



Government of Tamil Nadu

MATHEMATICS

V STANDARD

**Untouchability
Inhuman - Crime**

Department of School Education

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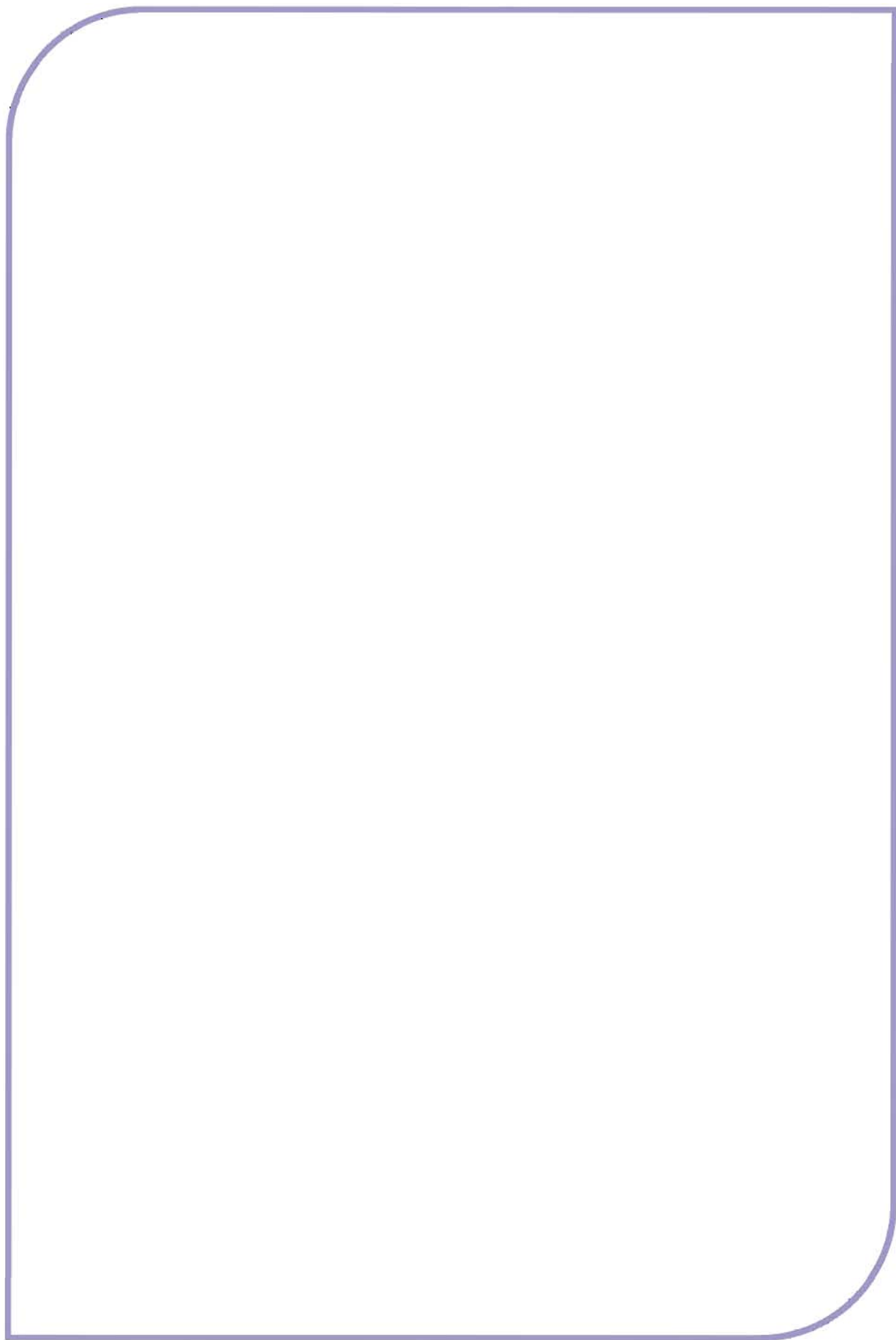
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Ravi, Rahul and Rani are excitedly talking about the recently concluded IPL cricket match.

RAVI : Did you watch the cricket match yesterday on T.V.

RAHUL : Yesterday, my uncle took me to the stadium and I saw the match live.

RANI : How was the crowd at the stadium?

RAHUL : The crowd was enjoying the match.

RAVI : What was the shape of the stadium and the pitch?

RAHUL : The oval-shaped stadium was packed with people and the two teams batted and bowled very well on the rectangular pitch.

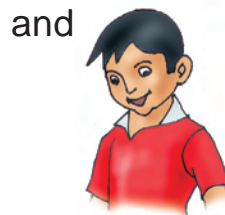
RANI : What is the shape of the cricket stumps?



RAHUL : It is cylindrical in shape.

RAVI : What is the shape of the ball?

RAHUL : The ball is spherical in shape.



Activity

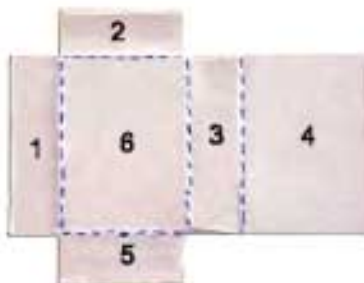


Write the shapes of the things which are around you.

Things	Shapes	Things	Shapes
Pencil		Globe	
Marble		Note book	
Chalk box		Match box	
Dice		Football	

Nets of a Cuboid

Have you seen a match box?
How many sides does it have?



Open out the folds of a match box. Mark the faces with numbers 1, 2, 3, 4, 5, and 6 on the match box as shown in the figure and remove the extra flaps and count the number of faces. Yes it has 6 faces. What is the shape of each face? Each face is a rectangle.

If a match box is opened out and unfolded, it gives a flat shape. The unfold flat shape is called the net of the match box



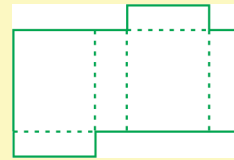
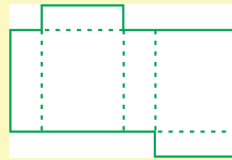
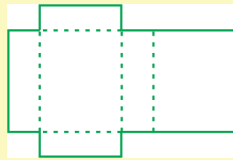
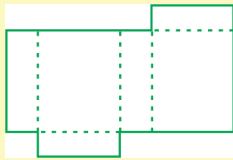
This shape when folded gives us the match box.

A net is a two dimensional figure which can be folded to form a three dimensional figure.



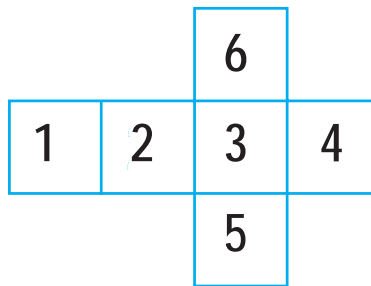
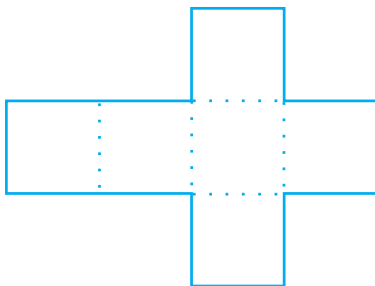
Try these

By folding along the dotted lines of the given shapes, find out which of these can be made into a box. Put a tick (✓) mark for the correct options.



Net of a cube

Six squares of equal size form a cube shaped box



Fold squares along the dotted lines.

Hence six equal squares form the net of a cube.

Activity



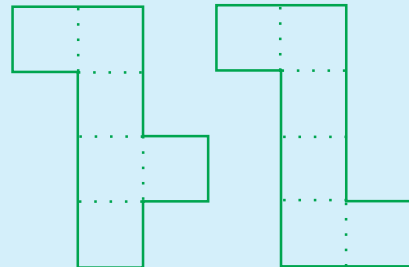
Ramu wants to make a paper cube. He knows that all the faces of a cube are squares. He draws two different shapes as shown below.



Will both these shapes fold to form a cube?

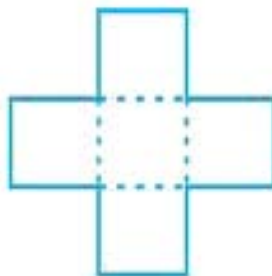
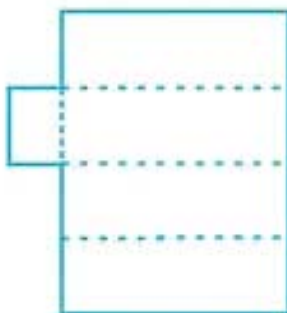


Draw atleast two other shapes which can be folded into a cube.



Nets of an open box

Two ways to make open boxes with faces (sides) in the shape of rectangle and square are given to you.



- Find out two more ways of making open boxes using the rectangle / square faces.
- Draw more shapes which will not fold to make an open box



The net of a cube is given.

If this net is folded to make a cube in such a way that the alphabet R is at bottom, then which letters of the alphabet will be on the top, front and right sides of the cube.

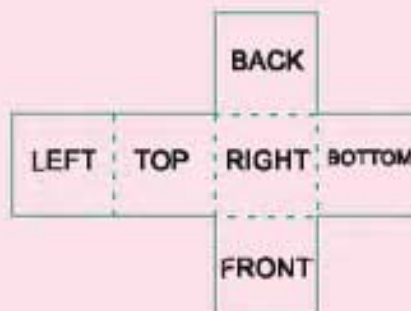


From the picture of the cube

Top side should be **H**

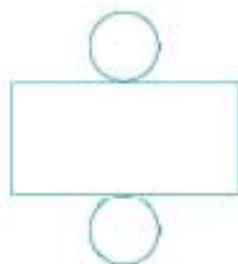
Front side should be **Y**

Right side should be **E**



Net of a cylinder

Consider a rectangle and two equal circles.



Join the two edges of a rectangle breadthwise in such a way that the length of the rectangle forms the boundary of one circle at the upper end and the other circle at the bottom of this figure. The figure thus formed is a cylinder.



Activity



Take a string and measure the upper circle.

Take another string and measure the bottom circle.

Both are exactly the same and equal to the length of the rectangle.

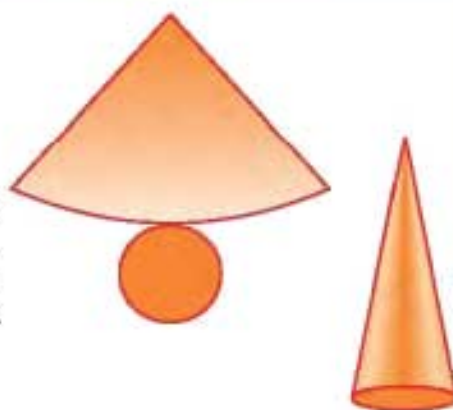


The length of the rectangle forms the boundary of the circle. Both of them are equal in length.

Net of a cone

Look at the figure.

Join both the sides of the portion of a circle in such way that the arc of the circle falls on the boundary of the circle attached at the bottom.



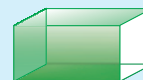
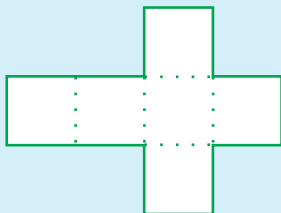
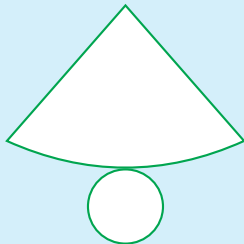
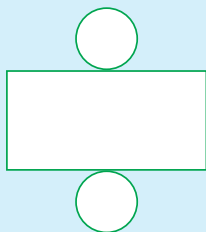
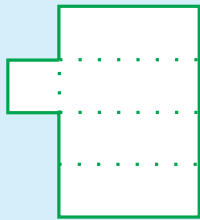
The figure thus formed is a cone.

The length of the arc forms the boundary of the circle. Both are equal in length.

Activity

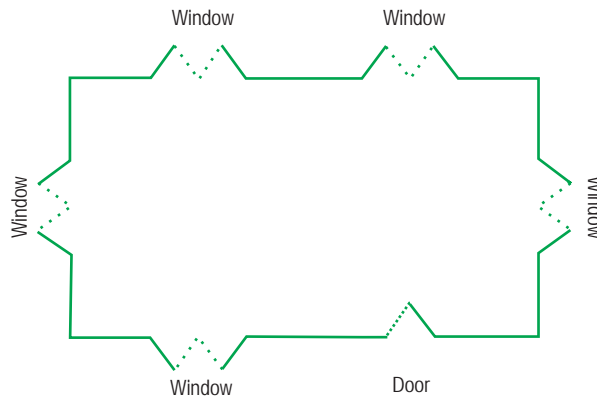


Match the net with the shape you will get on folding, as shown by arrow mark.

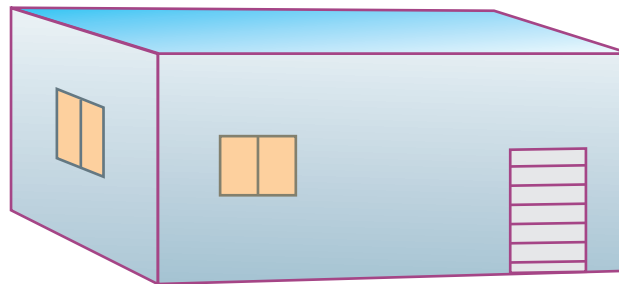


Floor maps

To make a house, a floor map is necessary. Here is a floor map of a house.



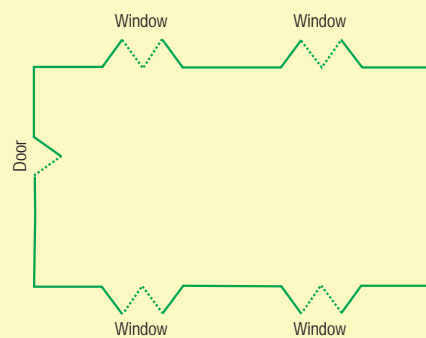
This house has got one window and one door in the front, two windows at the back, one window on the left and other on the right side of the house.



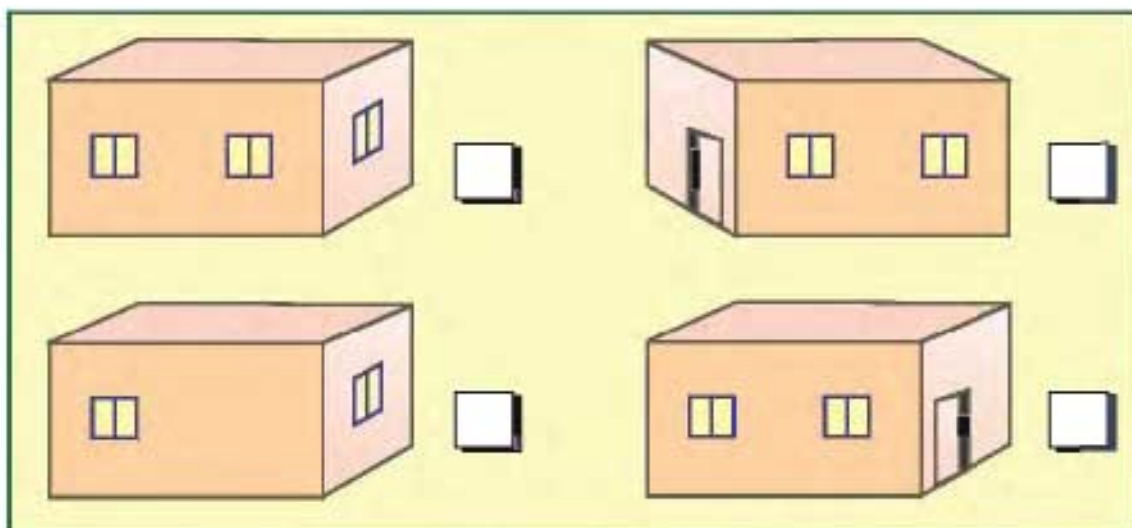
A special way of drawing the house which is deep to show the length, width and height is called a deep drawing.



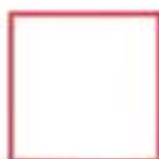
Try these



Put a tick (✓) mark for the correct deep drawing of the given floor map.



Drawing 3-D Shapes from 2-D Shapes



Square



Rectangle



Triangle

These are some of the two dimensional shapes. Now we are going to draw three dimensional geometric figures.

Any objects that takes up space is called a three dimensional object.

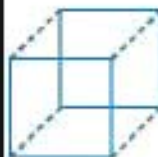
Drawing of cube through squares



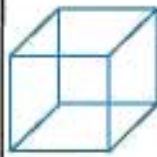
Draw a square on a paper.



Draw another square as shown in the diagram.



Draw dotted lines joining the corresponding corners as shown in the diagram.



Draw perfect lines over the dotted lines.

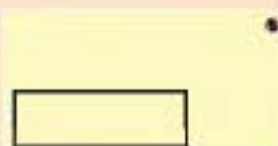
Perspective view

Perspective view is the view of a three dimensional object on a 2-D surface.

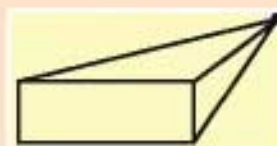


The front view of a thin metal plate is given. Make a perspective sketch of the metal plate.

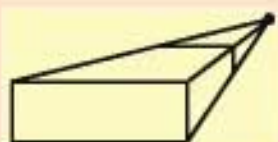
Step 1 : Take a sheet of paper. Draw the front view of the metal plate and mark a point (•) above the figure as shown below.



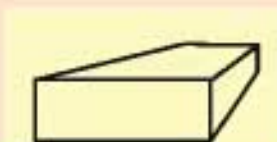
Step 2 : Join the three corners with the point as shown below.



Step 3 : Draw a line across and extend it down as given in the diagram.



Step 4 : Erase the lines outside the new lines drawn.



This is one of the perspective views of the metal plate.

Group Activity

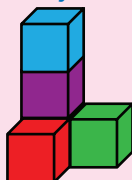


You can take different points outside the metal plate. Corresponding to each point, you will get different views of the three dimensional object.



Draw the right view and front view of the 3-D object shown.

Object



Right view



Front view



Practice Time

Draw the right view and front view of the 3-D objects shown.

3-D objects	Right view	Front view

2

Symmetry

Half a Turn

During the festival season all people gathered near the temple for celebration. To earn his living by amusing children, Raja brought the mini giant wheel with four cabins. All children loved to play in the small wheel. He was upset because he was not able to count exactly the number of times the wheel rotated. Every time the children said, "One more round to complete". The four cabins of the wheel looked alike.



One day, his daughter gave him an idea which he liked very much. She told to change the colour of the one of the cabins and his problem was solved.

What will you do to solve these problems?

- ✱ In a numberless wrist watch, there is no indication of the numerals. How will you tie it around your left wrist.



- ✱ A school boy held the digital watch upside down and noted 15 seconds as 51 seconds. How can this error be rectified.



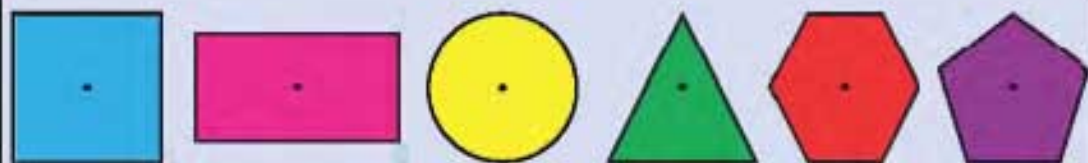
- ✱ In a hostel, rooms are numbered as NO11, NO12 NO17. No one dared to enter room number 17 why?

- ✱ In a library, comic books are pasted with 5 digit numbers starting from 35000 to 35030. No one touched the particular book titled "You are a winner". It was found that a particular number was pasted, upside down over the word "winner". Can you guess the reason and the number.

Activity



Guess which of the shapes below would look the same after half a turn ?



Do you find it difficult to tell? If yes, then there is a way to check your guess. Here's how you can do it. Take any of the shapes.

Trace its outline on a sheet of paper. Cut the shape and take it out. Here a rectangular shape is taken.



Then draw a horizontal line passing through its centre.



Fold it once lengthwise, so that the fold falls on the centre. One half fits exactly over the other half. We say that rectangular shapes look the same after half a turn.



Repeat the same procedure for other shapes given above and check whether the guessed answers are correct.



Practice Time

- (1) Find out which of the following letters look the same after half a turn.

N A T D O

- (2) Which of these English words read the same on half a turn?

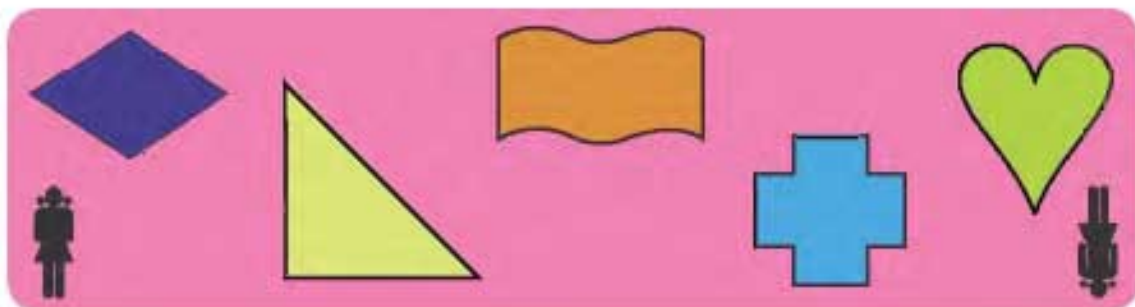
SIS, MOON, NOW, NOON

- (3) Give half a turn to the numbers given below. Find which of them still look the same.

6 3 5 1 7 0

- (4) Write all 5 digit numbers which look the same on half a turn.

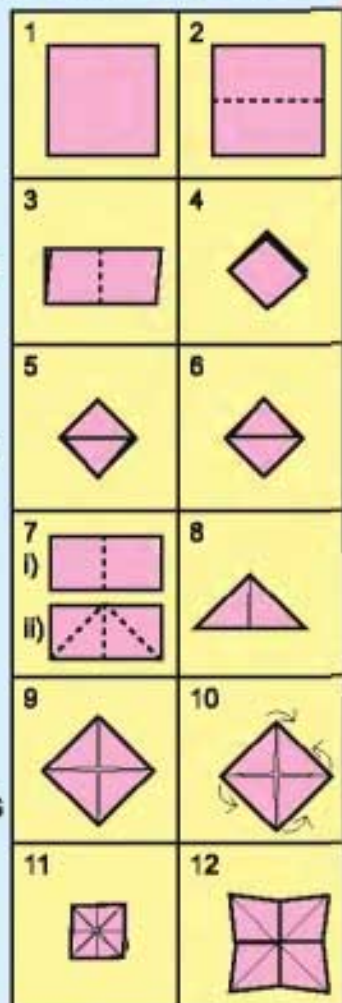
(5) Which among the following pictures will look the same on half a turn? Put a tick mark ()



Activity

Have you seen four cups made of paper. Let us make four cups

1. Take a square sheet of paper
2. Fold it in half
3. Fold it again in half
4. Turn the folded paper such that the folded two sides are at the bottom.
5. From the four flaps take one flap and fold it.
6. Turn the folded shape and take another flap and fold it.
7. Turn it inside out. One side is like 7 (i) and the other side is like 7 (ii).
8. Then fold other two flaps backwards to get the figure 8.
9. Open it out.
10. Reverse it and fold the four corners towards the centre. Repeat the steps 2 and 3.
11. Open it out.
12. The four cups are ready.



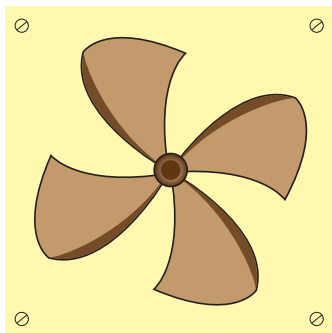
Rotate it and observe

☆ Do the four cups look the same on $\frac{1}{4}$ of a turn?

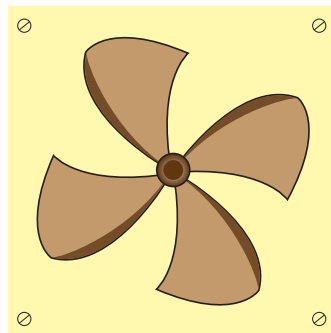
☆ Does it look the same on half a turn? Discuss.

One-fourth turn

The blades of a exhaust fan look the same on $\frac{1}{4}$ a turn.



Before turning it

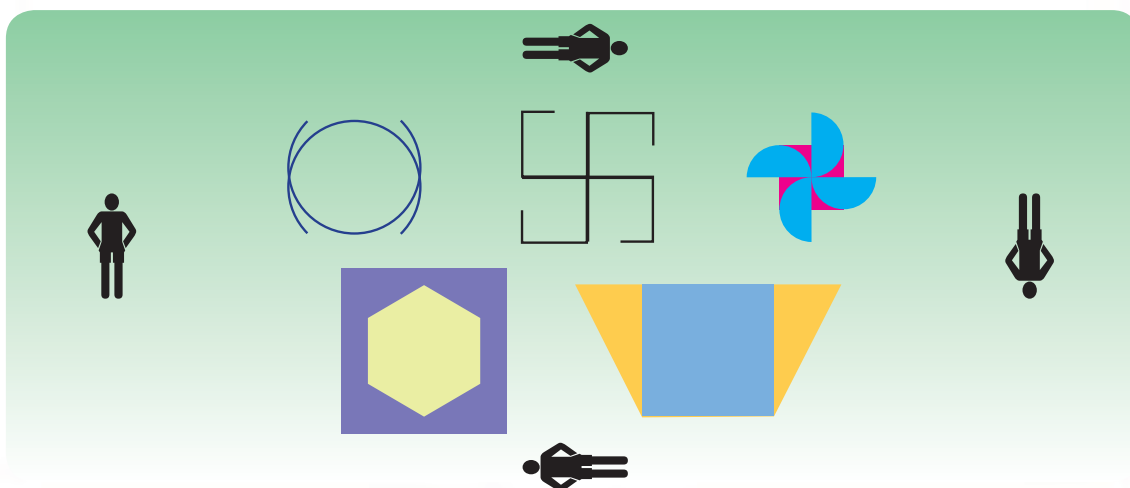


After $\frac{1}{4}$ a turn



Practice Time






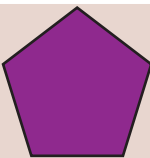
(1) Among the following shapes, find out which ones would look the same after $\frac{1}{4}$ a turn. Put a mark (✓).



(2) Draw what the following shapes would look like on $\frac{1}{4}$ a turn and half a turn.

On $\frac{1}{4}$ a turn

On half a turn

(3) Draw three shapes which will look the same after half a turn.

(4) Draw three shapes which will look the same after $\frac{1}{4}$ a turn.

One-third turn



Which one will look the same on a $\frac{1}{3}$ turn? Put a tick mark (✓) for the correct one.

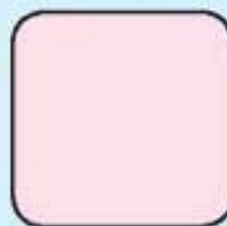


(a)

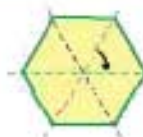


(b)

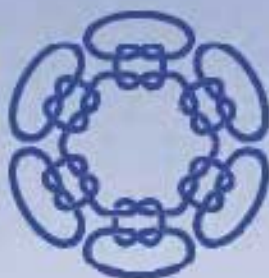
Draw the shape after $\frac{1}{3}$ turn



One-sixth turn



Can you see that these shapes look the same on $\frac{1}{6}$ turn?



Draw the shape after $\frac{1}{6}$ turn





Practice Time

- (1) Look at the following shapes. Draw how they will look on $\frac{1}{3}$ a turn and $\frac{1}{6}$ a turn.

	$\frac{1}{3}$ a turn	$\frac{1}{6}$ a turn

- (2) Draw three shapes which will look the same after $\frac{1}{3}$ a turn.
- (3) Draw three shapes which will look the same after $\frac{1}{6}$ a turn.

Group Activity



Collect and draw *kolams* in your note book which will look the same after half a turn, $\frac{1}{4}$ a turn, $\frac{1}{3}$ a turn and $\frac{1}{6}$ a turn.

Symmetry

The pictures of a front view of a tiger, an architectural marvel, a rocket, a butterfly, a bird and a flower are some of the examples exhibiting symmetry.

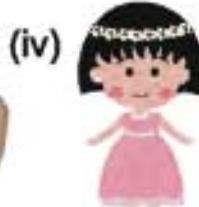


The bodies of most animals are symmetrical. Their left and right sides are mirror images of each other.



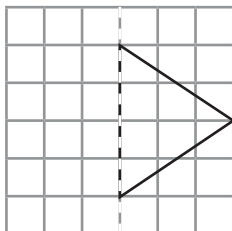
Practice Time

- (1) List any four symmetrical objects that you see on your way to school and draw them.
- (2) Identify the shapes given below. Check whether they are symmetrical or not. Draw the line of symmetry if they are symmetrical.

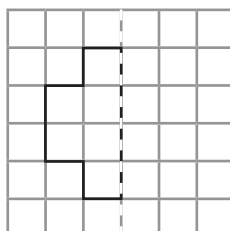


(3) Complete them such that the dotted line is the line of symmetry.

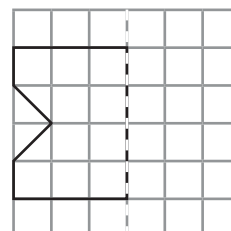
(i)



(ii)



(iii)

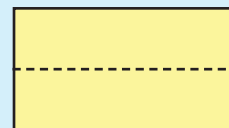


Activity



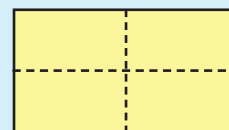
Figures with two lines of symmetry

Take a rectangular sheet. Fold it length wise, so that one half fits exactly over the other half.



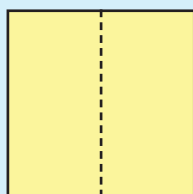
1st fold

Then fold it breadthwise in the same way. These two lines are the lines of symmetry.



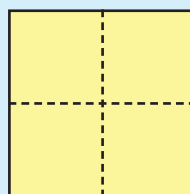
2nd fold

Figures with multiple (more than two) lines of symmetry



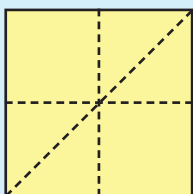
1st fold

Take a square sheet. Fold it into half vertically.



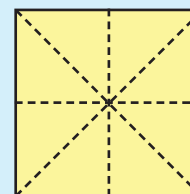
2nd fold

Fold it again into half horizontally.



3rd fold

Holding the closed ends as the base fold the two joined flaps along the base.



Open out the fold. There are four lines of symmetry.



Try these

(1) Find the number of lines of symmetry for each of the following shapes.

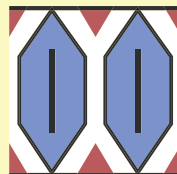
(i)



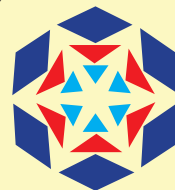
(ii)



(iii)



(iv)



(v)



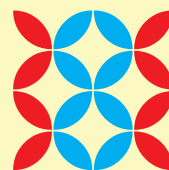
(vi)



(vii)

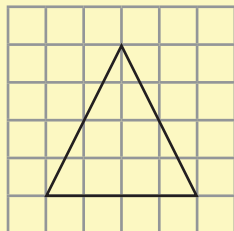


(viii)

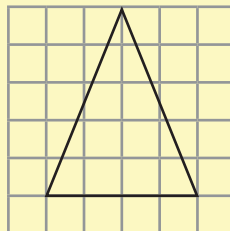


(2) Trace each figure and draw the lines of symmetry, if any.

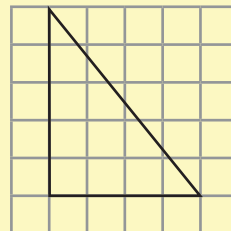
(i)



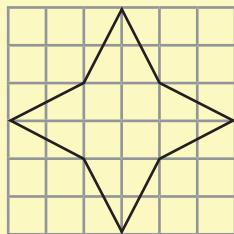
(ii)



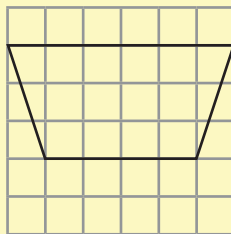
(iii)



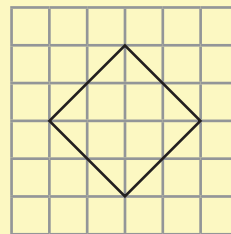
(iv)



(v)



(vi)



Reflection and symmetry

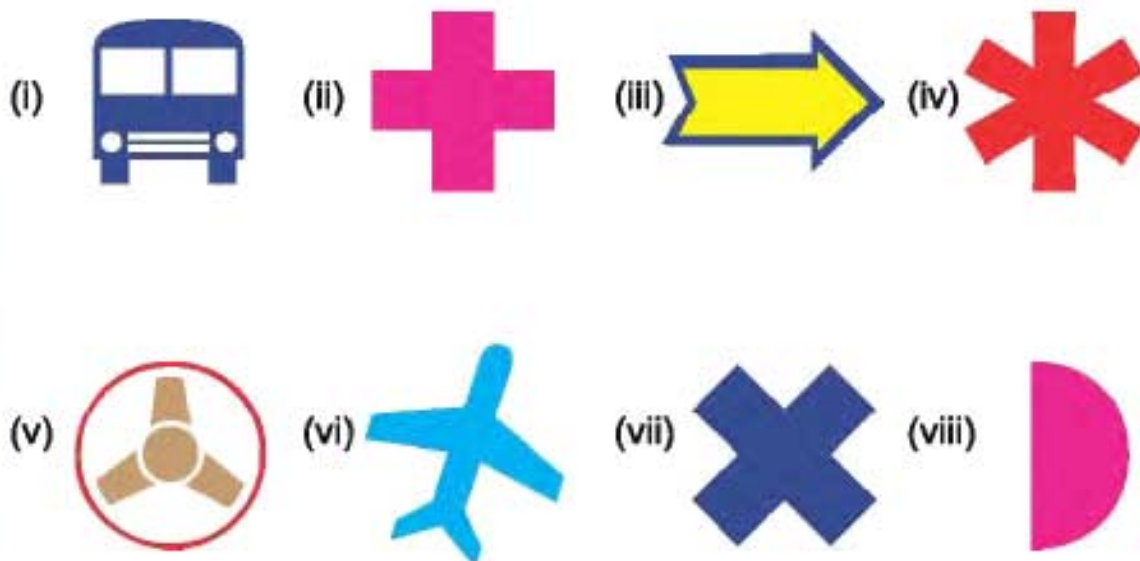


The mirror image of the face and the face itself are symmetrical about the plane of the mirror. Fold the paper in such a way that one face exactly falls on the other. Then the mirror line becomes the line of symmetry. Observe that the image is the reflection of the object at the mirror line.

