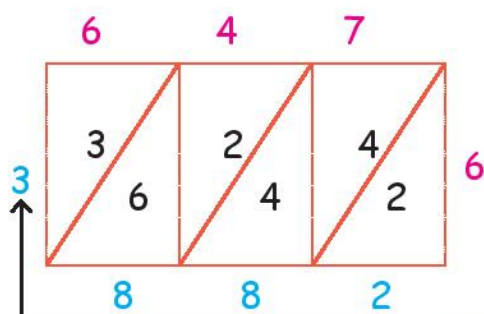
$$282 \times 9$$



$$282 \times 9 = 2538$$

EXAMPLE 2

$$647 \times 6$$



$$647 \times 6 = 3882$$

Standard Algorithm

EXAMPLE 3

$$282 \times 9$$

TH H T O

⑦ ①

2 8 2

$\times 9$

2 5 3 8

$$282 \times 9 = 2538$$

Step: 1

Multiply the ones: $2 \text{ ones} \times 9 = 18 \text{ ones}$

$= 10 \text{ ones} + 8 \text{ ones}$

$= 1 \text{ ten} + 8 \text{ ten}$

write 8 in the ones place and carry over 1 to the tens place.



Step: 2 Multiply the tens: $8 \text{ tens} \times 9 = 72 \text{ tens}$.

$$72 \text{ tens} + 1 \text{ tens} = 73 \text{ tens}$$

$$= 70 \text{ tens} + 3 \text{ tens}$$

$$= 7 \text{ hundreds} + 3 \text{ tens}$$

Write 3 in tens place and carry over 7 to the hundred place.

Step: 3 Multiply the hundreds:

$$2 \text{ hundreds} \times 9 = 18 \text{ hundreds.}$$

$$18 \text{ hundreds} + 7 \text{ hundreds} = 25 \text{ hundreds.}$$

$$= 20 \text{ hundreds} + 5 \text{ hundreds}$$

$$= 2 \text{ thousands} + 5 \text{ hundreds}$$

EXAMPLE 4

A book has 396 pages. How many pages are there in 9 such books?

Solution:

No. of pages in a book = 396 pages

Number of pages in 9 books = 396×9

= 3564 pages.

TH H T O

⑧ ⑤

3 9 6

× 9

3 5 6 4

Exercise 2.7

1. Multiply the following numbers by using lattice method.
(i) 52×49 (ii) 347×5 (iv) 127×7
(v) 65×37 (vi) 789×4 (vii) 37×29
2. Multiply the following numbers by using standard method;
(i) 72×29 (ii) 31×27 (iii) 93×42
(iv) 124×6 (v) 206×8 (vi) 479×3
3. One box contains 25 apples. How many apples are there in 36 such boxes?
4. There are 28 pages in a daily newspaper. If Ajay buys newspapers for 45 days, how many pages will it contain?
5. A truck carries 125 bags of rice. If each bag has 9 kg of rice, how many kg of rice will there be in the truck.
6. If the cost of one chair is ₹ 857. What will be the cost of 6 chairs?

UNIT-3

PATTERNS



Magic squares

Create magic square by using multiples of ten 10, 20, 30, 40, 50, 60, 70, 80 and 90

20	90	40
70	50	30
60	10	80
150		



Try This

1. Frame magic squares using multiples of nine.
2. Frame magic squares using multiples of hundred.

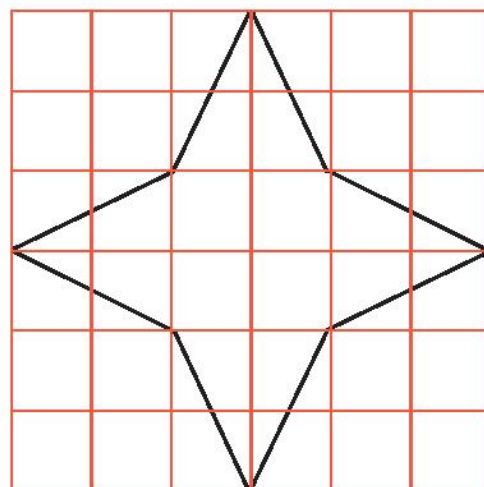
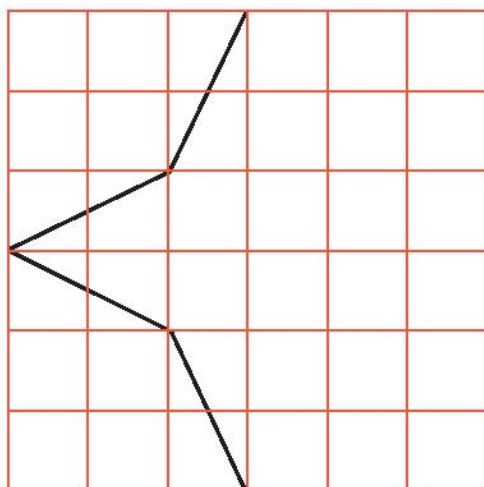
3.1 Patterns in Geometry

Able to identify symmetry in geometrical patterns.

Symmetry

The figures which can be divided into two parts of equal shape and size are called symmetrical figures.

EXAMPLE 1



EXAMPLE 2



Activity

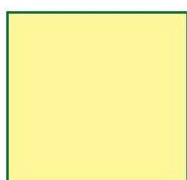
Write all the alphabets and then draw a symmetrical lines for each letters.



Exercise 3.1

I. Draw symmetrical lines for the following shapes

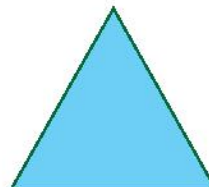
1.



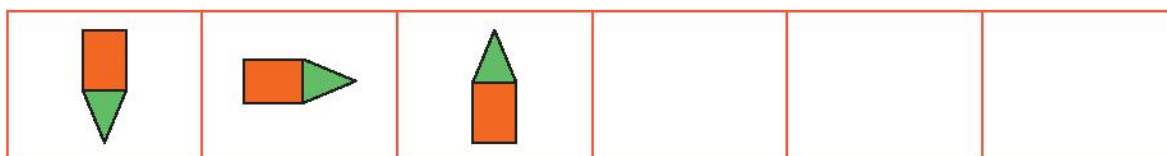
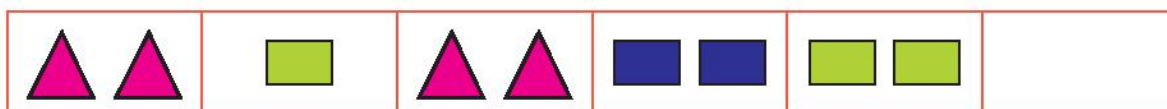
2.



