



Government of Tamilnadu

# STANDARD FIVE

TERM III

VOLUME 2



MATHEMATICS

SCIENCE



SOCIAL SCIENCE

**NOT FOR SALE**

*Untouchability is inhuman and a crime*

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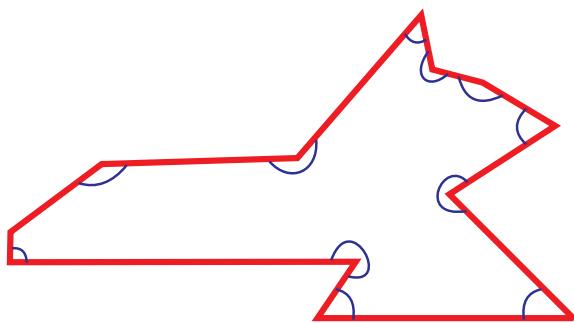
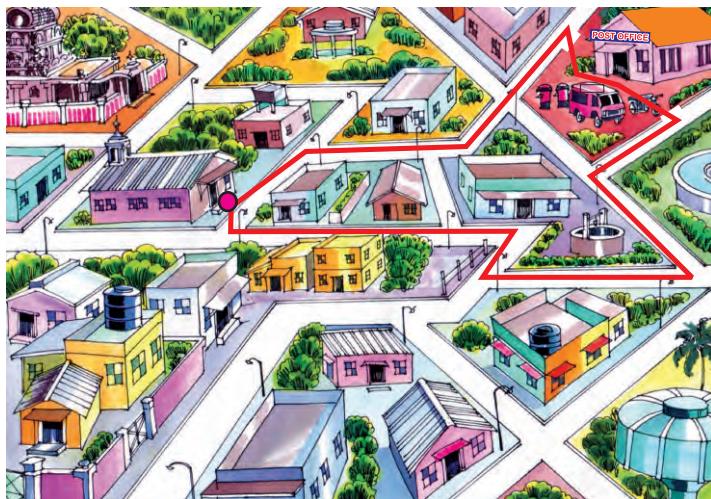
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## 1

## Angles

## Tracing the way

John went to the post office to post letters. He traced his way back home. The red line on the street map shows the path John took. When we draw the path, 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 “” this way.

## Activity



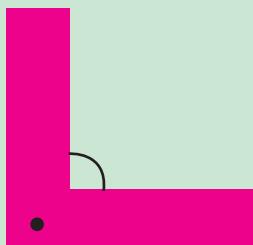
Trace two other ways to reach the post office from any of the two houses. You may get closed shapes again. Mark the angles.

## 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.

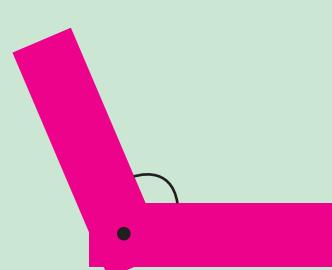
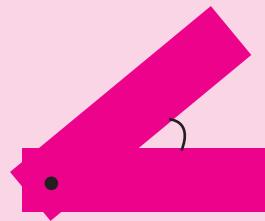


Keep the two strips as shown like the English alphabet "L".

Can you see the angle formed between the two strips? **It is a right angle.**

Fix the two strips as shown in the figure.

We see that one strip is bent towards the other. The angle so formed is less than a right angle. It is called an **acute angle**.



What do you observe?

One strip is bent away from the other.

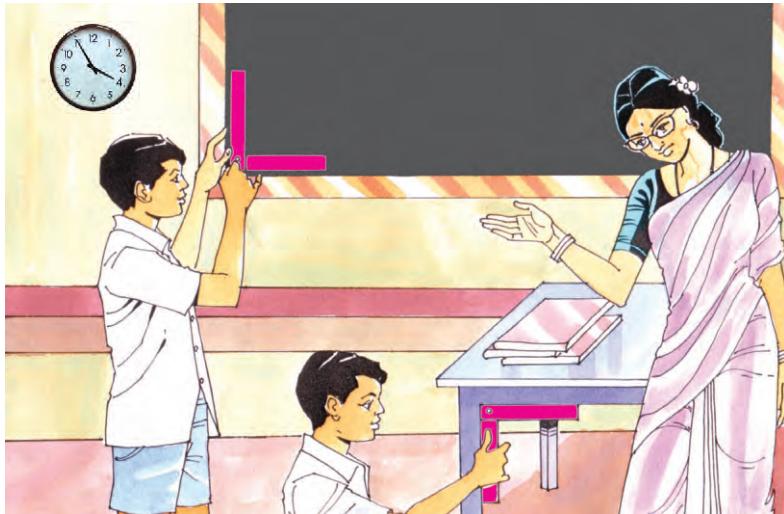
The angle so formed is more than a right angle. It is called an **obtuse angle**.

## Activity



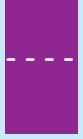
By using angle tester go around your class room and look for right angle, acute angle and obtuse angle.

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

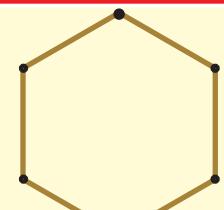
## Paper Folding Activity

<p><b>Step : 1</b> Take a square sheet of paper.</p>		<p><b>Step : 2</b> Fold it in half.</p>	
<p><b>Step : 3</b> Fold it once more and press it.</p>		<p><b>Step : 4</b> Open the last fold so that the sheet is folded in half.</p>	
<p><b>Step : 5</b> Take one corner and fold it to meet the dotted line.</p>			
<p>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.</p>			

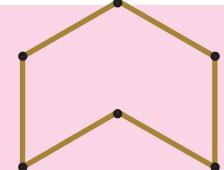
### Group Activity



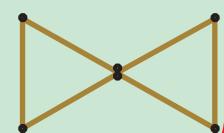
The teacher calls six students from the class to come with their skipping ropes. She then asks them to form a shape like this



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.

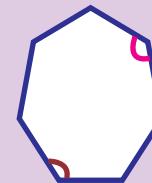
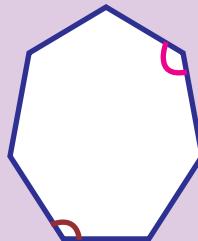
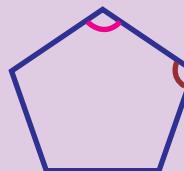
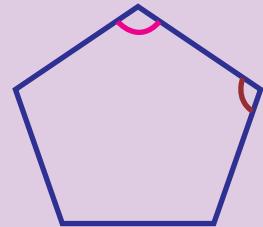
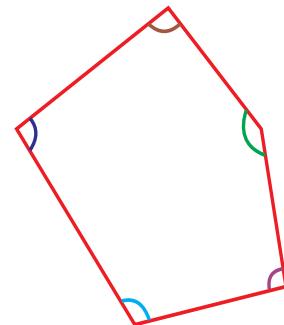
**When the angle changes, the shape also changes.**



## Practice Time

1. Look at the shape and answer.

The angles marked in ..... colour are all obtuse angles.



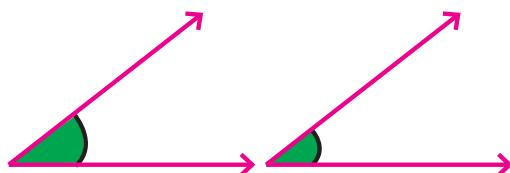
2. Look at the above shape and put the tick ( $\checkmark$ ) mark for the correct answer.
3. Are the angles marked in pink colour equal? (Yes / No)  
Are the angles marked in brown colour equal? (Yes / No)

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 the bunches containing 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 draw the hands of the clock and that they make a right angle. Write the time they show.



3:00








In the clocks draw the hands of the clock and that they make an acute angle. Write the time they show.



5:35








In the clocks draw the hands of the clock and that they make an obtuse angle. Write the time they show.