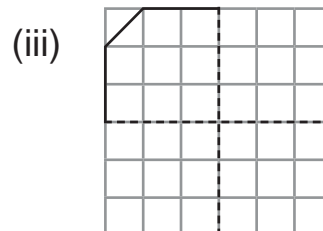
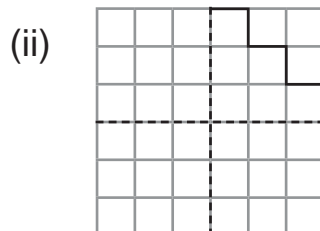
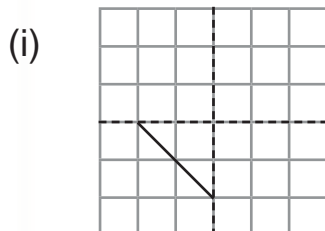


Practice Time

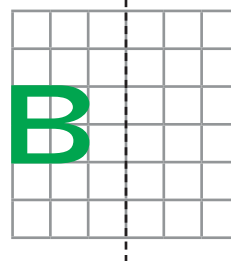
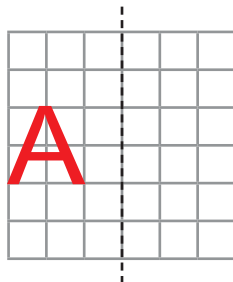
(1) Find the number of lines of symmetry in each of the following shapes. Check your answer by placing a mirror on the lines of symmetry.



(2) Copy the following on a squared paper. Complete each one of them in such a way that the resultant figure has two dotted lines as two lines of symmetry.



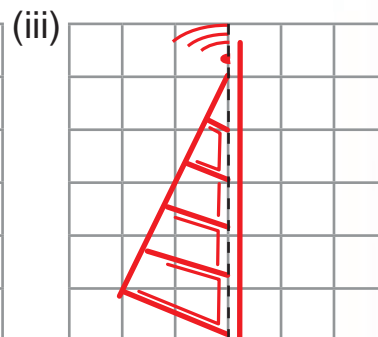
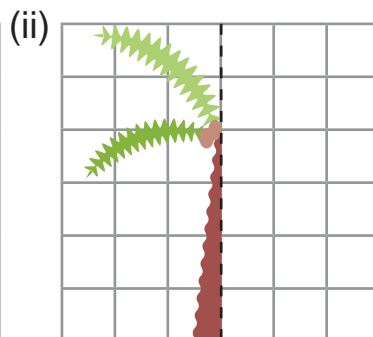
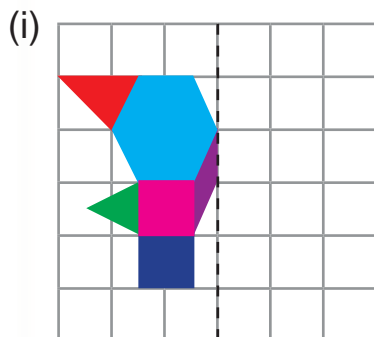
3) Take a mirror image of the letter in the given line. Find which letters look the same after reflection and which do not.



Try for other letters of the English alphabet.

C, D, E, F, G, H, M, N, O, R, S

(4) Place the mirror along the line shown, get the other side and draw and colour it.



Project work



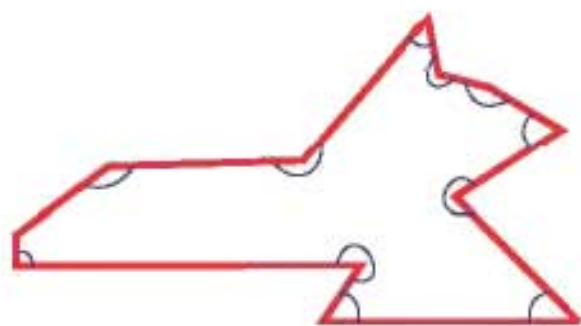
Collect and draw ten *kolams* in your note book with one, two and three lines of symmetry.

3

Angles

Tracing the way

John went to the post office to post letters. Tracing the way, he walked back (Red line on the street plan) and we get a shape like this.



A shape is made up of lines which are called the sides of the figure. Two sides meet at a vertex, where they make an angle. Mark those angles by drawing " \frown " this way.

Activity



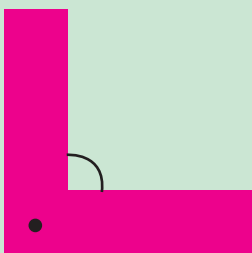
Trace two other ways to reach the post office from any of the two houses. You may get closed shapes again. Mark the angles.

Activity

Make your own angle tester.



Cut two strips from a chart paper. Keep one strip over the other and fix a drawing pin in one corner so that both the strips can move around easily. Now, angle tester is ready to use.



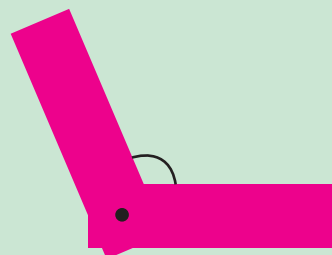
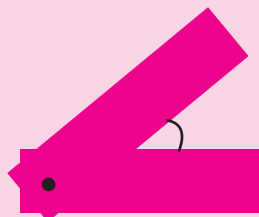
Keep the two strips as shown like the English alphabet "L".

Can you see the angle formed between two strips? What is it called? This is a **Right angle**.

Fix the two strips like this

Here, one strip is bent towards the other.

Again a different angle is formed which is less than a right angle. It is called an **Acute angle**.



Keep the two strips as shown in the diagram
What can you observe?

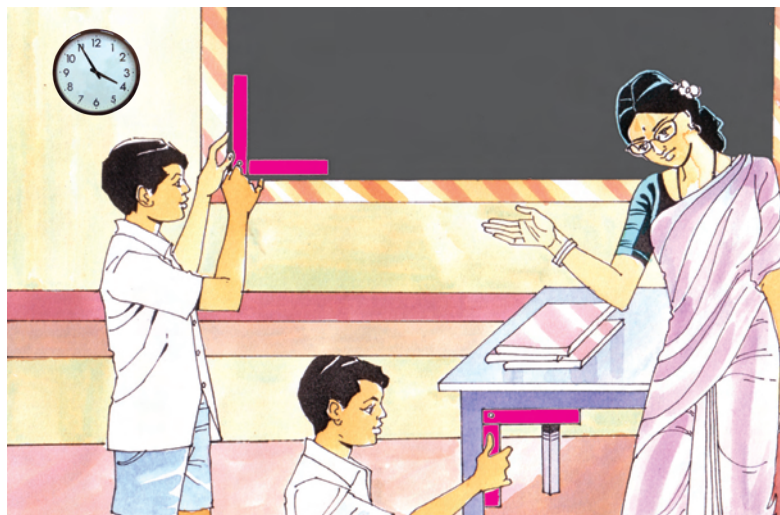
One strip is bent away from the other. Again a different angle is formed which is more than a right angle and it is called an **Obtuse angle**.

Activity



By using angle tester go around your class room and look for right angle, angles less than right angle and more than right angle.

Two positions are shown for you. Find the other positions and fill the table.



Position Placed	Angle Tester	Type of Angle
Corner of the Black Board		Right Angle
Hands of the clock		Obtuse Angle

Paper Folding Activity

Step : 1

Take a square sheet of paper.



Step : 2

Fold it in half.



Step : 3

Fold it once more and press it.



Step : 4

Open the last fold so that the sheet is folded in half.



Step : 5

Take one corner and fold it to meet the dotted line.

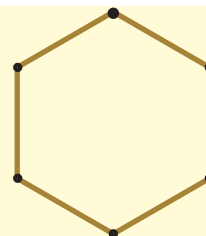


On the paper you will find lines making a right angle, an angle less than a right angle and an angle more than a right angle. Look for each of the angles and mark them with different colours.

Group Activity

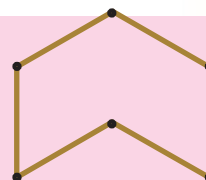


The teacher calls six students from the class to come with their skipping ropes. She then asks them to form a shape like this!

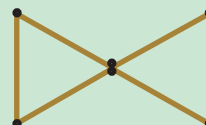


She calls one student to move to the centre.

The shape changes like this.



She calls for another student to move to the centre. Another new shape is formed.



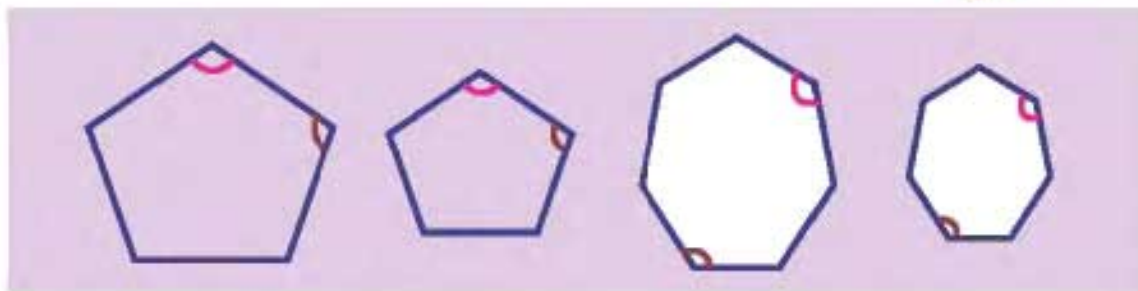
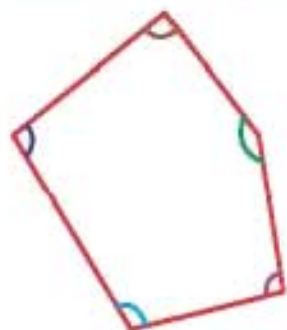
When the angle changes, the shape also changes.



Practice Time

- ❖ Look at the shape and answer.

The angle marked in colour is the most obtuse angle.



- ❖ Look at the above shape and put the tick (✓) mark for the correct answer.

Are the angles marked in pink colour equal? (Yes / No)

Are the angles marked in brown colour equal? (Yes / No)

- ❖ Compare the two angles in the following diagrams.
Take your angle tester (1) and measure both the angles.
Are the two angles given in the diagrams equal?
Say Yes / No? and discuss.



Group Activity



Using 3, 4, 5, 6, 7 & 8 sticks of same length, try to form different shapes by changing angle between the sticks in each of the closed shapes.

Angle and time

In the clocks given below draw the hands of the clock which makes right angle.



3:00







Draw the hands of the clock when they make an angle which is less than right angle. Also write the time.



5:35







Draw the hands of the clock when they make an angle which is more than right angle. Also write the time.



10:35







Write what kind of angle is made by the hands of the clock as shown in the picture. Also write the time.



Acute Angle

4:05




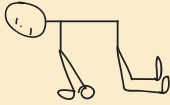








Angle and posture

Observe the angles in the following stick figures and form these angles:

	❖ A right angle with your leg	
	❖ An angle less than right angle with your hand	
	❖ An angle more than right angle with your leg	
	❖ An angle more than right angle using both the hands	
	❖ Try all possible postures draw them using stick figures and enjoy.	

Angles in alphabets

In the name **MANOHAR**
12 right angles, 13 acute angles and 5 obtuse angles are shown to you.

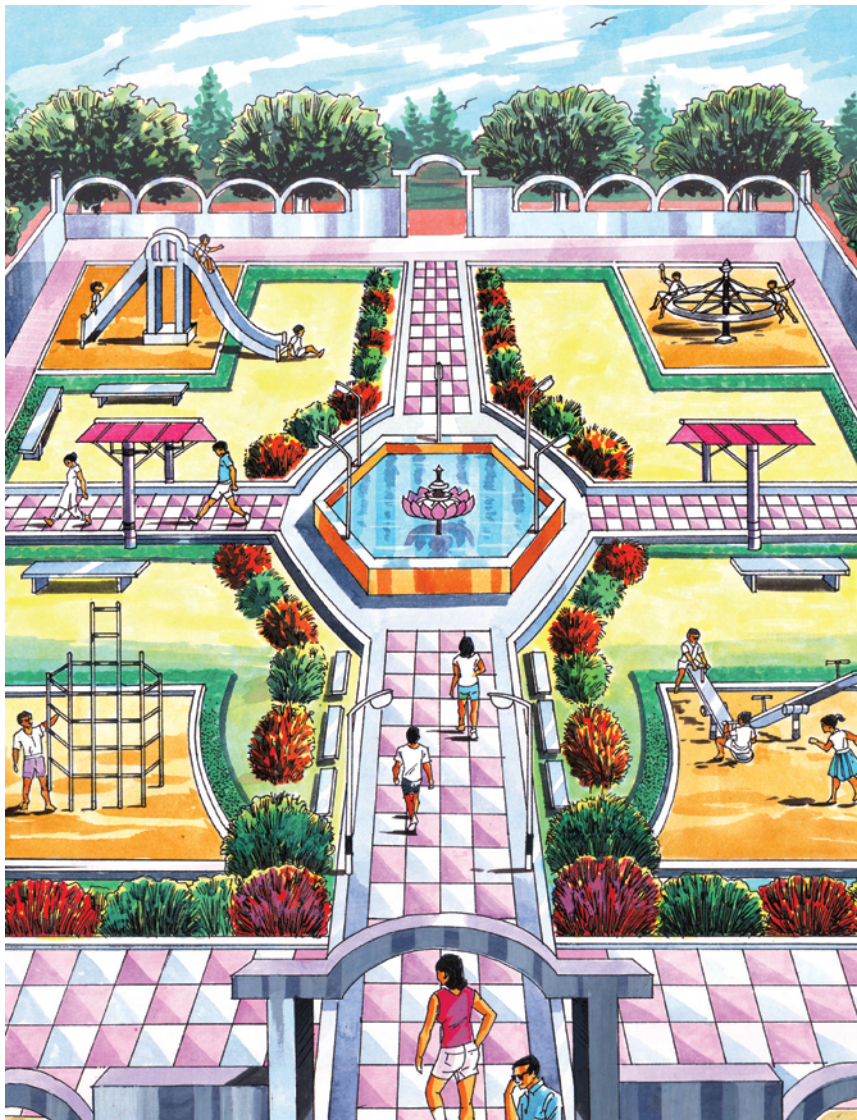


Practice Time

- ❖ Write your name, father's name and mother's name using straight line and count the angles.

Name	Number of Right Angles	Number of Acute Angles	Number of Obtuse Angles







- ❖ In the picture of the park, there are many angles.



Use colour pencils to mark

- (i) Right angles with red colour.
- (ii) Angles which are more than right angle with blue.
- (iii) Angles which are less than right angle with green.

- ❖ Look at the angles in the picture and put a tick (✓) mark in the corresponding column.

Picture	Right Angle	Obtuse Angle	Acute Angle
			
			
			
			
			
			

Project work



Collect ten other pictures and stick them in your note book. Mark the angles and write the types.

Work sheet

Choose the correct answer:

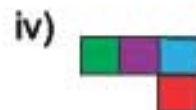
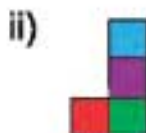
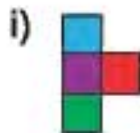
1. The three dimensional shape is _____

- i) Square ii) Rectangle iii) Triangle iv) Cuboid

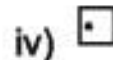
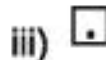
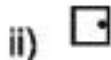
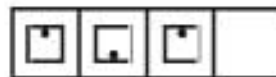
2. A cube has _____ faces.

- i) 4 ii) 6 iii) 8 iv) 10

3. The right view of the object is _____



4. Complete the diagram



5. The English alphabet which is not symmetrical is _____

- i) **F** ii) **A** iii) **B** iv) **D**

6. An angle whose measure is less than a Right angle is

- i) a acute angle ii) a obtuse angle
iii) a straight angle iv) a right angle

7. An angle whose measure is greater than right angle is

- i) an acute angle ii) an obtuse angle
iii) right angle iv) zero angle

8. Select the clock that shows the angle less than the right angle

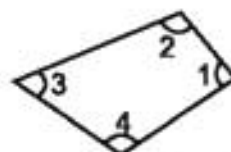


9. The acute angle among the four given below is _____



10. The obtuse angles in the figure are _____

- i) 1 and 2 ii) 1 and 3 iii) 2 and 4 iv) 2 and 3

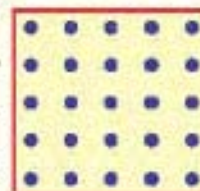


Fun With Maths

1. Observe the numbers given below. Use colour pencil to shade the pattern of numbers. Give half a turn to your text book and find out the secret message.



2. Twenty five dots are arranged in the form of a square as shown in the diagram. Can you connect 12 of these dots with straight lines to form a shape which has 5 dots inside it and 8 dots outside?



4 Numbers and Place Value



Recall

(1) Answer the following :

- i) The greatest two digit number is _____.
- ii) The smallest three digit number is _____.
- iii) The greatest three digit number is _____.
- iv) The smallest four digit number is _____.
- v) The greatest four digit number is _____.

(2) Write the number names for the following:

- i) 4005 ii) 4732 iii) 5060
- iv) 5847 v) 8340 vi) 9400

(3) Write the numerals for the following:

- i) Thousand six hundred.
- ii) Five thousand and forty two.
- iii) Seven thousand nine hundred and eighty six.
- iv) Eight thousand nine hundred and thirty.
- v) Nine thousand four hundred and eighty.

(4) Give the place value for the coloured digits in the following numbers

- i) 5**5**07 ii) 63**4**8 iii) 75**4**0
- iv) **8**675 v) **9**143 vi) 93**1**2

(5) Write the following in expanded notation:

- i) 3238 ii) 6520 iii) 8005
iv) 4317 v) 7430 vi) 8502

(6) Write the following in standard form:

- i) $2000 + 400 + 20 + 7 = \underline{\hspace{2cm}}$.
ii) $3000 + 500 + 60 + 5 = \underline{\hspace{2cm}}$.
iii) $5000 + 200 + 8 = \underline{\hspace{2cm}}$.

(7) Encircle the greatest number among the following:

- i) 429, 536, 209 ii) 6276, 6266, 6267

(8) Encircle the smallest number among the following:

- i) 655, 650, 605 ii) 9099, 9909, 9999

(9) Arrange the following numbers in ascending and descending orders.

- i) 1771, 6217, 4562, 8392, 5505
ii) 8077, 4212, 1791, 5500, 7508
iii) 4558, 6354, 8392, 7715, 5678

(10) Using the given digits 4, 6, 7 and 8 write the smallest and greatest four digit numbers without repetition of the digits:

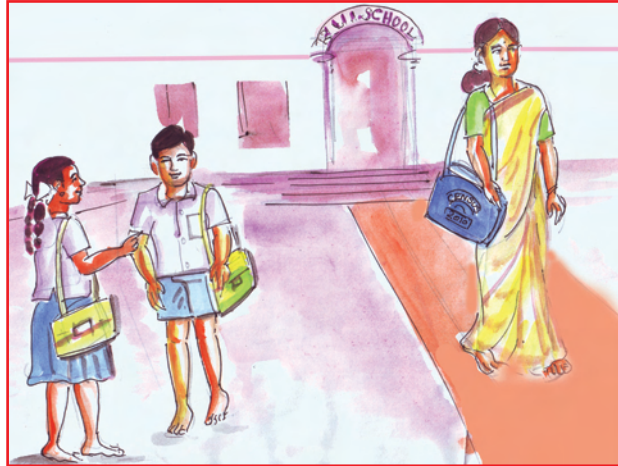
Smallest number : $\underline{\hspace{2cm}}$

Greatest number : $\underline{\hspace{2cm}}$



Large Numbers

The school bell had rung and then the students came out of their classrooms.



Bama: Where are our teachers going to after the school hours with those blue bags?

Aravind: They have to go from house to house to do the census work assigned to them.

Bama: Why is census done?

Aravind: The headmaster of a school can plan the distribution of benefits given by the Government only if he knows the number of students studying in each class. Similarly, there should be a data of the number of male and female people residing in a locality. The head count of this data is known as census. It is usually large in number.

Bama: Is that so?

Aravind: Yes. For example the rural population of Thiruvannamalai district is a **6** digit number. The total rural and urban population of other districts can be even greater. It can be either a **seven digit number or more**. To read large numbers, we make use of '**commas**' at appropriate places.

Bama: Thank you Aravind, for the valuable information you have given me.

Last year we learnt that the largest 4 digit number is 9,999.

We shall now study the numbers that come after 9,999.

The largest 4 digit number is 9,999	$9,999+1$	10,000	The smallest 5 digit number
The largest 5 digit number is 99,999	$99,999+1$	1,00,000	The smallest 6 digit number
The largest 6 digit number is 9,99,999	$9,99,999+1$	10,00,000	The smallest 7 digit number
The largest 7 digit number is 99,99,999	$99,99,999+1$	1,00,00,000	The smallest 8 digit number



Try these

Fill up the blanks

- 1) 10,001 , 10,002 , 10,003 , _____ , _____ , _____ , _____ , _____ , 10,009 , 10,010.
- 2) 10,010 , 10,020 , 10,030 , 10,040 , _____ , _____ , _____ , _____ , _____ , 10,100.
- 3) 10,100 , 10,200 , 10,300 , _____ , _____ , _____ , _____ , _____ , _____ , _____ .
- 4) 11,000 , 12,000 , 13,000 , _____ , _____ , _____ , 17,000 , _____ , _____ , _____ .
- 5) 10,000 , 20,000 , 30,000 , 40,000 , _____ , _____ , _____ , _____ , _____ , 1,00,000.
- 6) 10,00,000 , 20,00,000 , _____ , _____ , _____ , _____ , 70,00,000 , _____ , _____ , 1,00,00,000.

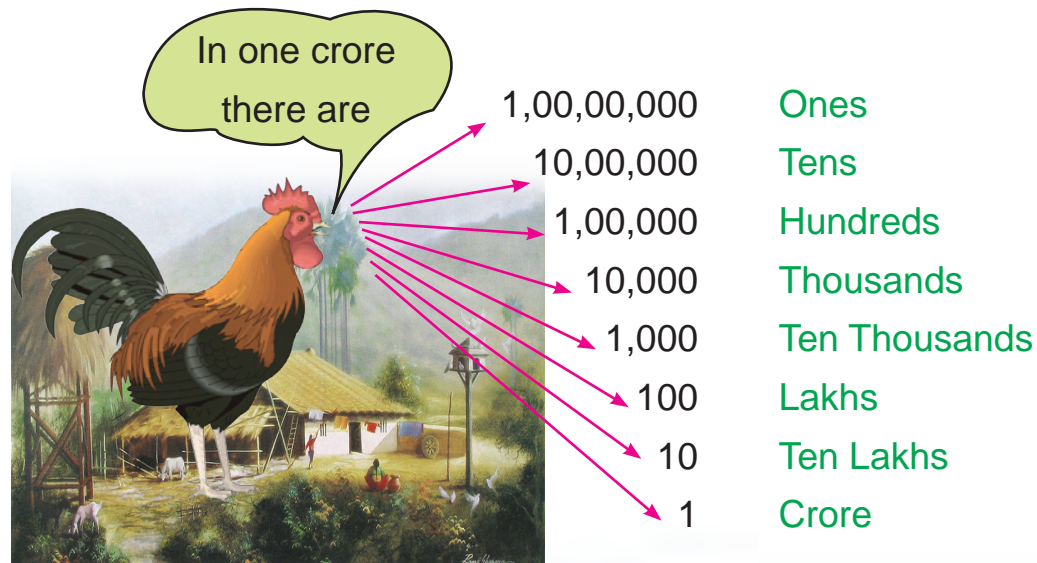


Try these

Fill up the blanks

- 1) 99,990 , 99,991 , 99,992 , _____, _____, _____,
_____, 99,997 , 99,998 , _____, 1,00,000.
- 2) 9,99,910 , 9,99,920 , 9,99,930 _____, _____, _____,
_____, _____, 9,99,990 , 10,00,000.
- 3) 9,99,100 , 9,99,200 , 9,99,300 , _____, _____, _____,
9,99,700 , 9,99,800 , _____, 10,00,000.
- 4) 99,000 , 99,100 , 99,200 , _____, _____, _____,
_____, 99,700 , 99,800 , _____, 1,00,000.
- 5) 99,91,000 , 99,92,000 , 99,93,000 , _____, _____,
_____, _____, 99,98,000 , _____, 1,00,00,000.

Let us know



Fill in the correct numbers in the following table

	Crone	Ten lakhs	Lakhs	Ten thousand	Thou- sand	Hundred	Tens	Ones
In one crore	1	10	100	1,000	10,000	1,00,000	10,00,000	1,00,00,000
In ten lakhs		1						
In a lakh			1					
In ten thousand				1				
In thousand					1			

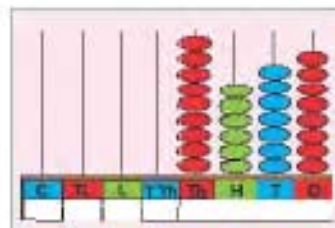
Activity



Let us learn to use the Abacus

- (1) The abacus shows the number 9,678

In words, it is Nine thousand six hundred and seventy eight.

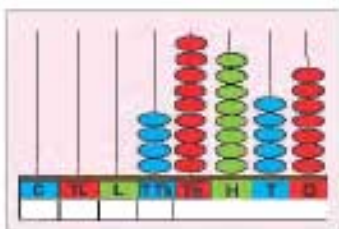


When expanded, it is, : 9 thousands + 6 hundreds + 7 tens + 8 ones

$$= 9,000 + 600 + 70 + 8$$

$$= 9 \times 1000 + 6 \times 100 + 7 \times 10 + 8 \times 1.$$

- (2)



The abacus shows the number 49,857

In words, it is : Forty nine thousand eight hundred and fifty seven.

When expanded, it is,

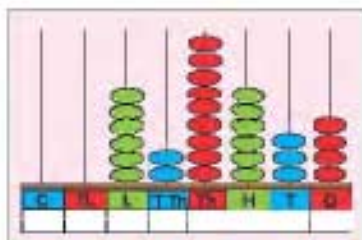
$$= 4 \text{ ten thousands} + 9 \text{ thousands} + 8 \text{ hundreds} + 5 \text{ tens} + 7 \text{ ones}$$

$$= 40,000 + \underline{\hspace{2cm}} + 800 + \underline{\hspace{2cm}} + 7$$

$$= 4 \times 10,000 + 9 \times 1,000 + 8 \times \underline{\hspace{1cm}} + 5 \times 10 + 7 \times 1$$

- (3) The abacus shows the number 6,29,634.

In words, it is Six lakhs twenty nine _____ six
hundred and _____ four



when expanded, it is,

$$= 6 \text{ lakhs} + 2 \text{ ten thousands} + 9 \text{ _____}$$

$$+ 6 \text{ hundreds} + 3 \text{ _____} + 4 \text{ ones}$$

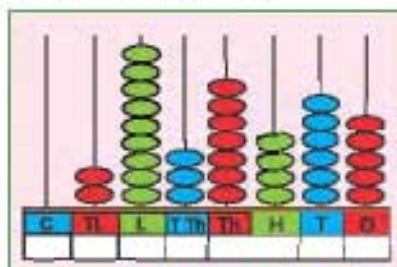
$$= 6,00,000 + 20,000 + \text{_____} + 600 + \text{_____} + 4$$

$$= 6 \times 1,00,000 + 2 \times \text{_____} + 9 \times \text{_____} + 6 \times$$

$$100 + \text{_____} \times 10 + \text{_____} \times 1$$

- (4) The abacus shows the number 29,37,465.

In words, it is : Twenty nine lakhs thirty seven thousand
four hundred and sixty five.



When expanded, it is,

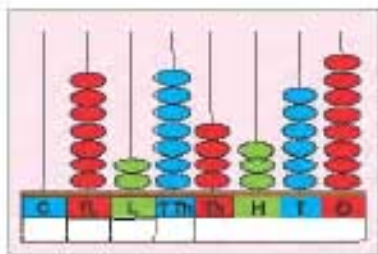
$$= 2 \text{ ten lakhs} + 9 \text{ _____} + 3 \text{ ten thousands}$$

$$+ 7 \text{ _____} + 4 \text{ hundreds} + 6 \text{ tens} + 5 \text{ _____}$$

$$= 20,00,000 + 9,00,000 + \text{_____} + 7,000 + \text{_____} 60 + 5$$

- (5) The abacus shows the number _____

In words, it is _____



Expanded form:

$$= 70,00,000 + 2,00,000 + \text{_____} + 4000$$

$$+ \text{_____} + \text{_____} + \text{_____}$$

$$= 7 \text{ ten lakhs} + \text{_____} + \text{_____} + \text{_____}$$

$$+ \text{_____} + \text{_____} + \text{_____}$$



Practice Time

Draw the abacus and place the beads on it according to the place value for the numbers given below. Write them in words and their expanded notation.

i) 38,205

ii) 7,20,045

iii) 23,47,280

iv) 17,35,488

Fill in the place value table for the following numbers according to the place value.

Place value Numbers	Crore	Lakhs		Thousands		Ones		
	1, 00, 00, 000	10,00,000	1,00,000	10,000	1000	100	10	1
48,769								
7,14,050								
38,29,014		3	8	2	9	0	1	4
19,15,845								
1,00,00,000								

We can fill up the place value table as given for the number 38,29,014. Similarly, fill up the table for the rest of the numbers.

In the number 38,29,014

The place value of 4 is

$$4 \times 1 = 4$$

The place value of 1 is

$$1 \times 10 = 10$$

The place value of 0 is

$$0 \times 100 = 0$$

The place value of 9 is

$$9 \times 1,000 = 9,000$$

The place value of 2 is

$$2 \times 10,000 = 20,000$$

The place value of 8 is

$$8 \times 1,00,000 = 8,00,000$$

The place value of 3 is

$$3 \times 10,00,000 = 30,00,000$$

Activity



Write the place value of each digit for the following numbers:

i) 48,769

ii) 7,14,050

iii) 89,05,946

Importance of Commas or periods

Numbers having 5 or more digits can be read quickly and easily by putting them into groups using commas.

In the place value system, ones, tens, and hundreds form the first group under "ones" period, thousands and ten thousands form second group under "thousands" period, lakhs and ten lakhs form the third group under "lakhs" period and crores and ten crores form the fourth group under "crores" period. Each group is separated by a comma.

i) 78,40,435

ii) 1,23,00,786

iii) 4,58,70,465



Practice Time

- (1) Read the following numbers by placing the commas at appropriate periods and write their number names:

i) 247345

ii) 465310

iii) 1946380

iv) 3438375

- (2) Use an abacus to show the place value of the given numbers, and then write them in words.

i) 59,047

ii) 2,04,854

iii) 3,79,89,750

(3) Write the place value for the coloured digits in the following numbers.

- i) 5,09,521 ii) 6,50,283 iii) 8,88,408 iv) 41,79,001

(4) Write the following numbers in expanded form.

- i) 70,635 ii) 40,06,360 iii) 56,08,866 iv) 99,80,623

(5) Write the following in standard notation.

- i) $20,000 + 4,000 + 300 + 20 + 5$
ii) $30,000 + 7,000 + 200 + 50 + 6$
iii) $2,00,000 + 60,000 + 5,000 + 300 + 40$
iv) $4,00,000 + 60$

Comparison of numbers

We use the symbols $>$ $<$ and $=$ to compare any two numbers.



Which is smaller between **35,826** and **9,586**?

Number with more number of digits is a larger number and number with a less number of digits is a smaller number.

9,586 $<$ **35,862**

4 digits 5 digits



Which is greater between **67,352** and **84,675**?

Here, both the given numbers are five digit number. So, the highest place value is to be compared to find the greater number.

Here, for the given numbers ten thousand is the highest place value. 8 ten thousands is greater than 6 ten thousands.

Hence, **$84,675 > 67,352$**

We read it as Eighty four thousand six hundred and seventy five **is greater than** Sixty seven thousand three hundred and fifty two.



Which is smaller between **63,150** and **61,879**?

Since both the numbers are five digit numbers and the digit in the ten thousands place is equal, the numbers in the thousand's place are to be compared.

When we compare the thousand's place, the first number has 3 thousands and the second one has 1 thousand. So the second number is the smaller number.

Hence, **$61,879 < 63,150$**

We read it as sixty one thousand eight hundred and seventy nine **is less than** sixty three thousand one hundred and fifty. Similarly,



Note

If two numerals contain the same number of digits, we compare them by their left most digit. If the left most digits are also the same, we compare by their next digits from the left so on.

for example, i) $45,679 < 45,789$

ii) $50,562 > 50,541$

iii) $65,432 < 65,439$



Find out which digits are compared in each example.

Thus numbers can be compared by

▲ Counting the number of digits in the given numbers.

▲ Checking their place value starting from the left to right.



Try these

From the pairs of numbers given below, compare them by using $<$, $>$ and $=$ signs.

1) $4,506$ $56,780$

5) $35,703$ $2,308$

2) $18,579$ $18,579$

6) $48,458$ $46,358$

3) $57,939$ $87,399$

7) $76,345$ $76,396$

4) $43,483$ $44,833$

8) $47,346$ $47,634$



Write the smallest and greatest five digit numbers using the given digits only once.

(1) **3, 7, 9, 5, 2**

Smallest Number **23,579**

Greatest Number **97,532**

(2) **7, 4, 3, 8, 2**

Smallest Number **23,478**

Greatest Number **87,432**



Try these

Form the smallest and greatest five digit numbers using the given digits only once.

i) 4, 3, 7, 9, 0

Smallest Number

Greatest Number

ii) 6, 1, 7, 4, 2

Smallest Number

Greatest Number

iii) 9, 4, 6, 3, 1

Smallest Number

Greatest Number

iv) 4, 5, 9, 8, 7

Smallest Number

Greatest Number

Activity



(1) Sort out the greatest and smallest numbers from the list of numbers. Place the smallest numbers in the smaller jar and the greatest numbers in the bigger jar.

i) 45, 7, 50,665

ii) 41,653, 460, 810

iii) 1,235, 22,558, 480

iv) 13,857, 4,790, 865

v) 12,636, 4,170, 8,878



How are the numbers arranged in the two jars?

Ascending and descending order of numbers

Ascending order of numbers is writing the numbers from the smallest to the greatest.



Arrange the given numbers in ascending order.

387, 4,462, 17,347, 986, 38,432

Ascending order

387, 986, 4,462, 17,347, 38,432

Descending order of numbers is writing the numbers from the greatest to the smallest.



Arrange the given numbers in descending order.

986, 6,421, 14,176, 979, 87,346

Descending order

87,346, 14,176, 6,421, 986, 979



Arrange the given numbers in ascending and descending order. 44,565, 36,735, 37,536, 44,655, 7,400

Ascending order : 7,400 , 36,735 , 37,536 , 44,565 , 44,655

Descending order : 44,655 , 44,565 , 37,536 , 36,735 , 7,400



Practice Time

Arrange the following numbers in the ascending and descending order of numbers.

- i) 27,045 , 18,137 , 33,270 , 10,678
- ii) 33,198 , 12,384 , 21,765 , 24,250
- iii) 52,830 , 41,197 , 64,532 , 47,675
- iv) 26,487 , 33,765 , 26,842 , 38,482

5

Four Operations

Addition

Maths teacher asked the students to solve the following problem. She also announced that,

One who gets the correct answer will get a gift."



The students were eagerly waiting for the question.

The teacher said, I bought a cot for ₹ 12,700 , a bureau for ₹ 9,300 and a table for ₹ 2,700. What is the total amount of the things I have bought?

All the students tried to solve the sum. She saw Iniyan and Elango, two students completed the sum ahead of others. She called them to show their note books. Shockingly, they got two different answers.

Check the methods they followed and tell whose answer is correct.



Iniyan

Cost of the cot	= ₹ 12,700
Cost of the bureau	= ₹ 9,300
Cost of the table	= ₹ 2,700
	<u>+</u>
Total Cost	= ₹ 1,32,700

Elango



Cost of the cot	= ₹ 12,700
Cost of the bureau	= ₹ 9,300
Cost of the table	= ₹ 2,700
	<u>+</u>
Total Cost	= ₹ 24,700

Can you understand that, Iniyan did not follow the place value correctly? While writing the numbers, he went wrong in his calculations. Let us learn how to write numbers using place values.