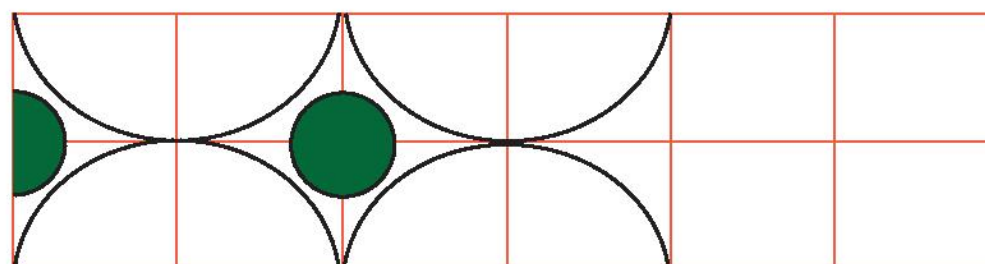
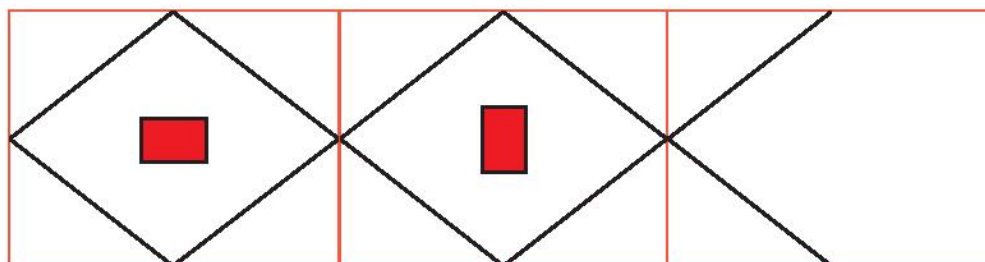
3.



II. Fill in the Boxes



III. Complete the patterns





Exercise 3.2



Fill in the blanks:

1. 1, 7, 13, 19, ____, ____, ____, ____

2.    ____

3.    ____

4. 5, 10, 15, 20, ____, ____, ____

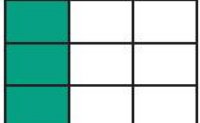
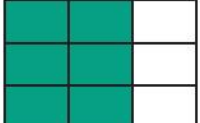
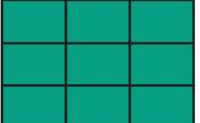
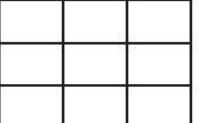
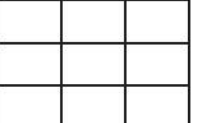
5. 12, 5, 11, 6, 10, 7, ____, ____, ____

6.    ____

7.    ____

8.    ____

9.      ____

10.     

UNIT-4

MEASUREMENTS



4.1 Introduction

Nisha and Joe were friends. Nisha had a pet animal. It was a dog. It was 25kilogram in weight. Joe had a pet animal. It was a cat. It was 15kilogram in weight.

Which animal is heavy?

Dog Cat



Which is heavy?

Balloon Ball



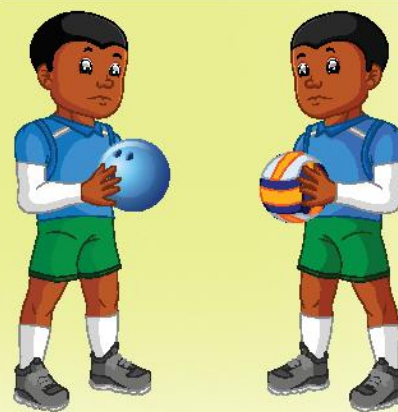
Which is heavy?

Paper Book



Which is heavy?

Iron ball Plastic ball

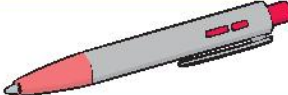




Activity

Estimate and tick the correct option

Tick the appropriate unit (gram/ kilogram) to measure the weight of the following.

S. No	Objects	gram	kilogram
1.			
2.			
3.			
4.			
5.			
6.			

Different weighing instruments are used to measure weight.



Common
balance



Digital
balance



Weigh
machine



Spring
balance

Note:

Vegetables,
fruits and
rice are
measured
in kilogram
(kg)

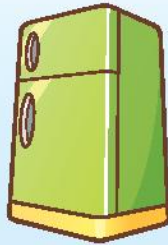


Activity

Circle the estimated weight of the given images.



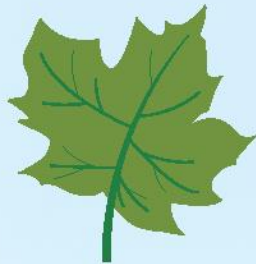
5g 5kg



160g 160kg



2000g 2000kg



1g 1kg



50g 50kg

Let us know the Weighing stones are in grams and kilograms



gram can be written as "g"



+

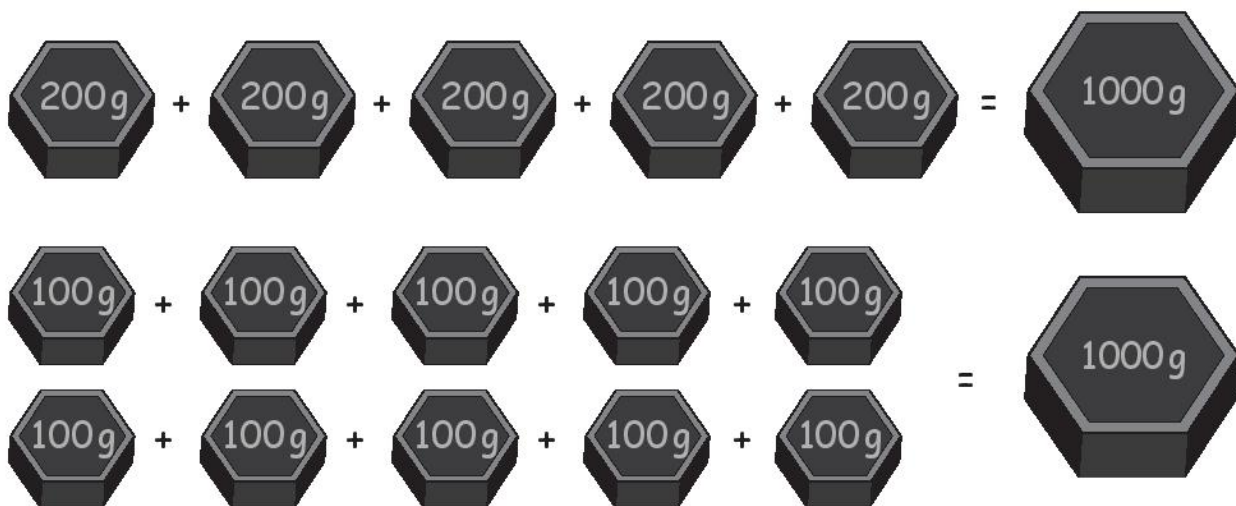


=



Note:

Gold, pepper, Tea powder, silver, Coffee powder etc. are measured by grams.