10:30








In the pictures given below, write the kind of angle the hands of the clock show. Also write the time shown by the hands of the clock.



Acute Angle

4:05

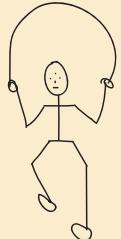




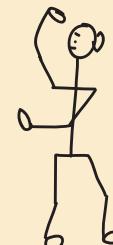
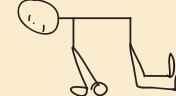
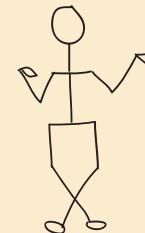


## Angle and posture

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



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



## Angles in alphabets

In the name

**M A N O H A R**

12 right angles, 13 acute angles and 5 obtuse angles are shown to you.



*Practice Time*

1. 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

2. 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 a right angle with blue.
- (iii) Angles which are less than a right angle with green.

3. 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 kind of angles.

# Worksheet

**Choose the correct answer:**

1. An angle which measures less than a right angle is \_\_\_\_\_
  - i) a acute angle
  - ii) a obtuse angle
  - iii) a straight angle
  - iv) a right angle
  
2. An angle which measures greater than a right angle is
  - i) an acute angle
  - ii) an obtuse angle
  - iii) right angle
  - iv) zero angle
  
3. Select the clock that shows the angle less than a right angle
   
\_\_\_\_\_
  - i)
  - ii)
  - iii)
  - iv)
  
4. The acute angle among the four given below is \_\_\_\_\_
   
  - i)
  - ii)
  - iii)
  - iv)
  
5. The obtuse angles in the figure are \_\_\_\_\_
   
  - i) 1 and 2
  - ii) 1 and 3
  - iii) 2 and 4
  - iv) 2 and 3

## Activity



Draw the object which makes angles that are located in your neighbourhood. For each picture write the type of angle.

(Example) (i) Electric Post      (ii) Branches of Tree

# 2

## Estimation

Mala called, Rani! come here. See this. Our father has brought two **bunch** of bananas.

Is it? Rani came running.

Mala asked Rani, ‘Can you say, how many bananas are there in each **bunch**?’

Rani observed the **bunches** keenly and said that approximately in the **first bunch** 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.



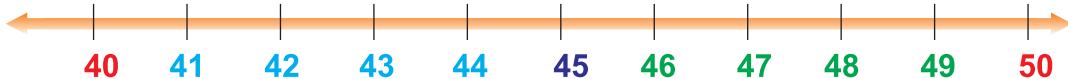
The actual number of bananas in the first *thari* is **75**.  
 The approximated number is **80**.  
 The difference is **5**.

The actual number of bananas in the second *thari* is **92**.  
 The approximated number is **90**.  
 The difference is **2**.

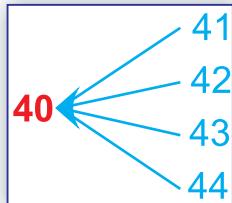
The actual total number of bananas in two *thars* is **167**.  
 The approximated total is **170**.  
 The difference is **3**.

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

Observe the following number line.



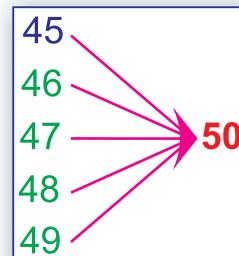
The number line has numbers from 40, 41, 42, 43, 44, 45, 46, 47, 48, 49 and 50.



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

The numbers 46, 47, 48, 49, are closer to 50. 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

**Solution :**

- 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



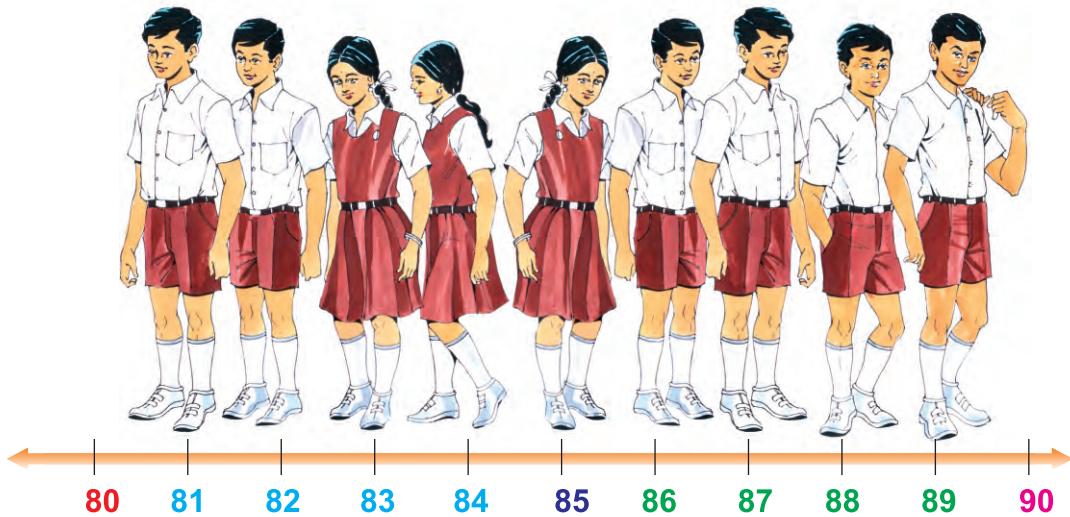
**Try these**

- 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 with the two given numbers. Find whether the estimated/actual is more or are they 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) $44 \times 29$	$40 \times 30 = 1200$	$44 \times 29 = 1276$	76	Estimated / Actual ✓ / Equal
ii) $26 \times 17$				Estimated / Actual / Equal
iii) $34 \times 43$				Estimated / Actual / Equal
iv) $57 \times 62$				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.

**Solution :** 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.

**Solution :** 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

Estimated = actual value

## 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.

**Solution :**

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 =  $70 \times 40$   
= 2800 persons

Actual number of persons to get the wages =  $65 \times 44$   
= 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.

**Solution :**

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

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

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. Estimate the total number of persons who attended on both days. Calculate the actual number of persons. Is the estimated value greater or lesser than the actual value? Find the difference.
- 2) 84 students took an examination. If 76 students were promoted, find the estimated and the actual number of students who failed. Is the estimated value more or less than the actual value? Find the difference.
- 3) A computer course was 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 who attended the course. Is the estimated value more or less than the actual value? Find the difference.
- 4) An oil barrel can hold 72 litres of oil. If each tin can hold 24 litres of oil, how many tins will be required? Find the estimated number and the actual number. Is the estimated value more or less than actual value? Find its difference.

### FUN TIME

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

$$\begin{aligned}
 1. \quad & 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55 \\
 2. \quad & 11 + 12 + 13 + 14 + 15 + 16 + 17 + 18 + 19 + 20 = 155 \\
 3. \quad & 21 + 22 + 23 + 24 + 25 + 26 + 27 + 28 + 29 + 30 = 255 \\
 4. \quad & 31 + 32 + 33 + 34 + 35 + 36 + 37 + 38 + 39 + 40 = 355 \\
 5. \quad & 41 + 42 + 43 + 44 + 45 + 46 + 47 + 48 + 49 + 50 = 455
 \end{aligned}$$

$$\begin{aligned}
 1. \quad & \underline{\hspace{10em}} = \underline{\hspace{1em}} \\
 2. \quad & \underline{\hspace{10em}} = \underline{\hspace{1em}} \\
 3. \quad & \underline{\hspace{10em}} = \underline{\hspace{1em}} \\
 4. \quad & \underline{\hspace{10em}} = \underline{\hspace{1em}} \\
 5. \quad & \underline{\hspace{10em}} = \underline{\hspace{1em}}
 \end{aligned}$$

## Activity



- 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) Circle both the answers in the following box