Add the following numbers, by writing one below the other
 $64,737 + 3,475 + 22,710 + 276$.

TTh	Th	H	T	O		Th	H	T	O		TTh	Th	H	T	O		H	T	O
6	4	7	3	7	+	3	4	7	5	+	2	2	7	1	0	+	2	7	6

TTh	Th	H	T	O
1	2	1	1	
6	4	7	3	7
	3	4	7	5
2	2	7	1	0
+		2	7	6
9	1	1	9	8

To add ones

$$6 + 0 + 5 + 7 = 18 \text{ ones} \\ = 1 \text{ tens} + 8 \text{ ones}$$

To add tens

$$7 + 1 + 7 + 3 = 18 + 1 \\ = 19 \text{ tens} = 1 \text{ hundred} + 9 \text{ tens}$$

To add hundreds

$$2 + 7 + 4 + 7 = 20 + 1 \\ = 21 \text{ H} = 2 \text{ Th} + 1 \text{ H}$$

To add thousands

$$2 + 3 + 4 = 9 + 2 \\ = 11 \text{ Th} = 1 \text{ TTh} + 1 \text{ Th}$$

To add ten thousands

$$2 + 6 = 8 + 1 = 9 \text{ TTh}$$



Find the sum of 346 , 64,786 , 9 and 89.

TTh	Th	H	T	O
	1	2	3	
		3	4	6
6	4	7	8	6
				9
+			8	9
6	5	2	3	0



Note
 If you leave enough space between the numbers, you can avoid making mistakes, while adding the numbers



Try these

(1) Add the following numbers by writing one below the other and find their sum:

- i) 18,436 , 11,705 , 26,470 and 39,390
- ii) 74,786 , 375 , 5,450 and 78
- iii) 2,465 , 94,366 , 376 and 56
- iv) 270 , 46,210 , 17 and 6,500
- v) 7 , 493 , 28,786 and 6,405

(2) Replace each ♦ by the correct digit in each of the following:

	TTh	Th	H	T	O
	4	9	8	5	
	♦	4	3	♦	
+	2	♦	2	7	
	1	1	0	4	2

	TTh	Th	H	T	O
	5	♦	7	♦	
	♦	2	3	4	
+	1	0	♦	2	
	1	5	8	9	2



Observe the following price list exhibited in an electric and electronic goods shop.

XYZ & Co.		
PRICE LIST	Television (29")	₹ 12,750
	Home Theatre	₹ 7,550
	Washing Machine	₹ 14,750
	Fan	₹ 1,800
	Electric Cooker (1 L)	₹ 850
	Electric iron box	₹ 570
	Torch light	₹ 65
No. 10, East Car Street, Coimbatore.		



The items purchased by 5 persons are given below:

Shanthi : Television - 1, Fan - 1, Torch light - 1.

Kavya : Home theatre - 1, Electric iron box - 1,
Torch light - 1.

Savitha : Fan - 1, Electric cooker - 1, Home Theatre - 1.

Priya : Washing machine - 1, Torch light - 1, Fan - 1.

Geetha : Television - 1, Torch light - 1, Electric cooker - 1.

Find the total value of things bought by Shanthi.

Shanthi bought,

Cost of Television = ₹ 12,750

Cost of Fan = ₹ 1,800

Cost of Torch light = ₹ 65

Total value of things = ₹ 14,615

Total value of things bought by Shanthi = ₹ 14,615

Activity



From the above table, find out the total value of the things bought by Kavya, Savitha, Priya and Geetha.



Practice Time

(1) The rough estimation to construct a house is as follows:-

For construction - 1,150 bags of cement

For laying concrete - 850 bags of cement

For plastering the walls - 98 bags of cement



What is the total number of cement bags required to construct a house?

(2) A family spent ₹ 3,500 monthly for grocery, ₹ 1,200 for milk, ₹ 4,800 for rent and electricity, and ₹ 950 for other expenses. Find the total expenditure of the family in the month?



- (3) A Municipality collects ₹ 8,430 as water tax, ₹ 9,890 as professional tax, ₹ 1,480 as entertainment tax and ₹ 2,740 as service tax. What is the total amount collected by the municipality?
- (4) In an exhibition, the amount collected from the sale of books, Electronic items, Textiles, Household items are ₹ 1,700, ₹ 18,585, ₹ 9,200 and ₹ 22,000 respectively. What is the total amount collected in the exhibition?



Subtraction

“Why have you not completed your homework still?” asked Sarala’s mother.

“Mother, I am not able to complete one particular problem”, replied Sarala.

Mother had a glance of Sarala’s problem.

$$27632 - 8267 = ?$$

The mother saw, how she has written the numbers one below the other. She explained her daughter the mistake committed by her.

$$\begin{array}{r} 27632 \\ - 8267 \\ \hline \end{array}$$

Now you would have understood why Sarala was not able to do the problem.

Can you correct Sarala’s mistake yourselves? Do you need help to solve the problem?



Subtract the following numbers, by writing them one below the other $27,632 - 8,267$.

T	Th	H	T	O		Th	H	T	O
2	7	6	3	2	-	8	2	6	7

T	Th	H	T	O
				12
1	17	5	2	12
2	7	6	3	2
-	8	2	6	7
1	9	3	6	5

To subtract ones

Since 2 is smaller than 7, convert 1 ten from 3 and then regroup into ones ($10 + 2 = 12$). Hence $12 - 7 = 5$

To subtract tens

Since 2 is smaller than 6, convert 1 hundred from 6 and then regroup into tens. $12 - 6 = 6$

To subtract hundreds

Subtract 2 hundreds from 5 hundreds. $5 - 2 = 3$

To subtract thousands

Since 7 is smaller than 8, convert 1 ten thousand from 2 and then regroup into thousand. $17 - 8 = 9$

To subtract ten thousands

$1 - 0 = 1$



Try these

(1) Subtract the following

i) $76,236 - 987$

ii) $9,827 - 992$

iii) $60,006 - 27,822$

iv) $98,765 - 7,988$

(2) Subtract 58,600 from 69,848.

(3) Find the difference between 6,589 and 74,569.

(4) How much 75,000 is more than 23,569?

(5) What should be added to 5,600 to get 90,000.



In a cement factory 63,665 bags of cement are produced in a year. Among them 52,980 bags are sold. Find the number of cement bags unsold.

Number of cement bags produced =

Number of bags sold =

Number of bags unsold

T	h	T	h	H	T	O
				15		
		2	5	16		
6	3	6	6	5		
-	5	2	9	8	0	
1	0	6	8	5		

Number of cement bags unsold = **10,685**



Practice Time

- Find the difference between the largest five digit number and smallest six digit number.
- The cost of a motorbike is ₹ 45,800. If the cost of a bicycle is ₹ 42,910 less than the cost of a motor bike, find the cost of the bicycle.
- Arivazhagan deposited his monthly income of ₹ 26,000 in a bank. He withdrew ₹ 7600 from the bank once and ₹ 12,400 from the bank second time to meet his family expenditure. Calculate the balance amount left in his account?
- In a flower show 35,000 flowers were used for decoration. After 3 days 1,314 flowers were removed and the remaining flowers were used to make a new model of decoration. How many flowers were used for making the new model?



- (4) In a town bus, ₹ 27,432 was collected in the first week and ₹16,758 was collected in the second week. By how much was the collection amount less in the second week compared to that of the first week?



- (5) Replace each * by the correct digit in each of the following

i)

	Tth	Th	H	T	O
	4	6	3	5	7
-	*	*	*	*	*
	2	1	2	1	3

ii)

	Tth	Th	H	T	O
	*	6	4	3	*
-	4	*	7	*	9
	3	2	*	2	1

Multiplication

Bharani has done a multiplication problem in the class. Even though he has completed the problem, he had a doubt about the method he followed to solve the problem. He clarified it with his friend. He too was unable to clear his doubt. Finally, their maths teacher cleared their doubt.



Bharani's way of solving the multiplication problem:

$$\begin{array}{r}
 658 \times 46 \\
 \hline
 3948 \\
 + 2632 \\
 \hline
 30268
 \end{array}$$

When 658 is multiplied by 4, the product is written from ten's place. They wanted the explanation for this.

Explanation 1

	H	T	O
	6	5	8
x		4	6
	3	9	4
+	2	6	3
	3	0	2

$$658 \times 6 \text{ ones} = 658 \times 6 = 3948$$

$$658 \times 4 \text{ tens} = 658 \times 40 = 26320$$

Explanation 2

	H	T	O
658			
× 46			
<hr/>			
3948			
+ 2632			
<hr/>			
30268			

Write all the values, according to place value and add them

658 × 6 ones

$$\begin{array}{l} \text{O} \quad \text{O} \\ 8 \times 6 = 48 \text{ ones} \\ \text{T} \quad \text{O} \\ 5 \times 6 = 30 \text{ tens} \\ \text{H} \quad \text{O} \\ 6 \times 6 = 36 \text{ hundreds} \end{array}$$

658 × 4 tens

$$\begin{array}{l} \text{O} \quad \text{T} \\ 8 \times 4 = 32 \text{ tens} \\ \text{T} \quad \text{T} \\ 5 \times 4 = 20 \text{ hundreds} \\ \text{H} \quad \text{T} \\ 6 \times 4 = 24 \text{ thousands} \end{array}$$

In the multiplier 46, the place value of 4 is tens. Hence, the product should be written from the tens place instead of ones place.

Thus, the teacher cleared Bharani's doubt.

**Try these**

Multiply the following numbers

- | | |
|----------------|----------------|
| (1) 9,500 × 2 | (2) 7,426 × 39 |
| (3) 9,427 × 67 | (4) 8,085 × 94 |
| (5) 9,707 × 52 | (6) 354 × 256 |



In a students hostel, the amount spent for the students per day is ₹ 350. Calculate the amount spent for a month which has 30 days.

$$\text{Amount spent for one day} = ₹ \quad 350$$

$$\text{Amount spent for a month} = ₹ \quad 350 \times 30$$

$$₹ \quad 10,500$$

Thus, ₹ 10,500 is the amount spent for a month in a student's hostel.



If the number of tickets sold in a circus on one day is 126, find the number of tickets sold for 16 days.

To find the product of 126 and 16.

$$126 \times 10 = 1,260$$

$$126 \times 6 = + 756$$

$$\underline{\underline{2,016}}$$

Thus, 2,016 tickets were sold for 16 days.

The multiplier 16 can be split as $(10 + 6)$
Hence first find the product of 126×10 and 126×6 and then add both of them.



If a multiplier has a number followed by zeros, multiply the number and then add the number of zeros to the right of the answer.



The cost of a ceiling fan is ₹ 735. Find the cost of 125 ceiling fans?

The price of 1 ceiling fan = ₹ 735

The price of 125 ceiling fans = ₹ 735×125

$$\underline{735 \times 125}$$

$$3675$$

$$14700$$

$$73500$$

$$\underline{\underline{91875}}$$

$$735 \times 5 = 3675$$

$$735 \times 20 = 14700$$

$$735 \times 100 = 73500$$

Thus, cost of 125 ceiling fans is ₹ 91,875.

Another Method of multiplying 735 and 125.

		MULTIPLIER			
Place value		1H (100)	2T (20)	5 O (5)	Total
MULTIPLICAND	7 H (700)	70,000	14,000	3,500	87,500
	3 T (30)	3,000	600	150	3,750
	5 O (5)	500	100	25	625
	Total	73,500	14,700	3,675	91,875



Practice Time

- (1) If the cost of 1 litre milk is ₹ 22, find the cost of 20 litre of milk?



- (2) The cost of a folding chair is ₹ 182. Calculate the cost of 25 folding chairs?



- (3) The price of a book ₹ 250. What is the amount needed to buy 40 such books?



- (4) A factory produces 285 PVC pipes in a day. How many PVC pipes will it produce in a year, if the factory has 293 working days in the year?



- (5) A carton can hold 144 apples. 675 cartons of apples were brought to a market on a day. Find the total number of apples brought to the market on the day?



Activity



Magic Square

Fill up the boxes with the numbers from 46 to 54. The numbers should be filled in such a way that the sum in both rows and columns should be 150.

		49
46		
	52	47

Complete this magic square with numbers from 21 to 29. The sum of both horizontal and vertical boxes addition should be 75.

21		

Group Activity



Make some more magic squares with your friends.

Activity



Read the following five statements and choose the appropriate question from the list given for each statement and put a tick (✓) mark against the correct one.

- (1) A fruit – seller has 50 boxes with 38 fruits in each box.

- i) How much of money, he might have spent to buy all the fruits?
- ii) How many fruits does the fruit seller have?
- iii) What is the selling price of each fruit?



- (2) Revathi and Anu bought books for ₹ 47 and ₹ 43 respectively. They gave ₹ 100 to the shop keeper.

- i) What is the total number of books in the shop?
- ii) What is the balance money given by the shopkeeper?
- iii) Does the book-shop have enough stock?

- (3) In an Aquarium, there are 15 fish tanks. Each fish tank has got 20 varieties of fishes.



- i) In the Aquarium, how many varieties of fishes are there?
- ii) How many varieties of fishes were sent to other places?
- iii) How many persons were there in the Aquarium?

- (4) A circus group has 176 members. They stayed in tents, with 8 persons in each tent.



- i) How many persons saw the circus?
- ii) How many tents were made for the circus group?
- iii) How many persons left the circus group?

- (5) The shopkeeper has 144 eggs. He puts them in egg trays. Each tray has 12 eggs.

- i) How many more eggs will he need?
- ii) How many fresh eggs does he sell?
- iii) How many egg trays does he need?

Division

Dhivya's Aunty with her 3 daughters Varsha, Reshma and Priya has come from Delhi to Dhivya's house for Dasara holidays.

Divya's brother Kumar had a doubt in the division of numbers. He clarified his doubt from his sister and cousins. All of them tried the sum separately.

The sum is $7692 \div 6$

Priya solved by the following method

$$\begin{aligned}
 7692 &= 7000 + 600 + 90 + 2 \\
 &= 6000 + 1000 + 600 + 90 + 2 \\
 &= 6000 + 1600 + 90 + 2 \\
 &= 6000 + 1200 + 400 + 90 + 2 \\
 &= 6000 + 1200 + 490 + 2 \\
 &= 6000 + 1200 + 480 + 10 + 2 \\
 &= 6000 + 1200 + 480 + 12
 \end{aligned}$$

Let us share 7692 equally among 6 persons.

$$\begin{aligned}
 7692 \div 6 &= (6000 \div 6) + (1200 \div 6) \\
 &\quad + (480 \div 6) + (12 \div 6) \\
 &= 1000 + 200 + 80 + 2
 \end{aligned}$$

So, the share of each person is **1282**.

Varsha solved by this method

$$\begin{aligned}
 7692 &= 7\text{Th} + 6\text{H} + 9\text{T} + 2\text{O} \\
 &= 7\text{Th} + 1\text{Th} + 6\text{H} + 9\text{T} + 2\text{O} \\
 &= 6\text{Th} + 16\text{H} + 9\text{T} + 2\text{O} \\
 &= 6\text{Th} + 12\text{H} + 4\text{H} + 9\text{T} + 2\text{O} \\
 &= 6\text{Th} + 12\text{H} + 49\text{T} + 2\text{O} \\
 &= 6\text{Th} + 12\text{H} + 48\text{T} + 12\text{O}
 \end{aligned}$$

Let us share 7692 equally among 6 persons

$$\begin{aligned}
 7692 \div 6 &= (6\text{Th} \div 6) + (12\text{H} \div 6) \\
 &\quad + (48\text{T} \div 6) + (12\text{O} \div 6) \\
 &= 1\text{Th} + 2\text{H} + 8\text{T} + 2\text{O} \\
 &= 1282
 \end{aligned}$$

So, the share of each person is **1282**.

Reshma solved by the following method. Let us share 7692 equally among 6 persons.

$$\begin{array}{r}
 500 + 500 + 200 + 80 + 2 \\
 6 \overline{) 7692} \\
 \underline{3000} \\
 4692 \\
 \underline{3000} \\
 1692 \\
 \underline{1200} \\
 492 \\
 \underline{480} \\
 12 \\
 \underline{12} \\
 0
 \end{array}$$



Dividend	=	7692
Divisor	=	6
Quotient	=	1282
Remainder	=	0



Divya solved by this method.

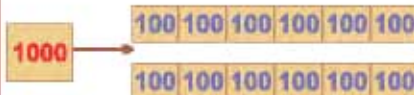
Let us share 7692 equally among 6 persons.

Equal Share



7 Th 1000 1000 1000 1000 1000 1000

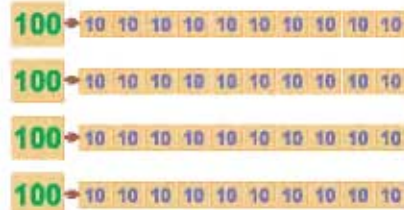
Let us change 1000
into 10 hundreds



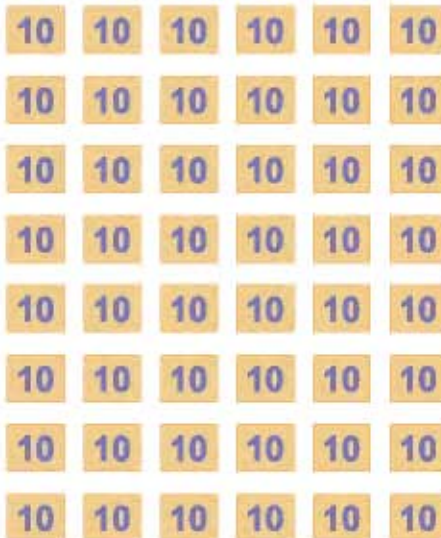
10 H + 6 H



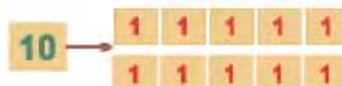
Let us change 400
into 40 tens



40 T + 9 T



Let us change 10
into 10 ones



12 O



Quotient = 1282

Remainder = 0

Share of each
person is 1282

All the four got the same answer irrespective of their different methods.

Let us follow the steps for solving division problems.

Step 1

Seven thousands can be split as 1 group of 6 thousands. So, $7 \div 6 = 1$ thousand, remainder 1.

	1			
	Th	H	T	O
6	7	6	9	2
	6			
	1			

Step 2

Bring down the 6 from the Hundred's place and write next to '1'. 16 Hundreds split into 2 groups of 6 hundreds. So, $16 \div 6 = 2$ hundred, remainder 4.

	1	2		
	Th	H	T	O
6	7	6	9	2
	6			
	1	6		
	1	2		
		4		

Step 3

Bring down the '9' from the Ten's place and write next to '4'. 49 tens can be split into 8 groups of 6 tens. So, $49 \div 6 = 8$ tens, remainder = 1.

	1	2	8	
	Th	H	T	O
6	7	6	9	2
	6			
	1	6		
	1	2		
		4	9	
		4	8	
			1	

Step 4

Bring down the '2' from the Units place and write next to '1'. 12 ones can be split into 2 groups of 6 ones. So, $12 \div 6 = 2$ ones remainder = 0.

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

Therefore, $7692 \div 6 = 1282$, Remainder = 0.



In a student's hostel, the amount spent in a week for food was ₹ 4,809. Find the amount spent for a day.



Divide 4,809 by 7.

Step 1

Can you split 4 thousands into groups of 7 thousands? **No.**

But 48 hundreds can be further split into 6 groups of 7 hundreds.

So, $48 \div 7 = 6$, Remainder is 6 hundreds.

	Th	H	T	O
	0	6		
7	4	8	0	9
	4	2		
		6		

Step 2

Bring down the '0' from the Tens's place and write next to '6', split 60 tens as 8 groups of 7 tens.

So, $60 \div 7 = 8$, Remainder is 4 tens.

	Th	H	T	O
	0	6	8	
7	4	8	0	9
	4	2		
		6	0	
		5	6	
			4	

Step 3

Bring down the '9' from the units place and write next to 4, 49 ones can be split as 7 groups of 7 ones.

So, $49 \div 7 = 7$, Remainder is 0.

	Th	H	T	O
	0	6	8	7
7	4	8	0	9
	4	2		
		6	0	
		5	6	
			4	9
			4	9
				0

Hence, money spent for one day = ₹ 687.



In a factory, the price of 36 bags of poultry food is ₹ 3024. Find the cost of 1 bag?

Divide 3,024 by 36.

Step 1

Can you split 3 thousands into groups of 36 thousands? **No.**

Can you split 30 hundreds into groups of 36 hundreds? **No.**

so 302 tens can be split as 8 groups of 36 tens.

$$7 \times 36 = 252$$

$$8 \times 36 = 288$$

$$9 \times 36 = 324$$

302 ÷ 36 = 8 tens and remainder is 14.

	Th	H	T	O
	0	0	8	
36	3	0	2	4
	2	8	8	
		1	4	

Step 2

Bring down the 4 from the Units place and write next to 14.

144 ones can be split as 4 groups of 36 ones.

$$2 \times 36 = 72$$

$$3 \times 36 = 108$$

$$4 \times 36 = 144$$

$$5 \times 36 = 188$$

144 ÷ 36 = 4 ones and remainder is 0.

	Th	H	T	O
	0	0	8	4
36	3	0	2	4
	2	8	8	
		1	4	4
		1	4	4
				0

Hence, the cost of 1 bag of poultry food is ₹ 84



Practice Time

- (1) Divide and then find quotient and remainder for the following sums.

i) $6,005 \div 5$

ii) $3264 \div 3$

iii) $5,697 \div 9$

iv) $9,450 \div 30$

v) $5,150 \div 25$

vi) $6,490 \div 55$

- (2) If you arrange 3,375 mangoes in 75 baskets, find the number of mangoes arranged in one basket?



- (3) In a fair price shop, the amount of rice sold for 50 days is 13,500kg. Find the rice sold for 1 day? (in Kg)



- (4) In a farm, the number of eggs collected in June is 19,500. How many eggs were collected on each day in the month of June?



- (5) In a post office, stamps worth ₹ 12,750 were sold in 10 days. Calculate the amount of stamps sold for a day?



- (6) If a company manufactures 13,365 utensils in 27 days, find out the number of utensils manufactured in a day.



6

Multiples & Factors

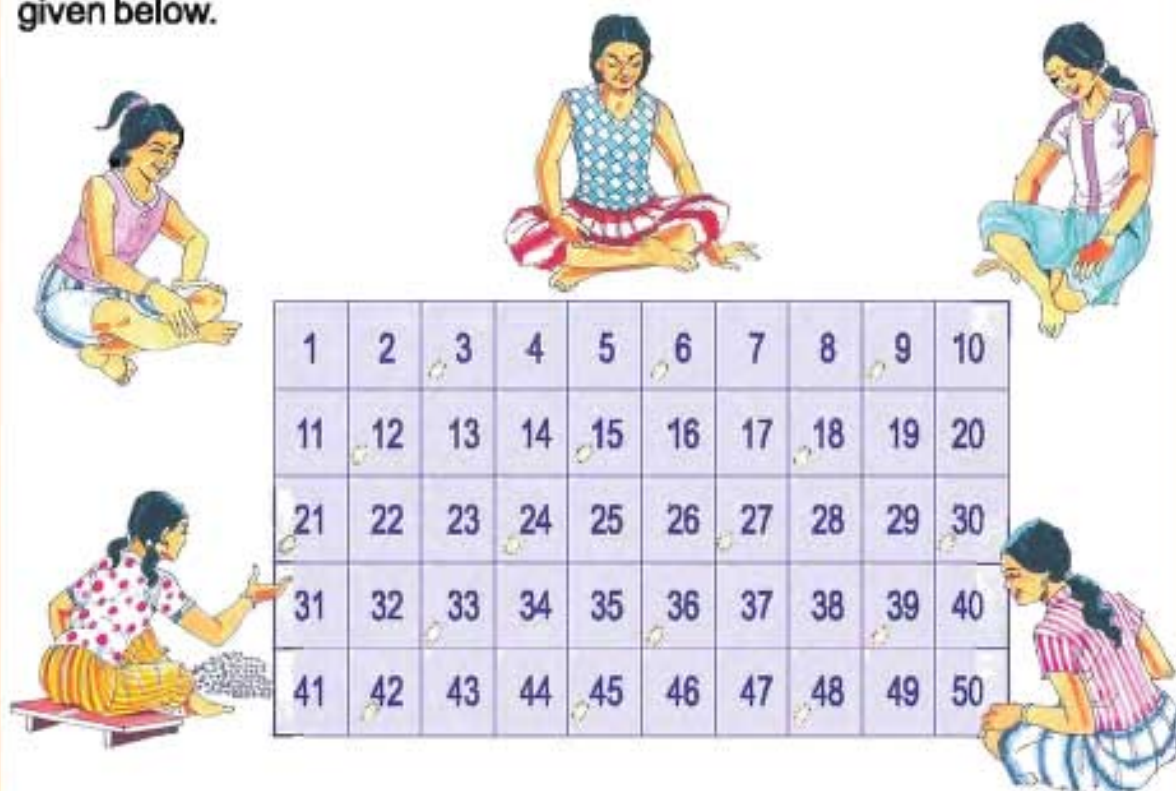
Multiples

Mary, Meena, Emily, Noorjahan and Taj are friends. Emily wanted to play an indoor game.

Emily started explaining the rules. She took a sheet of paper, and wrote the numbers from 1 to 50 as shown below. She made lots of cast from 1 to 10.

From the lots of cast, whoever picks a number, has to keep a small stone on the particular number. Then she adds the number with the same number and keeps a stone on the number. The activity is continued in the same way.

Taj picked one of the lots of cast. She got number 3. Can you guess, on what boxes she would have kept the stones? Look at the table given below.

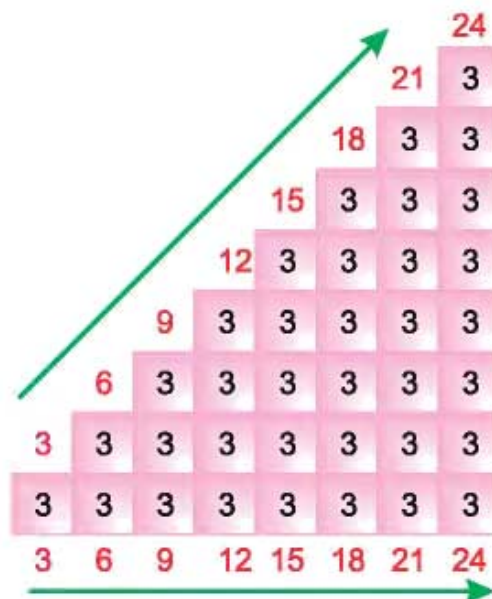
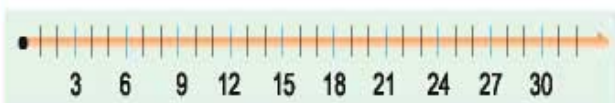


1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Number started with 3 and its consecutive summations are

3, 6, 9, 12, 15, 18, 21, 27, ...

Mark these numbers on the number line.

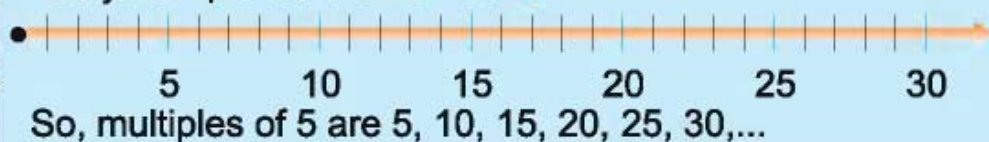


When a number is added repeatedly, the resulting numbers are called its multiples.

Mark the numbers, picked up by the other friends on the number line.



Noorjahan picked the number **5**



Emily picked the number **6**



So, multiples of 6 are _____

Meena picked the number **9**



So, multiples of 9 are _____

Mary picked the number **4**



So, multiples of 4 are _____



Each number is a first multiple of itself.



Practice Time

1. Fill in the blanks, with the multiples.

(i) 8, 16, _____, _____, _____ 48 _____, _____.

(ii) 13, 26, _____, _____, _____ 78 _____, _____.

(iii) 20, _____, _____, 80 _____, _____.

2. Write 5 multiples of each of the following numbers.

(i) 15

(ii) 25

(iii) 50

Project Work



The multiple of numbers from 1 to 10 are given in two ways that is from **left to right** and from **top to bottom**.

Follow the instructions and **encircle** the multiples.

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

Left to right:

From the 3rd multiple to the 8th multiple of 3

From the 3rd multiple to the 8th multiple of 6

From the 3rd multiple to the 8th multiple of 9

Top to bottom:

4th and 5th multiple of 3

7th and 8th multiple of 8

Shade the circles and enjoy.



What do you see? This year you are studying in ____ Standard.



What is the connection between multiple of a number, and its multiplication table?

Factors

Abdulla and Fathima got 4 cream biscuits each from their mom as snacks. Since Fathima is crazy of cream biscuits, Abdulla tempted her, and said "I will give you one more biscuit if you answer my question".

Fathima was eagerly waiting for the question. The much awaited question is "write 8 as the product of two numbers" in all the possible ways and arrange these toys as the numbers.

Observe Fathima's answer:

$8 = 1 \times 8$		$8 = 8 \times 1$	
$8 = 2 \times 4$			
$8 = 4 \times 2$			

If a number can be written as a product of two or more numbers, those numbers are called factors.

Abdulla appreciated Fathima and gave her one more cream biscuit. He concluded saying that 8 can be expressed as the product of two different pairs of numbers.

$$\begin{array}{l} 8 = 1 \times 8 \\ 8 = 2 \times 4 \end{array}$$

Hence, the factors of 8 are 1, 2, 4 and 8.



i) Find the factors of 15.



Factors of 15
are 1, 3, 5, 15

ii) Find the factors of 9.

$$9 = 1 \times 9$$

$$9 = 3 \times 3$$

Factors of 9 are
1, 3, 9



Try these

(i) Find the factors of 10.



Factors of 10 are _____

(ii) Find the factors of 6.

$$6 =$$

$$6 =$$

Factors of 6 are



(i) Find the factors of 20.



Factors of
20 are
1, 2, 4, 5, 10, 20

(ii) Find the factors of 18.

$$18 = 1 \times 18$$

$$18 = 2 \times 9$$

$$18 = 3 \times 6$$

Factors of 18 are
1, 2, 3, 6, 9, 18



Try these

(i) Find the factors of 24.



Factors of 24 are _____

(ii) Find the factors of 36.

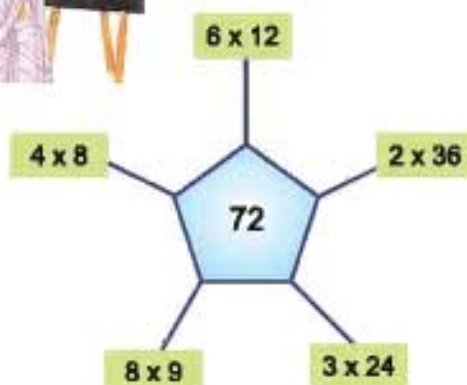


Note

Observe the factors of 8, 15 and 20. For any number, **1 and the number itself** are the factors. They are called **trivial factors**. Generally, we don't mention the trivial factors when we write these factors.



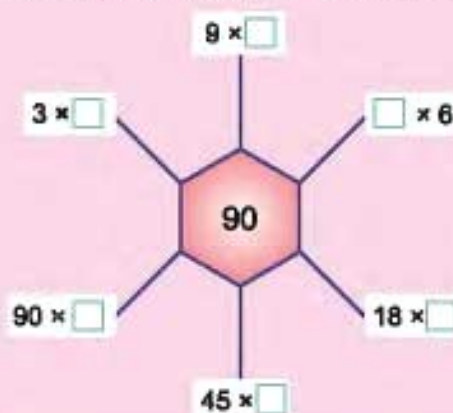
Find the factors of 72



Factors of 72 are

2, 3, 4, 6, 8, 9, 12, 18, 24, 36

Fill in the boxes with suitable numbers and write the factors of 90



Factors of 90 are

FACTOR TREE

The factor tree for 30 are given in three different ways



Practice Time

- Write the following numbers as multiplication of two numbers in all possible ways and write the factors: (i) 48 (ii) 50
- Draw the factor tree for 60 in all possible ways.

The factors of a number can divide the number without remainder.



7

Estimation

Mala called, Rani! come here. See this. Our father brought two banana *thars* from the garden.

Is it? Rani came running.

Mala asked Rani, 'Can you say, how many banana are there in each *thar*'?

Rani observed the *thars* keenly and said that approximately in the *first thar* there are 80 bananas and in the second there are 90. So, altogether there are 170.

Then they decided to count the number of bananas.

They counted the bananas by putting a mark on the bananas.



The actual number of bananas in the first *thar* is **75**.

The approximated number is **80**.

The difference is **5**.

The actual number of bananas in the second *thar* is **92**.

The approximated number is **90**.

The difference is **2**.

The actual total number of bananas in two *thars* is **167**.

The approximated total is **170**.

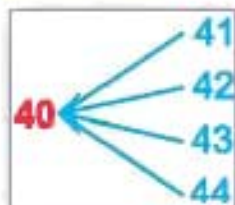
The difference is **3**.

Mala appreciated Rani for guessing the total number very near to the exact number.

Observe the following number line.



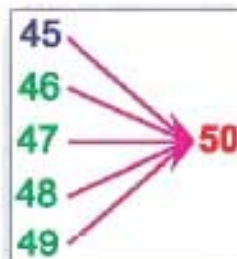
The number line has numbers from 40, 41, 42, 43, 44, 45, 46, 47, 48, 49 and 50.



The numbers 41, 42, 43, 44, are closer to 40 than 50. So, they can be rounded off to **40**, correct to its nearest lowest tens.

The numbers 46, 47, 48, 49, are closer to 50 than 40. So, they can be rounded off to **50**, correct to its nearest highest tens.

Since **45** is in the middle of the number line, it is a common practice to round it off to **50**.



To round off a number to the nearest ten, we round it off to the multiple of ten nearest to it. A number which is in the midway is always rounded off to the nearest highest tens.



Round off the following numbers to their nearest tens.

(i) 22, (ii) 64, (iii) 73, (iv) 86, (v) 35

- i) 22 can be rounded off to = 20
- ii) 64 can be rounded off to = 60
- iii) 73 can be rounded off to = 70
- iv) 86 can be rounded off to = 90
- v) 35 can be rounded off to = 40



Try these

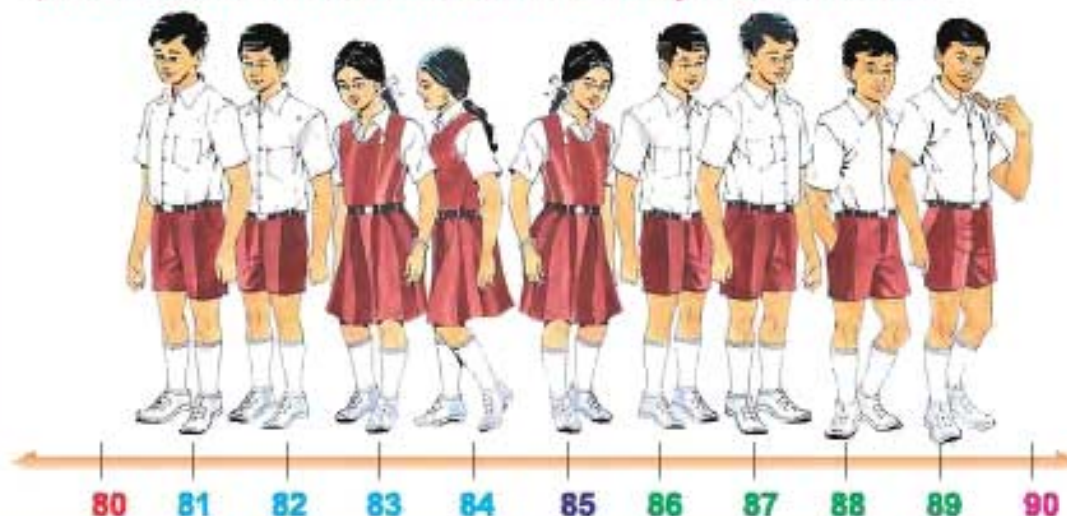
Round off the following numbers to their nearest tens

- i) 74, ii) 81, iii) 37,
- iv) 26, v) 18, vi) 15.

