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INFORMATION & COMMUNICATIONS TECHNOLOGY

Standard

V



Government of Kerala
Department of Education

State Council of Educational Research and Training (SCERT), KERALA
2017

THE NATIONAL ANTHEM

Jana-gana-mana adhinayaka jaya he
Bharatha-bhagya-vidhata,
Punjab-Sindh-Gujarat-Maratha
Dravida-Utkala-Banga
Vindhya-Himachala-Yamuna-Ganga
Uchchala-Jaladhi-taranga
Tava subha name jage,
Tava subha asisa mage,
Gahe tava jaya gatha.
Jana-gana-mangala-dayaka jaya he
Bharatha-bhagya-vidhata,
Jaya he, jaya he, jaya he,
Jaya jaya jaya jaya he!

PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders respect, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness.

Information & Communications Technology-V

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Foreword

Dear children,

We had been playing some games with the computer till last year. But, is the computer just a toy? Not at all. The computer can be used for more serious matters too. Preparing letters, viewing scenes of the sky, analyzing mathematical concepts and so on Activities like these are carried out this time. These are only a few activities from the unlimited possibilities offered by computers that are acknowledged as the machines of the era. Try to do all the activities in this book. Surely it will help you in learning all subjects

With best wishes,

Director
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Contents

1. Poetic Pictures 07-11
2. Eclipse Scenes 12-16
3. Fractions and Numerals in Fractions 17-19
4. Touching up Letters.... 20-26
5. Circular Figures 27-33
6. My Malayalam 34-38
7. When Fractions Combine 39-43
8. Maps at your Fingertips 44-51
9. Area and Perimeter 52-56

**Certain icons are used in this book
for convenience**



For further reading



Let's assess



Extended Activities

Chapter 1 Poetic Pictures



“മേഘങ്ങളാലുടുപ്പിട്ട
മല, കുന്നുകൾ, മേടുകൾ
ആന മൗനം പന്നി പുലികൾ
പോരത്ഥം മേളിച്ച കടുകൾ,
തെളിഞ്ഞതാളങ്ങൾ തൻ മുളി
പാട്ടുമാഖ്യാനകുമാറുകൾ,
.....
.....”

You might by this time be familiar with the poem *Malayalam* written by Vallathol Narayana Menon, describing the natural beauty of Kerala.

Many pictures might come to your mind when you recite this poem. Which are they?



- ◆ Mountain ranges covered with clouds
- ◆ Rivers with dancing waves
- ◆
- ◆

Can you draw these pictures that come to your mind?

Let’s try to do this activity using the software *KolourPaint* in our computer.

Let’s begin to picturise the description of nature in the poem.

Many software solutions are available that help the computer user to draw pictures. One such is *KolourPaint*.

Activity 1.1

Let’s prepare the Frame

Open *KolourPaint* software in the order given below.



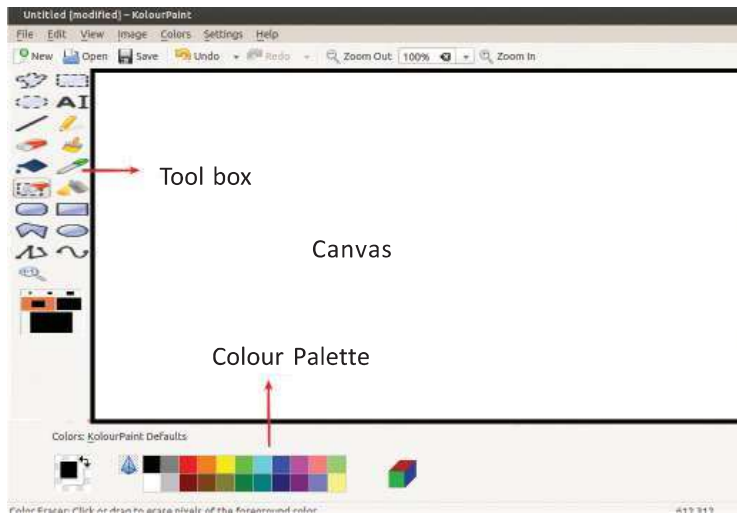


Figure 1.1 KolourPaint window

When you open *KolourPaint*, you will see at first a canvas screen to draw pictures (Figure 1.1). Now, place the mouse pointer on each tool in the toolbar. Have you understood what these tools are? The tools of *Tux Paint* which you became familiar with earlier can also be seen in *KolourPaint*.

Should we use the whole canvas for the picture? Isn't it more artistic to draw the picture inside a particular frame?