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

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

- 1)  $11 \times 11$     10)  $52 \times 56$   
 2)  $16 \times 14$     11)  $57 \times 57$   
 3)  $24 \times 23$     12)  $69 \times 64$   
 4)  $25 \times 23$     13)  $68 \times 67$   
 5)  $25 \times 25$     14)  $75 \times 25$   
 6)  $32 \times 35$     15)  $75 \times 74$   
 7)  $36 \times 39$     16)  $79 \times 89$   
 8)  $44 \times 45$     17)  $89 \times 87$   
 9)  $46 \times 46$

- 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.
- 4) Circle the difference in the following box

0	31	46	21	110	35	89	1
3	34	8	49	70	5	90	
88					6		
51	50	91	80	94			
98	69	2	40	60	5		
64	30	4	100	113	77		
41	100	85	113	141			

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

222	85	90
152	76	384
565	88	21
123	20	53
357	25	216
673	6	42
333	50	525
196	80	169
543	169	404
275		45

Colour the circles. What do you get?-----

## Activity

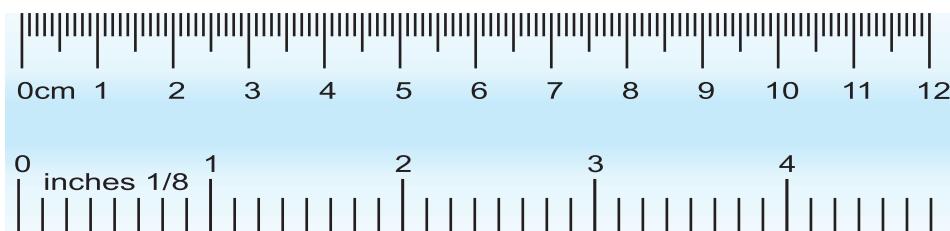


1. Pile up any one of the items like tamarind seeds, marbles and beads. Take a small quantity in your hand. Show it to your friend. Ask him to tell the number approximately. Remember the answer given by your friend. Then find the exact number by actually counting it. Approximate the two numbers to the nearest tens. Appreciate your friend if both the numbers are the same. Continue to do this activity.
2. Take a small bunch of neem leaves in your hand and ask your friend to estimate the number of neem leaves. Then find the exact number by actually counting it. Approximate both numbers to the nearest tens. Check whether both the numbers are same.
3. In the library find the approximate number of books arranged in a shelf. Then count the actual number of books. Approximate both numbers to the nearest tens. Compare both the numbers.



# 3

# Length



In the scale given above, we find that each 1cm 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.

**A kilometre (km) is greater than a metre, a metre (m) is greater than a cm., and a cm is greater than a mm  
Metre (m) is the standard unit of length.**

## 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)  $8 \text{ m} = 8 \times \underline{\hspace{2cm}} = 8000 \text{ mm}$
- iii)  $10 \text{ m} = 10 \times 1000 = 10000 \text{ mm}$
- iv)  $13 \text{ m} = 13 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ mm}$
- v)  $19 \text{ m} = 19 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ mm}$



**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.



**Solution :**

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



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

**Remember**

**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)  $170 \text{ mm} = 170 \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ cm}$
- iv)  $500 \text{ mm} = 500 \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ cm}$

## Convert kilometres into metres



**1 km = 1000 m**

**Remember**

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

Observe the example and complete the following.

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

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

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

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

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

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

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

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.

i)  $5 \text{ km}$       ii)  $10 \text{ km}$       iii)  $15 \text{ km}$

iv)  $45 \text{ km}$       v)  $6\text{km } 500\text{m}$       vi)  $9\text{km } 600\text{ m}$

vii)  $10\text{km } 50\text{m}$       viii)  $13\text{km } 5\text{m}$       ix)  $21\text{km } 500\text{m}$

## Addition



Add : 8m 50cm and 6m 70cm

Solution :

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 m 35 cm + 30 m 32 cm   | ii) 16m 35 cm + 25 m 35 cm  |
| iii) 4 km 600 m + 5 km 500 m | iv) 7 km 800 m + 3 km 400 m |

Example:

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?



Solution :

m	cm
1	
2	50
+	
1	50
Total	= 4m 00cm

Length of cloth bought for father =

Length of cloth bought for Gopal = +

Total =

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?



**Solution :**

$$\text{Distance between Chennai and Trichy} = 320 \text{ Km}$$

$$\text{Distance between Trichy and Madurai} = +120 \text{ Km}$$

$$\begin{array}{rcl} \text{Total distance} & & \\ & & = 440 \text{ km} \end{array}$$



### Note

*To teacher:*

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

Total distance between Chennai and Madurai is 440 km

## Subtraction

**Subtract 35m 40cm from 40 m 35cm**

**Solution :**

m	cm
39	135
<del>40</del>	<del>35</del>
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

$$\text{i)} 15 \text{ m } 25 \text{ cm} - 10 \text{ m } 85 \text{ cm} \quad \text{ii)} 28 \text{ m } 30 \text{ cm} - 25 \text{ m } 55 \text{ cm}$$

$$\text{iii)} 50 \text{ km } 300 \text{ m} - 20 \text{ km } 600 \text{ cm} \quad \text{iv)} 75 \text{ km } 300 \text{ m} - 38 \text{ km } 750 \text{ m}$$

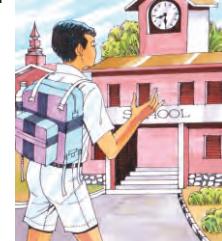
(2) Subtract 860 km 750 m from 900 km 300 m



In a school, the distance between the gate and the Principal's office is 400 m 75 cm. A boy had covered a distance of 200 m 50 cm. What is the distance left to be covered to reach the principal's office?

### Solution :

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



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?

### Solution :

Total length of ribbon		m	cm
	=	9	100
The length of ribbon cut	=	— 2	50
<hr/>			
7 m 50 cm			
<hr/>			



**Note**

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

## Multiplication

Multiply 30m 40cm by 6

### Solution :

m	cm
2	
30	40
x	6
182m	40cm

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 m 12 cm × 9     | ii) 5 m 20 cm × 6   |
| iii) 20 km 300 m × 8 | iv) 31 km 210 m × 7 |
| v) 48 km 600 m × 4   | vi) 20 km 700 m × 8 |

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

**Solution :**

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

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

The length of 6 such ropes is 61 m 20 cm

m	cm
1	
10	20
×	6
<hr/>	
61m 20cm	



### Note

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

## Division

Divide 10m 50cm by 3

**Solution :**

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

Divide the metres:

$$10 \div 3 = 3 \text{ m, remainder } = 1 \text{ m}$$

convert 1m into centimetres and add to the centimetres.

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

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

Divide 150 cm by 3

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



### Try these

#### Divide the following

- |                     |                     |
|---------------------|---------------------|
| i) 7 m 11 cm ÷ 3    | ii) 15 m 60 cm ÷ 4  |
| iii) 4 km 550 m ÷ 5 | iv) 27 m 48 cm ÷ 6  |
| v) 10 km 48 m ÷ 8   | vi) 108 km 81 m ÷ 9 |



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

**Solution :**

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

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



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?