Activity



1. Round off all the two digit numbers to their nearest tens.
2. Draw a number line with numbers from 80 to 90. Make 9 students to stand over the number as shown below. The students from 81 to 84 face towards 80 and 85 to 89 towards 90. Observe the round off process and create similar activities in your classroom.



Estimating the sum



Round off the following numbers to their nearest tens. Calculate the actual answer of the given two numbers. Find whether the estimated/actual is more or they are equal.

Numbers	Estimated	Actual	Difference	Which is more
i) $37 + 22$	$40 + 20 = 60$	$37 + 22 = 59$	1	Estimated / Actual / Equal
ii) $44 + 33$				Estimated / Actual / Equal
iii) $19 + 54$				Estimated / Actual / Equal
iv) $66 + 28$				Estimated / Actual / Equal

Numbers	Estimated	Actual	Difference	Which is more
i) $62 - 27$	$60 - 30 = 30$	$62 - 27 = 35$	5	Estimated / Actual / Equal
ii) $94 - 31$				Estimated / Actual / Equal
iii) $75 - 44$				Estimated / Actual / Equal
iv) $53 - 18$				Estimated / Actual / Equal

Numbers	Estimated	Actual	Difference	Which is more
i) 44×29	$40 \times 30 = 1200$	$44 \times 29 = 1276$	76	Estimated / Actual / Equal
ii) 26×17				Estimated / Actual / Equal
iii) 34×43				Estimated / Actual / Equal
iv) 57×62				Estimated / Actual / Equal

Numbers	Estimated	Actual	Difference	Which is more
i) $64 \div 28$	$60 \div 30 = 2$	$64 \div 28 = 2$	0	Estimated / Actual / Equal
ii) $81 \div 22$				Estimated / Actual / Equal
iii) $93 \div 26$				Estimated / Actual / Equal
iv) $89 \div 36$				Estimated / Actual / Equal

Addition



In a school, V standard 'A' section has 44 students, V standard 'B' section has 48 students. Find the estimated number of question papers required for both the sections, the actual number of question papers and also find its difference between the estimated value and the actual value.

Estimated number of question paper for V 'A' = 40

(Rounded off to its nearest tens)

Estimated number of question papers for V 'B' = 50

(Rounded off to its nearest tens)

Total number of estimated question papers = $40 + 50 = 90$

Actual number of question paper for V 'A' and V 'B' = $44 + 48 = 92$

Their difference = $92 - 90 = 2$

Which is more = **Actual**



Estimated number may be less than the actual number in some cases.

Subtraction



A students' hostel has 75kg of Dhal in the beginning of the week. It was estimated that 65 kg of dhal would be used in a week. Calculate the difference between the estimated balance and the actual balance of dhal at the end of the week.

Estimated Amount of Dhal in the beginning of the week = 80 kg

(Rounded off to its nearest tens)

Estimated amount of Dhal to be used in the week = 70 kg

(Rounded off to its nearest tens)

Estimated balance at the end of the week = $80 - 70$

= **10 kg**

Actual balance at the end of the week = $75 - 65$

= **10 kg**

Difference = **0**

Which is more = **Equal**

Multiplication



For a construction work 65 persons were involved in 1 day. The work went on for 44 days. Find the estimated number of persons who might get the wages and also find the actual number of persons employed for the work. Compare both the answers.

Estimated number of persons per day = 70 persons

(Rounded off to its nearest tens)

Estimated number of days worked = 40 days

(Rounded off to its nearest tens)

Estimated number of persons to get the wages = 70×40
= 2800 persons

Actual number of persons to get the wages = 65×44
= 2860 persons

Difference = $2860 - 2800$
= 60 persons

Which is more = Actual

Division



In a coconut farm, there are 96 coconut trees. Each day coconuts are plucked from 24 trees. In how many days coconuts can be plucked from all the 96 trees. Find the estimated number of days and the actual number of days and compare the answers.

Estimated number of trees in the farm } = 100
(Rounded off to its nearest tens)

Estimated number of trees in which
coconuts are plucked } = 20
(Rounded off to its nearest tens)

Estimated number of days required to
pluck coconuts from all the trees } = $100 \div 20 = 5$ days

Actual number of days requires = $96 \div 24 = 4$ days

Difference = $5 - 4 = 1$ day

Which is more = Estimated



Practice Time

- 1) 64 candidates were expected to attend a seminar on the first day and 73 candidates were expected on the second day. Find the total number of persons estimated and the actual turned out. To prepare food for both the days. Is the estimated value more or less than the actual value? Find its difference.
- 2) 84 students took up an examination. If 76 students were promoted, find the estimated and the actual number of students failed. Is the estimated value more or less than the actual value? Find its difference.
- 3) A computer course is conducted for 24 days. Each day 48 persons attended the course. To prepare a day wise work done sheet for all 24 days, find the estimated and the actual number of persons attended the course. Is the estimated value more or less than the actual value? Find its difference.
- 4) An oil barrel can hold 72 litres of oil. If each barrel can hold 24 litres of oil, how many tins are required? Find the estimated number and the actual number. Is the estimated value more or less than the actual value? Find its difference.

FUN TIME

Continue the pattern and find out the difference between their sums:

$$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55$$

$$11 + 12 + 13 + 14 + 15 + 16 + 17 + 18 + 19 + 20 = 155$$

$$21 + 22 + 23 + 24 + 25 + 26 + 27 + 28 + 29 + 30 = 255$$

$$31 + 32 + 33 + 34 + 35 + 36 + 37 + 38 + 39 + 40 = 355$$

$$41 + 42 + 43 + 44 + 45 + 46 + 47 + 48 + 49 + 50 = 455$$

$$\begin{array}{l} \text{_____} = \text{____} \\ \text{_____} = \text{____} \\ \text{_____} = \text{____} \\ \text{_____} = \text{____} \\ \text{_____} = \text{____} \end{array}$$

Activity



- 1) Find the actual value.
- 2) Estimate the number into nearest ten and then find the answer.
- 3) Encircle both the answers in the following box

- | | |
|--------------|--------------|
| 1) $14 + 17$ | 6) $35 + 35$ |
| 2) $16 + 18$ | 7) $44 + 45$ |
| 3) $27 + 22$ | 8) $45 + 46$ |
| 4) $26 + 25$ | 9) $54 + 59$ |
| 5) $31 + 38$ | |

- 1) Find the actual value.
- 2) Estimate the number into nearest ten and then find the answer.
- 3) Encircle both the answers in the following box

- 1) $84 + 12$
- 2) $26 + 13$
- 3) $60 + 15$
- 4) $99 + 11$
- 5) $56 + 14$
- 6) $80 + 16$

- 1) Find the actual value.
- 2) Estimate the number into nearest ten and then find the answer.
- 3) Find out the difference between the actual and estimated values.
- 3) Encircle the difference in the following box

- | | |
|-------------------|--------------------|
| 1) 11×11 | 10) 52×56 |
| 2) 16×14 | 11) 57×57 |
| 3) 24×23 | 12) 69×64 |
| 4) 25×23 | 13) 68×67 |
| 5) 25×25 | 14) 76×23 |
| 6) 32×35 | 15) 75×75 |
| 7) 36×39 | 16) 79×89 |
| 8) 44×45 | 17) 89×87 |
| 9) 46×46 | |

0 31 46 21 110 35 89 1
3 34 8 49 70 5 90
88 51 50 91 6 80 94
98 69 2 40 60 5
64 30 4 114 77
41 100 85 141

10 8 3
92 6 47
36 6 58
99 5 69
15 9 74
23 81
7 4 2

222 152 76 85 384 90
565 88 21 53 216 42
123 20 24 344 111
375 6 25 535
673 351 67 80 169 404
333 196 543 275 45

Colour the circles. What do you get? _____

Work Sheet

Answer the following.

- (1) The five digit number is _____.
i) Ten thousand ii) Thousand forty
iii) Hundred iv) Ten
- (2) The numeral for "six lakhs fifty thousand and forty" is _____.
i) 65,040 ii) 6,50,040
iii) 6,50,400 iv) 654
- (3) The number name of 6,54,302 is _____.
i) Six lakhs fifty four thousand three hundred and two.
ii) Sixty five thousand four hundred thirty two.
iii) Sixty lakh fifty four thousand three hundred two.
iv) Sixty five lakh four thousand thirty two.
- (4) The place value of 7 in 76,543 is _____.
i) 7 ii) 70
iii) 70,000 iv) 7,000
- (5) 54,302 is equal to _____.
i) $5 + 4 + 3 + 0 + 2$
ii) $5,000 + 400 + 30 + 2$
iii) $50,000 + 4,000 + 300 + 2$
iv) $5,000 + 4,000 + 30 + 2$
- (6) The difference between place value of two 6's in 96,160 is _____.
i) 0 ii) 994 iii) 5,940 iv) 6,000
- (7) Form the greatest 5 digit number by using the digits 2,9,5,4 and 6 is _____.
i) 24,569 ii) 96,542
iii) 92,456 iv) 95,624

(8) Which is correct ?

- i) 49,505 is less than 49,550.
- ii) 49,550 is less than 45,950.
- iii) 45,960 is less than 40,965.
- iv) 45,906 is less than 45,609.

(9) Which is the greatest number?

- i) 5,405
- ii) 4,505
- iii) 5,054
- iv) 5,504

(10) In the numeral 75,432, the digits 5 and 3 are interchanged to get new number. Find the difference between the new number and the given numeral is _____

- i) 1,980
- ii) 9,990
- iii) 990
- iv) 1,890

(11) The difference between the greatest 6 digit and smallest 5 digit number is _____.

- i) 89,999
- ii) 9,89,999
- iii) 10,000
- iv) 1,00,999

(12) The product of 405 and 40 is _____.

- i) 445
- ii) 16,200
- iii) 1,620
- iv) 1,800

(13) If, 7427 is divided by 7 then the quotient is _____.

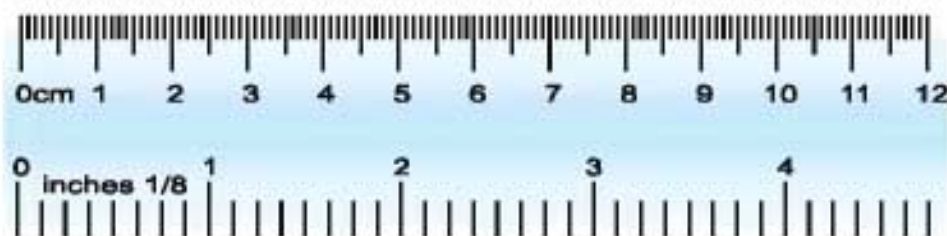
- i) 161
- ii) 1,061
- iii) 1,006
- iv) 1,001

(14) Factors of 12 are _____.

- i) 2, 3, 4, 6
- ii) 2, 3, 6
- iii) 2, 6
- iv) 3, 4

(15) The numbers 6, 12, 18, 24, ... are called _____.

- i) Factors of 6
- ii) Multiples of 6
- iii) Multiples of 4
- iv) Factors of 12



In the scale given above, we find that each 1 cm length is further divided equally into ten parts. The length of each of the smaller division is mm. So,

$$1 \text{ cm} = 10 \text{ mm}$$

The shopkeeper measures cloth with a metre stick in metres (m) and centimetres (cm).



Remember

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



The length of telephone wires, electric wires and cable wires are measured in metres. Railway tracks, roads, rivers, trains etc. are measured in kilometres.

$$1 \text{ km} = 1000 \text{ m}$$

From the above units of length, let us compare the units.

Kilometre(km) is more than metre.

Metre (m) is the standard unit of length.

Centimetre (cm) and Millimetre (mm) are less than metre.

Convert centimetres into millimetres

The length of the chocolate bar is _____ cm



The length of the same chocolate bar is _____ mm



Remember

$$1 \text{ cm} = 10 \text{ mm}$$

To convert centimetres into millimetres, multiply
the given centimetre by 10.

Observe the example and complete the following.

- i) $4 \text{ cm} = 4 \times 10 \text{ mm} = 40 \text{ mm}$
- ii) $7 \text{ cm} = 7 \times 10 \text{ mm} = 70 \text{ mm}$
- iii) $10 \text{ cm} = 10 \times \underline{\hspace{1cm}} \text{ mm} = \underline{\hspace{1cm}} \text{ mm}$
- iv) $12 \text{ cm} = 12 \times \underline{\hspace{1cm}} \text{ mm} = \underline{\hspace{1cm}} \text{ mm}$



Try these

Convert the following into millimetres

- | | | |
|-----------|----------|-----------|
| i) 6 cm | ii) 9 cm | iii) 5 cm |
| iv) 15 cm | v) 20 cm | vi) 35 cm |

Convert metres into millimetres



Remember

$$1 \text{ m} = 1000 \text{ mm}$$

To convert metres into millimetres multiply,
the given metre by 1000.

Observe the example and complete the following.

- i) $6 \text{ m} = 6 \times 1000 = 6000 \text{ mm}$
- ii) $8 \text{ m} = 8 \times \underline{\hspace{1cm}} = 8000 \text{ mm}$
- iii) $10 \text{ m} = 10 \times 1000 = 10000 \text{ mm}$
- iv) $13 \text{ m} = 13 \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \text{ mm}$
- v) $19 \text{ m} = 19 \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \text{ mm}$



Try these

Convert the following measurements into millimetres

- i) 5 cm ii) 8 cm iii) 9 cm
- iv) 14 m v) 18 m vi) 32 m

Convert millimetres into centimetres.

If your little finger measures 40 millimetres, what will be its measure expressed in centimetres.

Since, $10 \text{ mm} = 1 \text{ cm}$, $40 \text{ mm} = (40 \div 10) \text{ cm} = 4 \text{ cm}$



Remember

$10 \text{ mm} = 1 \text{ cm}$

To convert millimetre into centimetre divide the given millimetre by 10

Observe the example and complete the following.

- i) $20 \text{ mm} = 20 \div 10 \text{ cm} = 2 \text{ cm}$
- ii) $110 \text{ mm} = 110 \div 10 \text{ cm} = 11 \text{ cm}$
- iii) $170 \text{ mm} = 170 \div \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \text{ cm}$
- iv) $500 \text{ mm} = 500 \div \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \text{ cm}$

Convert kilometres into metres



Remember

$$1 \text{ km} = 1000 \text{ m}$$

To convert kilometres into metres multiply the given kilometre by 1000.

Observe the example and complete the following.

$$\text{i) } 4 \text{ km} = 4 \times 1000 \text{ m} = 4000 \text{ m}$$

$$\text{ii) } 7 \text{ km} = 7 \times \underline{\quad} = \underline{\quad} \text{ m}$$

$$\text{iii) } 12 \text{ km} = 12 \times 1000 \text{ m} = 12000 \text{ m}$$

$$\text{iv) } 14 \text{ km} = 14 \times \underline{\quad} = \underline{\quad} \text{ m}$$

$$\begin{aligned} \text{v) } 8 \text{ km } 400 \text{ m} &= 8 \times 1000 \text{ m} + 400 \text{ m} \\ &= 8000 \text{ m} + 400 \text{ m} = 8400 \text{ m} \end{aligned}$$

$$\text{vi) } 15 \text{ km } 500 \text{ m} = 15 \times \underline{\quad} + 500 \text{ m} = \underline{\quad} + \underline{\quad} = \underline{\quad} \text{ m}$$

$$\text{vii) } 18 \text{ km } 50 \text{ m} = 18 \times \underline{\quad} + 050 \text{ m} = \underline{\quad} + \underline{\quad} = \underline{\quad} \text{ m}$$

$$\text{viii) } 20 \text{ km } 5 \text{ m} = 20 \times \underline{\quad} + 005 \text{ m} = \underline{\quad} + \underline{\quad} = \underline{\quad} \text{ m}$$



Try these

Convert the following measurements into metres.

$$\text{i) } 5 \text{ km}$$

$$\text{ii) } 10 \text{ km}$$

$$\text{iii) } 15 \text{ km}$$

$$\text{iv) } 45 \text{ km}$$

$$\text{v) } 6 \text{ km } 500 \text{ m}$$

$$\text{vi) } 9 \text{ km } 600 \text{ m}$$

$$\text{vii) } 10 \text{ km } 50 \text{ m}$$

$$\text{viii) } 13 \text{ km } 5 \text{ m}$$

$$\text{ix) } 21 \text{ km } 500 \text{ m}$$

Addition



Add : 8m 50cm and 6m 70cm

	m	cm
	1	
	8	50
+	6	70
	15m	20cm

Add the centimetres

$$50 + 70 = 120 \text{ cm}$$

Convert it into metres.

$$120 \text{ cm} = 1\text{m } 20 \text{ cm}$$

Add the metres

$$1+8+6 = 15 \text{ m}$$



Try these

Find the sum of the following.

i) $20 \text{ m } 35 \text{ cm} + 30 \text{ m } 32 \text{ cm}$

ii) $16\text{m } 35 \text{ cm} + 25 \text{ m } 35 \text{ cm}$

iii) $4 \text{ km } 600 \text{ m} + 5 \text{ km } 500 \text{ m}$

iv) $7 \text{ km } 800 \text{ m} + 3 \text{ km } 400 \text{ m}$



Gopal's father bought 2 m 50 cm of cloth for a shirt for him and 1 m 50 cm for Gopal. What is the total length of cloth he bought?

Length of cloth bought for father =

Length of cloth bought for Gopal =

Total =

+

m	cm
1	
2	50
1	50
4m	00cm

Total length of cloth is 4m.



The distance between Chennai and Trichy is 320 km and Trichy and Madurai is 120 km. What is the total distance between Chennai and Madurai?



Distance between Chennai and Trichy = 320

Distance between Trichy and Madurai = +120

Total distance

Km
= 440 km

Total distance between Chennai and Madurai is 440 km



To teacher:

Similarly, more statement sums can be assigned to students for practice.

Subtraction

Subtract 35m 40cm from 40 m 35cm

m	cm
39	135
40	35
35	40
—	
4m	95cm

To subtract 40 cm from 35 cm,
Convert 1 m into cm and add it
with the cm and then subtract

$$40 - 1 = 39 \text{ m}$$

$$100 + 35 = 135 \text{ cm}$$

$$135 - 40 = 95 \text{ cm}$$

Subtract 35m from 39 m

$$39 - 35 = 4 \text{ m}$$



Try these

(1) Subtract the following

i) 15 m 25 cm – 10 m 85 cm

ii) 28 m 30 cm – 25 m 55 cm

iii) 50 km 300 m – 20 km 600 cm

iv) 75 km 300 m – 38 km 750 m

(2) Subtract 860 km 750 m from 900 km 300 m



In a school, the distance between the gate and the Principal's office is 400 m 75 cm. A boy has walked 200 m 50 cm. What distance does he have to walk further?



Distance between the gate and the Principal's office	=	m	cm
	=	400	75
Distance walked by the boy	=	- 200	50
Distance still to be covered	=	<u>200m 25cm</u>	



Mother bought a roll of ribbon measuring 10m. If she cuts a piece of ribbon measuring 2m 50cm, what is the remaining length of the ribbon?



		m	cm
		9	100
Total length of ribbon	=	10	00
The length of ribbon cut	=	- 2	50
		<u>7 m 50 cm</u>	



Note

To teacher:
Similarly, more statement sums can be assigned to students for practice.

The remaining length of the ribbon is 7 m 50 cm.

Multiplication

Multiply 30m 40cm by 6

m	cm
30	40
x	6
<u>182m 40cm</u>	

Multiply the centimetre

$$40 \times 6 = 240 \text{ cm}$$

Convert 240 cm into metre

$$240 \div 100 = 2 \text{ m } 40 \text{ cm}$$

Multiply the metres and then add

$$30 \times 6 = 180$$

$$180 + 2 = 182 \text{ m}$$



Try these

Multiply the following

i) $3\text{ m } 12\text{ cm} \times 9$

ii) $5\text{ m } 20\text{ cm} \times 6$

iii) $20\text{ km } 300\text{ m} \times 8$

iv) $31\text{ km } 210\text{ m} \times 7$

v) $48\text{ km } 600\text{ m} \times 4$

vi) $20\text{ km } 700\text{ m} \times 8$

Mother bought a nylon rope measuring $10\text{ m } 20\text{ cm}$ length to dry the clothes. What will be the length of 6 such ropes?

Length of 1 rope = $10\text{ m } 20\text{ cm}$

Length of 6 ropes = $10\text{ m } 20\text{ cm} \times 6$
= $61\text{ m } 20\text{ cm}$

m	cm
10	20
\times	6
61m 20cm	

The length of 6 such ropes is $61\text{ m } 20\text{ cm}$



Note

To teacher: Similarly, more statement sums can be assigned to students for practice.

Division

Divide $10\text{ m } 50\text{ cm}$ by 3

$$\begin{array}{r} 10\text{ m } 50\text{ cm} \div 3 \\ \hline 3\text{ m } 50\text{ cm} \end{array}$$

Divide the metres:

$10 \div 3 = 3\text{ m}$, remainder = 1 m
convert 1 m into centimetres and
add to the centimetres.

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

So, $100 + 50 = 150\text{ cm}$

Divide 150 cm by 3

$150 \div 3 = 50\text{ cm}$



Try these

Divide the following

i) $7\text{ m } 11\text{ cm} \div 3$

ii) $15\text{ m } 60\text{ cm} \div 4$

iii) $4\text{ km } 550\text{ m} \div 5$

iv) $27\text{ m } 48\text{ cm} \div 6$

v) $10\text{ km } 48\text{ m} \div 8$

vi) $108\text{ km } 81\text{ m} \div 9$



If the total length of 8 tracks of equal length is 16km 32m. What is the length of 1 track?



$$\text{Length of 8 tracks} = 16\text{km } 32\text{ m}$$

$$\begin{aligned}\text{Length of 1 track} &= 16\text{km } 32\text{ m} \div 8 \\ &= \underline{2\text{ km } 04\text{ m}}\end{aligned}$$

The length of 1 track is 2 km 04 m



If the total length of 12 bed sheet is 25m 44cm, what is the length of 1 bed sheet?

$$\begin{aligned}\text{Total length of 12 bed sheets} &= 25\text{m } 44\text{cm} \\ \text{Length of 1 bed sheet} &= \underline{25\text{m } 44\text{cm} \div 12} \\ &= \underline{2\text{m } 12\text{cm}}\end{aligned}$$



The length of 1 bed sheet is 2m 12cm.



Note

To teacher:

Similarly, more statement sums can be assigned to students for practice.



Practice Time

- (1) Mother bought 2 sarees and the length of 1 saree was 6m 50cm and the other was 5m 50 cm. What is the total length of both the sarees?



- (2) Mr. Naveen kumar walked the distance of 200m 50 cm to reach the bank from his house. He returned back to his house. What distance did he walk together?



- (3) If the length of 2 roads are 25km 500m and 30 km 400m. What is the total length of both the roads?

(4) A rope is 27m 40 cm long. If 20 m 30cm is cut from it, what is the length of the rope left?



(5) John is 1m 60 cm tall. James is 1m 40cm tall. By how much is John taller than James?



(6) A fishing boat covered 7km 400m. A motor boat covered 30 km 500m. What is the difference between the distance covered by the two boats?



(7) Sumanth jogged 8 times around a park that had a path of length 500m 10cm. What was the total distance jogged by him?

(8) The length of one measuring tape used by a tailor is 1m 50cm. What will be the length of 10 such tapes?



(9) The length of a sports stadium is 1500m, if a sports man runs twice around it, what is the total distance covered by him?

(10) A roll of wire is 8m 90cm long, If I cut it off into 9 pieces of equal length, what will be the length of each piece?

(11) John runs along the boundary of ground covering 7 m 42cm in a week. What is the distance he ran in 1 day?



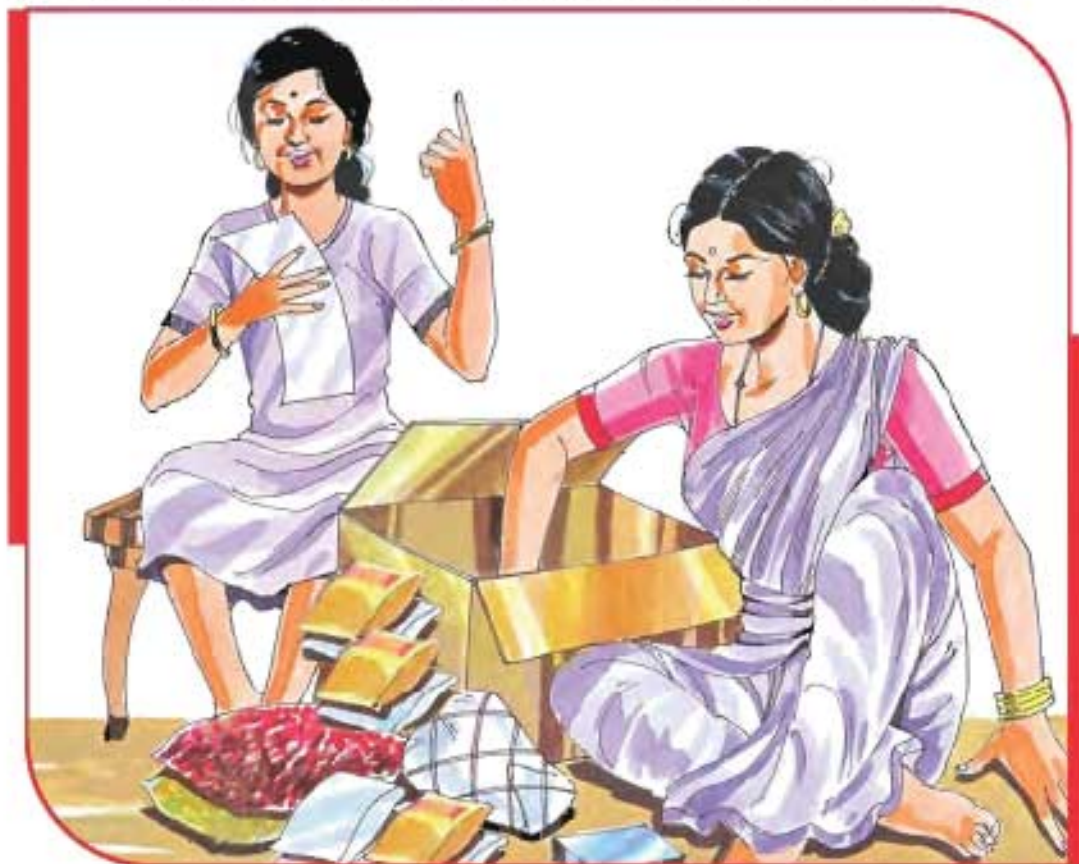
Project Work



Find the heights of your classmates in metres and convert them into cms.

S.No	Name of the student	Height		Height (in cm)
		m	cm	

Sudha is helping her mother in verifying the provision store list.



Urad dhal	-	2 kg 500 g
Black gram	-	1 kg 250 g
Green gram	-	750 g
Ground nut	-	500g
Salt	-	2 kg

Garlic	-	200 g
Cardamom	-	5 g
Fenugreek	-	50 g
Chilli power	-	100 g
Clove	-	10 g

From this table Sudha wants to collect some information.

Please help her.

1. The heaviest item from the given list is _____ and its weight is _____.
2. The item with least weight is _____ and its weight is _____.
3. The items which are bought only in grams are _____.
4. The items which are bought only in kg is _____.

Conversion



Sudha's father asked the following question to Sudha:

"Sudha, on your birthday I will give you 1kg of sweet. How will you distribute it to 10 of your friends, in equal measure?"

Do this as a mental sum, and give your answer quickly.

Sudha said, "Daddy, will you give a hint to distribute 1kg of sweets among 10 of them".

Daddy gave the hint, "*convert 1 kg into grams*".

She replied quickly "I will give 100 g to each friend".

He appreciated her for quick response.



Remember



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

$$\frac{1}{2} \text{ kg} = 500 \text{ g}$$

$$\frac{1}{4} \text{ kg} = 250 \text{ g}$$

$$\frac{3}{4} \text{ kg} = 750 \text{ g}$$



Conversion of kilogram(Kg) into gram(g)

To convert kg into g, multiply kg by 1000

Observe the example and complete the table.

$$1 \text{ kg} = 1 \times 1000 = 1000 \text{ grams}$$

$$2 \text{ kg} = \quad =$$

$$5 \text{ kg} = \quad =$$

$$6 \text{ kg} = \quad =$$

To convert a unit which has both kg and g, multiply kg by 1000 and add the gram unit with the product.

Observe the example and complete the table:

$$\text{i) } 2 \text{ kg } 300 \text{ g} = 2 \times 1000 + 300 = 2000 + 300 = 2300 \text{ g}$$

$$\text{ii) } 9 \text{ kg } 600 \text{ g} = \quad =$$

$$\text{iii) } 3 \text{ kg } 60 \text{ g} = \quad =$$

$$\text{iv) } 7 \text{ kg } 5 \text{ g} = \quad =$$

$$\text{v) } 75 \text{ kg } 8 \text{ g} = \quad =$$



Try these

Convert the following into gram

i) 8 Kg

ii) 11 kg

iii) 3 kg 200 gm

iv) 4 kg 50 gm

v) 5 kg 70 gm

vi) 10 kg 5 gm

Smaller Units

Again Sudha was keenly looking at the medical prescription, which a doctor had given for her brother. She could identify only 100mg and 50mg in the prescription.



Since she was not able to understand the meaning of it, she asked her father to help her out. Her father replied her that **mg** is the abbreviation for **milligram** and it is the measurement to measure very small things.



She took one 100mg tablet in her hand and she could feel the weight of it. If a 100mg tablet is lesser in weight, how a 1 mg weight will be? She could feel that the weight of one milligram will be still smaller.

Activity

Take one 100mg tablet or 50mg tablet and feel the weight of it. Think how a 1 mg weight would be like.



Milligram is the least unit of measurement for common usage.

Project Work

Go to chemistry lab and physics lab, collect information about the usage of mg.



Know this

1 g = 1000 mg

To convert g into mg, multiply gram by 1000

Observe the example and complete the table:

i)	1 g	=	1×1000	=	1000 milligram
ii)	5 g	=		=	
iii)	7 g	=		=	
iv)	9 g	=		=	
v)	11 g	=		=	
vi)	16 g	=		=	

To convert a unit which has both g and mg, multiply the g by 1000 and add the mg with the product.

Observe the example and complete the table.

- i) $3\text{ g } 400\text{ mg} = 3 \times 1000 + 400 = 3000\text{ mg} + 400\text{mg} = 3400\text{ mg}$
- ii) $7\text{ g } 700\text{ mg} =$
- iii) $6\text{ g } 500\text{ mg} =$
- iv) $16\text{ g } 75\text{ mg} =$
- v) $3\text{ g } 20\text{ mg} =$
- vi) $19\text{ g } 5\text{ mg} =$



Try these

Convert the following into mg

- i) 4g ii) 12 g iii) 5 g 700 mg iv) 2 g 70 mg v) 15 g 5 mg

Group Activity



From the provision list, list out the weight of the items and convert into its lower unit.

Read the following measurement:

15,000 g, 25,000 g

Looks so easy when you convert this into kg as 15 kg and 25 kg. It is very apt and comfortable to use.

Convert g into kg

To convert g into kg, divide gram by 1000

Observe the example and complete the table.

- i) $1,000 \text{ g} = 1,000 \div 1,000 = 1 \text{ kg}$
- ii) $12,000 \text{ g} =$
- iii) $2,700 \text{ g} = 2,700 \div 1,000 = 2 \text{ kg } 700 \text{ g}$
- iv) $9,300 \text{ g} =$
- v) $3,030 \text{ g} =$
- vi) $7,005 \text{ g} =$

$$\begin{array}{r} 2 \\ 1000 \overline{) 2700} \\ \underline{2000} \\ 700 \end{array}$$



Try these

Convert the following measurement into kg

- i) $6,550 \text{ g}$ ii) $7,350 \text{ g}$ iii) $10,625 \text{ g}$
- iv) $10,090 \text{ g}$ v) $11,050 \text{ g}$ vi) $12,005 \text{ g}$

To convert mg into g, divide mg by 1,000

Observe the example and complete the table.

- i) $1,000 \text{ mg} = 1,000 \div 1,000 = 1 \text{ g}$
- ii) $3,000 \text{ mg} =$
- iii) $7,000 \text{ mg} =$
- iv) $4,750 \text{ mg} = 4,750 \div 1,000 = 4 \text{ g } 750 \text{ mg}$
- v) $8,730 \text{ mg} =$
- vi) $9,655 \text{ mg} =$

$$\begin{array}{r} 4 \\ 1000 \overline{) 4750} \\ \underline{4000} \\ 750 \end{array}$$

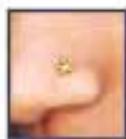


Try these

(1) Convert the following measurement into g

- i) $5,000 \text{ mg}$ ii) $6,500 \text{ mg}$ iii) $7,300 \text{ mg}$
- iv) $11,600 \text{ mg}$ v) $12,075 \text{ mg}$ vi) $13,050 \text{ mg}$

(2) The following jewels are given in mg. convert them into g.



1. Nose stud - 1950 mg

2. Ear stud - 2750 mg



3. Ring - 4350 mg



4. Necklace - 16450 mg

Addition



Example 1

Find the answer: 160 g 920 mg + 75 g 440 mg + 9 g 50 mg.

$$\begin{array}{r}
 \text{g} \quad \text{mg} \\
 \hline
 160 \quad 920 \\
 75 \quad 440 \\
 + \quad 9 \quad 050 \\
 \hline
 245 \text{g} \quad 410 \text{ mg}
 \end{array}$$

Add the milligrams

$$920 + 440 + 50 = 1410 \text{ mg}$$

Convert the mg into g

$$1410 \div 1000 = 1 \text{g} \quad 410 \text{ mg}$$

Add the grams

$$9 + 75 + 160 + 1 = 245 \text{ g}$$



Try these

Find the sum

- 76 kg 450 g and 8 kg 300 g.
- 6 kg 900 g and 65 kg 50 g.
- 50 g 600 mg, 45 g 750 mg and 6 g 300 mg.
- 150 g 700 mg, 60 g 500 mg and 75 g 130 mg.
- 250 g 850 mg, 125 g 150 mg and 35 g 700 mg.



Arul bought 13kg 500g of brinjal, 27 kg 750 g of potato and 15 kg 500 g of carrot for his hotel. Find the total weight of the vegetables.

	kg	g
	<u>11</u>	
Weight of the brinjal =	13	500
Weight of the potato =	27	750
Weight of the carrot =	15	500
Total weight =	<u>56</u>	<u>750</u>

Total weight of the vegetables are 56 kg 750 g

Add the grams

$$500 + 750 + 500 = 1750 \text{ g}$$

Convert the g into kg

$$1750 \div 1000 = 1\text{kg } 750 \text{ g}$$

Add the kilograms

$$13 + 27 + 15 + 1 = 56 \text{ kg}$$



Note

To teacher:

Similarly, more statement sums can be assigned to students for practice.