Select **Rectangle** tool  from the tool box. Now try to click on the canvas and drag it. Don't you get a rectangular - shaped frame? (Figure 1.2)



Figure 1.2 Drawing a frame within the canvas

Your picture needs to be saved. Save this to your class folder with the help of your teacher. Don't forget to give the picture a title!



Won't we lose what we drew if the computer accidentally shuts down?

You only need to save it.



Activity 1.2


Let's draw mountains and valleys

To save



When you click on the **Save document** icon a window opens. Type the name of the picture against name and click Save

How can we picturise the hills described by the poet in the frame that we created?

Let's examine how to use the **Line Tool**  to draw

- ◆ Take **Line Tool** from the tool box.
- ◆ Click on one side of the frame, drag and draw a line.
- ◆ To draw mountains (Figure 1.3, Figure 1.4), click on the canvas, drag and draw as in the picture.

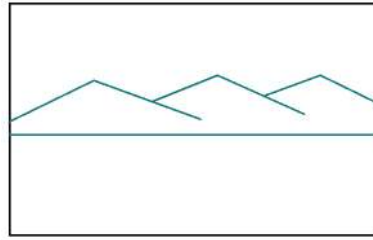
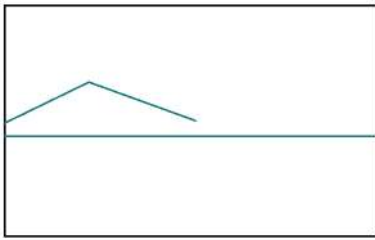


Figure 1.3, Figure 1.4 – The stages in drawing mountains and valleys

Did you go wrong? Don't worry, it can be erased.

Mistakes can be erased using the **Eraser tool** .




All your work will be erased if you double click the eraser tool. So be careful

But it can also be retrieved by clicking on the Undo icon.



At each stage, save what you've drawn.

Fields, valleys and rivers can now be drawn. Use the **Pen Tool**  for this. (Figure 1.5).

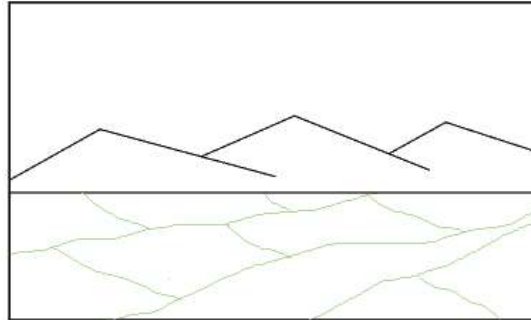



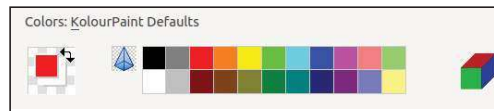
Figure 1.5 Drawing fields, valleys and rivers

You might have finished drawing. Now let's apply colours.

Activity 1.3

Applying colours

Using **Flood Fill Tool**  choose appropriate colours from **Colour Palette** to fill colours in drawings of the mountains, the sky and the plains by clicking as required. (Figure 1.6).



Colour palette

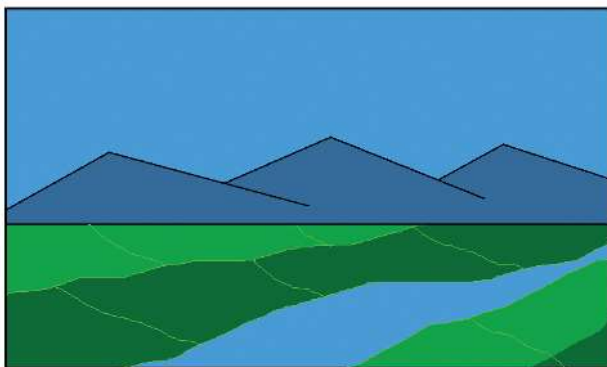


Figure 1.6 Filling colours

Shall we draw a coconut tree using  **Brush tool**? Isn't **Brush tool** convenient?

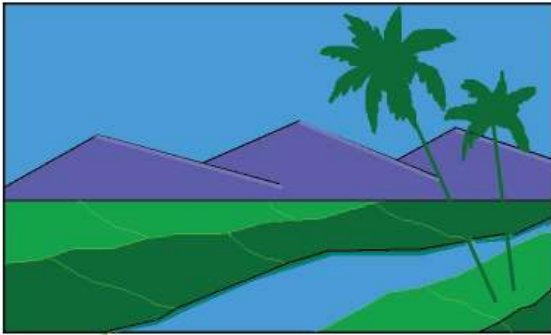


Figure 1.7 Adding coconut tree drawings to the picture.

Attention please...


When you apply colour, does it spread over the picture? It may be because of a small gap that was formed while drawing. Previous actions can be discarded by clicking the Undo button on the **Edit** icon. Complete the gap using the **Pen Tool** and fill it again with colours.