**Solution :**

$$\text{Total length of 12 bed sheets} = 25\text{m } 44\text{cm}$$

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



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. 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 500m 10cm long path. 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 square 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



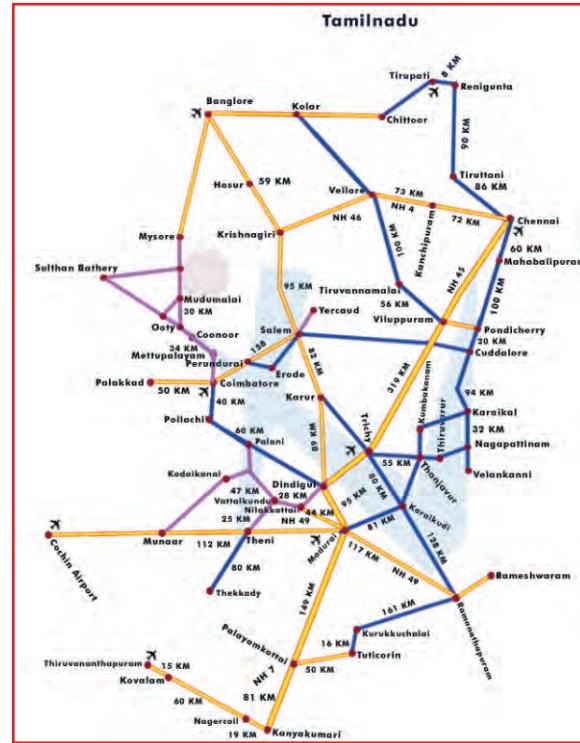
Find the heights of your classmates in metres and convert them into cms.

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

## Activity



- Take a Tamil Nadu map which contains all details related to distance. Mark the name of two cities in it. Using the map write the distance between two cities in your note book. Like this write the distances between five important cities in your notebook.



- Is there any relation between one's height and weight? Collect the information with the help of teachers and parents and record it in your note book.
- Measure the length and breadth of the rooms in your house using metre scale and write in your notebook.
- Write the measurement needed to stitch a shirt for you, your father and your brothers separately in your notebook.

## 4

## Weight

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.

- The heaviest item from the given list is \_\_\_\_\_ and its weight is \_\_\_\_\_.
- The item with least weight is \_\_\_\_\_ and its weight is \_\_\_\_\_.
- The items which are bought only in grams are \_\_\_\_\_.
- 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 kg	=	1000 g
$\frac{1}{2}$ kg	=	500 g
$\frac{1}{4}$ kg	=	250 g
$\frac{3}{4}$ kg	=	750 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**  
 **$1 \text{ g} = 1000 \text{ mg}$**

**To convert g into mg, multiply gram by 1000**

Observe the example and complete the table:

- |      |      |   |                 |   |                |
|------|------|---|-----------------|---|----------------|
| i)   | 1 g  | = | $1 \times 1000$ | = | 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 g 400 mg =  $3 \times 1000 + 400 = 3000 \text{ mg} + 400 \text{ mg} = 3400 \text{ mg}$
- ii) 7g 700 mg =
- iii) 6 g 500 mg =
- iv) 16 g 75 mg =
- v) 3 g 20 mg =
- vi) 19 g 5 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**.

### 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)  $7,005 \text{ g} =$

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



### 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)  $9,655 \text{ mg} =$

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



### 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



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

**Solution :**

$$\begin{array}{r}
 \text{g} \quad \text{mg} \\
 \text{1} \textcolor{red}{1} \text{ } \textcolor{blue}{1} \\
 \hline
 \begin{array}{r}
 160 \ 920 \\
 75 \ 440 \\
 + \quad 9 \ 050 \\
 \hline
 \text{245g } \textcolor{red}{410} \text{ mg}
 \end{array}
 \end{array}$$

Add the milligrams

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

Convert the mg into g

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

Add the grams

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



### Try these

Add

- 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.

**Solution :**

$$\begin{array}{r} \text{kg} \quad \text{g} \\ \hline 11 \\ \hline \end{array}$$

Weight of the brinjal = 13 500

Weight of the potato = 27 750

Weight of the carrot = 15 500

Total weight = 56 750

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

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



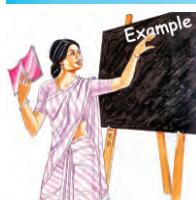
**Note**

*To teacher:*

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

**Total weight of the vegetables are 56 kg 750 g**

## Subtraction



Subtract 78 g 550 mg from 175 g 250 mg.

**Solution :**

$$\begin{array}{r} \text{g} \quad \text{mg} \\ \hline 174 \quad 1250 \\ \hline 175 \quad 250 \\ (-) \quad 78 \quad 550 \\ \hline 96g \quad 700 \text{ mg} \end{array}$$

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.

- i) 75 kg 500 g – 55 kg 100 g
- ii) 640 kg 400 g – 275 kg 700 g
- iii) 15 g 650 mg – 10 g 500 mg
- iv) 16 g 250 mg – 12 g 750 mg
- v) 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?

**Solution :**

Kg      g

274    1750

$$\text{Weight of the available tamarind} = \underline{\quad 275 \quad 750}$$

$$\text{Weight of the tamarind sold} = \underline{- \quad 87 \quad 800}$$

$$\text{Weight of the tamarind remaining} = \underline{\quad 187 \quad 950}$$

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.

**Solution :**

$$26 \text{ g } 350 \text{ mg} \times 18$$

$$\underline{\quad 474 \text{ g } 300 \text{ mg}}$$

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:

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

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

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

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



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?

**Solution :**



$$\text{Weight of 1 gas cylinder} = 16 \text{ kg } 500 \text{ g}$$

$$\text{Weight of 7 gas cylinders} = \underline{16 \text{ kg } 500 \text{ g} \times 7}$$

$$\text{Total weight} = \underline{115 \text{ kg } 500 \text{ g}}$$

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.

**Solution :**

$$\begin{array}{r} 95 \text{ g } 400 \text{ mg } \div 8 \\ \hline 11 \text{ g } 925 \text{ mg } \end{array}$$

Divide the grams

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

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

$$\begin{aligned} 7 \text{ g } &= 7 \times 1000 \\ &= 7000 \text{ mg} \end{aligned}$$

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

Divide the milligram

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



### Try these

1. Find the answer:

- i) 75 kg 190 g  $\div$  5
- ii) 12 kg 240 g  $\div$  6
- iii) 45 kg 650 g  $\div$  11
- iv) 25 kg 740 g  $\div$  12

2. Find the answer:

- i) 48 g 300 mg  $\div$  4
- ii) 24 g 800 mg  $\div$  8
- iii) 66 g 600 mg  $\div$  15
- iv) 33 g 760 mg  $\div$  16



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

**Solution :**

Sweets to be distributed  
to 25 persons } = 18 kg 750 g

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

Each person's share = 750 g

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

Each person's share is 750 g.

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.



## 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 of pickle are filled equally in 30 bottles. What is the weight of pickle in each bottle?
- (12) Weight of 20 tablets is 1 g 200 mg. Find out the weight of each tablet? 



### Try these

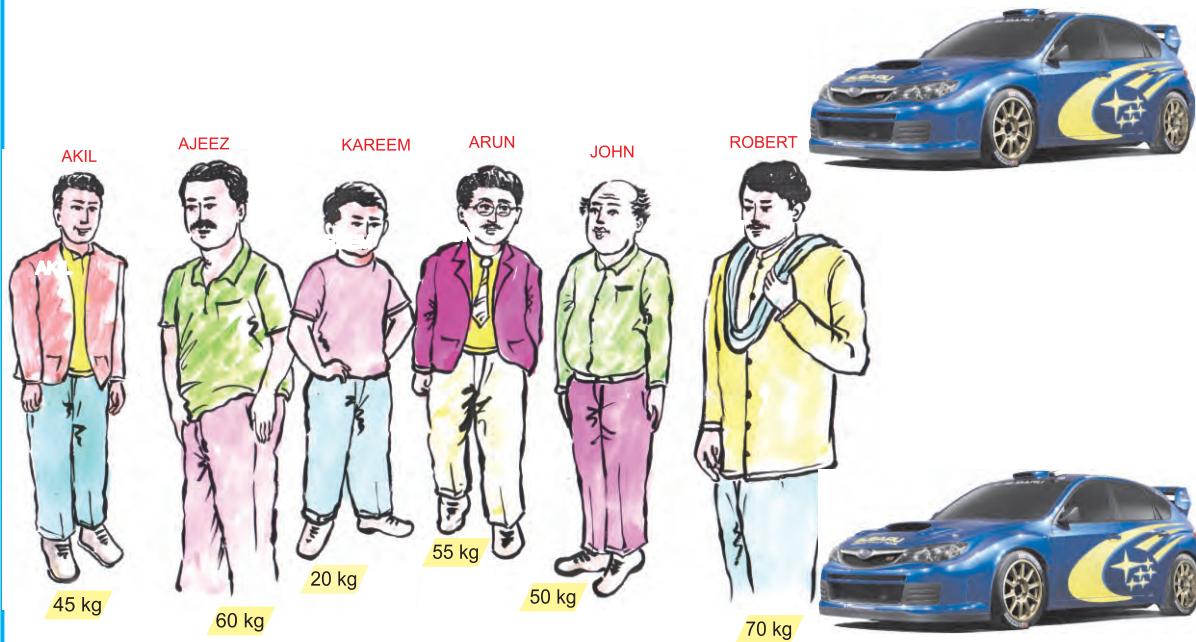
In what measurements, the following items are bought. Put a (✓) in the correct box.