1 kilogram = 1000grams

Change into grams and kilogram

- a) 1 kg = 1000g d) 15 kg = 15000g
b) 2 kg = _____g e) 23 kg = _____g
c) _____kg = 3000g

4.2 Addition and subtraction of measures of weights.

EXAMPLE 1

1. Add 4 kg 530 g and 3 kg 698 g.

kg	g
① 4	① 530
(+) 3	698
8	228

Answer: 8 kg 228 g

2. Subtract 23 kg 345 g from 55 kg 207 g

kg	g
④ 55	⑪⑩ 207
(-) 23	345
31	862

Answer: 31 kg 862 g

EXAMPLE 2

Kavitha bought 3 kg 435g of apples, 1 kg 350g of oranges and 2 kg 355g of mangoes. What is the total weight of the fruits that she bought?

Solution:

Weight of apples = 3 kg 435g

Weight of oranges = 1 kg 350g

Weight of mangoes = 2 kg 355g

Total weight = 7 kg 140g

kg	g
① 3	① ① 435
1	350
(+) 2	355
7	140

EXAMPLE 3

A box full of bottles weighs 12 kg 248g. The weight of empty box is 2 kg 290g. What is the weight of the bottles in the box?

Solution:

Weight of the box full of bottles = 12 kg 248g

Weight of the empty box = 2 kg 290g

Weight of the bottles in the box is 9 kg 958g.

kg	g
① 12	① ① ④ 248
(-) 2	290
9	958

Exercise 4.1

1. Add:

kg	g
3	215
(+) 4	163

kg	g
6	525
(+) 2	363

kg	g
7	255
(+) 2	163



2. Subtract:	kg	g	kg	g	kg	g
	43	650	26	754	54	115
	(-) 11	340	(-) 20	330	(-) 36	000

- Raman bought 3 kg 250 g of tomatoes, 5 kg 110 g of potatoes and 3 kg 750 g of onions. What is the total weight of the vegetables?
- Kannan bought some fruits and vegetables whose total weight is 3 kg 480 g. If the weight of fruits is 1 kg 657 g, find weight of the vegetables.
- The weight of first bag is 1 kg 200 g more than the weight of the second bag. If the weight of the first bag is 3 kg 500 g. Find the weight of the second bag.

4.3 Estimate the weight of an object and verify using a balance.

Introduction

Sumathi went to the market along with her mother. In the market they kept the vegetables heap. She evaluates the vegetables.





And then check through the balance.



1 kg 250g



1 kg 500g



750g



2 kg

Sumathi's approximate value is near to the correct weight. Potato's weight is exactly correct



Activity

Complete the table.

S. No	Objects	approximate value	correct value
1.			
2.			
3.			
4.			
5.			



Exercise 4.2

1. Mohana bought 2 kg 600 g grapes and 1 kg 450 g guavas. How much more did Mohana buy grapes than guavas, by weight?

1) 150 g

2) 1 kg 150 g

3) 1 kg 200 g

4) 4 kg

2. Put $>$, $<$ or $=$ in the boxes provided below.

50 g

340 g

640 g

800 g

34 kg

22 kg

1000 g

1 kg



3. Add:

kg	g
2	326
(+) 6	123

kg	g
16	564
(+) 11	270

kg	g
4	433
(+) 9	264

4. Subtract:

kg	g
8	645
(-) 6	375

kg	g
7	900
(-) 2	950

kg	g
5	147
(-) 2	140

5. The weights of three babies are respectively 3 kg 650 g, 5 kg 420 g and 4 kg 750 g. Find their total weight?
6. A shopkeeper had 275 kg 450 g of coffee powder. He sold 80 kg 475 g. How much coffee powder will be left?



5.1 Introduction to fractions

5.1.1 Able to observe items being a part or parts of a whole.

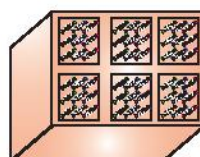
Raja bought a cake for his four children. He has to make it four equal parts. Then he took a knife and sliced it into four equal parts. Then he gave it to his children and they had eaten it happily.



Look at the following pictures keenly



Number blocks



Chocolates



Label



Ice apple

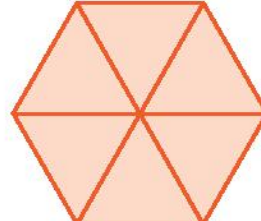
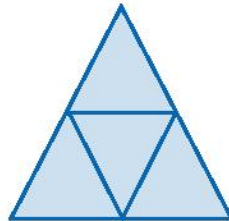
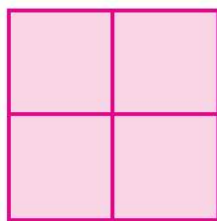
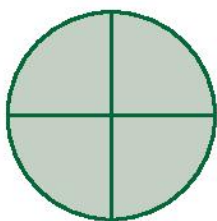


The Pictures given above are divided into equal parts.

Complete the table?

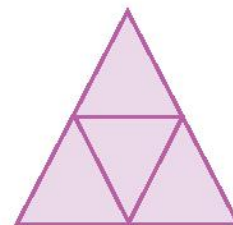
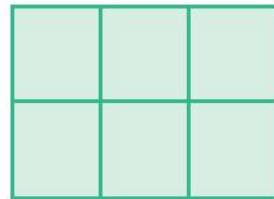
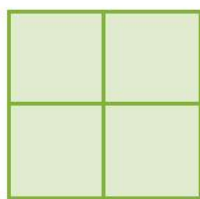
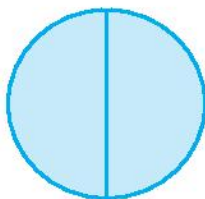
S.No	Name of the picture's	Number of equal parts
1		
2		
3		
4		

Following shapes are divided into equal parts.



Exercise 5.1

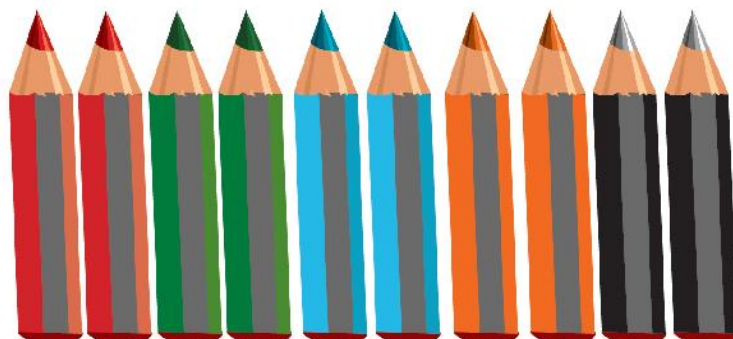
1. Observe the following pictures and write how many equal parts are they divided into.