You have completed the picture. Don't you want to keep the picture safe? Save it.



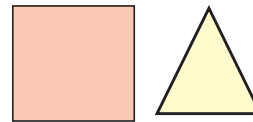
Using polygon tool

Is it difficult to draw a coconut tree using Brush Tool? Then, use the **Polygon Tool**  click points, and draw.



Let's assess

- Which tools will you need to draw our National flag with *KolourPaint* software? (Use **Circle Tool** and **Line Tool** to draw the Ashoka Chakra).
- Draw the given figures with *KolourPaint* using the tools you know and save your drawing.

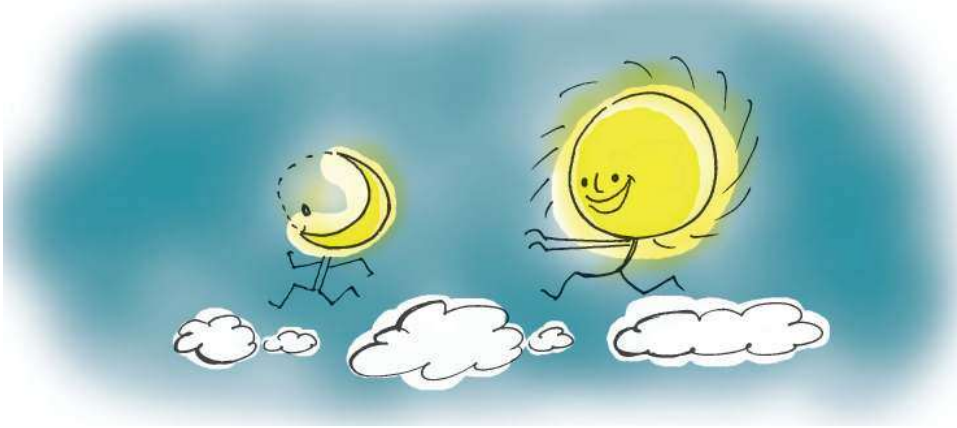


Extended Activities

- ◆ Picturise the ideas in the poem *BhoomiSanadhayanu* in the Malayalam text-book using *KolourPaint* software.
- ◆ Observe and draw a sunset.



Chapter 2 Eclipse Scenes



Let's read a diary entry written by Vinayan who had witnessed the Solar Eclipse in 2010.

Will it become dark at noon? Will I see it?



15 January 2010

Reached Thiruvananthapuram in the morning. We waited at the Kanakakunnu Palace grounds with the solar telescope and x-ray film spectacles to view the solar eclipse. The Solar eclipse began at 11.15 am. It came to a climax around 1.15pm. The noon appeared as if it was late evening. Birds chirped strangely.

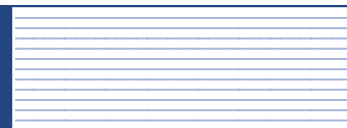
The solar eclipse was over by 3 pm. The experience left an indelible impression on my mind. How wonderful is our world!

You would have understood the different types of solar eclipses from the lesson *Celestial Shadow Sights* in your Basic Science text. Have you ever seen a solar eclipse? Would you like to see an eclipse?

What kind of solar eclipse did Vinayan see?



Let me help. I can simulate the views of the sky.



Various software are available to simulate scenes from the sky on the computer screen. The following activities are based on the software *Stellarium* installed in our computer.

Activity 2.1

Eclipse in the classroom

Let us discover more about the type of solar eclipse visible on 15 January 2010 in Thiruvananthapuram, using the software *Stellarium*. Let us try the following steps.

Open the software Stellarium



Observe the window as the *Stellarium* opens (Figure 2.1)

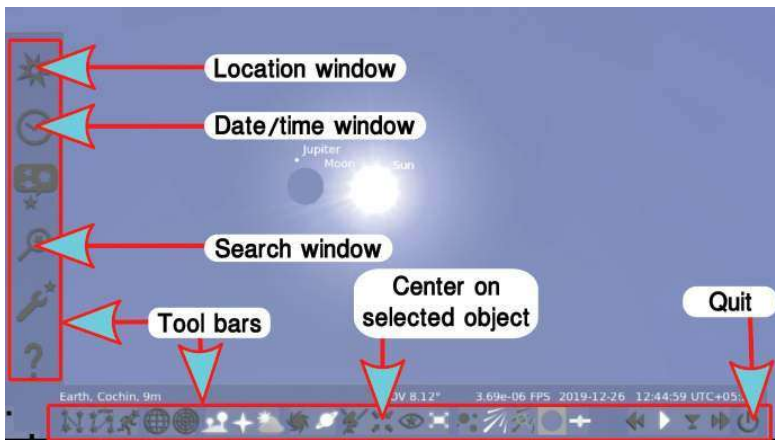


Figure 2.1 Stellarium window

Click and drag on the screen. Different parts of the sky can be viewed in the screen

Move the scroll wheel of the mouse to and fro to zoom in and zoom out the views of the sky.