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"/>

### 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.



## Project Work



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

Find the weight of each object.

**Example:** 1. Toothpaste - 100 g

## Activity



$$1 \text{ Tonne} = 1000 \text{ kg.}$$

1. Gather information from your teacher regarding the measurement 'Tonne'. Observe and note the electronic items which measures in Tonne with the help of your teacher. Make a note of all materials that instrument measures in Tonnes.
2. What is the difference between ordinary and electronic weighing machine? Which is better?

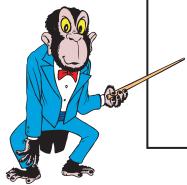
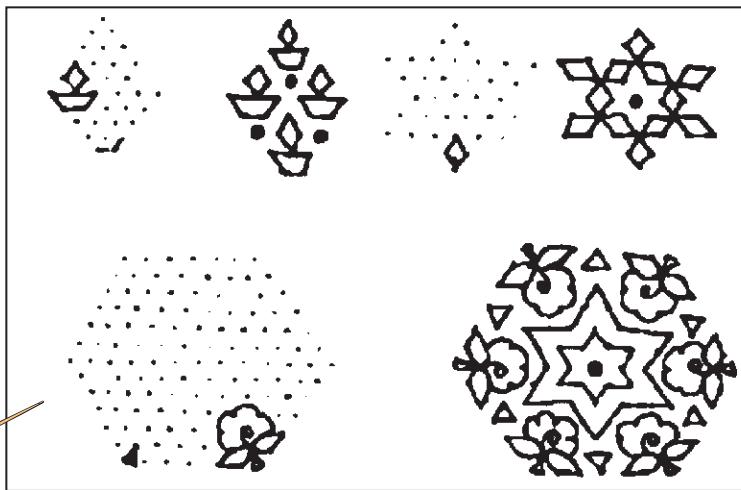
# 5

# Patterns



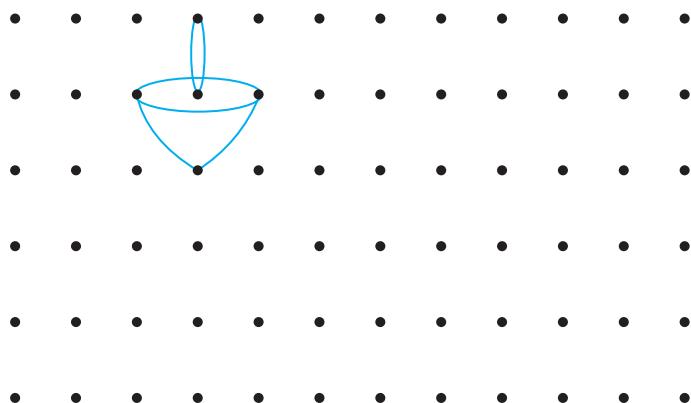
'Try these

Complete the following rangoli patterns with the help of the dots and colour them.



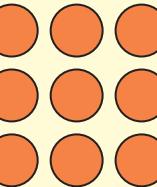
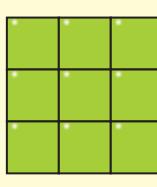
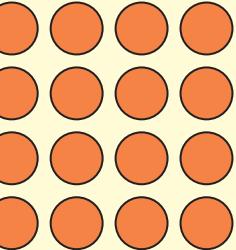
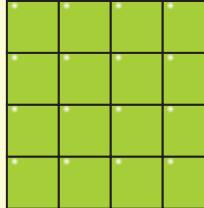
## Activity

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	1	2	3	4	5	6	7	8	9	10	→ Multiplicand
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	2	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	35	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)  $3 \times 3$
- ii)  $5 \times 5$
- iii)  $9 \times 9$



## Activity

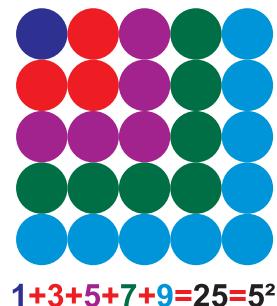
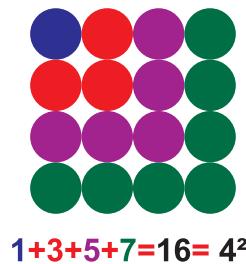
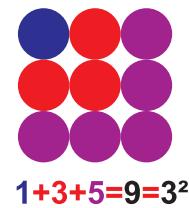
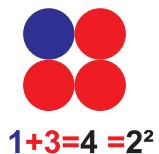
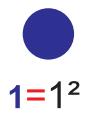
The multiplication table given below shows all the square numbers upto 144. Encircle the square numbers (9 to 144) in the multiplication table and observe the pattern formed.



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.

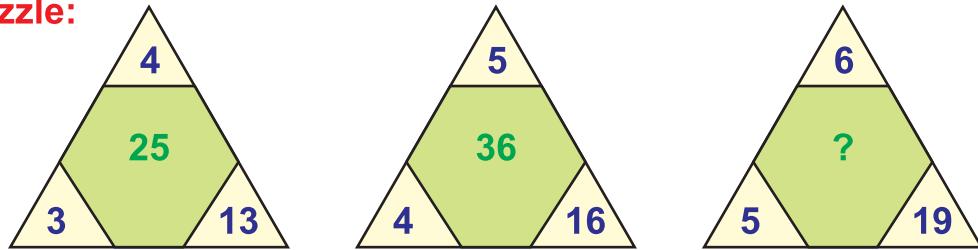
### Adding consecutive odd numbers to get square numbers