2. Draw square and circle. Make it into four equal parts.
3. Draw a rectangle and divide it into eight equal parts.

5.1.2 Able to find the fractional part of a Collection

Bala's father bought a colour pencil box for him. The box had in 10 colour pencils such that 2 red, 2 green, 2 blue, 2 orange and 2 black colour pencils.



Fraction of orange coloured pencils

Represents two parts of whole i. e. $\frac{2}{10}$

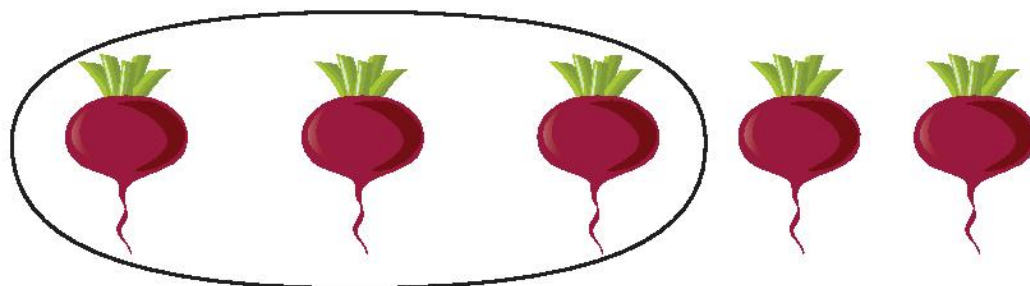
The fraction part of blue Colour pencils = $\frac{2}{10}$

The fraction part of black colour pencils = $\frac{2}{10}$

The fraction part of green colour pencils = $\frac{2}{10}$



Priya bought $\frac{1}{2}$ kg of beet root that counts to 5, that are given below. Find the fractional part of circled and uncircled beet roots.

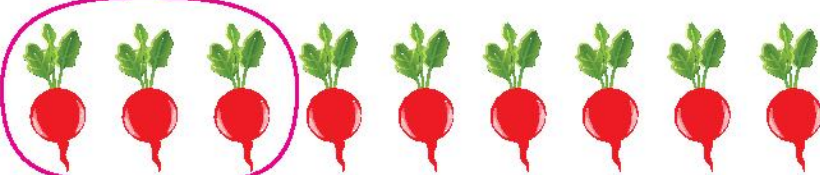


The fractional part of circled beet roots = $\frac{3}{5}$

The fractional part of uncircled beet roots = $\frac{2}{5}$

Exercise 5.2

1. Write the fractional part for the pictures that is circled.

2. Match the following:

	3/7
	2/5
	4/9

3. Mark the given pictures with the fractions given below.

1	$\frac{3}{8}$	
2	$\frac{2}{7}$	
3	$\frac{5}{9}$	



5.1.3 Able to identify the notation of fractions:

Ramu and Akil playing with their friends Rangan and Thangam. Ramu's mother had an apple, so she called Ramu and Akil. She made it into two halves and gave it to them. She totally forgot Rangan and Thangam. So she recollected the two pieces of apple from (her son) them. Then she made it as four equal parts and gave it to them.



An apple fruit brought by Ramu's mother = 1

Here 1 means whole

Two equal parts of an apple.

First one half given to Ramu = $\frac{1}{2}$

Other half given to Akil = $\frac{1}{2}$

If a whole is divided into two parts then its denominator is 2.

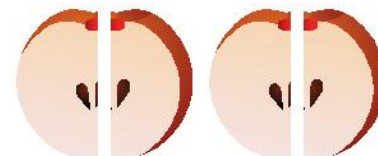
A whole is divided into two equal parts.

The divided parts is denominator.

Here $\frac{1}{2}$ which means 2 is denominator and 1 is numerator.



When Ramu's mother collected the two equal parts of an apple from her sons and sliced it once again into four equal parts.



Four equal parts of an apple (the whole)

A part given to Ramu = $\frac{1}{4}$

A part given to Akil = $\frac{1}{4}$

A part given to Rangan = $\frac{1}{4}$

A part given to thangam = $\frac{1}{4}$

Denominator is the total number of parts that make up a whole.

Numerator represents the number of equal parts on a whole.

If a whole is divided into four equal parts then its denominator is 4.

In $\frac{1}{4}$, 4 is the denominator and 1 is the numerator.



EXAMPLE

There are 10 guavas in a basket which are equal sized.

Here the 10 guavas makes a whole.



So it is the denominator (10 guavas = whole)

If we take 4 guavas = $\frac{4}{10}$



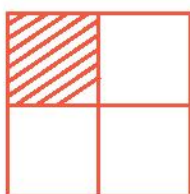
Now 10 is the denominator and 4 is the numerator.

Remaining fruits in the basket = $\frac{6}{10}$

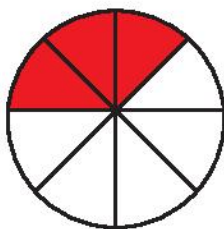


Here 10 is the denominator and 6 is the numerator.

Numerator and Denominator of different Shapes.



The square is divided into four equal parts 4 equal parts said to be denominator, in this four parts one portion (part) is coloured, so the coloured one portion is numerator. Now we can write this as $\frac{1}{4}$.



This circle is divided into eight equal parts. So its denominator is 8. In the 8 parts coloured 3 parts are said to be numerator. so its numerator is 3. Now we can write it as $\frac{3}{8}$

$$\frac{3}{8} = \frac{\text{Numerator}}{\text{Denominator}}$$

Exercise 5.3

I. Write the numerator and denominator for the following Numbers.

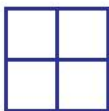
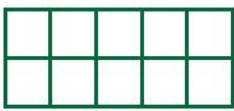
1. $\frac{3}{7}$

2. $\frac{4}{6}$

3. $\frac{5}{10}$

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

II. shade the parts according to the number and write the numerator and Denominator.

S.No	Fraction	Image	Numerator	Denominator
1	$\frac{2}{6}$			
2	$\frac{3}{4}$			
3	$\frac{5}{10}$			
4	$\frac{1}{4}$			
5	$\frac{3}{8}$			

5.1.4 Use the vocabulary as half, quarter, three fourth, semi, partial and whole.

Ravi had two Children. He bought a pencil for Kabilan and a pomegranate for Akilan. Akilan doesn't have pencil. Then Kabilan said "I will give you a pencil". So Kabilan cuts the new pencil into two halves gives to his brother Akilan and another half he kept himself.

Akilan was very thankful to Kabilan. so he said that he will give him one fourth or quarter part of the pomegranate to him. Akilan cuts the fruit into two halves and he took one half and once again cuts into two equal parts as quarter (one - fourth). Now Akilan gave one fourth portion to Kabilan and he kept three fourth for himself.