If the mouse pointer is brought to the left or to the bottom of the screen, the toolbars are seen.

Let us adjust the place

To see the scenes of the sky over Thiruvananthapuram, the place has to be set as Thiruvananthapuram on *Stellarium*. For that,




- ◆ Click on the  tool to get Place window. (Figure 2.2)
- ◆ Type Thiruvananthapuram in the search box near the symbol  on the **Location window**.
- ◆ A line ‘Thiruvananthapuram, India’ will appear. Click on that line.
- ◆ Close the window.




Figure 2.2 Place Window



Let's fix celestial objects at the centre of the screen

Click on the object to select. Then click on the  tool from the tool box below the *Stellarium* window to fix the position of the celestial object at the centre of the screen.

Finding the sun

Click on the  tool. Type ‘sun’ on the window (Figure 2.3) and press ‘Enter key’. Can you see the sun appearing at the centre of the screen?

Setting date and time

Click on the  tool. Set date 2010/01/15 (year/month/date) and time as 11:15:00 on the window (Figure 2.4). Move the mouse scroll wheel forward and zoom in on the screen. Can you see the sun near the moon? Click on the  symbol above the ‘minute’ on the time window to set the time forward, and complete the table 2.1.

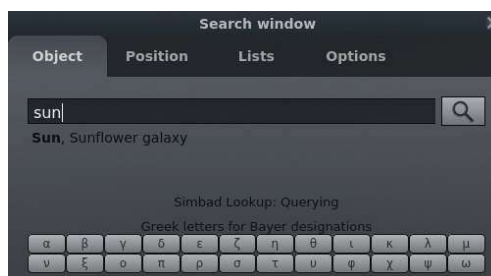


Figure 2.3 Search Window



Fig 2.4 Time Window

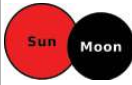
11:30	12:00	12:40	13:15	14:10	14:45	15:00
						

Table 2.1 Various phases of the solar eclipse

Activity 2.2

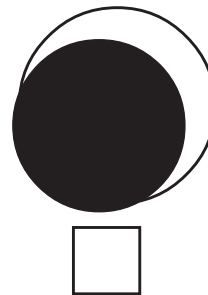
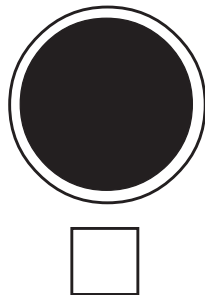
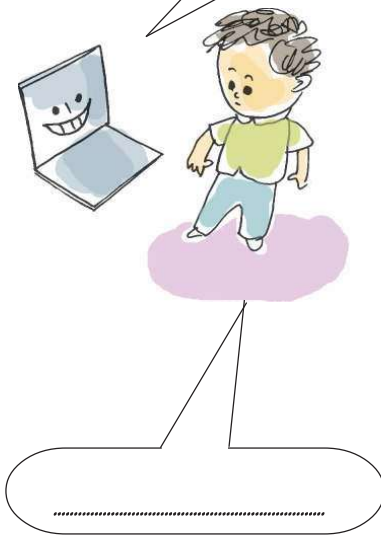
Eclipse in different places at the same time

Now, can you say what kind of solar eclipse was seen on 15 January 2010?

Does the eclipse happening at the same time appear alike in different places?

Setting Kasaragod as the location, observe the eclipse again.

Which among the following pictures is similar to the eclipse? Mark it.



Is there any difference between the eclipses seen in Thiruvananthapuram and Kasaragod?

Activity 2.3

Different Eclipses

Set the place and time given in table 2.2 using the *Stellarium* software. Then complete the table.

Sl. No.	Place	Date	Time		Time of the Solar eclipse at its maximum	Type of eclipse (Total/Ring/Partial)
			From	To		
1	Kottayam, India	21/05/2031	11:10	15:00	13:15	Ring solar eclipse
2	Chennai, India	12/09/2053	15:15	17:25		
3	Kozhikode, India	26/12/2019	8:00	01:10		
4	Kilifi, Kenya	16/02/1980	12:30	15:30		

Table 2.2 solar eclipses seen in different places at different time



Let's assess

- ◆ Which among the following is a total solar eclipse? Find out with the help of *Stellarium* software.
 - a) Kalpetta, India - 21-9-1992 From 7:50 to 9:50
 - b) Mananjary, Madagascar - 4-9-2100 From 13:30 to 16:10



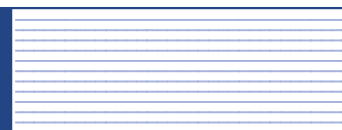
Extended Activities

- ◆ Let's observe the Lunar eclipse.