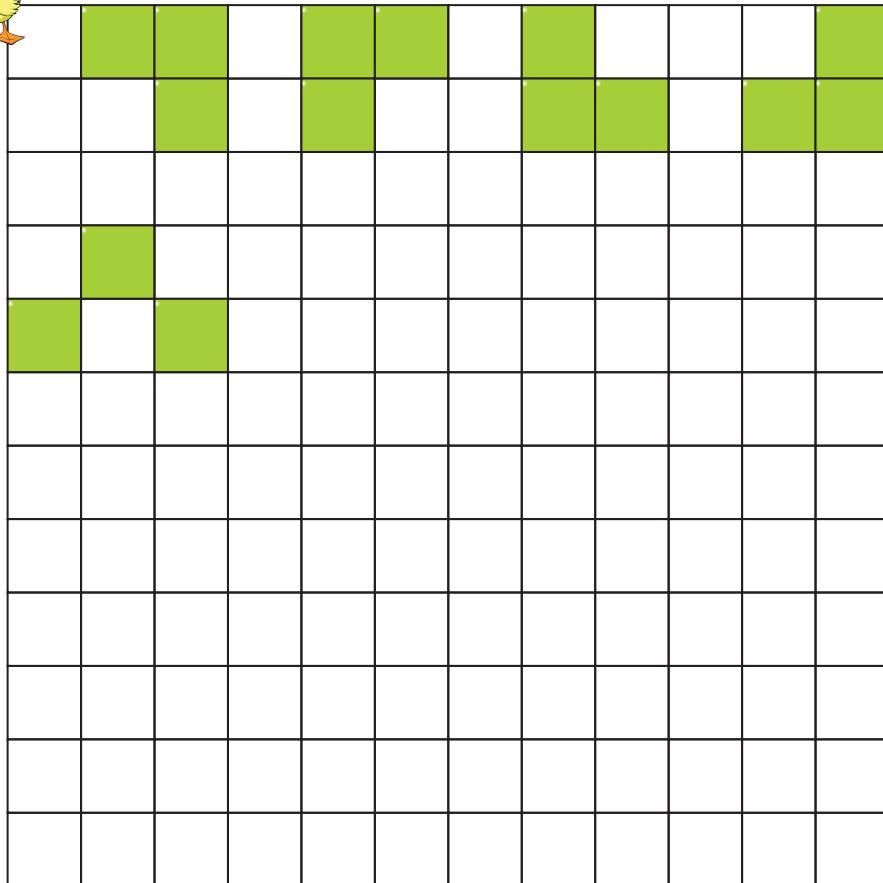
This number pattern shows the relationship between square numbers and odd numbers.

*Activity*

**Continue the above pattern to write down all the square numbers up to 100**

**Puzzle:****Pattern in tiles**

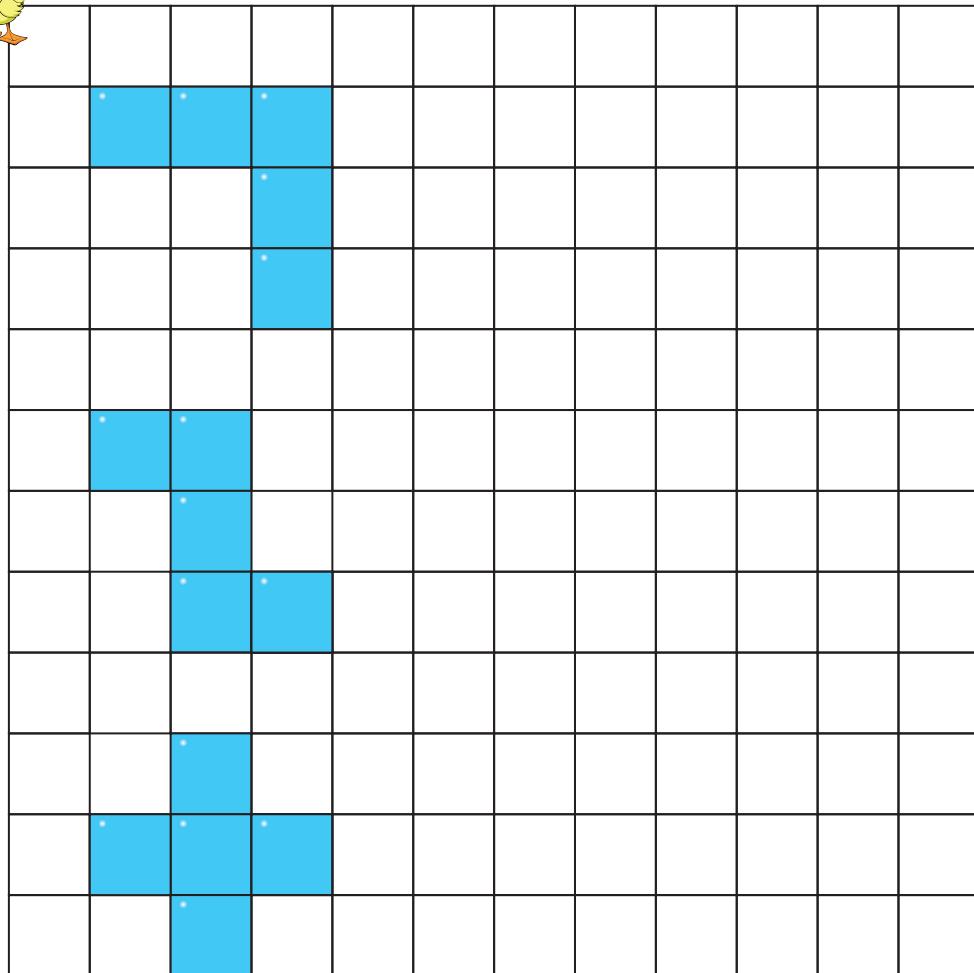
Look at the shapes formed by joining the three squares. Try to make more shapes using only 3 squares of the square sheet given below.



## Activity

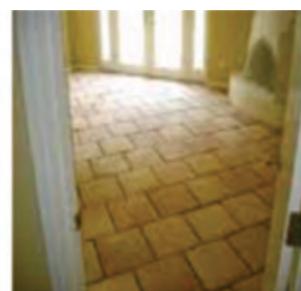
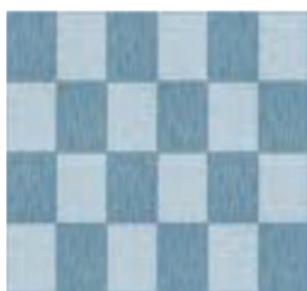


Make your own shapes using five squares.



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.

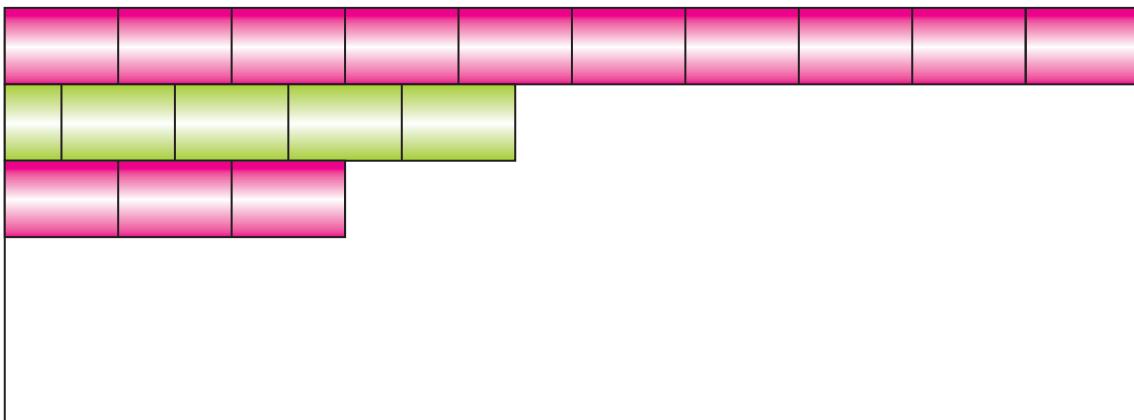
Tiling means covering the area with tiles.