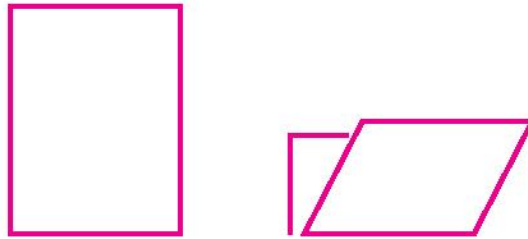




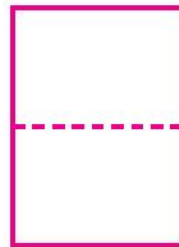
Activity

Take a sheet of paper. Fold it along the centre.

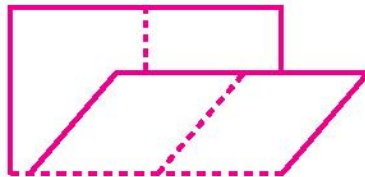
Observe the crease has divided the paper into two equal parts.



Open the paper to observe the two equal halves.



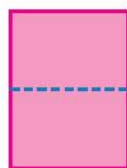
Fold the paper again as shown below.



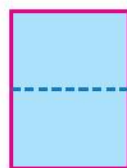
Observe the two crease lines has divided the paper into four parts.



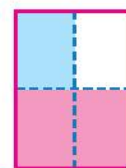
Whole



Two
equal
halves



Four equal
quarters



One half and one quarter
makes three fourth



Activity

Ask the students to take a ribbon and cut it as half, half into one fourth, and join one half and one fourth to make three fourth. At last join all portion, its make whole.

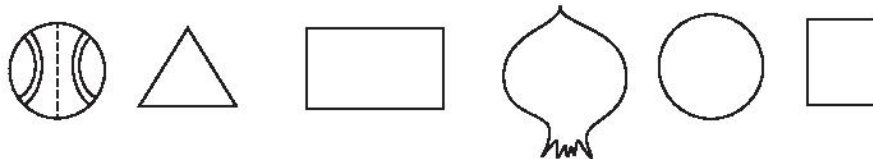
Complete the given pictures. One is done for you.



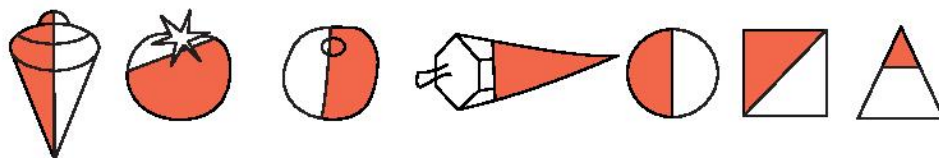
The above pictures are divided into two equal parts. Every parts represents half (or) semi. So we call it as half (or) semi.

Exercise 5.4

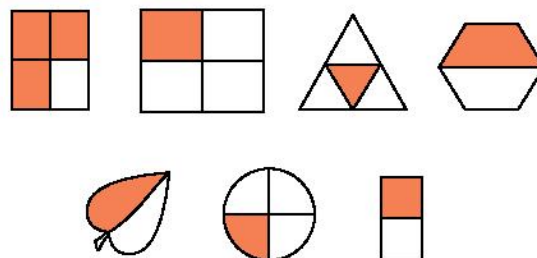
I. Colour or shade half portion of the following pictures:



II. Tick the picture that represent semi portion.



III. Write appropriately which represent half, quarter and three fourth.



5.1.5 Able to Define fractions:

Swathi is studying fourth standard. Today she has won the chess championship. So, the class teacher has bought a cake for her. There are 19 students and a teacher in her class. So, she cuts the cake into 20 equal parts.

Teacher: students, I have bought a cake, the cake is a whole part. Swathi divided the whole into 20 equal parts, everybody had a piece that is 1 part.

A piece of cake given to one student is one out of twenty. We can write it as $\frac{1}{20}$

We have $\frac{1}{20}$. We call numbers like this as fraction.

In $\frac{1}{20}$, 1 is numerator, 20 is denominator.

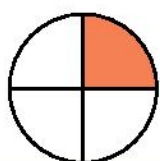
Thus the Combination of number as a numerator and denominator is called as a fraction.

Definition:

A fraction is a part or parts of a whole.

$$\text{Fraction} = \frac{\text{Numerator}}{\text{Denominator}}$$

Observe the following pictures:

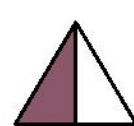
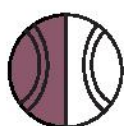
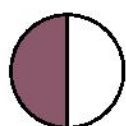


A circle is divided into four equal parts. In this four parts only one part is shaded.

The shaded portion is fraction = $\frac{1}{4}$ (or) one fourth

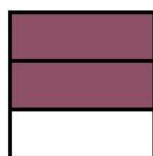
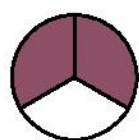
Division of the whole:

The whole portion is divided into two equal parts. In this two parts, one part is coloured or shaded. Fraction of the shaded part = $\frac{1}{2}$ (half).

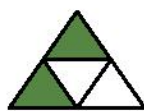
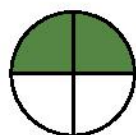




The whole portion is divided into three equal parts. In that, two parts are shaded. Fraction of the shaded parts = $\frac{2}{3}$ (two third).

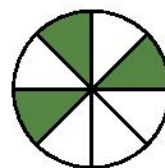
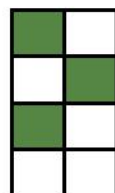
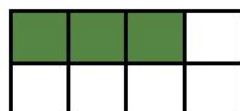


The whole portion is divided into four equal parts. In that, two parts are shaded. Fraction of the shaded parts = $\frac{2}{4}$ (two fourth).



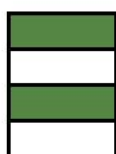
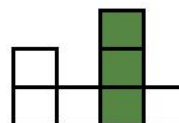
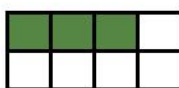
The whole portion is divided into eight equal parts. In that, three parts are shaded. Fraction of the shaded parts = $\frac{3}{8}$ (Three eighth)

numbers such as $\frac{1}{2}$, $\frac{2}{3}$, $\frac{2}{4}$, $\frac{3}{8}$ are examples of fraction.

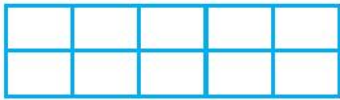
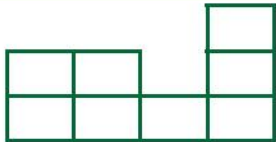


Exercise 5.5

I. Write the fraction for the shaded portions of the given figures.



II. Shade the figure according to the fraction

1	$\frac{3}{4}$	
2	$\frac{5}{10}$	
3	$\frac{1}{8}$	
4	$\frac{2}{6}$	

5.1.6 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?

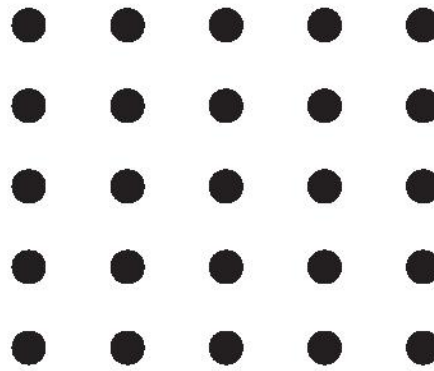


So, Rani will get 2 out of 4 dosas and Gowri will get 2 out of 4 dosas.