Can you observe the lunar eclipse with the help of *Stellarium* software?

Set the following data in *Stellarium* and observe the moon.

 - Angamaly, India - 28-07-2018 from 00:05 to 3:30
 - Kolkata, India - 17-07-2019 from 01:45 to 4:15
- ◆ Find the planets Mercury, Venus and Mars with the help of the **Search window** in the *Stellarium* software.
- ◆ Find the planet Jupiter in *Stellarium* software. Zoom in to identify and name its satellites.



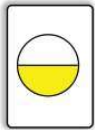
Chapter 3

Fractions and Numerals in Fractions



Games with fraction cards

Prepare twenty fraction cards to begin the game. Write fractions like $\frac{1}{2}$, $\frac{1}{3}$ etc.. on ten of these cards and draw pictures indicating the same fractions in the remaining ten.



Now shuffle the cards and divide them between the two players. The first player has to draw a card. If the other player puts up the equivalent card, he can have both the cards. If the game advances like this, the player with more cards will win. You like such games, don't you?

Games like these are available in our computers too. Let's learn one such game.

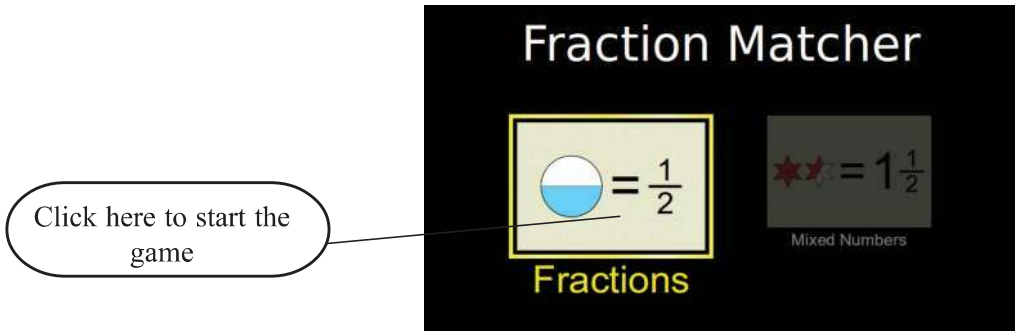
Activity 3.1

Finding pairs

Let's open Fractions in the game Fraction Matcher using the *PhET* software.

Applications  School Resources  PhET  Fraction Matcher





Start the game selecting suitable levels from the window (Figure 3.1) that opens.