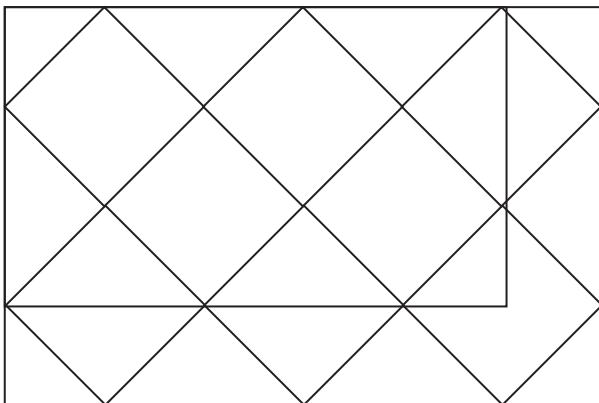


## Practice Time

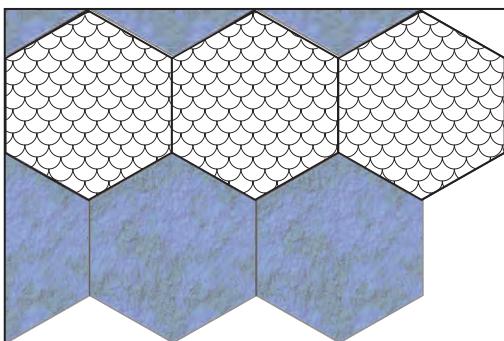
(1) Complete the following pattern tile:



(2)



(3)

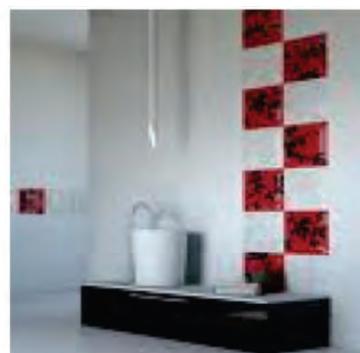
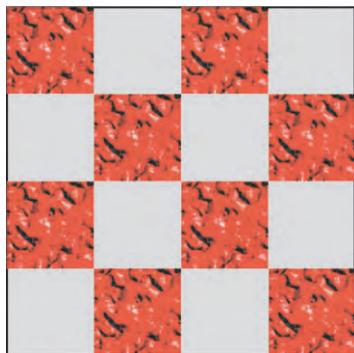


**Group Activity****Make your own tile pattern.****Materials required:**

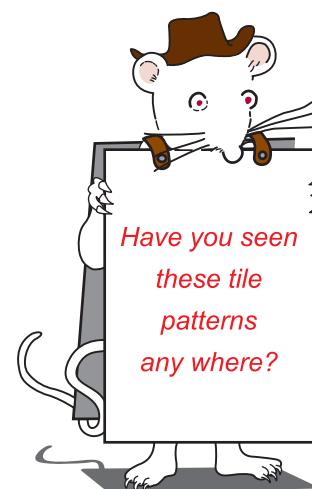
Cardboard, colour paper, glue, etc.

**Method:**

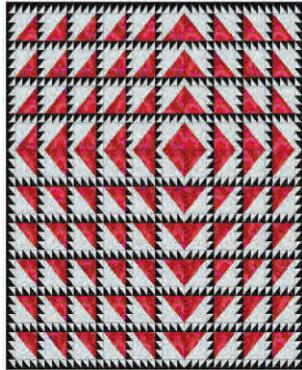
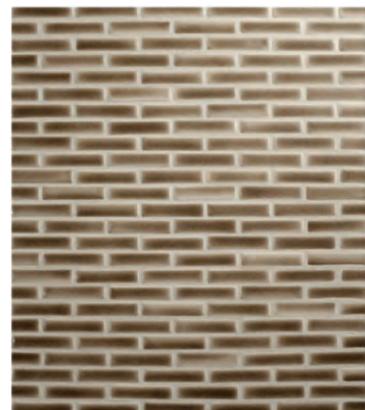
- ❖ Construct a square of side with 16cm using cardboard.
- ❖ Stick some squares with red coloured paper and some with grey. Now the coloured squares will serve as tiles.
- ❖ The tile pattern thus formed is given below.

**Practice Time**

- (1) Using square shaped cardboard pieces, form a tile pattern as shown below:



(2) Construct your own tile patterns as shown below:



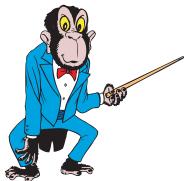
### *Activity*

Border strip is made by giving half a turn to the Tamil letter 'ஃ'.

Create simple border strips using the Tamil letters and English alphabets.



## 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.*



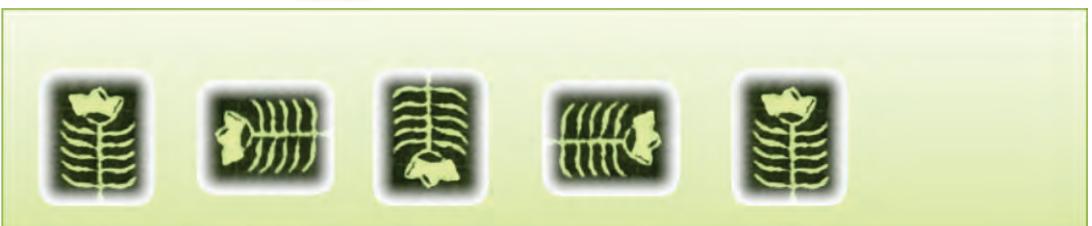
- (1) Let us use the block  to make patterns giving  $\frac{1}{2}$  a turn.



- (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)

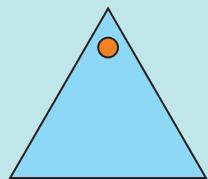


Turn sequence \_\_\_\_\_

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?**



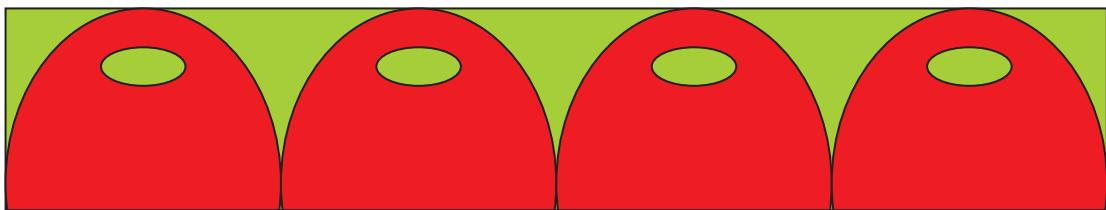
**Yes, let me try...**

### 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.



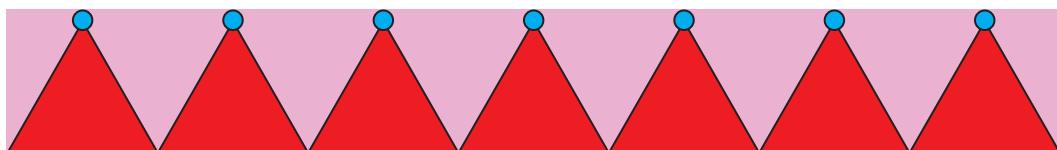
Now this can be used as a border strip.



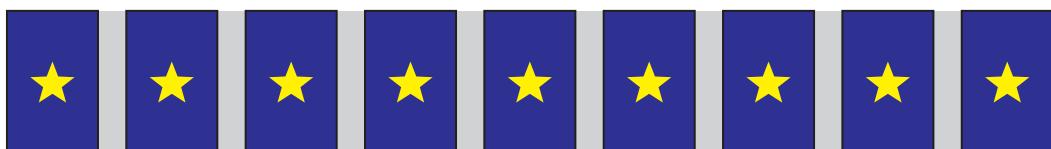
## Practice Time

Make your own border strips according to the patterns given below.