Activity 1

Draw lines to join the dots given below. It could be vertical, horizontal or diagonal.



There are _____ equal parts.

Shade as many parts as you wish.

It can be written as _____ out of _____ parts are shaded.



Let us try

Divide the following figure into many equal parts. (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.

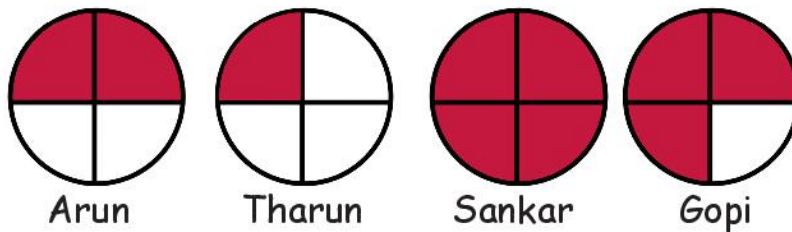


Activity 2

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.



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

Half ($\frac{1}{2}$) portion was coloured by _____

Whole portion was coloured by _____

Three fourth ($\frac{3}{4}$) of the portion was coloured by _____

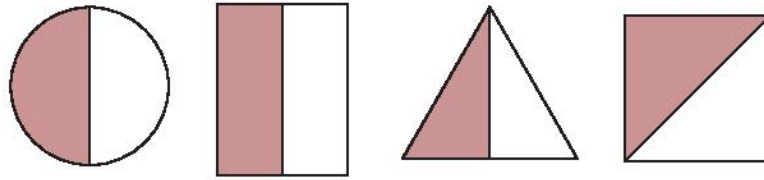
5.1.7 Able to identify half, one fourth, and three fourths of a whole.

Half

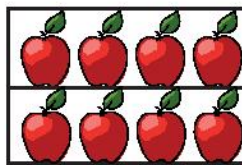
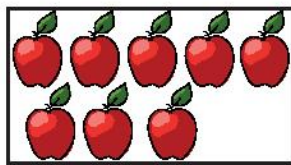
Whole	Two halves	
		
		
		



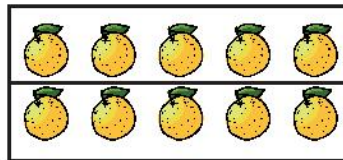
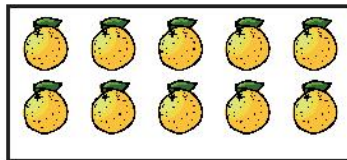
The above pictures were divided into two equal halves.



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



Half of 8 is 4.

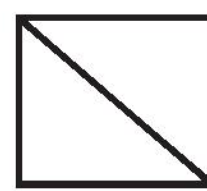
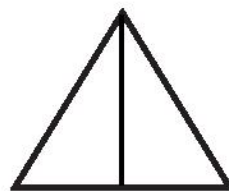
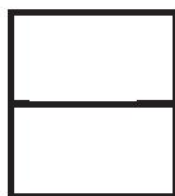
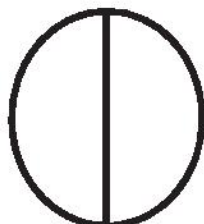
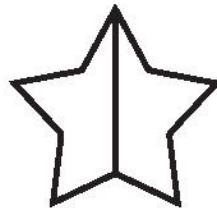


Half of 10 is 5.

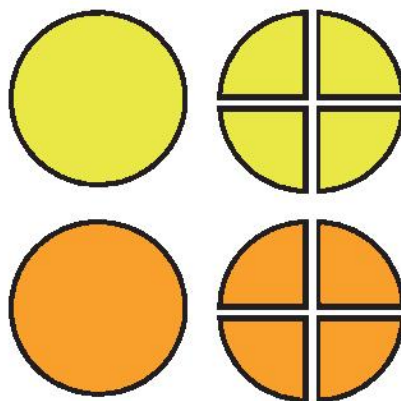
The above collection of whole is divided into two equal parts.

Exercise 5.6

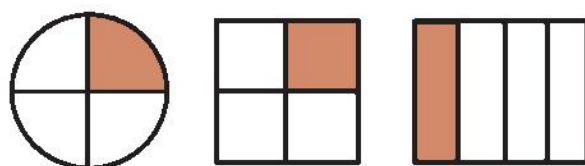
I. Shade the half portion of the given pictures



One fourth (quarter)



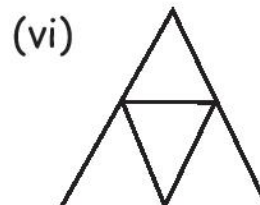
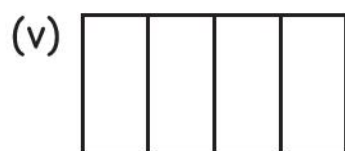
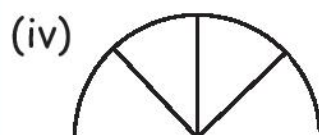
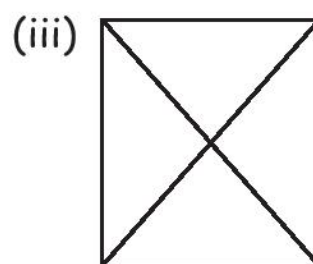
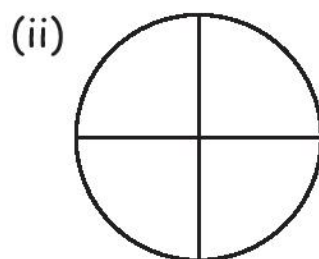
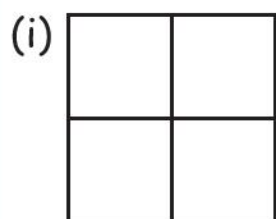
Each fruit is divided into four equal quarters.



Every picture is divided into four equal parts and the shaded portion represents quarter or one fourth.

Exercise 5.7

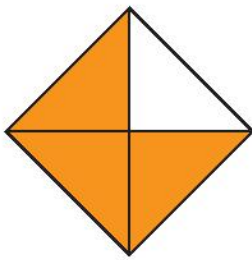
Shade the quarter portion in the following figures.