Subtraction



Subtract 78 g 550 mg from 175 g 250 mg.

	g	mg
	<u>174</u>	<u>1250</u>
	175	250
(-)	78	550
	<u>96g</u>	<u>700 mg</u>

When we subtract 550mg from 250 mg, convert 1g into mg, add with 250 mg and then subtract.

$$175 - 1 = 174 \text{ g}$$

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

$$1000 + 250 = 1250 \text{ mg}$$

$$1250 - 550 = 700 \text{ mg}$$

Subtract the grams

$$174 - 78 = 96 \text{ g}$$



Try these

Find the answer.

- 75 kg 500 g – 55 kg 100 g
- 640 kg 400 g – 275 kg 700 g
- 15 g 650 mg – 10 g 500 mg
- 16 g 250 mg – 12 g 750 mg
- 84 g 750 mg – 64 g 800 mg



In a shop, the weight of the available tamarind is 275 kg 750 g. He sold 87 kg 800 g. Find the weight of the remaining tamarind?

	Kg	g
	275	750
Weight of the available tamarind =	275	750
Weight of the sold tamarind =	- 87	800
Remaining tamarind =	187	950

Weight of the remaining tamarind is 187 kg 950 g

When we subtract 800 g from 750 g, convert 1 kg into g and add with 750 mg and then subtract.

$$275 - 1 = 274 \text{ kg}$$

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

$$1000 + 750 = 1750 \text{ g}$$

$$1750 - 800 = 950 \text{ g}$$

Subtract the Kilograms

$$274 - 87 = 187 \text{ kg}$$

Multiplication



Multiply 26 g 350 mg by 18.

$$\begin{array}{r} 26 \text{ g } 350 \text{ mg} \times 18 \\ \hline 474 \text{ g } 300 \text{ mg} \end{array}$$

Multiply the mg

$$350 \times 18 = 6300 \text{ mg}$$

Convert the 6300 mg into g

$$6300 \div 1000 = 6 \text{ g } 300 \text{ mg}$$

Multiply the grams

$$26 \times 18 = 468 \text{ g}$$

Add the grams

$$468 + 6 = 474 \text{ g}$$



Try these

Find the answer:

i) $6 \text{ kg } 300 \text{ g} \times 3$

ii) $3 \text{ kg } 150 \text{ g} \times 6$

iii) $12 \text{ g } 350 \text{ mg} \times 7$

iv) $9 \text{ g } 500 \text{ mg} \times 12$



Weight of a gas cylinder is 16 kg 500 g. A particular house needs 7 cylinders per year. What is the Total weight of gas used in a year?



Weight of 1 gas cylinder = 16 kg 500 g

Weight of 7 gas cylinders = 16 kg 500 g $\times 7$

Total weight = 115 kg 500 g

Total weight of gas used in a year = 115 kg 500g

Multiply the grams

$$500 \times 7 = 3500 \text{ g}$$

Convert grams into kg

$$3500 \div 1000 = 3 \text{ kg } 500 \text{ g}$$

Multiply the Kilograms

$$16 \times 7 = 112 \text{ kg}$$

Add the kilograms

$$112 + 3 = 115 \text{ kg}$$

Division



Divide 95 g 400 mg by 8.

$$95 \text{ g } 400 \text{ mg} \div 8$$

$$\underline{11 \text{ g } 925 \text{ mg}}$$

Divide the grams

$$95 \div 8 = \text{Quotient } 11 \text{ g, Remainder } 7 \text{ g}$$

Convert the remainder (7g) into mg and add with the mg

$$7 \text{ g} = 7 \times 1000$$

$$= 7000 \text{ mg}$$

$$7000 \text{ mg} + 400 \text{ mg} = 7400 \text{ mg}$$

Divide the milligram

$$7400 \div 8 = 925 \text{ mg}$$



Try these

1. Find the answer:

i) $75 \text{ kg } 190 \text{ g} \div 5$

ii) $12 \text{ kg } 240 \text{ g} \div 6$

iii) $45 \text{ kg } 650 \text{ g} \div 11$

iv) $25 \text{ kg } 740 \text{ g} \div 12$

2. Find the answer:

i) $48 \text{ g } 300 \text{ mg} \div 4$

ii) $24 \text{ g } 800 \text{ mg} \div 8$

iii) $66 \text{ g } 600 \text{ mg} \div 15$

iv) $33 \text{ g } 760 \text{ mg} \div 16$



Uma distributes 18 kg 750 g sweets equally to 25 persons, how much of sweet will each person get?

$$\left. \begin{array}{l} \text{Sweets to be distributed} \\ \text{to 25 persons} \end{array} \right\} = 18 \text{ kg } 750 \text{ g}$$

$$\text{Each person's share} = 18 \text{ kg } 750 \text{ g} \div 25$$

$$\text{Each person's share} = \underline{750 \text{ g}}$$

$$\begin{array}{r} 750 \\ 25 \overline{) 18750} \\ \underline{175} \\ 125 \\ \underline{125} \\ 0 \end{array}$$

When we divide 18 kg by 25,

Convert the kilograms into grams and add with the grams.

$$18 \times 1000 = 18000 \text{ g}$$

$$18000 + 750 \text{ g} = 18750 \text{ g}$$

Divide the grams by 25

$$18750 \text{ g} \div 25 = 750 \text{ g}$$







Note

To teacher: Similarly, more statement sums on subtraction, multiplication and division may be given for practice.

Each person's share is 750 g.



Practice Time

- (1) A person purchased a gold chain of weight 33 g 300 mg, an ear stud of 3 g 400 mg and a pair of bangles of weight 32 g 200 mg in a jewellery shop. What is the total weight of the jewels?
- (2) A fruit shop had 75 kg 750 g grapes. Again, he purchased 25 kg 500 g grapes from the market for his shop. What is the total weight of the grapes in the shop? 
- (3) A person bought 2kg 500g laddu, 1kg 750g mysoorpa, and 3kg 250g Mixture in a sweet stall. How much of weight did he purchase altogether?
- (4) Mohan weighs 45kg and Naveen weighs 20kg. By how much is Mohan heavier than Naveen? 
- (5) 35 kg Urad dhal was bought for a wedding reception. Out of which 28 kg 600 g was used. Find the weight of the remaining dhal.
- (6) A sack contains 100kg of sugar. From that 75kg 500g was sold. How many kilograms of sugar is left?
- (7) A bullock cart can hold 525 kg weight. How much weight can 5 bullock carts hold? 
- (8) One packet of chilli powder weighs 250 g. What is the weight of 25 such packets?
- (9) Weight of one bath soap is 90 g. What is the weight of 75 bath soaps?
- (10) A sack contains 75 kg of wheat flour. How many bags you need if each bag can fill 5 kg of flour?
- (11) 15 kg weight of pickles are filled up in equally 30 bottles. What is the weight of pickles in each bottle?
- (12) Weight of 20 tablets is 1 g 200 mg. Find the weight of each tablet? 



Try these

In what measurements, the following items are bought. Put a (✓) in the correct box.

1. Fruits	milligram	<input type="checkbox"/>	kilogram	<input type="checkbox"/>
2. Green chilli	gram	<input type="checkbox"/>	Milligram	<input type="checkbox"/>
3. Ice-cream	kilogram	<input type="checkbox"/>	gram	<input type="checkbox"/>
4. Gold bangle	gram	<input type="checkbox"/>	kilogram	<input type="checkbox"/>
5. Silver anklet	kilogram	<input type="checkbox"/>	gram	<input type="checkbox"/>
6. Tablet	kilogram	<input type="checkbox"/>	milligram	<input type="checkbox"/>
7. Firewood	kilogram	<input type="checkbox"/>	gram	<input type="checkbox"/>

Project Work



List out the things which are used in our day- to-day life.

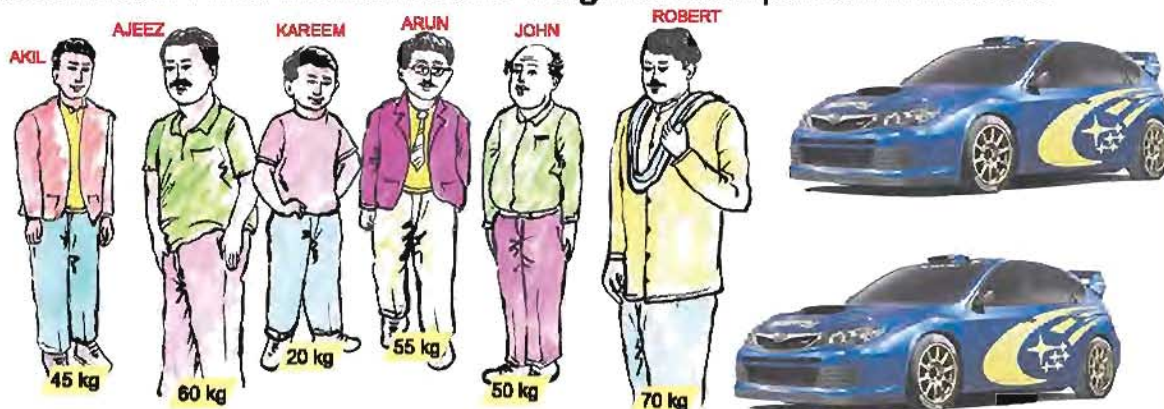
Find the weight of each object.

Example: 1. Tooth paste - 100 g

Activity



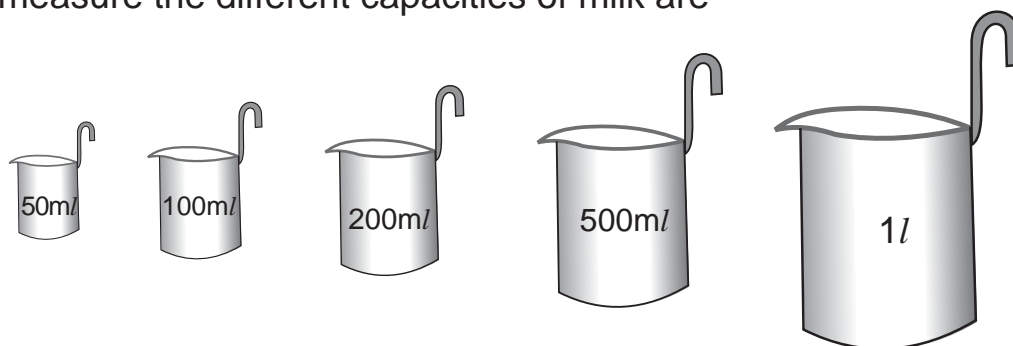
The following six persons want to get into two different cars. Each car can accommodate 3 persons. Weight of 3 persons accommodated in the first car is to be equal to the weight of 3 persons accommodated in the second car. Write the names and weight of each person in the cars.



10

Capacity

Ramu helps his father in a milk depot. The vessels used by him to measure the different capacities of milk are



Even though Ramu knows that the 1 litre (l) vessel is bigger than the 500 millilitres (ml) vessel, he wants to find the relationship between the two. He poured milk from the jar into the 500ml measuring vessel till it read 500ml. He then poured it into the 1l vessel. He noticed that it was not full.

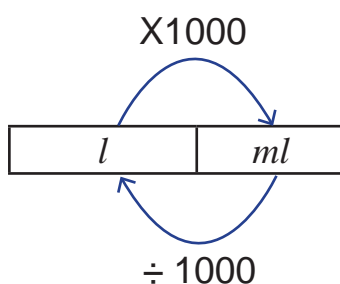
So, he poured one more vessel of 500ml milk into the 1l vessel. He found that the level of milk in the vessel reached the 1l mark. From this, we observe that $1l = 500ml + 500ml = 1000ml$



$$1l = 1000ml$$

Try to do the above activity with water using 200ml, 100ml vessels and compare their quantities.

Conversion of litres into millilitres & millilitres into litres



Conversion of litres into millilitres

To convert litres into millilitres, multiply litres by 1000



Convert 2 litres into millilitres

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



Practice Time

Complete the table.

Litre (l)	1	2	3	4	5	6	7	8	9
Millilitre (ml)	1000	2000	3000	4000					



Convert 2l 250ml into millilitres

$$\begin{aligned} 2\text{ l } 250\text{ ml} &= 2\text{ l} + 250\text{ l} \\ &= (2 \times 1000)\text{ ml} + 250\text{ ml} \\ &= 2000\text{ ml} + 250\text{ ml} \\ &= 2250\text{ ml} \end{aligned}$$



Convert $5\text{ l } 50\text{ ml}$ into millilitres

$$\begin{aligned} 5\text{ l } 50\text{ ml} &= 5\text{ l} + 50\text{ ml} \\ &= (5 \times 1000)\text{ ml} + 50\text{ ml} \\ &= 5000\text{ ml} + 50\text{ ml} \\ &= 5050\text{ ml} \end{aligned}$$



Try these

Convert the following values into millilitres

- | | |
|--------------------|-----------------------------------|
| i) 3 l | ii) $1\text{ l } 500\text{ ml}$ |
| iii) 8 l | iv) $6\text{ l } 200\text{ ml}$ |
| v) 10 l | vi) $7\text{ l } 50\text{ ml}$ |
| vii) 25 l | viii) $9\text{ l } 100\text{ ml}$ |

Conversion of millilitres into litres

To convert millilitres into litres divide millilitres by 1000



Convert 3000 ml into l

$$\begin{aligned} 3000\text{ ml} &= 3000 \div 1000 \\ &= 3\text{ l} \end{aligned}$$



Practice Time

Complete the table.

ml	1000	2000	3000	4000	5000	6000	7000	8000	9000
l	1	2	3	4					



Convert 3150ml into litres and millilitres.

$$\begin{aligned} 3150 \text{ ml} &= 3000 \text{ ml} + 150 \text{ ml} \\ &= (3000 \div 1000) \text{ l} + 150 \text{ ml} \\ &= 3 \text{ l } 150 \text{ ml} \end{aligned}$$

Convert 4500ml into litres and millilitres.

$$\begin{aligned} 4500 \text{ ml} &= 4000 \text{ ml} + 500 \text{ ml} \\ &= (4000 \div 1000) \text{ l} + 500 \text{ ml} \\ &= 4 \text{ l } 500 \text{ ml} \end{aligned}$$



Try these

Convert the following into litres and millilitres

- | | | |
|-------------|-------------|--------------|
| i) 3500 ml | ii) 4150 ml | iii) 5500 ml |
| iv) 6200 ml | v) 9050 ml | vi) 9250 ml |

Addition

Meera, Geetha and Priya went to a shop and bought the following things and made a list of them.

Name	Items			
	Milk	Coconut oil	Groundnut oil	Sunflower oil
Meera	2l 500 ml	500ml	3l 250 ml	2l
Geetha	1l 500 ml	2 l	1 l	500ml
Priya	500ml	500ml	1l 500 ml	1l
Total				

From the above list, let us calculate how much of milk was bought by all of them.

Milk bought by Meera =

Milk bought by Geetha =

Milk bought by Priya = +

l	ml
1	
2	500
1	500
0	500
3	1500

Arrange the given values against *l* and *ml* and then add them.

$$3\text{ l } 1500\text{ ml} = 3\text{ l} + (1500\text{ ml} \div 1000) = 3\text{ l} + (1\text{ l } 500\text{ ml}) = 4\text{ l } 500\text{ ml}$$

Therefore, the quantity of milk bought by all of them = **4 l 500 ml**

Activity



From the table given, find out how many litres of coconut oil, groundnut oil and sunflower oil, they bought?



Add **12 l 250 ml** and **34 l 800 ml**

	l	ml
	1	
	12	250
+	34	800
	47	050

Add the millilitres.

$$250\text{ ml} + 800\text{ ml} = 1050\text{ ml.}$$

Convert it into litres and millilitres.

$$1050\text{ ml} = 1\text{ l } 050\text{ ml.}$$

Add the litres

$$1 + 12 + 34 = 47\text{ l.}$$



Note
To teacher: Similarly, more statement sums can be assigned to students for practice.



Try these

Add the following

i) 3 l 250 ml, 6 l 150 ml

ii) 7 l 850 ml, 9 l 300 ml

iii) 5 l 550 ml, 3 l 300 ml

iv) 8 l 450 ml and 7 l 350 ml

v) 20 l 500 ml and 35 l 600 ml

vi) 45 l 600 ml and 20 l 500 ml

Subtraction

A barrel can hold 40 l of water and a bucket can hold 5 l of water. Jean filled the whole barrel with water. She then took one bucket full of water from the barrel for watering the plants. Can you tell how much of water is left in the barrel?

$$\begin{array}{rcl} \text{Capacity of the barrel} & = & 40\text{ l} \\ \text{Quantity of water used for the plants} & = & - 5\text{ l} \\ \hline \text{Quantity of water left in the barrel} & = & \underline{35\text{ l}} \end{array}$$

Therefore, 35 l of water is left in the barrel.



Note

To teacher: Similarly, more statement sums can be assigned to students for practice.



Subtract 56 l 350 ml from 75 l 200 ml

	l	ml
	74	1200
	75	200
-	56	350
	18	850

To subtract 350 ml from 200 ml, convert 1 l into ml and add with ml.

$$75\text{ l} - 1\text{ l} = 74\text{ l}$$

$$1000\text{ ml} + 200\text{ ml} = 1200\text{ ml}$$

$$1200\text{ ml} - 350\text{ ml} = 850\text{ ml}$$

Subtract 56 l from 74 l

$$74\text{ l} - 56\text{ l} = 18\text{ l}$$



Try these

Subtract the following

- | | |
|---------------------------------|----------------------------------|
| i) 5 l 250 ml - 2 l 150 ml | ii) 9 l 200 ml - 3 l 150 ml |
| iii) 9 l 500 ml - 7 l 600 ml | iv) 14 l 150 ml from 17 l 450 ml |
| v) 34 l 400 ml from 84 l 600 ml | vi) 32 l 800 ml from 55 l 750 ml |

Multiplication

John drinks a glass of milk daily both in the morning and evening. The glass can hold 200 *ml* of milk. Find out the quantity of milk he drinks per day.



Capacity of the cup = 200 *ml*

Number of cups he drinks = x 2

Quantity of milk he drinks per day = 400 *ml*

Therefore, he drinks 400 *ml* per day.



Multiply 3 *l* 150 *ml* by 4

$$\begin{array}{r}
 \textit{l} \quad \textit{ml} \\
 3 \quad 150 \\
 \times \quad 4 \\
 \hline
 12 \textit{l} \quad 600 \textit{ml}
 \end{array}$$

$$\begin{array}{r}
 \textit{l} \quad \textit{ml} \\
 150 \textit{ml} \times 4 = 600 \\
 3 \textit{l} \times 4 = 12 \\
 \hline
 12 \quad 600
 \end{array}$$

Multiply 48 *l* 200 *ml* by 7

$$\begin{array}{r}
 \textit{l} \quad \textit{ml} \\
 \textcolor{red}{1} \\
 48 \quad 200 \\
 \times \quad 7 \\
 \hline
 337 \textit{l} \quad 400 \textit{ml}
 \end{array}$$

$$\begin{array}{r}
 \textit{l} \quad \textit{ml} \\
 200 \textit{ml} \times 7 = 1 \quad 400 \\
 48 \textit{l} \times 7 = 336 \\
 \hline
 337 \quad 400
 \end{array}$$



Try these

Multiply the following

i) 7l 350ml by 2

ii) 55l 400ml by 5

iii) 35l 300ml by 6

iv) 8l 400ml by 7

v) 9l 500ml by 8

vi) 18l 200ml by 9

Division

Mrs. Lakshmi prepared 400 ml of fruit juice for her children. She shared the juice equally between the two. How much of juice did each one get?



Quantity of juice mother prepared = 400ml

Number of children = 2

Quantity of juice each one got = $400 \div 2$
= 200ml

Therefore, each one got 200ml of juice.

$$\begin{array}{r}
 200 \\
 2 \overline{)400} \\
 \underline{-400} \\
 00 \\
 0 \\
 \underline{0} \\
 0 \\
 \underline{0} \\
 0
 \end{array}$$



Divide 4l 640ml by 4

$$\begin{array}{r}
 \text{l} \quad \text{ml} \\
 1 \quad 640 \\
 4 \overline{)4 \quad 640} \\
 \underline{-4} \quad \downarrow \downarrow \downarrow \\
 0 \quad 6 \quad \downarrow \downarrow \downarrow \\
 \underline{-4} \quad \downarrow \downarrow \downarrow \\
 24 \quad \downarrow \downarrow \downarrow \\
 \underline{-24} \quad \downarrow \downarrow \downarrow \\
 000 \\
 \underline{0} \\
 0
 \end{array}$$

$$4 \text{ l } 640 \text{ ml} : 4 = 1 \text{ l } 160 \text{ ml}$$

Divide 64l 320ml : 8

$$\begin{array}{r}
 \text{l} \quad \text{ml} \\
 8 \quad 040 \\
 8 \overline{)64 \quad 320} \\
 \underline{-64} \quad \downarrow \downarrow \downarrow \\
 0 \quad 32 \quad \downarrow \downarrow \downarrow \\
 \underline{-32} \quad \downarrow \downarrow \downarrow \\
 000 \\
 \underline{0} \\
 0
 \end{array}$$

$$64 \text{ l } 320 \text{ ml} : 8 = 8 \text{ l } 040 \text{ ml}$$



Divide $74\text{ l } 440\text{ ml}$ by 8

Step 1: Divide $74\text{ l} \div 8 = 9\text{ l}$, Remainder 2 litres.

We know that $1\text{ l} = 1000\text{ ml}$

Therefore $2\text{ l} = 2000\text{ ml}$

Step 2: Add 2000 ml and 440 ml , now we get 2440 ml

Step 3: Divide 2440 ml by 8.

Now we get 305 ml

Hence, the answer is $9\text{ l } 305\text{ ml}$

$$\begin{array}{r} 9 \\ 8 \overline{)74} \\ \underline{72} \\ 2 \end{array}$$

$$\begin{array}{r} 305 \\ 8 \overline{)2440} \\ \underline{-24} \\ 04 \\ \underline{00} \\ 40 \\ \underline{-40} \\ 00 \end{array}$$



Try these

Divide the following

- i) $36\text{ l } 480\text{ ml} : 6$ ii) $21\text{ l } 420\text{ ml} : 7$ iii) $40\text{ l } 720\text{ ml} : 8$
iv) $81\text{ l } 540\text{ ml} : 9$ v) $42\text{ l } 980\text{ ml} : 14$ vi) $24\text{ l } 600\text{ ml} : 12$



Practice Time

- (1) Deepthi poured 350 ml of juice in the first bottle and 750 ml of juice in the second bottle. How much of juice did she pour?
- (2) A petrol pump sold $15\text{ l } 500\text{ ml}$, $20\text{ l } 100\text{ ml}$ and $50\text{ l } 200\text{ ml}$ of petrol to three persons. Find the total quantity of petrol sold ?
- (3) A shop keeper sold $50\text{ l } 500\text{ ml}$ of sunflower oil and $35\text{ l } 500\text{ ml}$ of coconut oil. How many litres of oil did he sell?

- (4) Mr.David bought 20l of paint. After painting his house he had 4l of paint left.How much paint did he use?
- (5) An oil drum contains 60l of oil in it. If 22l 500ml of oil is taken out of it, find how much is left?
- (6) Swetha purchased 500ml of milk. She used 200ml during the day. How much of milk is left over?
- (7) There are two water tanks on the terrace of a building. One tank can hold 90l of water and the other one can hold 80l of water. How much more water can the first tank hold than the second one?
- (8) If a jar fills 150ml of water, find how much of water 4 such jars can fill?
- (9) One can can contain 3l 500ml of petrol. How much petrol can 8 cans contain?
- (10) The capacity of one flask is 1l 500ml. What is the total capacity of 9 such flasks?
- (11) Geetha poured 500ml of milk equally into 4 bottles. How much of milk does each bottle hold?
- (12) A barrel holds 24l of water. If it is poured equally into 4 buckets, how much of water does each bucket hold?
- (13) A can contains 10l 500ml of kerosene. If it is poured equally into 5 bottles, how much of kerosene does each bottle hold?
- (14) Meera makes 7l 200ml of lime juice for her 6 friends. How much will each one get?

Activity



- (1) How many glasses of water do you drink after the various activities you do in a day? Express the quantity in *ml* / *l* and fillup the table.



Activities	Glasses of water	<i>ml</i> / <i>l</i>

- (2) Find out from your doctor the quantity of water you should drink everyday. Find out for yourself how much more or less water you have taken.

Fun Time

Secret Numbers

Can you guess the secret number?

It is larger than half of **100**

It is more than 7 tens and less than 8 tens

The tens digit is two more than the ones digit

Together the digits have a sum of twelve.

What is the secret number? Find it out.

Write set of clues for a secret number of your own. Then give it to a friend to guess your secret number?

Volume

Ezhilan at the end of his play, came with a lot of marbles in his hand. His brother Akilan said, "Why do you have so many marbles in your hand". He replied, "I was playing marble game with my friends." Akilan asked his brother, "Let us make a simple **measuring glass** with these marbles and observe the procedure of making measuring glass."

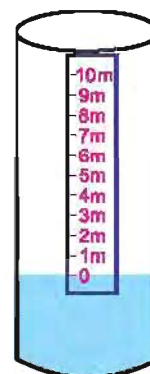


Akilan took a glass tumbler. He poured some water in the tumbler. Outside the glass tumbler, he stuck a white paper. He marked the initial water level as **0** in the white paper.

He took a few similar sized marbles. He dropped one marble inside the tumbler. The water level raised a little, and then he marked the water level as 1 marble (**1 m**). Similarly, he dropped the other marbles one by one and marked the respective water levels as **2m, 3m, 4m** and so on.

Then he removed all the marbles from the tumbler. The water level came back approximately to **0** level.

Now, observe the simple **measuring glass** prepared by Ezhilan and Akilan.

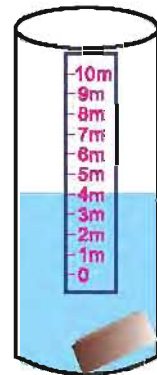
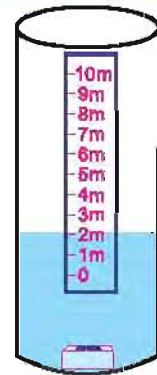


Using this measuring glass, we can measure the water level raised by the immersion of different objects which get completely immersed in water.

Ok. Let me drop an eraser in the glass. Akilan said, the water level immediately raised to approximately 2 m level.

Then he dropped an iron piece in the glass. Since the iron piece is bigger in size the water level raised up to approximately 4 m level

Ezhilan dropped various objects like lemon, onion, potato and coins in the measuring glass and noted down the water level accordingly.



Note

Before you drop each object in the measuring glass ensure that the water level should be at 0 level.

Group Activity



Prepare a measuring glass yourself, drop different objects into it and mark the water level

as given in the above guidelines.

Fill up the given table.

Things	Water Level

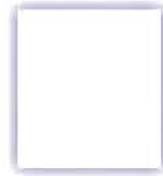
Shall we arrange the match boxes

In the following each diagram pattern, count the number of match boxes and write in the given box.

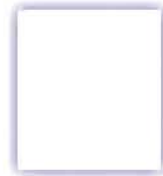
1)



2)



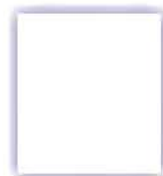
3)



4)



5)



Group Activity

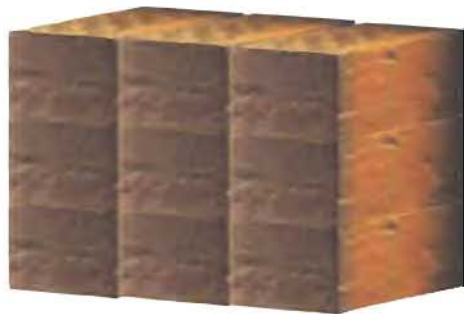


Make different patterns using empty match boxes and count them.

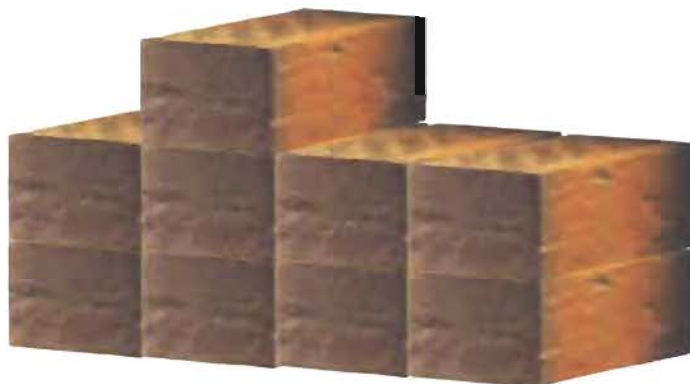
Arrangement of Bricks

Different patterns with 9 bricks are given below. Eventhough, they differ in pattern, their volume is same.

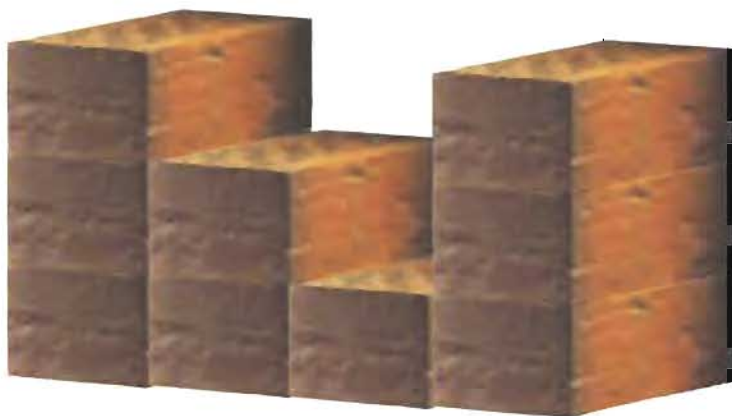
1)



2)



3)



Group Activity



Arrange some more different patterns with 9 bricks.

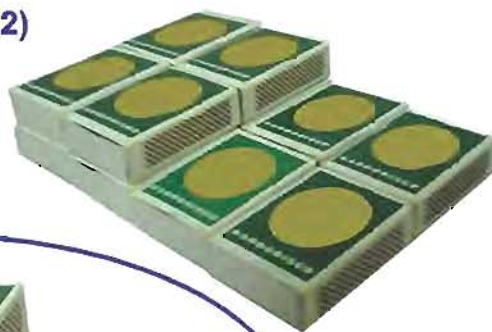
Forming Solid Shapes

Observe the patterns given below. Count the number of match boxes and write it. Also count the number of match boxes required to complete the solid shape. Then, count the total number of match boxes present in the full solid shape.

1)



2)



3)



4)



5)



Sl. No.	Number of match boxes in the given picture	Number of match boxes needed to complete it	Total number of match boxes in the full solid shape
1.			
2.			
3.			
4.			
5.			



Practice Time

Find the number of match boxes in each figure by counting them and write it in the box given below.

1.



2.



3.



4.



5.



There is an another way to find the number of match boxes in each pattern without counting? Find it.

11

Time

What time does each clock show?

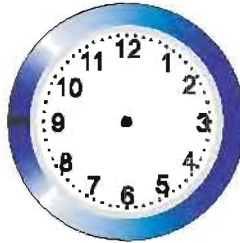


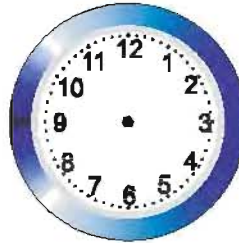




Draw the hands of the clocks for the time given below:









Anand travelled **from Chennai to Kanniyakumari** **by bus**. He noted that the time of departure and the time of arrival at various places. Observe the time schedule and answer the question given below.



Name of the Places	Time of arrival	Time of departure
Chennai	—	06:30 a.m
Tambaram	07:25 a.m	07:30 a.m
Tindivanam	09:45 a.m	09:55 a.m
Villupuram	11:05 a.m	11:15 a.m
Trichy	02:10 p.m	02:40 p.m
Madurai	04:55 p.m	05:05 p.m
Virudhunagar	05:55 p.m	06:00 p.m
Tirunelveli	08:10 p.m	08:20 pm
Kanniyakumari	09:35 p.m	—





Remember

60 Seconds = 1 minutes

60 Minutes = 1 hour



How long did the bus stop at Tambaram?

Tambaram

Time of departure at Tambaram	=	7:30 a.m
Time of arrival at Tambaram	=	- 7:25 a.m
The duration of time, the bus stopped } at Tambaram }	=	<u>0:05 minutes</u>

Usually it is read as 5 minutes



Try these

What is the time taken to travel from Madurai to Virudhunagar?

Madurai

Time of arrival at Virudhunagar =

Time of departure from Madurai =

Time travelled =

Virudhunagar



Tindivanam

Find the travelling time from Tindivanam to Villupuram.

Villupuram

Arrival time at Villupuram	=	11 05 a.m
Departure time from Tindivanam	=	- 09 55 a.m
Travelling time =		

Note:

Hour	Minutes
(11 - 1) = 10	(60 + 5 = 65)
<u>11</u>	<u>05</u>
- 09	55
<u>1</u>	<u>10</u>
= 1hr 10 min	

When subtracting 55 min from 5 min, convert 1 hour into minutes and add with the 05 minute and then subtract

11 - 1 = 10 Hr

1 Hr = 60 Min.

05 + 60 = 65 Min.

65 - 55 = 10 Min.

Subtract the hours.

10 - 9 = 1 Hour

Travelling time from Tindivanam to Villupuram = 1 hr 10 min.



Try these

Find the travelling time from Chennai to Villupuram.

Chennai

Arrival time at Villupuram =

Departure time at Chennai =

Travelling time =

Villupuram



Practice Time

Using the travelling schedule, find the answers for the following:

- 1) Calculate the travelling time from **Madurai** to **Kanyakumari**.
- 2) How long did the bus stop at **Madurai**?
- 3) Find the travelling time from **Trichy** to **Tirunelveli**.



Villupuram

Tirunelveli

Find the travelling time from Villupuram to Tirunelveli.

Arrival time at Tirunelveli = 8 : 10 p.m

Departure time at Villupuram = 11 : 15 a.m

Travelling time =



To subtract a.m from p.m, 12 hours should be added to p.m.

Know this

	Hr	Min
Arrival time at Tirunelveli	(20-1) = 19	(10+60) = 70
(12 : 00 + 8 : 10 = 20 : 10)	20	: 10
Departure time at Villupuram	- 11	: 15
Travelling time	8	55

Hence, the travelling time from **Villupuram** to **Tirunelveli** is 8 hr 55 min.



Practice Time

Using the travelling schedule, find the answers for the following:

- 1) Find the travelling time from **Tindivanam** to **Madurai**.
- 2) Calculate the travelling time from **Chennai** to **Kanniyakumari**.
- 3) Find out the travelling time from **Vilupuram** to **Tirunelveli**.



From Joseph's diary:

Joseph has noted his one day schedule in his diary. Find out the time duration for each of his activity.