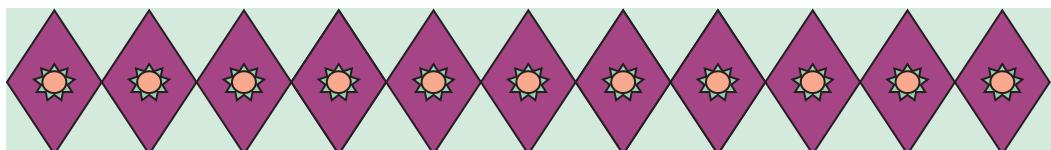
(1)



(2)



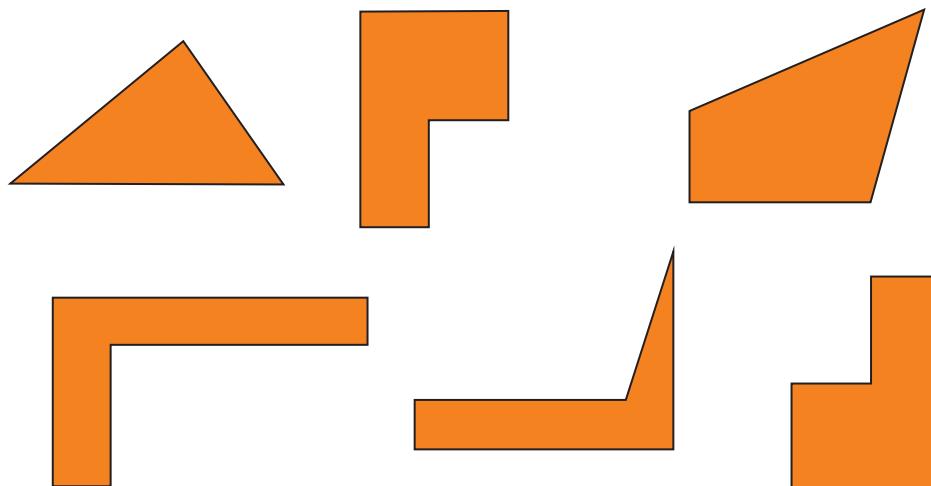
(3)



### Project Work



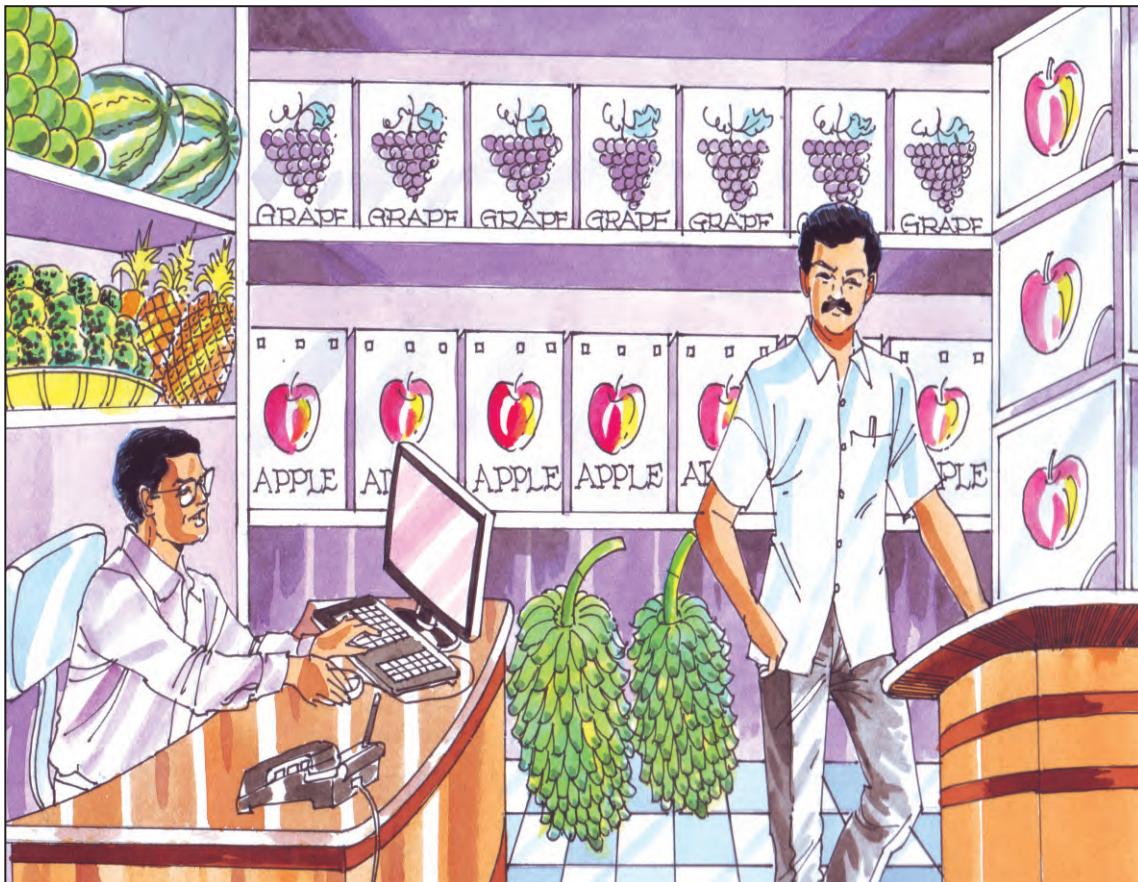
From the shapes of cardboard pieces given below, select any two shapes and form a square. Now construct your own tile pattern with it.



## 6

## Data Handling

## 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.

family members \ Food item	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 January 2014. She classified the weather as sunny, cloudy and rainy and represented them on the calendar using symbols ☀️ ☁️ 🌧️ respectively.

January - 2014						
			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 ☁️	

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 January 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 January 2014 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.

- How many vehicles did Raju see on the road within half an hour?
- 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.

Days	Number of absentees	 represents 1 absentee
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		

- i) On which day maximum number of students were absent?
- ii) On which day all the children were present?
- iii) What was the total number of absentees in that week?

### Solution:

- i) The maximum number of absentees were on Monday. (There are 5 pictures against Monday. On all other days, the number of pictures is less.)
- ii) The class had full attendance on Friday. (No picture was found on Friday)
- iii) Totally there are 14 pictures. So the total number of absentees in that week was 14.

### Mode of Transport

The data about the different modes of transport used by 42 students of class V to travel to school was displayed in the form of a pictograph.

Modes of transport	Number of students	 represents- 2 students
Bicycle		
Walking		
Public Transport system		
School bus		
Scooter		

- The number of students who travel 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.

		 represents 5 packets
Days	Number of buttermilk packets	
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		

- The sale was the highest on \_\_\_\_\_
- The sale was the least on \_\_\_\_\_
- The total number of packets sold throughout the week was \_\_\_\_\_
- 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.

Street	Number of Children
Street A	
Street B	
Street C	
Street D	
Street E	
Street F	

- 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 is 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:

- How many pictures are to be plotted against the village E?
- Which village has the maximum number of people?
- 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

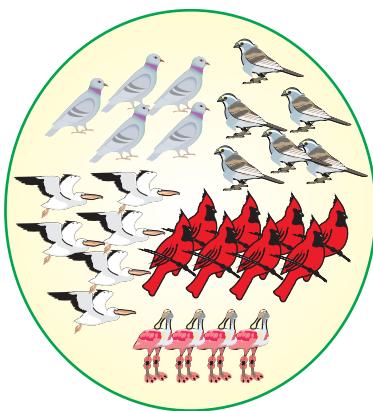
Prepare a pictograph using the symbol  to represent 100 watches and answer the following questions:

- 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.



### Activity



Make a note of the number of books classified under different categories from the school library stock-book register. Draw a pictograph for the following number of books (i) Short Stories (ii) Poems (iii) Books on Life History (iv) Science books (v) Other books.

# Worksheet

**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 icecreams sold in a week in a ice cream shop.

Ice Creams	Number of ice creams
Vanilla	
Pista	
Strawberry	
Mango	
Chocolate	

 Represents  
3 icecreams.

## Worksheet

Fill in the blanks from the pictograph given above.

1. The number of pista icecreams sold was \_\_\_\_\_.
2. Chocolate flavoured icecream sold was \_\_\_\_\_ than that of strawberry icecream.
3. The flavour that was sold the most was \_\_\_\_\_.
4. The flavour that was sold the least was \_\_\_\_\_.
5. Total number of icecreams sold was \_\_\_\_\_.

# **'I can, I did'**

## **Student's Activity Record**

**Subject :**