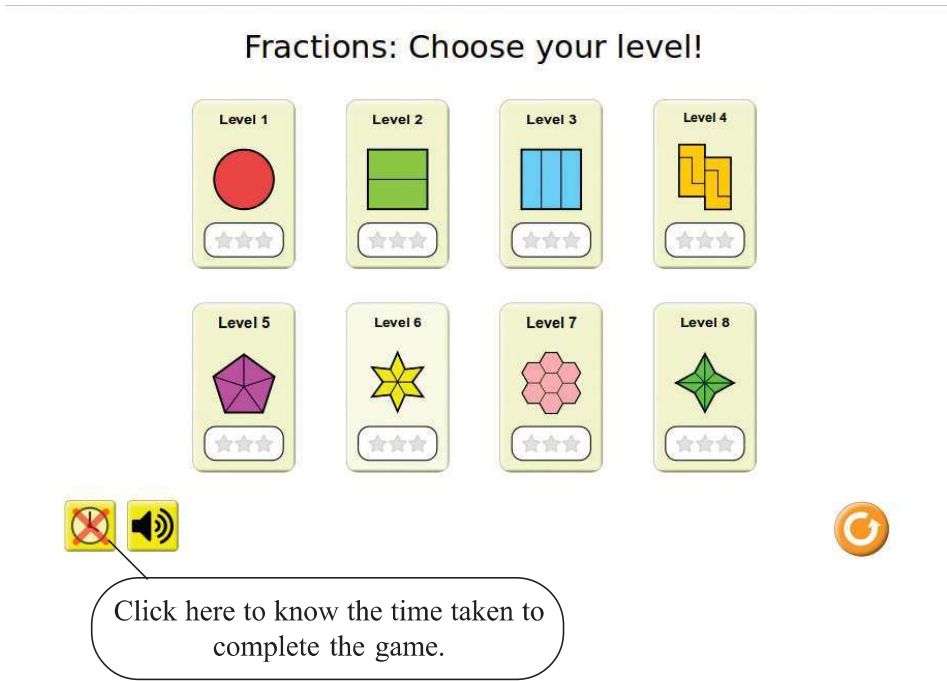


Figure 3.1 Level window

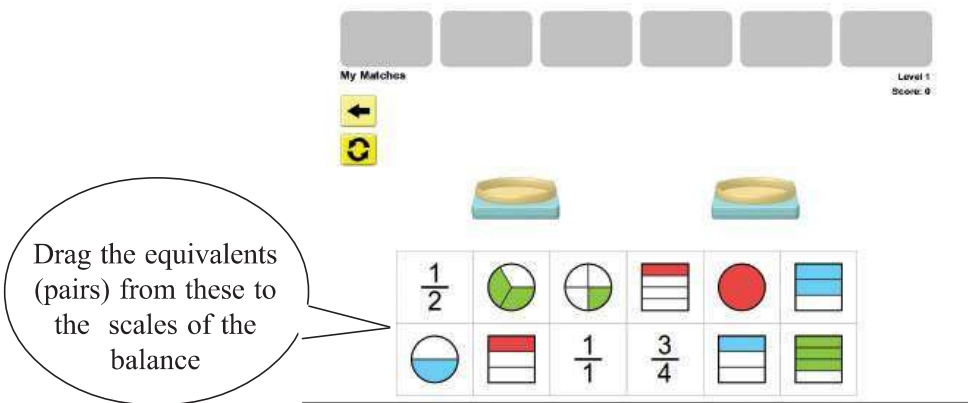
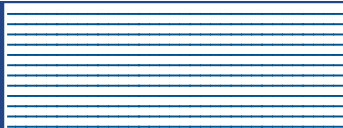


Figure 3.2 Fraction Matcher window



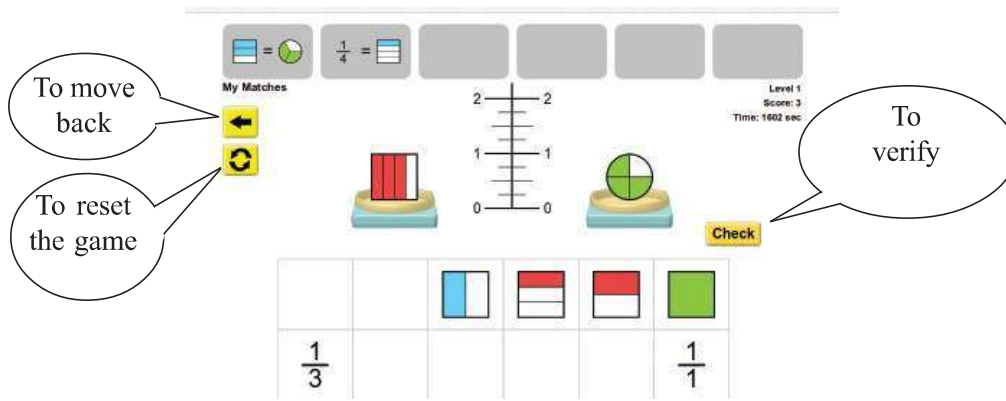


Figure 3.3 Fraction Matcher window

Six pairs are to be found at each level. If the correct pairs are selected, they will move to the top of the column. (Figure 3.3)

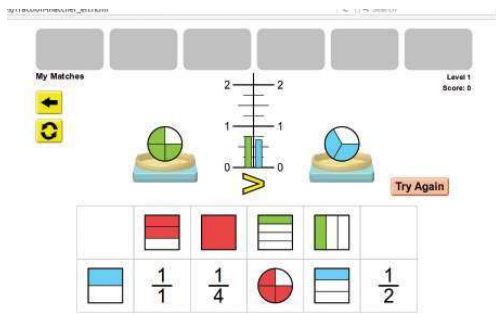


Figure 3.4 Fraction Matcher window

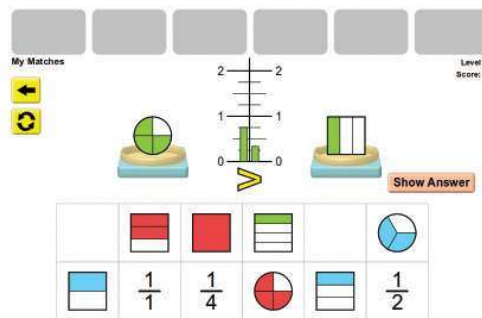


Figure 3.5 Fraction Matcher window

If a mistake is made, click the Try again button (Figure 3.4) and drag down the picture/fraction in the scales replacing them with the right ones to continue the game.