Activity	From	To	Time Hr	Duration Min
In the morning				
Gets up	6 : 00 a.m			
Bathing	6 : 00 a.m	6 : 50 a.m	1	30
Prayer	6 : 50 a.m	7 : 00 a.m		
Study time	7 : 00 a.m	8 : 30 a.m		
Break fast	8 : 30 a.m	8 : 45 a.m		
Going to school	8 : 45 a.m	9 : 00 a.m		
At School				
Morning Prayer	9 : 20 a.m	9 : 30 a.m	3	10
Forenoon Study time	9 : 30 a.m	12 : 40 p.m		
Lunch break	12 : 40 p.m	2 : 00 p.m		
Afternoon study time	2 : 00 p.m	4 : 10 p.m		
Evening prayer	4 : 10 p.m	4 : 20 p.m		
In the evening				
Playing games	4 : 30 p.m	6 : 00 p.m	0	45
Home work	6 : 00 p.m	6 : 45 p.m		
Study time	6 : 45 p.m	7 : 30 p.m		
Watching T.V	7 : 30 p.m	8 : 15 p.m		
Dinner	8 : 15 p.m	8 : 30 p.m		
Goes to bed	8 : 30 p.m			



Find the forenoon and afternoon study time in school:

		Hr	Min
Forenoon study time	=	3	10
Afternoon study time	=	+ 2	10
Total study time in school	=	5	20

Forenoon and afternoon study time in school is 5 hrs and 20 min.



Find the time taken by Joseph to complete his home work and study at home?

		Hr	Min
Forenoon study time	=	1	30
Evening study time	=	0	45
Time taken to complete his home work	= +	0	45
Total time	=	3	00

Add the Minutes

$$45 + 45 + 30 = 120 \text{ min}$$

Convert the minutes into hour

$$120 \div 60 = 2 \text{ Hrs}$$

Add the hours

$$2 + 1 = 3 \text{ Hrs}$$

So, time taken to study and complete his home work at home is 3 hrs.



Try these

(From the Joseph's diary)

1. Get the total time taken for finishing breakfast and dinner.
2. Calculate the total time taken for prayer at home and at school.
3. Find the time taken for playing and watching T.V?



Practice Time

1. A person travelled 4 hrs 40 min by train, 1 hr 15 min by bus to reach his home town. How much of time did he spend in travelling?
2. An artist started his drawing at 6:30 a.m and finished at 11:50 a.m. How much of time did he spend on drawing?



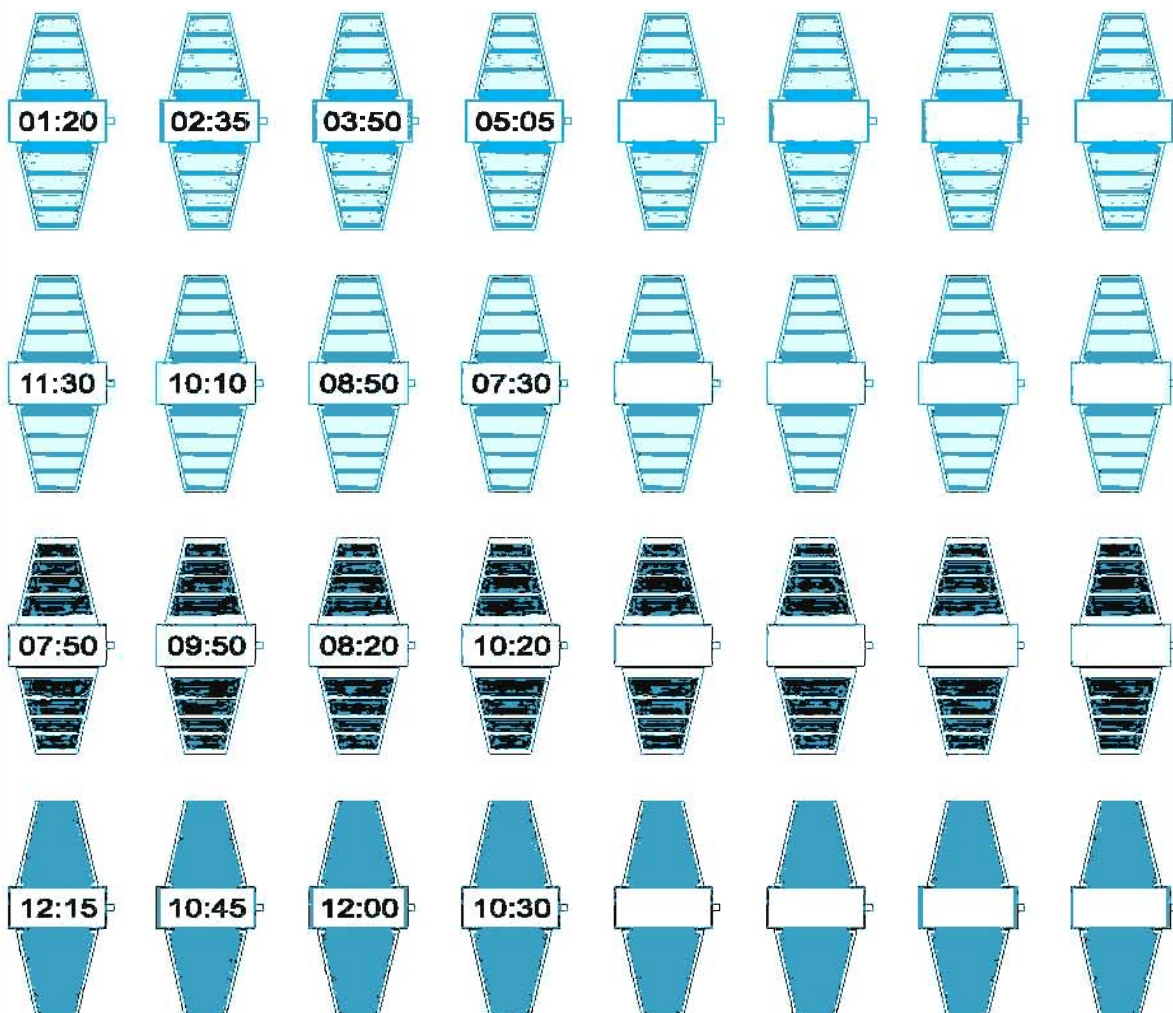
3. A departmental store, stopped the sale of goods from 1:30 p.m to 4:00 p.m. How long were goods not sold at the store?
4. An overhead tank takes 2 hrs 50 min to fill. It takes 3 hrs 45 mins to distribute water to all the houses. Find the time duration for the tank to fill once and distribute It to all the houses?
5. An exhibition in a school started at 10:30 a.m and ended at 3:00 p.m. Find the time duration of the exhibition.



Activity



Carefully, observe the time sequence shown by the watches in each row. Find the time for the last four watches in each row.





Naveen opened his filled up savings box. He found the currency notes and coins. They were as follows.



Number of 10 Rupee notes	- 25
Number of 5 Rupee coins	- 40
Number of 1 Rupee coins	- 150
Number of 20 Rupee notes	- 10
Number of 100 Rupee notes	- 4
Number of 50 Rupee notes	- 8
Number of 2 Rupee coins	- 45



Activity

Shall we count the total value of his savings?



Value of 100 Rupee Notes	100×4	₹ 400
Value of 50 Rupee Notes		
Value of 20 Rupee Notes		
Value of 10 Rupee Notes		
Value of 5 Rupee coins		
Value of 2 Rupee Coins	2×45	90
Value of 1 Rupee Coins		
Total		

Total value is

Activity



He distributed ₹ 550 to his sister Radha.

(i) Find out 3 possible denominations of arriving at ₹ 550.

One example is given to you

Number of denominations					Amount
₹ 50	x	5	=		₹ 250.00
₹ 10	x	20	=		₹ 200.00
₹ 2	x	30	=		₹ 60.00
₹ 1	x	40	=		₹ 40.00
Total					= ₹ 550.00



(ii) How much money is left with him?

Remember

₹ 1 = 100 paise

Addition



Find the total amount ₹ 37.50, ₹ 473.75, ₹ 6,076.50 and ₹ 9.50.

	1 2 2
₹ 37.50	
₹ 473.75	
₹ 6,076.50	
₹ 9.50	
₹ 6,597.25	

Add the paise

$$50 + 50 + 75 + 50 = 225 \text{ paise}$$

Convert the paise into ₹

$$225 \div 100 = ₹ 2 \text{ and } 25 \text{ paise}$$

Add the ₹

$$9 + 6076 + 473 + 37 + 2 = ₹ 6,597$$



Try these

1) Answer the following:

i) ₹ 645.75 + ₹ 760.50 + ₹ 135.50

ii) ₹ 4375.50 + ₹ 8436.50 + ₹ 9647.75

2) Find the total amount.

i) ₹ 8000.50, ₹ 6366.50 and ₹ 2322.50

ii) ₹ 9600.50, ₹ 35.50 and ₹ 205.50



In a shop, the sale value of three consecutive days are ₹ 436.75, ₹ 278.75 and ₹ 678.75 respectively. What is the total sale value?

Sale value of first day	= ₹ 436.75
Sale value of second day	= ₹ 278.75
Sale value of third day	= ₹ 678.75
Total value	= ₹ 1,394.25

Add the Paise

$$75 + 75 + 75 = 225 \text{ P}$$

Convert into ₹

$$225 \div 100 = ₹ 2 \text{ and } 25 \text{ P}$$

Add the ₹

$$678 + 278 + 436 + 2$$

$$= ₹ 1,394$$

The total value of sales for 3 days is ₹ 1,394.25



Note

To teacher: Similarly, more statement sums can be assigned to students for practice.

Subtraction



Subtract ₹ 739.75 from ₹ 5,269.50

$$\begin{array}{r}
 18 \quad 14 \\
 4 \quad 125 \quad 10 \\
 \hline
 ₹ \quad 5 \quad 2 \quad 6 \quad 9 \quad . \quad 5 \quad 0 \\
 - ₹ \quad 7 \quad 3 \quad 9 \quad . \quad 7 \quad 5 \\
 \hline
 ₹ \quad 4 \quad 5 \quad 2 \quad 9 \quad . \quad 7 \quad 5
 \end{array}$$

When we subtract 75 paise from 50 paise convert ₹ 1 into paise add with 50 paise and then subtract.

$$5269 - 1 = ₹ 5268$$

$$₹ 1 = 100 \text{ paise}$$

$$100 + 50 = 150 \text{ paise}$$

$$150 - 75 = 75 \text{ paise}$$

Subtract the ₹

$$5268 - 739 = ₹ 4529$$



Try these

(1) Find the answer:

i) ₹ 684.75 – ₹ 294.50

ii) ₹ 188.00 – ₹ 88.00

iii) ₹ 6,846.50 – ₹ 436.75

(2) Subtract ₹ 1984.75 from ₹ 2144.50

(3) Find the difference between ₹ 12.75 and ₹ 6888.50



A person had ₹ 6435 and he spent ₹ 745.50.
How many rupees does he have now?

$$\begin{array}{r}
 \text{Amount had} = ₹ \overset{5}{\cancel{6}} \overset{13}{\cancel{4}} \overset{12}{\cancel{3}} \overset{14}{\cancel{5}} . \overset{10}{\cancel{00}} \\
 \text{Amount spent} = ₹ \quad 7 \quad 4 \quad 5 . 50 \\
 \hline
 \text{Balance} = ₹ 5 \quad 6 \quad 8 \quad 9 . 50
 \end{array}$$

The Balance Amount is ₹ 5689.50



Note

To teacher: Similarly, more statement sums can be assigned to students for practice.

When we subtract 50 paise from 00 paise, convert ₹ 1 into paise, add with 00 paise and then subtract.

$$6435 - 1 = ₹ 6434$$

$$₹ 1 = 100 \text{ paise}$$

$$100 + 0 = 100 \text{ paise}$$

$$100 - 50 = 50 \text{ paise}$$

Subtract the ₹

$$6434 - 745 = ₹ 5689$$

Multiplication



Find the answer ₹ 543.75 × 15.

$$₹ \quad 543.75 \times 15$$

$$₹ \quad 8156.25$$

Multiple the paise

$$75 \times 15 = 1125 \text{ paise}$$

$$75 \times 15$$

$$375$$

$$75$$

$$1125$$

Convert the paise

Into ₹ 1125 ÷ 100

$$= ₹ 11 \quad 25 \text{ P}$$

$$\begin{array}{r}
 11 \\
 100 \overline{) 1125} \\
 \underline{100} \\
 125 \\
 \underline{100} \\
 25
 \end{array}$$



Try these

Find the answer

i) ₹ 355.50 × 7

ii) ₹ 960.75 × 8

iii) ₹ 66.75 × 9

iv) ₹ 212.50 × 11

v) ₹ 243.50 × 12

Multiply the ₹

$$543 \times 15 = ₹ 8145$$

Add the rupees

$$8145 + 11 = ₹ 8156$$

$$\begin{array}{r}
 543 \times 15 \\
 2715 \\
 543 \\
 \hline
 8145
 \end{array}$$



The cost of 1 pen is ₹ 15.50.
Find the cost of 7 such pens?

$$\begin{array}{rcl} \text{Cost of 1 pen} & = & ₹ \quad 15 . 50 \\ \text{Cost of 7 pens} & = & ₹ \quad 15 . 50 \times 7 \\ \hline \text{Total cost} & = & ₹ \quad 108 . 50 \end{array}$$

The cost of 7 pens is ₹ 108.50



Note

To teacher: Similarly, more statement sums can be assigned to students for practice.



Multiply the paise

$$50 \times 7 = 350 \text{ P}$$

Convert into Rupees

$$350 \div 100 = ₹ 3.50$$

Multiply the Rupees

$$15 \times 7 = ₹ 105$$

Add the Rupees with the Rupees

$$3 + 105 = ₹ 108$$

Division



Find the answer ₹ 6834.00 ÷ 12.

$$₹ 6834.00 \div 12 = ₹ 569.50$$

Divide the ₹

$$6834 \div 12 = ₹ 569$$

$$\begin{array}{r} 569 \\ 12 \overline{) 6834} \\ \underline{60} \\ 83 \\ \underline{72} \\ 114 \\ \underline{108} \\ 6 \end{array}$$



Try these

Find the answer

- ₹ 787.50 ÷ 5
- ₹ 24.00 ÷ 6
- ₹ 7286.00 ÷ 8
- ₹ 6529.50 ÷ 9
- ₹ 4375.50 ÷ 25

Convert the remainder
₹ 6 into paise and add
with 00 paise

$$6 \times 100 = 600 \text{ paise}$$

$$600 + 00 = 600 \text{ paise}$$

Divide the paise

$$600 \div 12 = 50 \text{ paise}$$

$$\begin{array}{r} 50 \\ 12 \overline{) 600} \\ \underline{60} \\ 00 \\ \underline{0} \\ 0 \end{array}$$



An institution equally distributed ₹ 26,000 to 40 persons.
How much money does each person get?

Amount distributed to 40 persons = ₹ 26000




Amount distributed to 1 person = ₹ 26000 ÷ 40

Amount paid to each person = ₹ 650

	650
40	26000
	240
	200
	200
	00
	0
	0



Practice Time

- (1) A man bought a bureau for ₹ 6750, a table for ₹ 4550 and a chair for ₹ 950 for his house. What is the total value of the things he bought?
- (2) The price of 5 books are ₹ 35.00, ₹ 75.50, ₹ 275.00, ₹ 52.00, ₹ 9.50 respectively. Find the total price of the books. 
- (3) In a bus, the collection made for 3 days are ₹ 4775.50, ₹ 5350.50 and ₹ 4785.50 respectively. Find the total collection for 3 days?
- (4) A person bought a Television set worth of ₹ 25000 . He paid ₹ 12375. Find the balance amount he has to pay. 
- (5) Sundar's bank balance is ₹ 76,350 How much more rupees he has to deposit in his account to reach the target of ₹ 80,000
- (6) Bhoopathi's monthly salary is ₹ 25,000. He saved ₹ 6435. How much money has been spent?
- (7) The cost of 1 metre cloth is ₹ 365. What will be the cost of 15 metre cloth? 
- (8) The cost of 1 kg tomato is ₹ 15.50. Find the cost of 13kg tomatoes?
- (9) The cost of 1 rice bag is ₹ 1750. Find the cost of 24 such rice bags?
- (10) The cost of 8 kg of sweets is ₹ 1,200. What will be the cost of 1 kg sweets?
- (11) A person found that ₹ 30,600 in his R.D.passbook after one year. What is his monthly contribution towards the R.D.?

Educational Tour



H.M. : Dear students, we have planned to go on an educational trip next week .

Students : How many students can participate sir? How much money we need to pay?

H.M. : Each one should pay ₹ 175 and only 55 students can participate.

If each student pays ₹ 175, how much money can be collected from 55 students?

Money collected from 1 student	=	₹ 175
Money collected from 55 students	=	₹ 175×55
Total	=	₹ <input type="text"/>

Students successfully completed their educational tour.

H.M. : Dear students, was the trip useful to you?

Students : Yes Sir.

H.M. : Do you know the total expenditure of the trip?

Students : We are eagerly waiting to know about the expenditure sir?

H.M. : We spent ₹ 4925 towards hiring the bus, ₹ 2250 for food and ₹ 1350 for other expenses. Can you calculate the total expenditure?

Bus fare	=	₹ 4925
Food	=	₹ 2250
Other expense	=	₹ 1350
Total expenditure	=	₹ <input type="text"/>



H.M. : Can you calculate the balance money?

Money collected = ₹

Money spent = ₹

Money left = ₹

Students : What shall we do with the balance money sir?

H.M. : I am going to distribute the remaining money to all the 55 students. Can you guess how much money will each one get?

Balance money = ₹

Amount to be given to each student = ₹ ÷ 55

Each one gets = ₹




Note

In this incident, we have used all the four fundamental operations such as addition, subtraction, multiplication and division.

You can also think of such incidents and create problems.



Practice Time

- (1) Praveen earns ₹ 16,500 per month. He spent ₹ 1,750 for rent, ₹ 500 for entertainment and ₹ 2,300 for children's education and spent the remaining money for food and savings. How much money did he spend for food and savings?
- (2) A person bought a Computer for ₹ 24,500, refrigerator for ₹ 12,750, and a washing machine for ₹ 12,525 in a shop. He gave ₹ 50,000 to the shop keeper. How much money he can get back from the shop keeper?
- (3) Shankar bought 6 apples each costing ₹ 12 and 12 oranges each costing ₹ 3.50. He gave ₹ 200 to the fruits-seller. How much amount will he get back? 
- (4) Arul saves ₹ 3,500 every month in a bank for one year. At the end of the year, he distribute the sum equally to his three daughters. How much will each daughter get?

Activity



Five friends went to a textile shop. Each person had ₹ 1,000. Each one wanted to buy any three things mentioned below for ₹ 1,000. Guess the things bought by them and fill up the blanks.



Work Sheet

Answer the following.

(1) The unit used to measure the length of a building is _____.

- i) mm
- ii) cm
- iii) m
- iv) km

(2) A person has 2 kg 500 g of mangoes and 1 kg 250 g of apples. The weight of mangoes is more than the weight of apples is _____.

- i) 250 gm
- ii) 1 kg 250 gm
- iii) 2 kg 250 gm
- iv) 3 kg 750 gm

(3) Choose the odd one out _____.

- i) $2\frac{1}{2}$ m = 250 cms.
- ii) $2\frac{1}{2}$ kg = 2500 gm
- iii) $2\frac{1}{2}$ hrs = 170 minutes
- iv) ₹ $2\frac{1}{2}$ = 250 paise

(4) 1 m 2 cm is _____.

- i) 120 cm
- ii) 102 cm
- iii) 201 cm
- iv) 210 cm

(5) A ribbon measuring 6 m is cut into 20 equal parts. The length of each part will be _____.

- i) 30 cm
- ii) 3 cm
- iii) 20 cm
- iv) 40 cm

(6) Kavitha made 10 l 500 ml of juice for her 10 friends, then each friend gets _____.

- i) 1 l 500 ml
- ii) 1 l 50 ml
- iii) 105 l
- iv) 1000 l

(7) Rama went to bed at 10 p.m. And she woke up 6.30 a.m. She slept for _____ hours.

- i) $6\frac{1}{2}$ hrs.
- ii) $4\frac{1}{2}$ hrs.
- iii) $5\frac{1}{2}$ hrs.
- iv) $8\frac{1}{2}$ hrs.

(8) A train starts at 3 p.m. And reaches Kanniyakumari the next day at 9 a.m. The time taken by the train will be _____.

i) 6 hrs.

ii) 9 hrs.

iii) 12 hrs.

iv) 18 hrs.

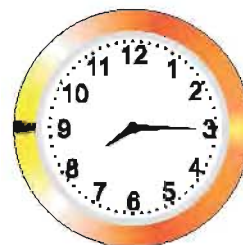
(9) The minutes needed for the clock to show 9 p.m. is _____.

i) 45 minutes

ii) 9 minutes

iii) 8 minutes

iv) 54 minutes



(10) The correct time for 75 minutes after 3 p.m. is _____.

i) 3 : 45 p.m.

ii) 3 : 75 p.m.

iii) 4 : 15 p.m.

iv) 4 : 75 p.m.

(11) If Rani sleeps 7 hours daily then how long does she sleep for a week?

i) 42 hours

ii) 49 hours

iii) 56 hours

iv) 63 hours

(12) A four hour film ends at 5 : 15 p.m. The film started at _____.

i) 9 : 15 p.m.

ii) 1 : 15 p.m.

iii) 56 hours

iv) 63 hours

(13) Sekar spent ₹ 15.00 for 4 note books and ₹ 3.50 for two pencils. The total amount spent by Sekar is _____.

i) ₹ 67.00

ii) ₹ 18.50

iii) ₹ 37.00

iv) ₹ 60.00

(14) From the figure, the number of match boxes are _____.

i) 8

ii) 5

iii) 4

iv) 7



Happy Birthday Celebration

Gowtham wanted to celebrate his birthday in an orphanage with children. Hearing this, his parents, Seenu and Lakshmi felt very happy

There were ten children in the orphanage. With the help of his father, he cut the cake into ten equal parts and distributed to them. He gave _____ part of the cake to each



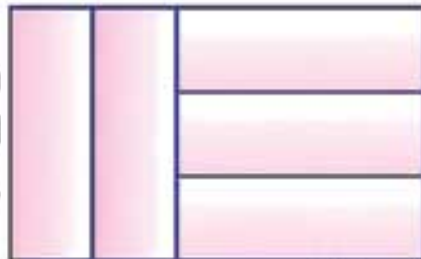
child. There were 7 girls and 3 boys. Then _____ part of the cake was given to girls and _____ part of the cake was given to boys. Round the larger portion. Girls / boys.

During Holiday



Ranjitha helped her mother to arrange the clothes in the wardrobe. There were 5 shelves in it. In $\frac{3}{5}$ th part of the shelves the clothes were neatly arranged, Then in _____ part of the shelves the clothes were not arranged.

Have you seen wardrobes with five equal shelves in any other form. One way is



Activity

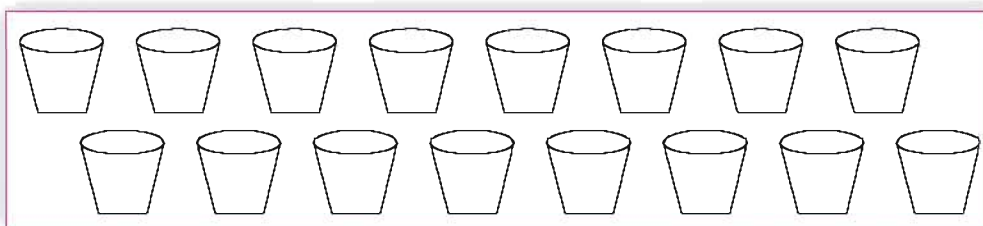
Create your own rectangular wardrobes in different ways with 5 equal shelves.



Activity



Colour $\frac{1}{4}$ of the flower pots in red. Colour half of them in blue.
The remaining are to be coloured in green.



How many flower pots are red coloured?

How many flower pots are blue coloured?

How many flower pots are green coloured?

**Fraction is a number representing part of a whole.
Whole may be a single object or a group of objects.**



Kavitha shows a piece of chocolate having 5 equal parts.

Raman takes away Three - fifth from it. $\frac{3}{5}$ is a fraction.

In the above fraction,

❁ **What does 5 stand for?** 5 stands for the **denominator**.

It is the number of equal part into which the whole has been divided.

❁ **What does 3 stand for?** 3 stands for the **numerator**.

It is the number of equal parts which is taken from the whole.



Practice Time

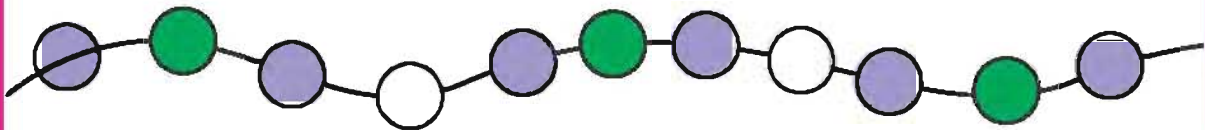
(1) Pick out the denominator and numerator in each of the following fractions. Write them in the respective boxes.

In $\frac{4}{6}$, Denominator is and Numerator is

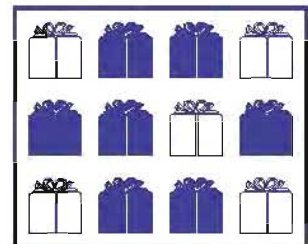
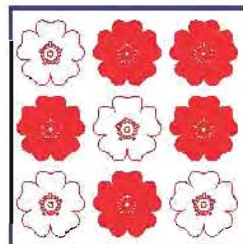
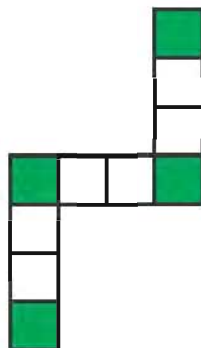
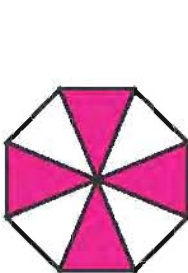
In $\frac{7}{12}$, Denominator is and Numerator is

In $\frac{13}{20}$, Denominator is and Numerator is

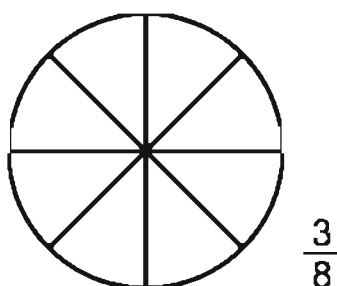
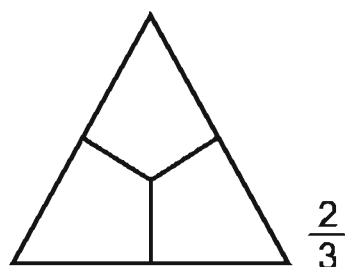
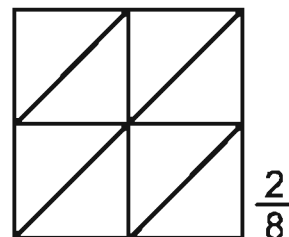
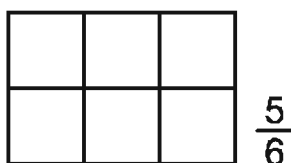
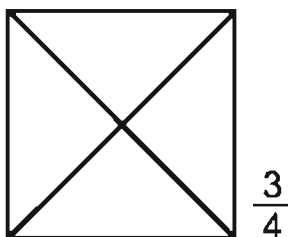
(2) In the given string of beads, number of white beads are _____.
_____ part of the beads are violet coloured and _____
part of the beads are green coloured.



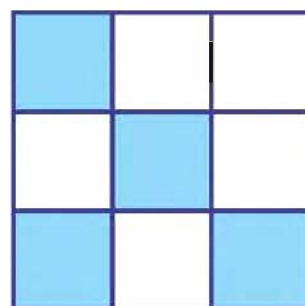
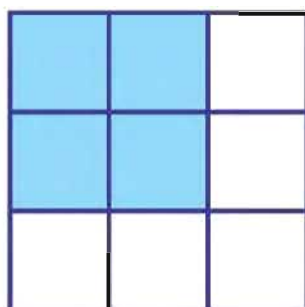
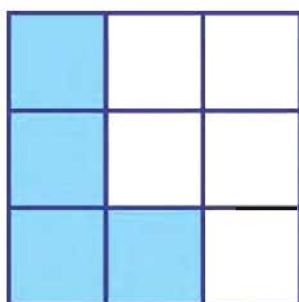
(3) Write the fraction representing the shaded portion.



(4) Colour the part according to the given fraction:

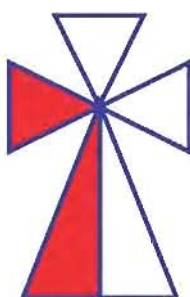
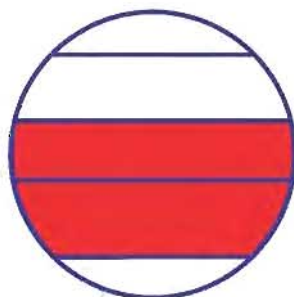
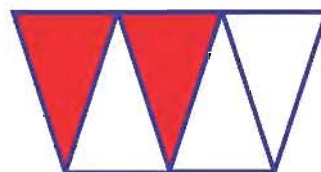


(5) In a 3×3 grid, the following figures show different ways of shading $\frac{4}{9}$. Make three more ways of shading $\frac{4}{9}$ in your notebook.

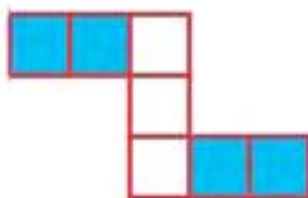


(6) Put the tick mark (✓) for the correct picture.

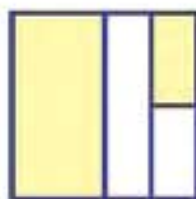
(i) $\frac{2}{5}$


☐

☐

☐

(ii) $\frac{4}{7}$



(iii) $\frac{5}{8}$



(7) Write the numbers from 1001 to 1021. Find the fraction of the even number from the list.

(8) What is the fraction of 5 hours in a day?

Activity



- The upper part is saffron in colour.
- The lower part is green in colour.
- Observe the picture.

What part is shaded in green?

_____ part is shaded in saffron.



Is the white colour a little less than $\frac{1}{3}$ of the flag? Why?

Project Work



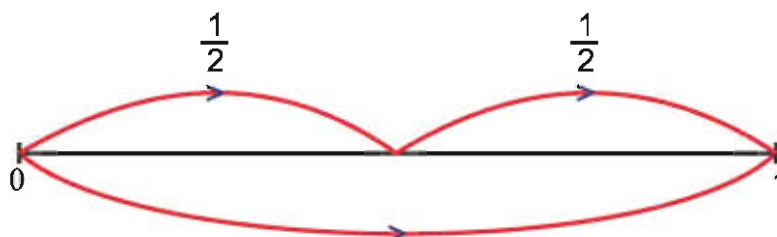
Collect the flags of 20 different countries. Stick them in your notebook. Check whether they can be used to represent fraction. If so, write the fraction for each colour used in the flag.

TYPES OF FRACTIONS

Fraction less than 1

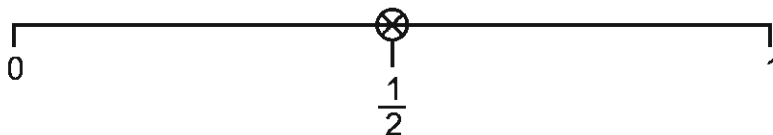
You have already learnt to show multiples of 2, 3, on a number line.

We can also show fractions on a number line .

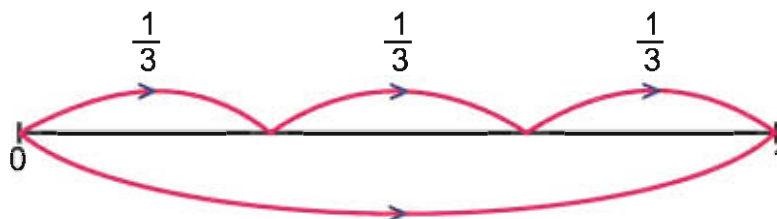


We divide the gap between 0 and 1 into two equal parts and show that each part is $\frac{1}{2}$.

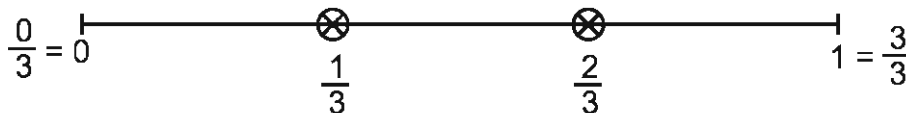
Mark the point which divides the line into two equal halves as $\frac{1}{2}$.



Suppose we want to show $\frac{1}{3}$ on a number line. Into how many equal parts, should the length between 0 and 1 be divided?



We divide the length between 0 and 1 into 3 equal parts and show that each part is $\frac{1}{3}$.



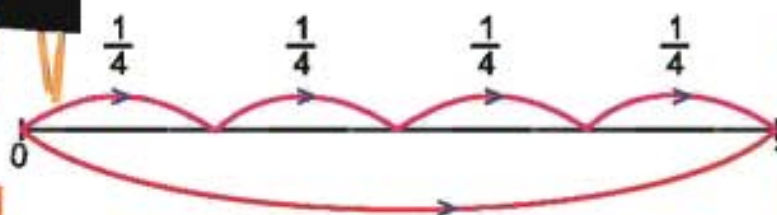
Can you show $\frac{2}{3}$ on this number line? $\frac{2}{3}$ means 2 times of $\frac{1}{3}$ and $\frac{3}{3}$ means three times of $\frac{1}{3}$.

Observe that

$$\frac{0}{3} = 0 \text{ and } \frac{3}{3} = 1$$



Plot $\frac{0}{4}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ and $\frac{4}{4}$ on this number line.

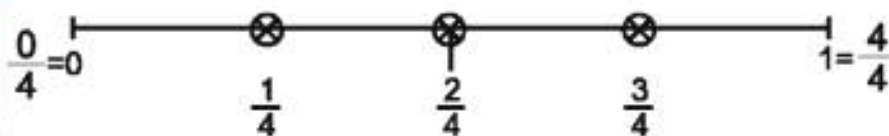


STEP 1

To plot these points divide the gap between 0 and 1 into 4 equal parts.

STEP 2

Mark the points $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ on the number line.



Kavitha recalls that the above fractions in the numberline represent parts of the whole. Raman adds that they are proper fractions. The denominator shows the number of parts into which the whole is divided into and the numerator shows the number of parts we have taken out. Both of them concluded saying that

All the fractions we have learnt so far are less than 1.

These are called proper fractions. In a proper fraction the numerator is always less than the denominator.



Try these

- (3) Choose the correct answer and put (✓) mark against the correct column.
- | Fraction | equal to 0 | less than 1 | equal to 1 |
|-------------------|------------|-------------|------------|
| $\frac{1}{2}$ | | ✓ | |
| $\frac{4}{5}$ | | | |
| $\frac{4}{4}$ | | | |
| $\frac{5}{6}$ | | | |
| $\frac{0}{7}$ | | | |
| $\frac{200}{200}$ | | | |
- (1) Give a proper fraction:
 i) Whose numerator is 5 and the denominator is 6.
 ii) Whose denominator is 10 and the numerator is 3.
 iii) Make 5 proper fractions on your own.
- (2) Locate the fractions $\frac{1}{2}$, $\frac{3}{5}$, $\frac{9}{10}$, $\frac{0}{9}$ and $\frac{5}{7}$ on separate number lines.

A way to Share

Sathya had three guavas with her. After having lunch with Mathan, she wanted to share them equally. How can they share three guavas among two of them? Sathya started dividing like this. She gave one full guava and a half of the remaining guava.