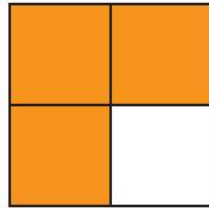


Three Fourth

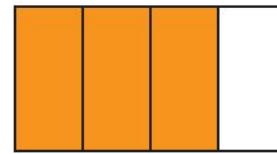
(i)



(ii)



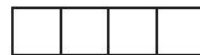
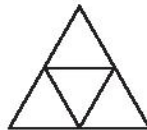
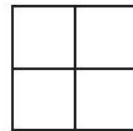
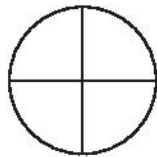
(iii)



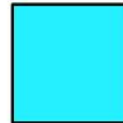
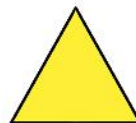
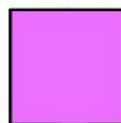
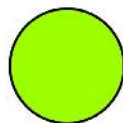
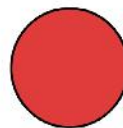
Each picture is divided into 4 parts. In this 3 parts are shaded. Shaded portion is called as 'three fourth'.

Exercise 5.8

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.

5.1.8 Able to identify and explain the fractions $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$

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 remaining two parts she planted lady's finger.

She used all the 4 equal parts equal to 1 whole.

The portion of brinjal planted out of the whole = $\frac{1}{4}$, we call this as 'quarter' or 'one-fourth'.

The portion of Pumpkin planted out of the whole = $\frac{1}{4}$, we call this as 'quarter' or 'one-fourth'.

The portion of Pumpkin and brinjal planted out of the whole = $\frac{1}{2}$, we call this as 'half'.

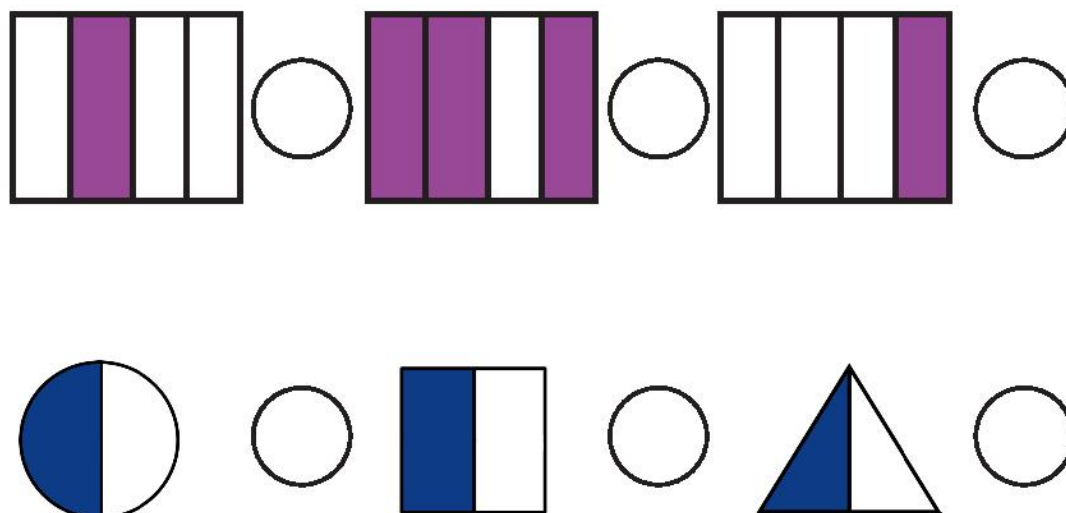
The portion of Ladys finger and Pumpkin planted out of the whole = $\frac{3}{4}$, this is called as **three fourth**

Can we try this:

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

Exercise 5.9

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



Activity 3

Take an old newspaper and spread it out. Try to occupy the full space thus formed without touching the floor. You can do so by sitting on it.

Fold it into half and try to occupy the space without touching the floor. You can do so by standing on it.

Fold it further into half and try to occupy the space without touching the floor. You can do so by standing on it with one leg.

Fold it further into half. Can you occupy the space in the newspaper without touching the floor?

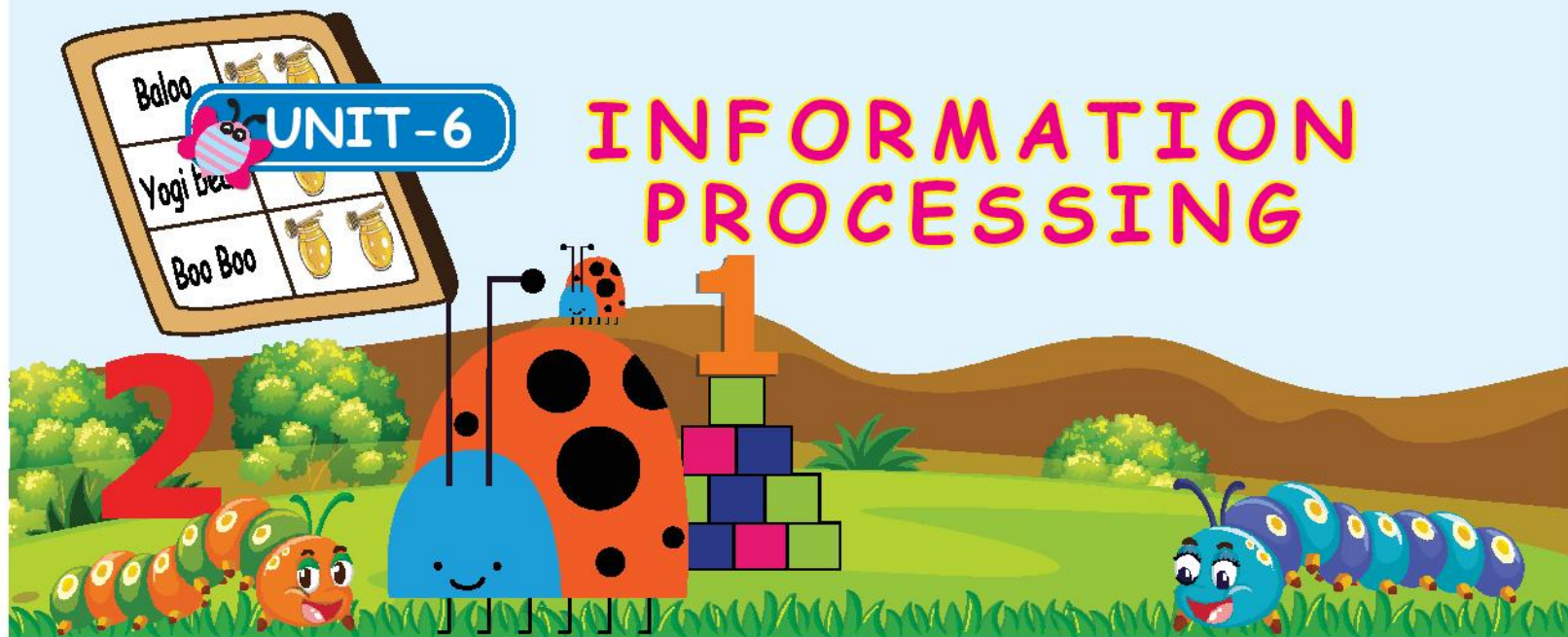
You can do so by standing on your toe.