Click 'Show Answer' button (Figure 3.5) to find the next pair if you go wrong again.

If played carefully...
Two points will be awarded if you win at the first try. Only one point for the second try.

Extended Activities

Complete as many of the levels as possible in the game Mixed Numbers in Fraction Matcher.



Chapter 4 Touching up letters....



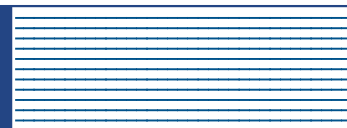
I would like to paste a notice like this in my classroom too.

Varsha had gone to see the doctor with her mother. It was then that she saw certain notices on hygienic habits pasted on the wall. Why not paste one such notice in my classroom, she wondered.

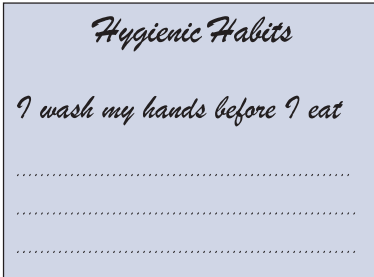
What sentences can I have in the poster? She thought.

- ◆ I wash my hands before and after I eat
- ◆

If the words of a word tree are arranged properly, they will become sentences...



Have you made a list of the hygienic habits that we should adopt?



Look at the notice prepared by Varsha.

What are its features ?

- ◆ **Headline is in bold letters.**
- ◆ **It is underlined.**
- ◆
- ◆

What are the steps to be followed to prepare such a notice using the computer?

- ◆ There should be space for typing.
- ◆ Words should be typed out.
- ◆

Do you remember how you had typed using the computer in your previous classes.

Let's familiarize ourselves with software that helps us to prepare letters, words, etc., as we wish. *LibreOffice Writer* is one such software.

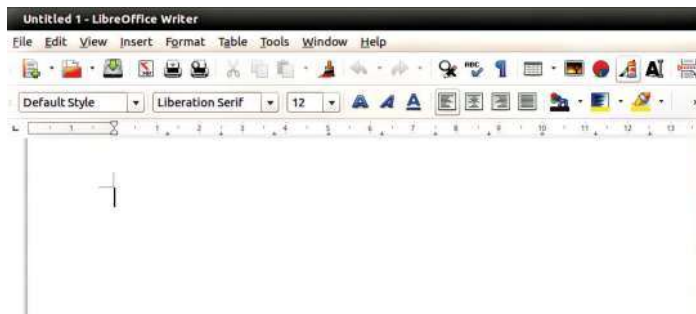


Activity 4.1

Let's open Word Processor



LibreOffice Writer can be opened in the above order



Can't you see a vertical black line shining in the word processor window? That is the cursor. The letters that we type appear where the cursor is.

Fig 4.1 Word Processor window

While using keyboard...

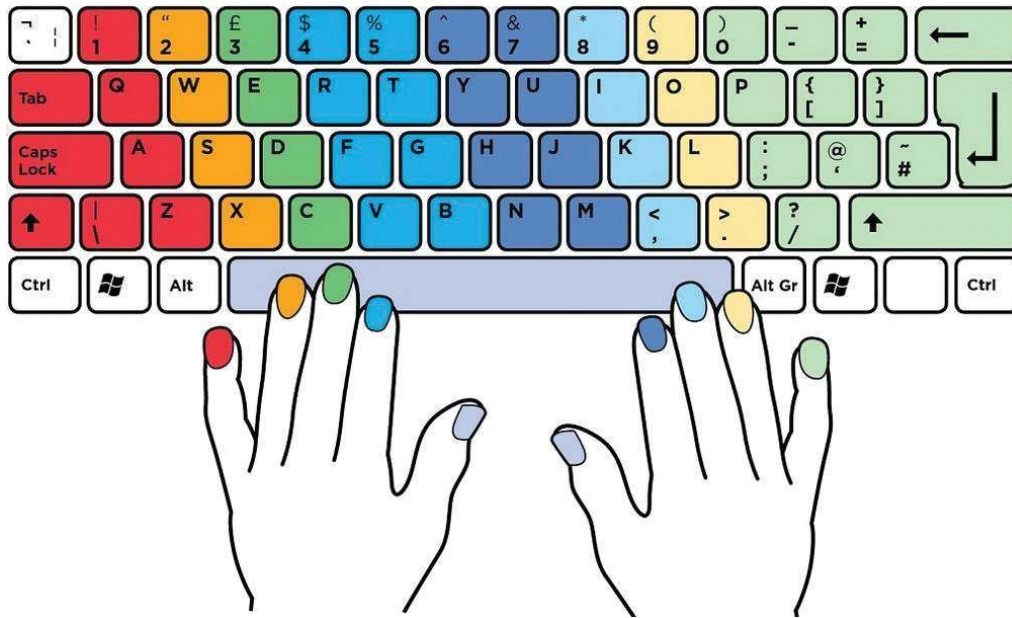
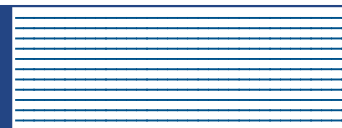


Figure 4.2 The right way of using the keyboard

- ◆ Make it a habit to place your fingers correctly on the keys of the keyboard while typing. Observe the colours of the keys on the keyboard and the colours of the finger nails in Figure.4.2.
- ◆ Use the thumb to press the space bar.