Mathan said, "I can divide like this". He divides each of the 3 guavas into 2 equal parts and gave half of each guava.



In Sathya's way, each share is equal to one whole and one half. It is $1 + \frac{1}{2}$ which is written as $1\frac{1}{2}$.

Sathya observed that the above number is the combination of whole and a fractional part.

Fractions such as $1\frac{1}{2}$ are called mixed fractions. A mixed fraction is the combination of a whole and a fractional part.



In Madan's way, each share is equal to three halves which is written as $\frac{3}{2}$.

Madan observed that in the above fraction, the numerator is greater than the denominator. Such fractions are called improper fractions.

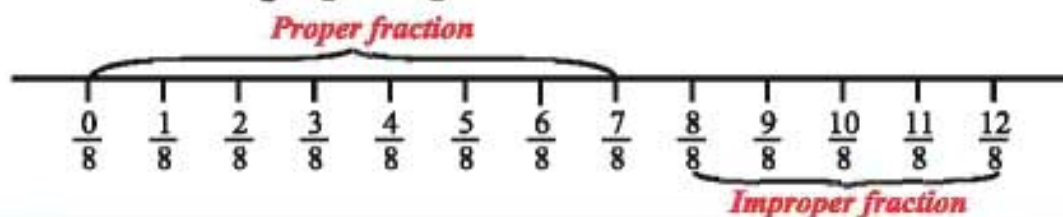
The fractions, in which the numerator is greater than or equal to denominator are called improper fractions.



Remember

In both ways each of them got the same share. But the same share can be represented in two different ways.

Improper fractions are greater than or equal to 1. We can mark fraction such as $\frac{0}{8}, \frac{1}{8}, \dots, \frac{12}{8}$ on the number line.



What about $\frac{0}{8}$ and $\frac{8}{8}$? We have already learnt that $\frac{0}{8}$ is 0 and $\frac{8}{8}$ is 1.









Try these

Draw the number line and locate the given points on it. List out the proper and improper fractions. (i) $\frac{2}{5}, \frac{3}{5}, \frac{8}{5}, \frac{4}{5}$ (ii) $\frac{1}{13}, \frac{15}{13}, \frac{8}{13}, \frac{17}{13}$

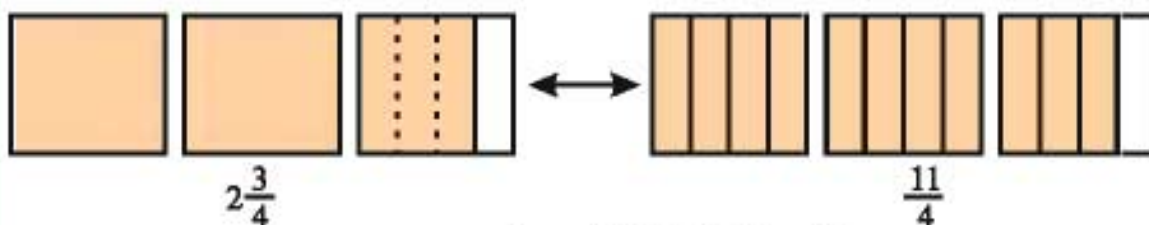
Mixed Fraction into Improper Fraction

Complete the table for two given mixed fractions $5\frac{1}{2}$ and $6\frac{1}{2}$.

Mixed Fractions	Improper Fractions	Mixed Fractions into Improper Fractions
$2\frac{1}{2}$ 		$\frac{(2 \times 2) + 1}{2} = \frac{5}{2}$
$3\frac{1}{2}$ 		$\frac{(2 \times 3) + 1}{2} = \frac{7}{2}$
$4\frac{1}{2}$ 		$\frac{(2 \times 4) + 1}{2} = \frac{9}{2}$



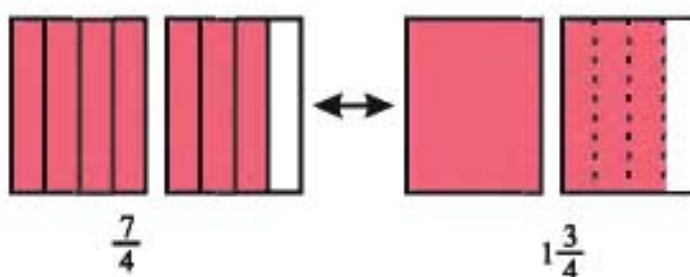
Conversion of mixed fraction $2\frac{3}{4}$ into improper fraction



The Improper fraction of $2\frac{3}{4}$ is $\frac{(4 \times 2) + 3}{4} = \frac{11}{4}$



Conversion of improper fraction $\frac{7}{4}$ into mixed fraction



The mixed fraction of $\frac{7}{4}$ is $1\frac{3}{4}$.

$$\begin{array}{r} 1 \\ 4 \overline{) 7} \\ \underline{4} \\ 3 \end{array}$$

Mixed fraction can be expressed as improper fraction and improper fraction can be converted into mixed fraction.

We can express a mixed fraction as an Improper fraction

$$\text{Improper fraction} = \frac{(\text{Whole} \times \text{Denominator}) + \text{Numerator}}{\text{Denominator}}$$



Try these

(1) Change these into improper fractions: a) $3\frac{3}{4}$ b) $2\frac{5}{7}$

(2) Change these into mixed fractions: a) $\frac{16}{3}$ b) $\frac{13}{5}$

MOTHER'S DAY



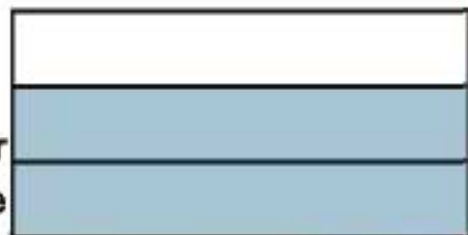
Each Mano and Meena had a saving of ₹ 500. They wanted to greet their mother with a gift on the Mother's Day.

With half of his saving, Mano bought a saree worth of ₹ 250. Meena bought a hand bag for ₹ 125 and bangles for ₹ 125 each of which is one-fourth of her saving. Hence, she has spent two-fourth $\left(\frac{1}{4} + \frac{1}{4}\right)$ of her savings. Both the children spent, equal share of their savings to greet their mother. So, $\frac{1}{2} = \frac{2}{4}$.

Changing a fraction to higher terms.

Paper folding activity

Take a rectangular sheet of paper measuring 6cm × 3 cm and represent the fraction $\frac{2}{3}$.



From the above picture

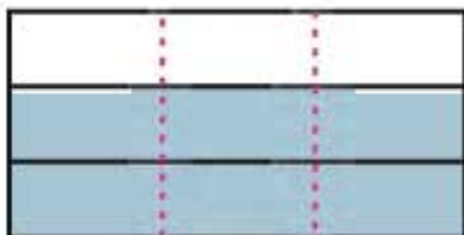
$$\frac{2}{3} \times \frac{1}{1} = \frac{2}{3}$$

Fold it exactly into two halves and unfold as shown.



$$- \times \frac{2}{2} = -$$

In another sheet of paper do the same activity as given above for representing $\frac{2}{3}$ and fold it into 3 equal parts and then unfold as done before.



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

We infer that $\frac{2}{3} = \frac{4}{6} = \frac{4}{6}$

These are called equivalent fractions. They represent the same part of a whole.

To find an equivalent fraction, multiply both the numerator and the denominator of the given fraction by the same number.



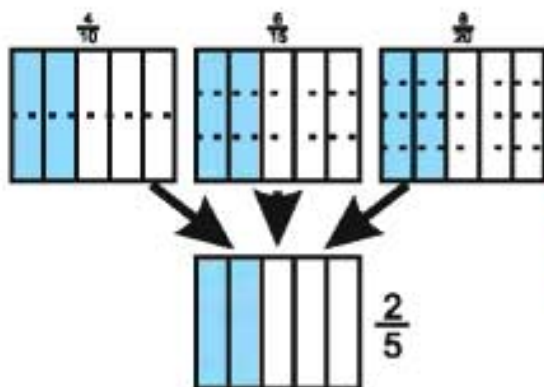
Try these

(1) Find the equivalent fractions of $\frac{3}{4}$ through paper folding until the numerator comes to 12.

(2) Find five equivalent fractions of $\frac{1}{5}$, $\frac{2}{7}$ and $\frac{4}{11}$.

Changing a fraction to lower terms.

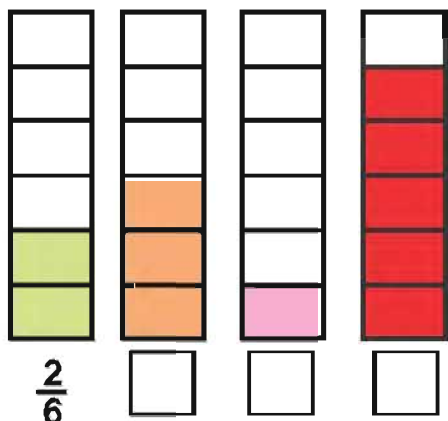
Look at the following representation of fractions.



To find an equivalent fraction, divide both the numerator and the denominator by the same number.

Like Fractions

Look at the shaded portion and write the fraction.

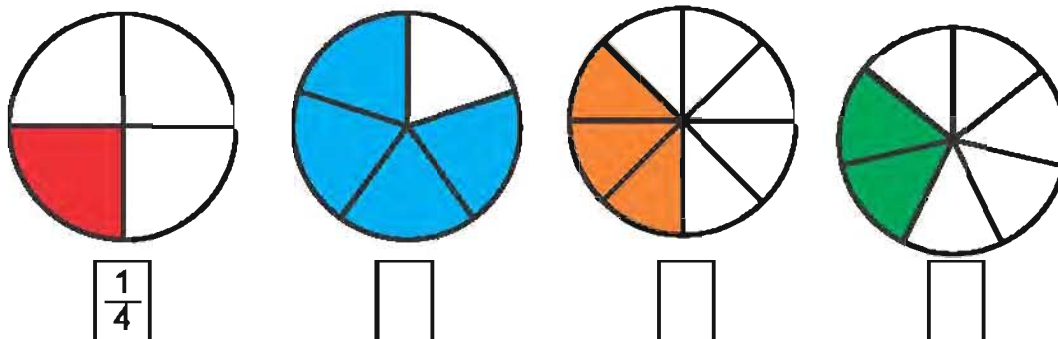


What is common in all these fractions?

In these fractions the whole is divided into 6 equal parts. That is, the denominator of all fractions is equal to 6.

Fractions with same denominators are called like fractions.

Observe the following shaded portion, Find the fraction



The whole of each is divided into different equal parts. That is the denominators of all fractions are different.

Fractions with different denominators are called unlike fractions.



Try these

Group the given fractions into three groups of like fractions and one group of unlike fractions:

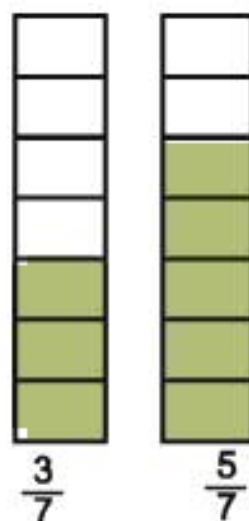
$$\frac{1}{9}, \frac{7}{9}, \frac{5}{12}, \frac{7}{15}, \frac{7}{12}, \frac{8}{15}, \frac{5}{9}, \frac{8}{9}, \frac{4}{15}, \frac{1}{12}, \frac{1}{15}, \frac{8}{17}, \frac{9}{19}, \frac{7}{8}, \frac{2}{5}$$

Comparing like Fractions

Let us compare two fractions $\frac{3}{7}$ and $\frac{5}{7}$.

In both the fractions, the whole is divided into 7 equal parts. The first and second fractions, 3 and 5 parts respectively are shaded from the divided whole. That is 3 times of $\frac{1}{7}$ is less than 5 times of $\frac{1}{7}$.

Hence $\frac{3}{7}$ is less than $\frac{5}{7}$.



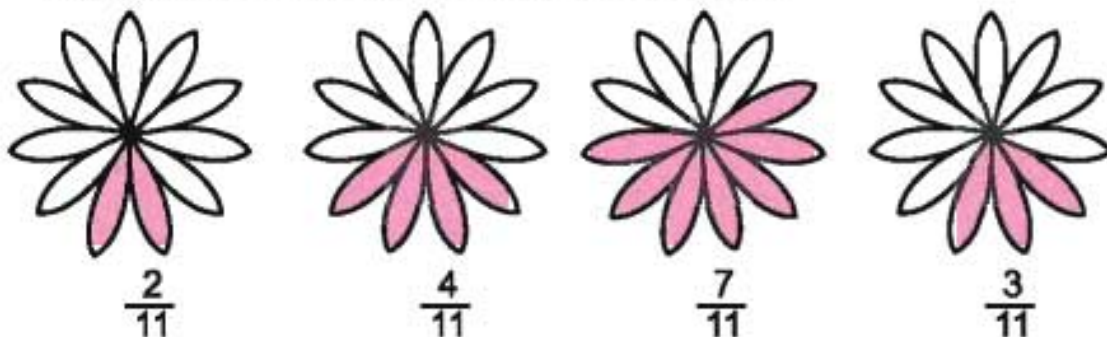
Try these

- Round the greater fraction: (i) $\frac{4}{5}$, $\frac{3}{5}$ (ii) $\frac{11}{20}$, $\frac{13}{20}$ (iii) $\frac{17}{19}$, $\frac{15}{19}$

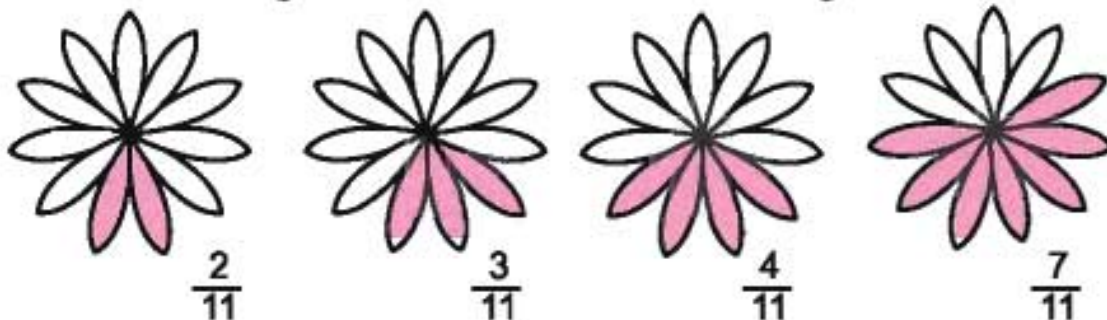
Small to Big

Arrange the following like fractions $\frac{2}{11}$, $\frac{4}{11}$, $\frac{7}{11}$ and $\frac{3}{11}$ in ascending order.

Pictorial representation of the given fractions:



Let us rearrange them from the smallest to the greatest fractions.

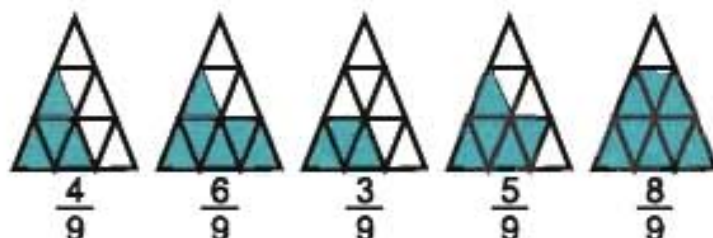


Ascending order of fractions are $\frac{2}{11}$, $\frac{3}{11}$, $\frac{4}{11}$, $\frac{7}{11}$

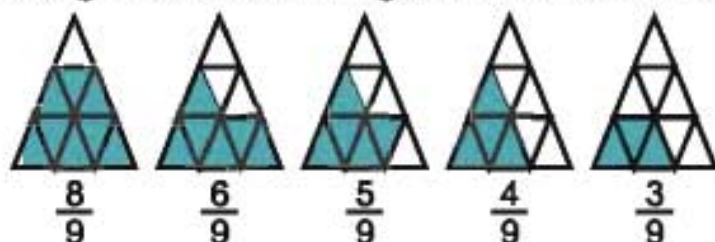
Big to Small

Arrange the following like fractions $\frac{4}{9}$, $\frac{6}{9}$, $\frac{3}{9}$, $\frac{5}{9}$ and $\frac{8}{9}$ in descending order.

Pictorial representation of the given fractions:



Let us rearrange these from the greatest to the smallest fractions.



Descending order of fractions are $\frac{8}{9}$, $\frac{6}{9}$, $\frac{5}{9}$, $\frac{4}{9}$, $\frac{3}{9}$



Remember

We observe that,

- + To write the like fraction in ascending order arrange the numerator of each of the fraction in ascending order.
- + To write the like fraction in descending order arrange the numerator of each of the fraction in descending order.



Practice Time

1. Write these in ascending and also in descending order

(i) $\frac{2}{8}$, $\frac{7}{8}$, $\frac{6}{8}$, $\frac{1}{8}$ (ii) $\frac{9}{7}$, $\frac{7}{7}$, $\frac{6}{7}$, $\frac{1}{7}$ (iii) $\frac{13}{12}$, $\frac{5}{12}$, $\frac{7}{12}$, $\frac{11}{12}$, $\frac{10}{12}$

2. Latha painted $\frac{3}{8}$ part of the wall in her room. Sudhakar helped her and he painted $\frac{5}{8}$ part of the wall. Find who painted more? Write the greater fraction between the two.

3. Vani wanted to take her two daughters to a book exhibition. So, she asked both of them to say the time they needed to visit the book stall. Karthika said that it would take $\frac{1}{4}$ of two hours for her. Meghala said that it would take $\frac{3}{4}$ of an hour for her. Find who takes more time?

14

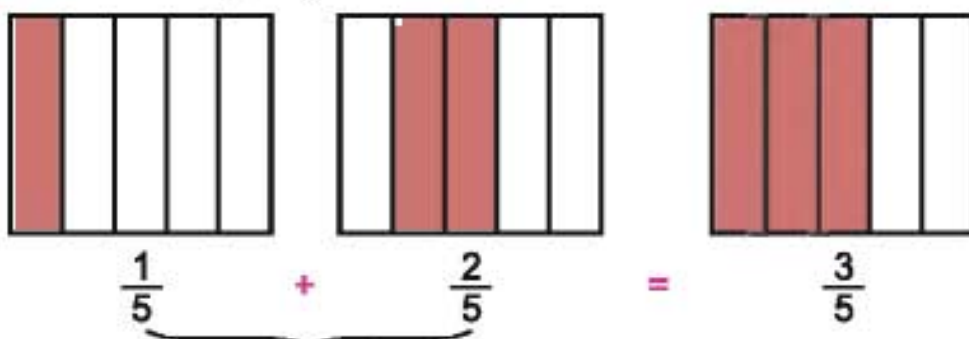
Addition, Subtraction and Multiplication of Fractions

Addition of like fractions



Geetha said that her mother uses $\frac{1}{3}$ of a litre of milk in the morning and $\frac{1}{3}$ of a litre of milk in the evening. Then the total quantity of milk she uses is $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$.

Find the sum: $\frac{1}{5} + \frac{2}{5}$



The sum of two or more like fractions can be obtained as follows.

Step 1 : Add the **numerator** $1 + 2 = 3$

Step 2 : Retain the **common denominator** 5

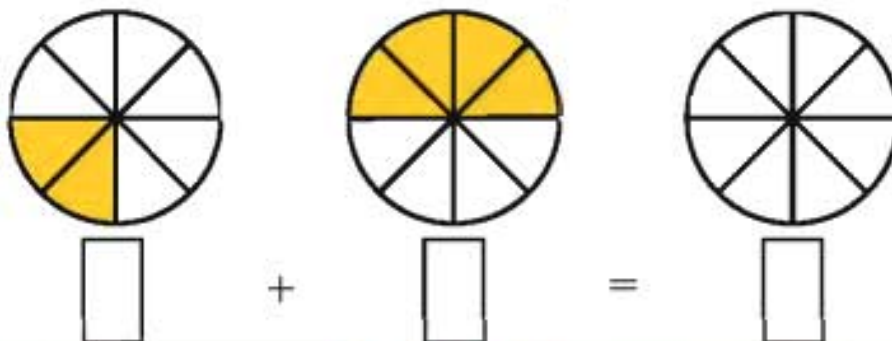
Step 3 : $\frac{\text{Result of Step 1}}{\text{Result of Step 2}} = \frac{3}{5}$

$$\frac{1}{5} + \frac{2}{5} = \frac{1+2}{5} = \frac{3}{5}$$



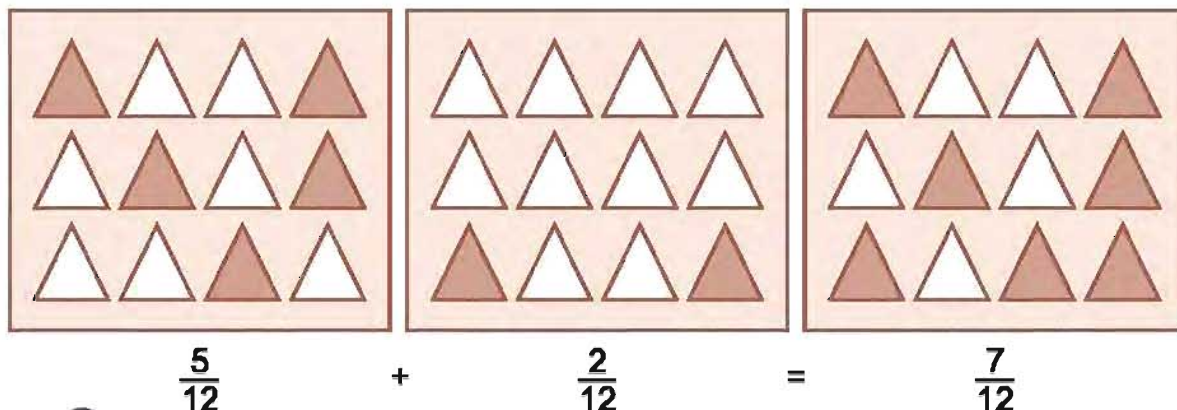
Try these

Write the fractions for the shaded part of the first two figures. Add them and shade the resultant part in the third figure.





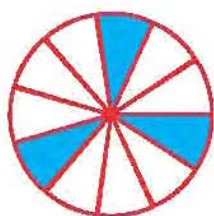
Find the sum of $\frac{5}{12}$ and $\frac{2}{12}$.



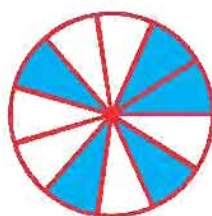
Try these

Find the sum of the following:

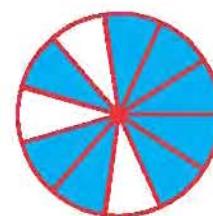
1.



+



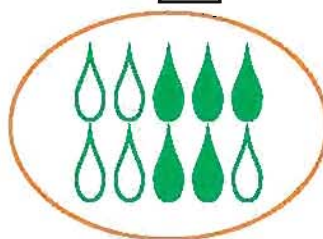
=



2.



+



=



3. Add the like fractions

(i) $\frac{3}{11} + \frac{7}{11}$

(ii) $\frac{4}{13} + \frac{8}{13}$

(iii) $\frac{4}{17} + \frac{9}{17}$

(iv) $\frac{7}{20} + \frac{2}{20}$

Finding the Balance



Shekar has $\frac{5}{6}$ part of the chocolate bar. He gave $\frac{2}{6}$ part of it to his younger sister. How much chocolate is left with him?



$$\frac{5}{6} - \frac{2}{6} = \frac{3}{6}$$

Thus the difference between two like fraction can be obtained as follows.

Step 1 : Subtract the smaller **numerator** from the bigger numerator $5 - 2 = 3$

Step 2 : Retain the **common denominator** 6

Step 3 : $\frac{\text{Result of Step 1}}{\text{Result of Step 2}} = \frac{3}{6}$ (or) $\frac{1}{2}$

$$\begin{aligned} \frac{5}{6} - \frac{2}{6} &= \frac{5-2}{6} \\ &= \frac{3}{6} = \frac{1}{2} \end{aligned}$$



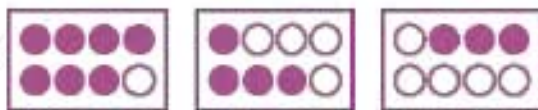
Try these

1.



$$\square - \square = \square$$

2.



$$\square - \square = \square$$

3. Fill in the missing fraction

(i) $\frac{13}{18} - \frac{7}{18} =$

(ii) $\frac{8}{12} - \square = \frac{5}{12}$

(iii) $\square - \frac{3}{14} = \frac{9}{14}$

(iv) $\frac{7}{9} - \square = \frac{4}{9}$

4. Can you subtract $\frac{3}{10}$ from $\frac{8}{10}$

5. Find the difference between $\frac{5}{8}$ and $\frac{7}{8}$

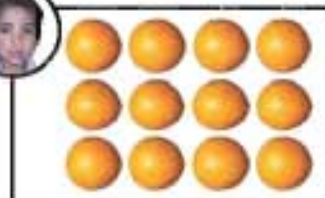
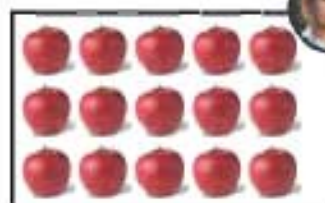
Activity

Balu bought fruits for his friend's family. He bought 15 apples, 9 pomegranates and 12 oranges. His friend's daughter Mrithika received the fruit basket and she started sharing the fruits between her brother Gowtham and her cousin Madhu keeping her own share. She grouped the apples into 3 equal parts. Each one got _____ apples.

She grouped the pomegranates into 3 equal parts. Each one got _____ part of pomegranates. As Gowtham did not like pomegranate, he gave his share to Mrithika.

Now, Mrithika has $\frac{3}{9} + \square = \square$ part of pomegranates.

She grouped the oranges into 3 equal parts. Each one got \square part of oranges.



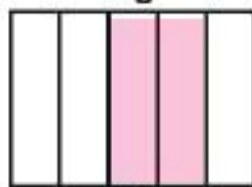
Multiplication of fraction



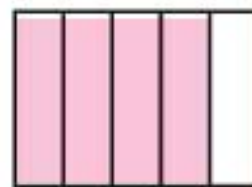
Look at the picture and find $\frac{2}{5} \times 2$.



$$\frac{2}{5}$$



$$\frac{2}{5}$$



=

$$\frac{4}{5}$$

2 times of $\frac{2}{5}$

Step 1 : Multiply the **numerator** of the fractions $2 \times 2 = 4$

Step 2 : Retain the **denominator** 5

Step 3 : $\frac{\text{Result of Step 1}}{\text{Result of Step 2}} = \frac{4}{5}$

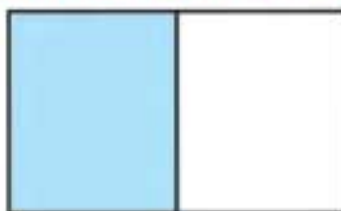
$$\begin{aligned} \frac{2}{5} \times 2 &= \frac{2 \times 2}{5} \\ &= \frac{4}{5} \end{aligned}$$

Multiply a fraction with another fraction

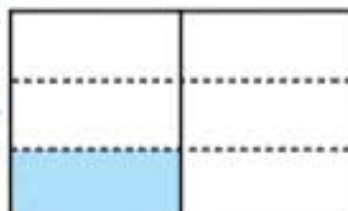


Find

$$\frac{1}{2} \times \frac{1}{3}$$



$$\frac{1}{2}$$



$$\frac{1}{6}$$

From the figure $\frac{1}{3}$ of $\frac{1}{2}$ is found out.

Step 1 : Multiply the **numerator** of both the fractions $1 \times 1 = 1$

Step 2 : Multiply the **denominator** of both the fractions $2 \times 3 = 6$

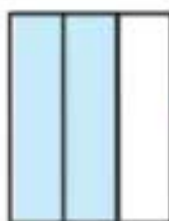
Step 3 : $\frac{\text{Result of Step 1}}{\text{Result of Step 2}} = \frac{1}{6}$

$$\frac{1}{2} \times \frac{1}{3} = \frac{1 \times 1}{2 \times 3} = \frac{1}{6}$$

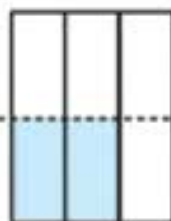


Find $\frac{2}{3} \times \frac{1}{2}$

$$\frac{2}{3} \times \frac{1}{2} = \frac{2 \times 1}{3 \times 2} = \frac{2}{6} = \frac{1}{3}$$

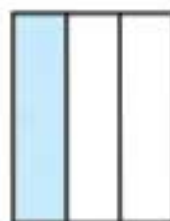


$$\frac{2}{3}$$



$$\frac{2}{6}$$

or



$$\frac{1}{3}$$

From the figure $\frac{1}{2}$ of $\frac{2}{3}$ is found out.



Try these

Find the answers for the following.

(i) $\frac{4}{7} \times 3 = \square$

(ii) $\frac{5}{9} \times 2 = \square$

(iii) $\frac{7}{15} \times 2 = \square$

(iv) $\frac{4}{11} \times 5 = \square$

(v) $\frac{3}{5} \times \frac{1}{4} = \square$

(vi) $\frac{3}{7} \times \frac{2}{5} = \square$

(vii) $\frac{7}{5} \times \frac{2}{3} = \square$

(viii) $\frac{4}{9} \times \frac{1}{5} = \square$



Practice Time

1. Round the greater fraction from the given pairs of fractions.

(a) $\frac{3}{5}$, $\frac{4}{5}$ (b) $\frac{1}{7}$, $\frac{3}{7}$ (c) $\frac{3}{8}$, $\frac{6}{8}$ (d) $\frac{4}{9}$, $\frac{7}{9}$

2. Write the following fractions in ascending and descending order.

(a) $\frac{3}{12}$, $\frac{6}{12}$, $\frac{10}{12}$, $\frac{5}{12}$ (b) $\frac{5}{8}$, $\frac{3}{8}$, $\frac{2}{8}$, $\frac{7}{8}$

3. Add

(a) $\frac{3}{8} + \frac{2}{8} = \square$ (b) $\frac{2}{5} + \square = \frac{3}{5}$ (c) $\square + \frac{3}{6} = \frac{5}{6}$

4. Subtract

(a) $\frac{4}{10} - \frac{1}{10} = \square$ (b) $\frac{7}{19} - \square = \frac{4}{19}$ (c) $\square - \frac{2}{17} = \frac{4}{17}$

5. Find the answers

(i) Subtract $\frac{2}{5}$ from $\frac{3}{5}$ (ii) Subtract $\frac{1}{9}$ from $\frac{5}{9}$

(iii) Subtract $\frac{8}{15}$ from $\frac{12}{15}$

6. The distance between Bhavani's house and her school is $\frac{1}{4}$ km. How long does she have to walk to go to school and come back?

7. Saran sleeps $\frac{1}{4}$ a day. How many hours he sleeps in 4 days?

8. In an egg case, 36 eggs can be accommodated. How many eggs will be in $\frac{1}{2}$ part of the egg case?

9. In a flower bouquet, there are 7 yellow roses and 13 red roses. Maran took 5 yellow roses and 8 red roses. Express the fraction of red and yellow roses taken by Maran also find out the fractions of roses left out in the bouquet?

10. Mani planted wheat in $\frac{3}{5}$ of his 15 acres land. In how many acres, did he plant?

11. The cost of 1 kg of Tomato is ₹ 18 and the cost of 1 kg of Onion is ₹ 16. Find the total cost of $2\frac{1}{2}$ kg Tomatoes and $1\frac{1}{4}$ kg of Onions?

A challenge for you !

An old man had 17 goats. He wanted to share these goats among his three sons. In his will, he has written as: " $\frac{1}{2}$ part of the goats will go to Dass, $\frac{1}{3}$ will go to Muthu and $\frac{1}{9}$ will go to Karthik", making sure that all the 17 goats are alive.

All the sons tried to share as per the will. They could not succeed. Finally, they approached a wise man. The wise man said, "take one of my goats and then share as per the will. After sharing, return my goat to me."



How many goats did Dass get? _____

Number of goats given to Muthu _____

Mohan got _____ goats.

Guess, whether the wise man has got his goat or not?

Decimals

Madan and Ravi were given a square sheet of paper with side 10cm. They were asked to make 100 equal parts. Both of them started trying. Ravi started making small bits. Madan thought for a while and planned well. He started to cut the paper into 10 equal parts in lengthwise and breadthwise. He got 100 equal parts.



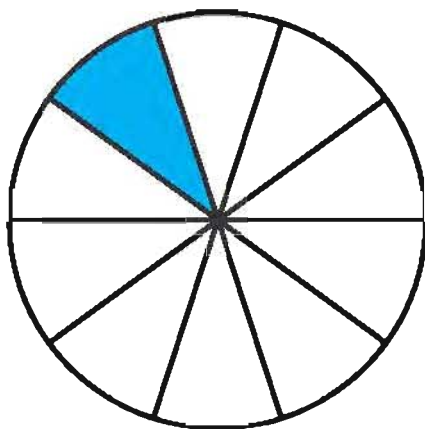
Among the 100 parts, what does each part represent? It is $\frac{1}{100}$
Can you imagine how small $\frac{1}{100}$ is?

We see that

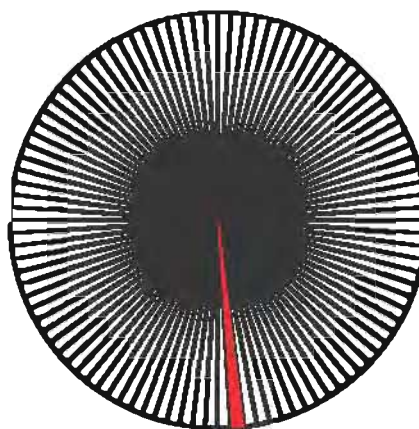
Fraction numbers whose denominators are 10 and 100 can be expressed as decimal numbers.

Here 'Dec' means ten.

Observe the pictures.



$$\frac{1}{10}$$



$$\frac{1}{100}$$

The portion shaded in blue colour is $\frac{1}{10}$ and it is represented as 0.1

The portion shaded in red colour is $\frac{1}{100}$ and it is represented as 0.01



Change the following fractions into decimals.

(i) $\frac{2}{10} = 0.2$ (ii) $\frac{35}{100} = 0.35$ (iii) $\frac{6}{100} = 0.06$

Change the following decimals into fractions.

0.9 = $\frac{9}{10}$ (ii) 0.44 = $\frac{44}{100}$ (iii) 0.03 = $\frac{3}{100}$



Try these

1. Write decimal number for the following fractional numbers.

(i) $\frac{5}{10} = \square$

(ii) $\frac{8}{10} = \square$

(iii) $\frac{3}{10} = \square$

(iv) $\frac{36}{100} = \square$

(v) $\frac{48}{100} = \square$

(vi) $\frac{6}{100} = \square$

2. Write the fractional numbers for the following decimal numbers.

(i) 0.7 = \square

(ii) 0.15 = \square

(iii) 0.21 = \square

Group Activity



Take a graph paper. Divide it into 100 equal parts. Shade the decimal portion. Use a separate sheet for each sum.