Fold the newspaper into further half and try to occupy it now. Can you do so?

Draw the outline of the newspaper in every step. Observe and mark the fractions.

UNIT-6

INFORMATION PROCESSING



6.1 Modelling

1. Route Map

- Able to locate short and long paths.
- Able to find out and check for connectivity between places.



Shortest path : School → house.

School → play ground → house

Longest path :

School → library → computer centre → house



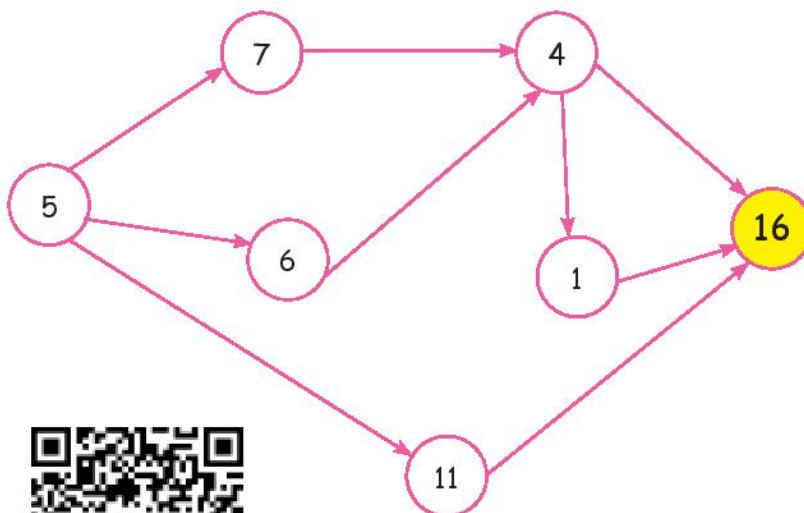
Activity 1

- ☞ In how many ways you can go from your home to a hospital nearby.
- ☞ Draw a path and then identify shortest path and longest path.

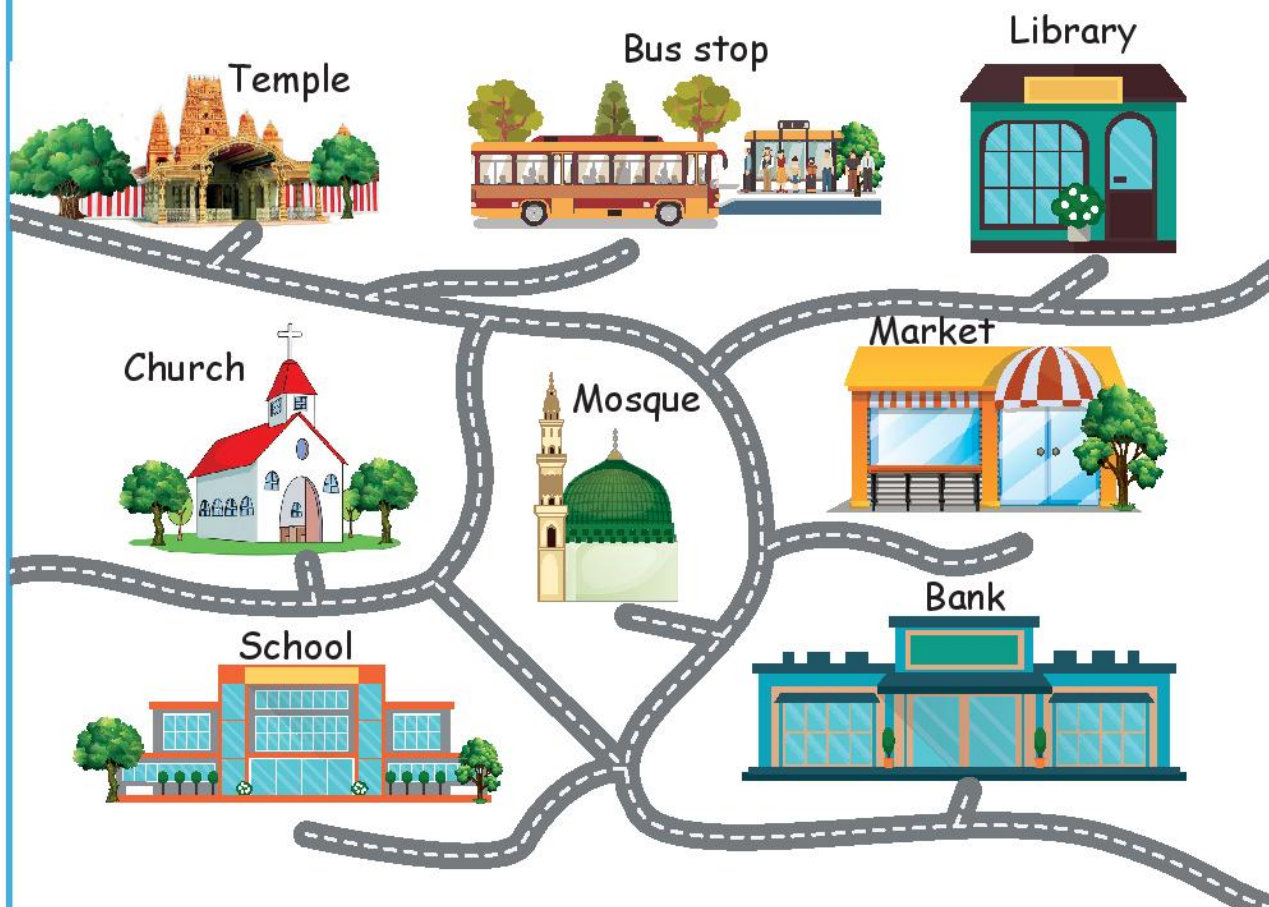


Activity 2

Write the shortest and longest path of addition of 16



Exercise 6.1





- (i) How many paths are there to reach temple from bus stop?
- (ii) Which is the longest path and shortest path?
- (iii) Specify the two places on the route from market to school?
- (iv) _____ is the place found between temple and mosque
(a) Bank (b) Church (c) Library

EXAMPLE

Creating a plan to set - up a garden in the school.

Step 1 : Levelling the land.

Step 2 : Setting up fence.

Step 3 : Sowing seeds.

Step 4 : Removing the weeds.

Step 5 : Watering once in five days.



Activity 1

List out the steps for the cleanliness programme in your school.





Activity 2

One of the teams frame the rules. One team prepares to play and the other team monitor the game.

Water filling Competition



EXAMPLE

Group I : Making the students to stand in line.

Group II : Measuring the height of the students.

Group III : Taking notes.

Name	Height in cm
Guru	120
Selvi	124
Kumar	110
Ammu	108

Group IV : Arrange the students based on height.

Group V : Ask the students to sit down in their places.



Exercise 6.2

1. Prepare a plan to buy the necessary books for the school library.
2. Prepare a project on the school annual day function.