(i) 0.15

(ii) 0.37

(iii) 0.45

(iv) 0.40

(v) 0.07



Work Sheet

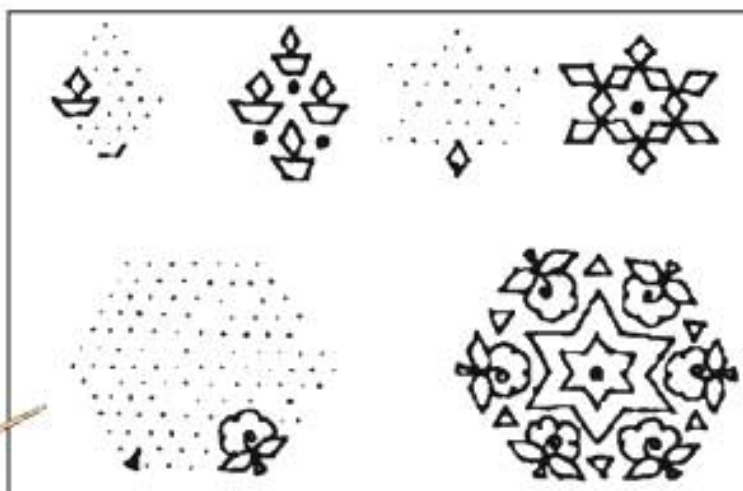
Answer the following:

1. The fraction which is less than 1 is called _____
i) Proper fraction ii) Improper fraction
iii) Mixed number iv) unlike fraction
2. The sum of $\frac{2}{11}$ and $\frac{1}{11}$ is _____
i) $\frac{3}{11}$ ii) $\frac{6}{11}$ iii) $\frac{7}{11}$ iv) $\frac{9}{11}$
3. From the fractions given below the fraction which is not equivalent to the other three is _____
i) $\frac{8}{10}$ ii) $\frac{4}{5}$ iii) $\frac{28}{35}$ iv) $\frac{5}{4}$
4. The difference between $\frac{3}{18}$ and $\frac{8}{18}$ is _____
i) $\frac{5}{18}$ ii) $\frac{7}{18}$ iii) $\frac{1}{8}$ iv) $\frac{11}{18}$
5. $4\frac{8}{3}$ is equal to _____
i) $\frac{8}{3}$ ii) $\frac{13}{3}$ iii) $\frac{10}{3}$ iv) $\frac{20}{3}$
6. The product of $\frac{2}{3}$ and 5 is _____
i) $\frac{5}{3}$ ii) $\frac{7}{3}$ iii) $\frac{2}{8}$ iv) $\frac{10}{3}$
7. $\frac{1}{2}$ of 3 _____
i) $\frac{3}{2}$ ii) $\frac{2}{3}$ iii) $\frac{1}{6}$ iv) $\frac{1}{5}$
8. If 1 litre of milk costs ₹ 20, the cost of $\frac{1}{2}$ litre is _____
i) ₹ 20 $\frac{1}{2}$ ii) ₹ 10 $\frac{1}{2}$ iii) ₹ 10 iv) ₹ 15
9. If represents 8, represents
i) $\frac{1}{2}$ of 8 ii) $\frac{1}{4}$ of 8 iii) $\frac{3}{4}$ of 8 iv) $\frac{1}{3}$ of 8
10. $\frac{2}{10}$ can be expressed as _____
i) 0.2 ii) 0.5 iii) 0.1 iv) 0.02



Try these

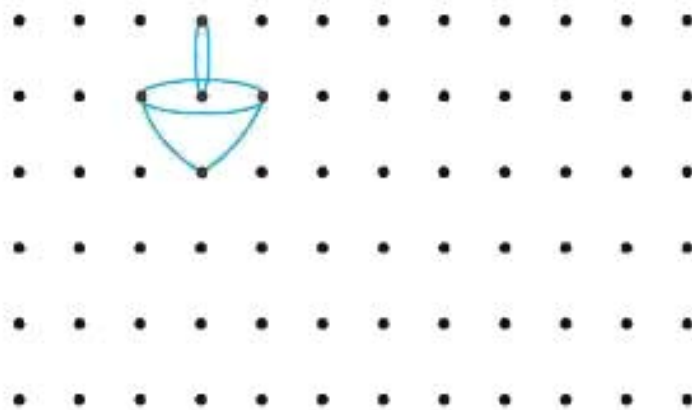
Complete the following rangoli patterns with the help of the dots and colour them.



Activity



By using 5 dots, create your own patterns. A model has been given below.



Pattern in square numbers

John collected some pebbles and tried to build up numbers that formed a figure or shape. He started with one pebble and finally obtained a pattern.



		1 is a square number because $1 \times 1 = 1$.
		4 is a square number because $2 \times 2 = 4$.
		9 is a square number because $3 \times 3 = 9$.
		16 is a square number because $4 \times 4 = 16$.

The numbers obtained in the pattern are 1, 4, 9, 16...and are named as **square numbers**.

Activity



Continue the above pattern for square numbers 25, 36, 49, 64, 81 and 100.

Square pattern in multiplication table

A multiplication table is an excellent tool for discovering patterns. Look at the multiplication table given below:

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

The numbers along the top horizontal row are **multiplicands** and the numbers along the first vertical column on the left are **multipliers**. The other numbers in the rows and columns are their **products**. The products of two numbers that are the **same** form a **pattern**. The shaded portion of the table shows the product of 6 by 6. You can see that a square is formed. Since $6 \times 6 = 36$, we find that 36 is a square number.

The product of any number multiplied by itself is called a square number.

Activity



In the above multiplication table, shade the corresponding rows and columns to form the squares of the following.

i) 3×3

ii) 5×5

iii) 9×9

Activity



The multiplication table given below shows all the square numbers upto 144. Encircle the square numbers (9 to 144) in the multiplication table and observe the pattern formed.



X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

The square numbers form a _____ across the multiplication table.

Adding consecutive odd numbers to get square numbers


 $1 = 1^2$


 $1 + 3 = 4 = 2^2$


 $1 + 3 + 5 = 9 = 3^2$


 $1 + 3 + 5 + 7 = 16 = 4^2$


 $1 + 3 + 5 + 7 + 9 = 25 = 5^2$

This number pattern shows the relationship between square numbers and odd numbers.

Activity



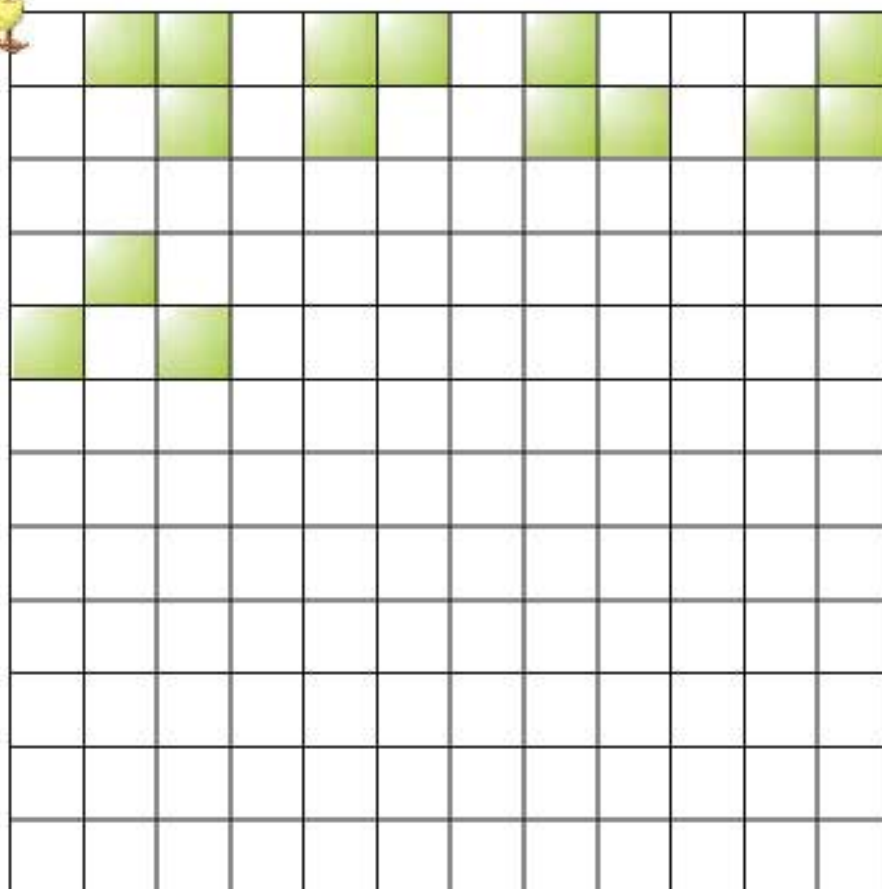
Continue the above pattern to write down all the square numbers up to 100

Puzzle:



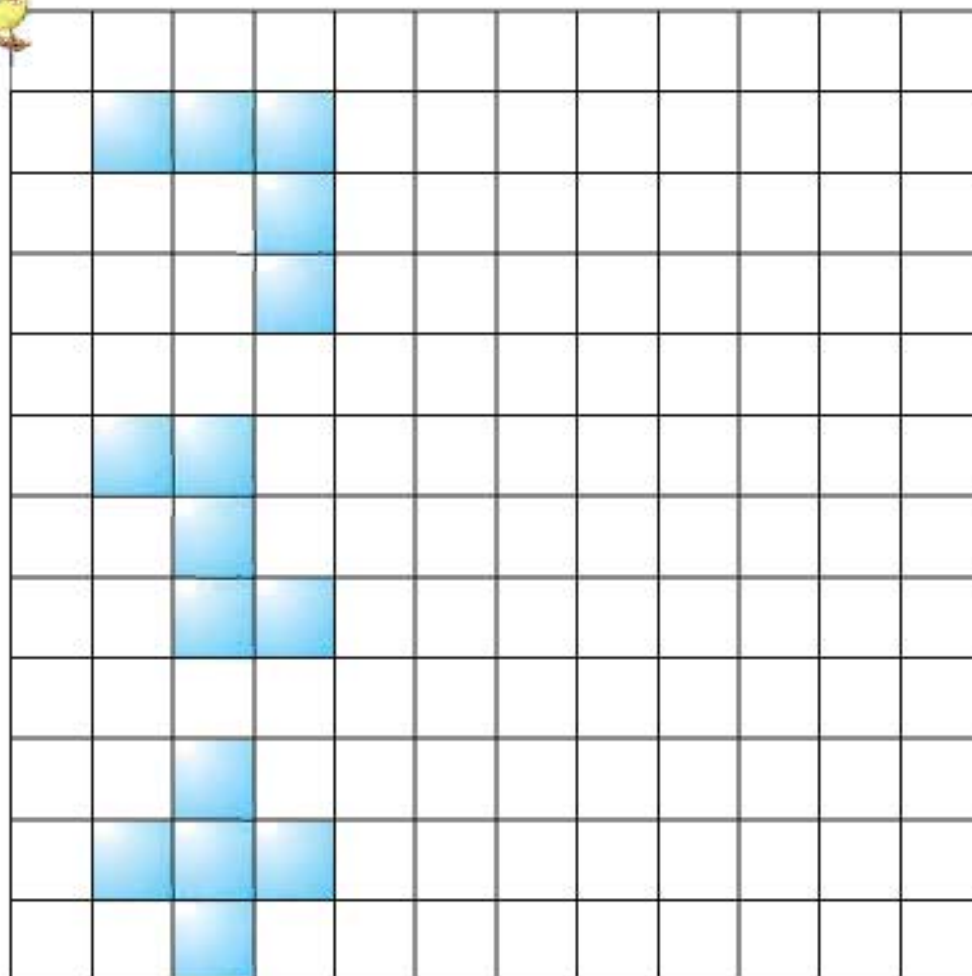
Pattern in tiles

Look at the shapes formed by joining the three squares. Try to make more shapes using only 3 squares of the square sheet given below.





Make your own shapes using five squares.



Several types of patterns are used to tile the flooring in our houses. When we think of the tile patterns, we can commonly find the square or rectangle shaped tiles arranged in a sequence.

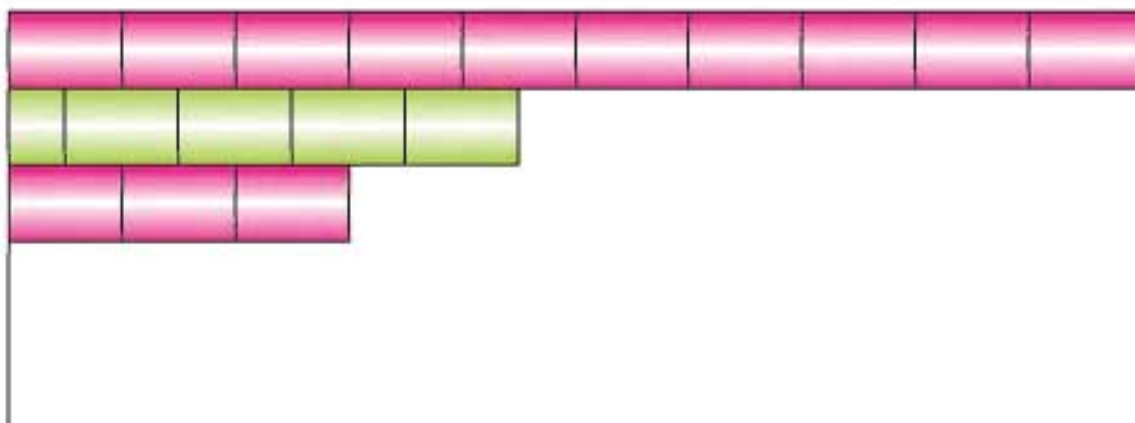
Tiling means covering the area with tiles.



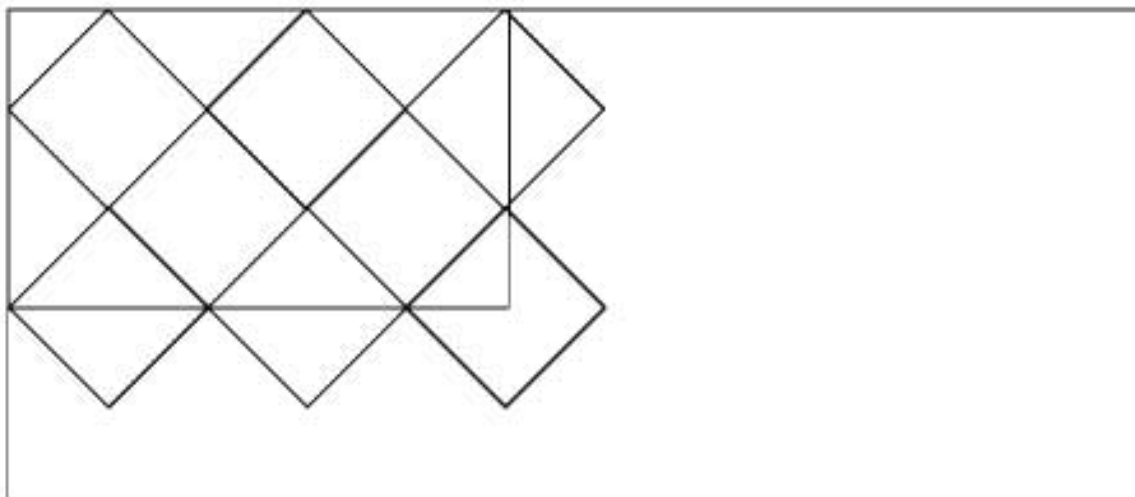


Practice Time

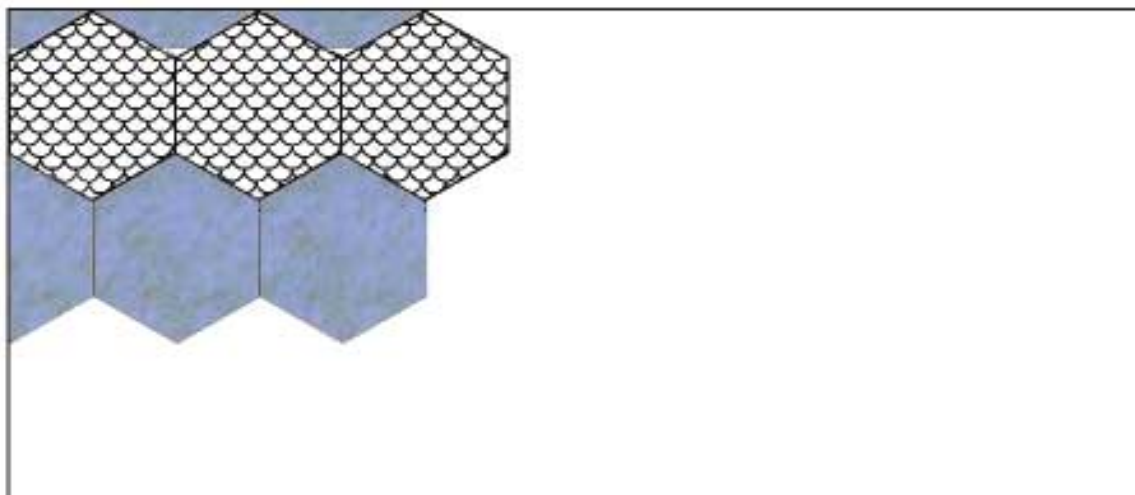
(1) Complete the following pattern tile:



(2)



(3)



Group Activity



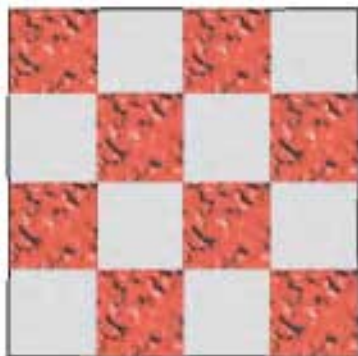
Make your own tile pattern.

Materials required:

Cardboard, colour paper, glue, etc.

Method:

- ❖ Construct a square of side with 16cm using cardboard.
- ❖ Stick some squares with red coloured paper and some with grey. Now the coloured squares will serve as tiles.
- ❖ The tile pattern thus formed is given below.

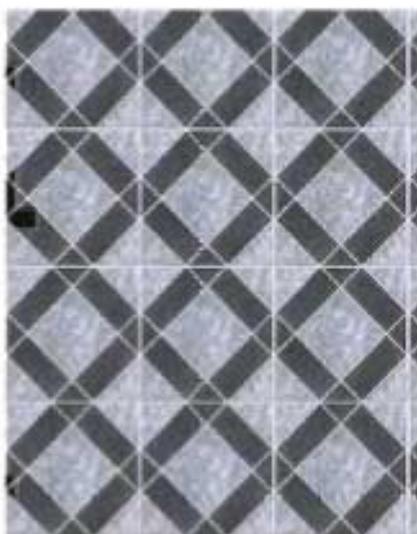


Practice Time

(1) Using square shaped cardboard pieces, form a tile pattern as shown below:



(2) Construct your own tile patterns as shown below:



Border strips



Now let us have a look at the various type of borders of sarees , shawls , etc.,




We can make designs of the borders of sarees, table clothes, bed covers etc.. by repeating a pattern again and again.




Can you see something special in the patterns of these borders?

Yes. There is a relationship between turns and patterns.



(1) Let us use the block  to make patterns giving $\frac{1}{2}$ a turn.



(2) Use the block  to make patterns giving $\frac{1}{4}$ a turn



(3) Use the block  to make patterns giving $\frac{3}{4}$ a turn.



Practice Time

(1) Observe the border pattern and write the turn sequence:

i)



Turn sequence _____

ii)



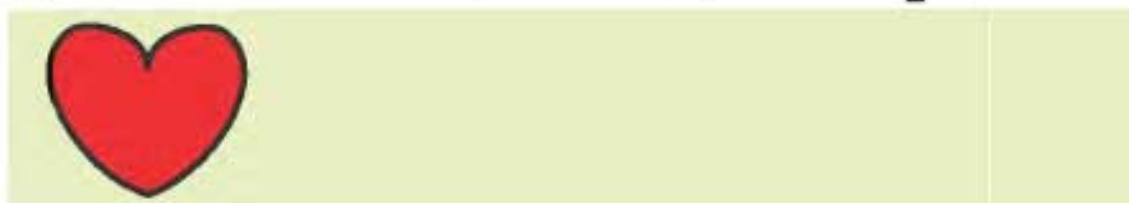
Turn sequence _____

iii)



Turn sequence _____

(2) Construct the border using the following pattern with $\frac{1}{2}$ a turn:



(3) Construct the border using the following pattern with $\frac{1}{4}$ a turn:



(4) Construct the border using the following pattern with $\frac{3}{4}$ a turn:



Border strips in tiles

Border strips are used to add more beauty to the interior of your houses. They can be used as a design on the wall or in between the tile patterns.



Can you make your own border strips?



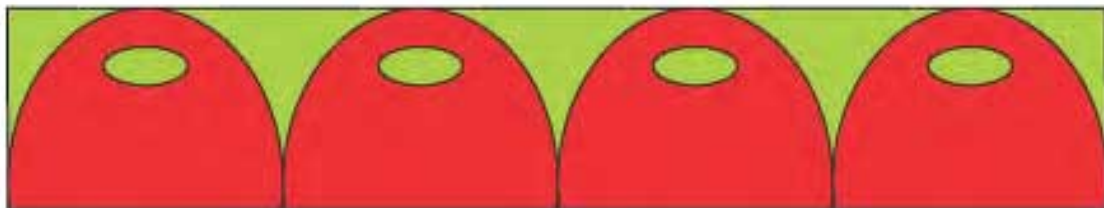
Yes, let me try...

Materials required:

Cardboard, red and green coloured papers, glitters, glue, etc.

Method:

- ◆ Take a cardboard and cut it into a strip with 60 cm length and 8 cm breadth.
- ◆ Cover the cardboard strip with a green coloured paper.
- ◆ Cut the red coloured paper into many semicircles of 2 cm diameter and paste them on the cardboard strip.
- ◆ Make small patterns on the semicircle using glitters.



Now this can be used as a border strip.



Practice Time

Make your own border strips according to the patterns given below.

(1)



(2)



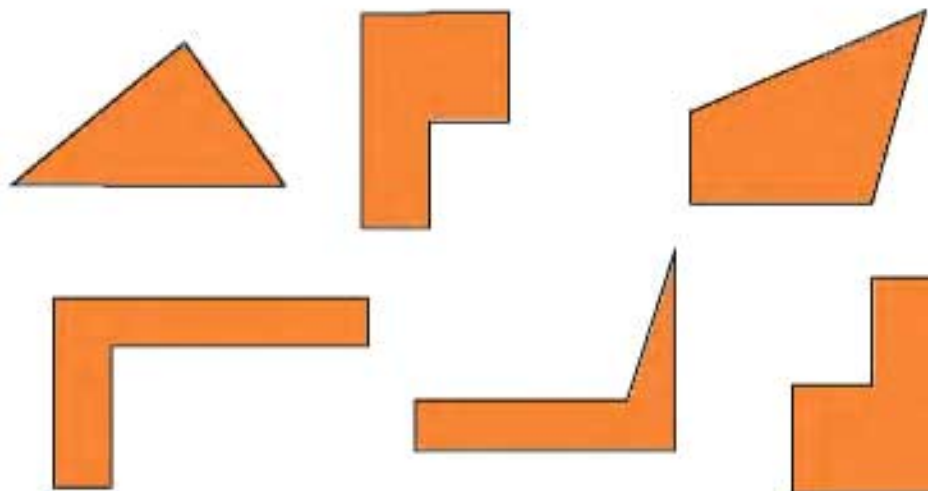
(3)



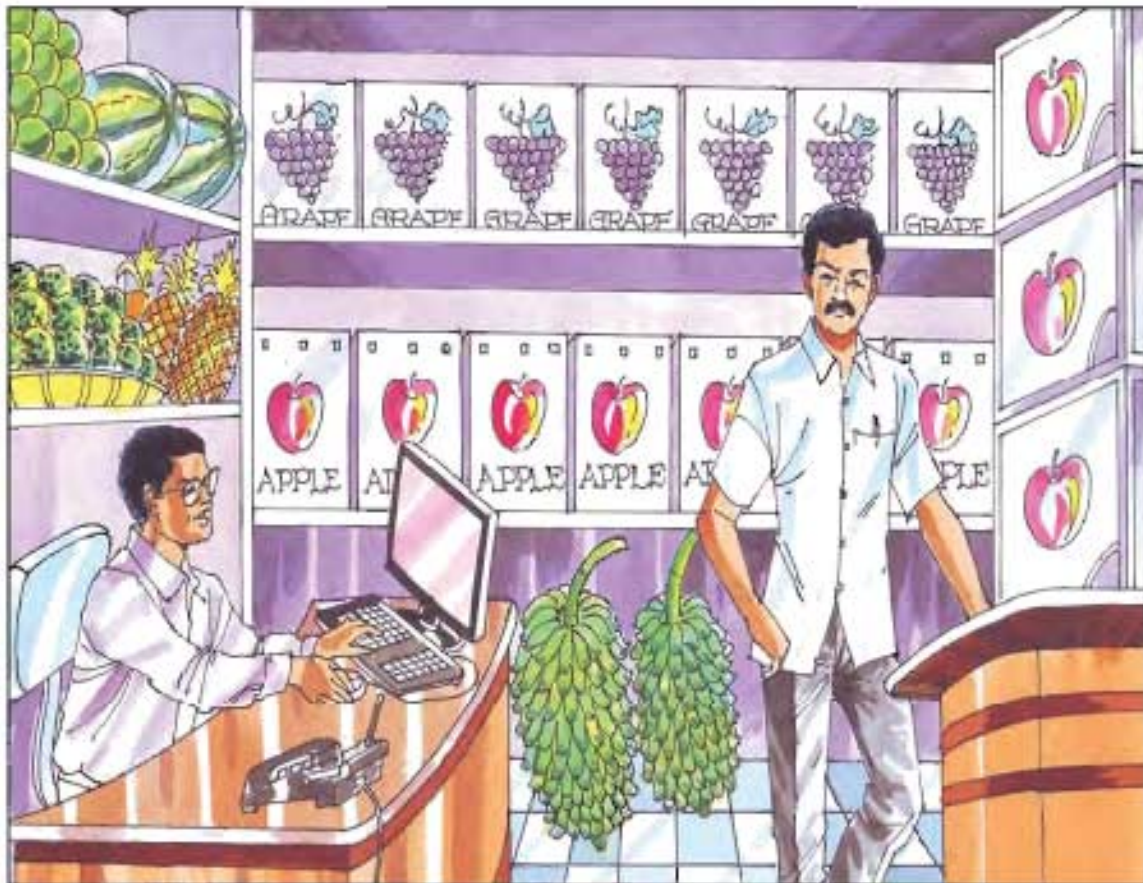
Project Work



From the shapes of cardboard pieces given below, select any two shapes and form a square. Now construct your own tile pattern with it.






Tabling the data



The picture given above shows that the fruits are arranged neatly and in an orderly manner. Since the fruits are well arranged, it is easy to count the number of different kinds of fruits available in the shop.

Ram collected the following information from a fruit shop.

					
25	20	24	30	10	8

The Food we like

One of our basic needs is food. Each one of us may have our own favourite food items.



On Sunday, the grandma made the following table to find out what food item each member liked to prepare breakfast for the family members.

Food item family members	Idly	Dosa	Chapathi	Poori	Pongal
Grand-father	●				●
Grand-mother	●		●		●
Father			●	●	
Mother	●		●	●	
Son		●		●	
Daughter		●		●	●

- ★ _____ of them liked Idli.
- ★ _____ of them liked both Dosa and Pongal.
- ★ _____ of them liked chapatti and _____ of them liked poori.
- ★ Most of the members in the family liked _____.
- ★ More than half of the family members liked chappathi.
(True / false).

Let us observe the weather

Mary studied the weather chart for the month of September 2009. She classified the weather as sunny, cloudy and rainy and represented them on the calendar using symbols ☀ ☁ ☔ respectively.

September - 2009						
	☀ 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				

Look at the chart and help her to prepare the table.





Weather	Days
Sunny ☀	
Cloudy ☁	
Rainy ☔	










Collection of information and arranging the data in a table with numbers, pictures or symbols in rows and columns is called Tabling the Data.

- ▲ _____ days in the month of September were sunny.
- ▲ The weather was _____ on the maximum number of days.
- ▲ The weather was cloudy for _____ days .
- ▲ It rained for _____ days.
- ▲ In general, the weather for the month of September 2009 was _____.

Indoor games are fun!

It was raining heavily. It was the games period for V standard 'A' section and V standard 'B' section children. So the physical Education teacher decided to engage the children in indoor games. She asked the children which game they liked to play. There were different answers. So she used tally marks to record each answer. For example, if someone said 'dice', she put one line | in front of 'dice'. If someone said 'dice' again, she added another line. So,  represents two times and  means 5 times. Totally 19 children said that 'dice' was their favourite game.

Children helped the teacher to complete the table.

Indoor games	Tally marks	Number
Dice 		19
Chess 		
Billiards 		
Puzzle 		
Carrom		

Count the tally marks and write the number against each game in the table and also answer the following questions.






- ☆ How many children were there in both sections?
- ☆ Which is the most favoured indoor game in this table?
- ☆ Which game is not much favoured by many children?

Caught in a Heavy Traffic!

After school, Raju and his friends were waiting for their bus to return home. Due to heavy traffic jam on one side of the road, they came to know that their bus will be late by 30 minutes. So, they started counting the vehicles passing by on the opposite side.



Raju marked a tally mark for each vehicle. His friends helped him in recording. This exercise helped them in recording the total number of different vehicles passing the road in a given half an hour.

Vehicles	Tally marks	Number
Bicycle 	□ □ □ □ □ □	
Car 	□ □	
Truck 	□ □ □	
Two wheeler 	□ □ □	
Bus 	□ □ □ □ □	

Count the tally mark for the different vehicles and fill in the table and answer the following question.

1. How many vehicles did Raju see on the road within half an hour?
2. The number of buses seen is twice the number of cars.

(True / False)

We use tally marks to simultaneously record data of a variety of things with large numbers.



Practice Time

- (1) Ask 10 of your friends about their favourite T.V. channels they would like to watch.

T.V. Channels	Number of Students
Animal planet 	
Cartoon Network 	
ESPN 	
National Geographic Channel 	
Discovery Channel 	

- (2) Ask 10 of your classmates about their favourite colours and record their responses.

Colours	Number of students
Red	
Blue	
Green	
Yellow	

Pictograph

A pictograph represents the given data through pictures or objects. It helps to answer the questions based on the data just at a glance.



The teacher asked Monisha to make a pictograph which shows the number of absentees in her class of 30 students during the previous week.

- ❖ The number of students who commute by the public Transport system is _____
- ❖ The maximum number of students come to school by _____
- ❖ _____ is used by only two students.
- ❖ The number of students who come by _____ is half of the number of students who come by _____

Drawing a Pictograph

The teacher asked the students to visit the school canteen and gather the data of number of butter milk packets it had sold during the last five days of the week. The students collected the following information.

Monday: 50




Tuesday: 40

Wednesday: 60

Thursday: 35

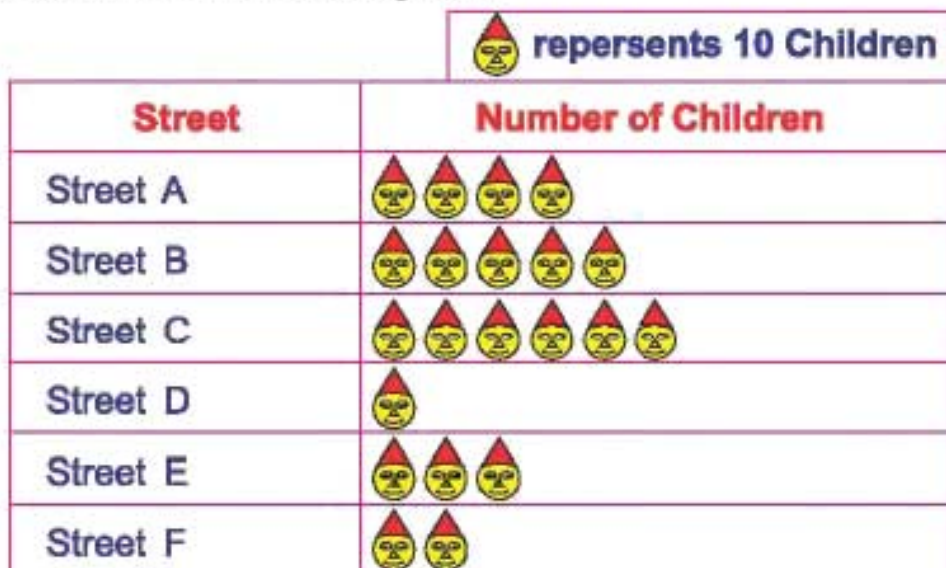
Friday: 55

A picture of a 'buttermilk packet' has been chosen to represent the sale of number of buttermilk packets. The students decided to consider one picture as five packets. The teacher accepted the above decision and asked one student to complete the pictograph with the help of others.

<div>  represents 5 packets </div>	
Days	Number of buttermilk packets
Monday	         
Tuesday	
Wednesday	
Thursday	
Friday	

- ❶ The sale was the highest on _____
- ❷ The sale was the least on _____
- ❸ The total number of packets sold throughout the week was _____
- ❹ The sale on Wednesday was _____ part of the total sale.

- (2) Every year, the Government of Tamilnadu administer Polio Drops for children below 5 years of age. The volunteers of Standard V collected the data from 6 streets near the school and submitted the data in the form of a pictograph.



- The maximum number of children administered the polio drops are from _____
- The minimum number of children administered the polio drops are from _____
- The total number of children administered polio drops were _____.



Practice Time

- (1) The Total number of people living in five villages are as follows


Village A : 500

Village B : 800

Village C : 700

Village D : 250

Village E : 600

Prepare a pictograph using the symbol  to represent 100 people and answer the following questions:

- i) How many pictures are to be plotted against the village E?
- ii) Which village has the maximum number of people?
- iii) Which village has the least number of people?

- (2) The total number of watches manufactured by a factory in a particular week is given below.

Monday : 600


Tuesday : 800

Wednesday : 700

Thursday : 400

Friday : 500

Saturday : 300

Prepare a pictograph using the symbol  to represent 100 watches and answer the following questions:

- On which day the least number of wrist watches were manufactured?
- On which day the maximum number of wrist watches were manufactured?
- Find out the total number of watches manufactured in that particular week?

Group Activity



Many of us love watching the birds flying back to their homes in the evening to rest. Find out how many kinds of birds you can see in the sky. Do you know their names? Use tally marks to record the number of different kinds of birds you see on a particular evening.



Work Sheet

Answer the following.

- (1) Collection of any information is called _____.
i) dates ii) data iii) dots iv) drawings
- (2) Data can be represented in the form of a _____.
i) tape ii) tile iii) table iv) trap
- (3) Tally marks are used to represent _____ number of data.
i) large ii) small iii) equal iv) unequal
- (4) Arranging the data in a table is called _____.
i) Collection of information ii) Tabling the data
iii) Informing the result iv) Marking tally marks
- (5) Information can be given only in tabular form (True / False)
- (6) Information can be given both in tabular form and pictograph. (True / False)
- (7) Information can be given only by using pictograph. (True / False)

- (8) The pictograph given below shows the different flavours of ice creams sold in a week in a ice cream shop.



Fill in the blanks from the pictograph given above.

- i) The number of pista icecreams sold was _____.
- ii) Chocolate flavoured icecream sold was _____ than that of strawberry icecream.
- iii) The flavour that was sold the most was _____.
- iv) The flavour that was sold the least was _____.
- v) Total number of icecreams sold was _____.