Activity 4.2

Start typing

To get CAPITAL LETTERS, press the Shift key and type.



Let's type the words and sentences of the notice.

Look at the heading 'Hygienic Habits'.

What should be done to get the letter **H** in the upper case?

Space bar can be used to insert space between words.



How do we move to the next line?

Activity 4.3

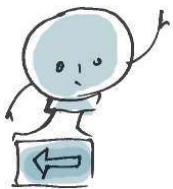
Let's add more lines

Have you typed the heading? Isn't the cursor now at the end of the title Hygienic Habits? If the next word is typed, won't it be at the spot where the cursor stands?

Press 'Enter' key to bring the cursor to the next line.

What will you do if the letters are typed wrong?

'Delete' and 'Backspace' keys can be used to erase letters typed incorrectly .



I can erase the letters to the left of the cursor.

I can erase the letters to the right of the cursor.



Activity 4.4

Enlarging the heading

In order to increase the font size, select the word and change the font size.(figure 4.3).



Figure 4.3 Font size tool



While writing the heading....

Wouldn't it get instant attention if the heading is made larger or typed in bold?



To select ...

Bring the cursor to the point before the sentence to be selected and select by dragging. Selection can also be done by bringing the cursor before the sentence and by pressing the shift key and the arrow key.

How can the heading be aligned to the centre?



Activity 4.5

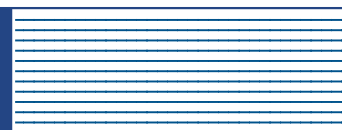
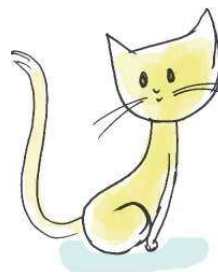
Let's Align the heading

In order to align the heading to the centre, place the cursor anywhere on the word and click on the 'Centre' tool in the toolbar. (Figure 4.4).



Figure 4.4 Alignment tool

Find the tool to be used to align the heading to the left or the right



Activity 4.6

Bolder heading...

Select the text and click on the first tool in the toolbar to make the heading bold.

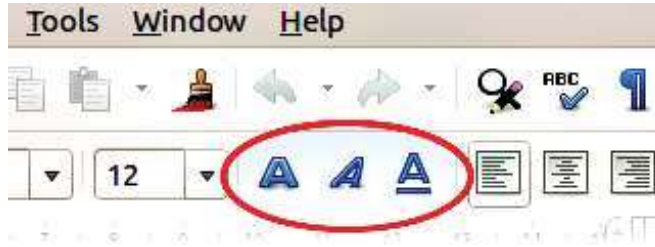


Fig. 4.5 Style tool




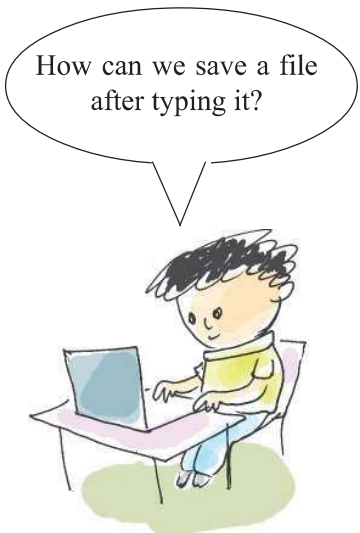
Tools	Use
	To make the letter bold



Table 4.1 Letter formatting

Activity 4.7

Save the notice

You have learnt in the previous chapter how to save a picture to the computer. With the help of your teacher, save the notice to the home folder of your class folder.



While saving a file...

Create a folder in your name in the class folder in 'Home' and save the file in it.

More such tools are available in the *LibreOffice Writer* which you will use in higher classes.



Let's assess

- As part of Green Club activity, type the following sentences to be displayed on the premises of your school.
 - ◆ AVOID PLASTICS
 - ◆ **Please Don't Waste Water**
 - ◆ **This is your area**
KEEP CLEAN
- Match the following words to make meaningful sentences and type accordingly.

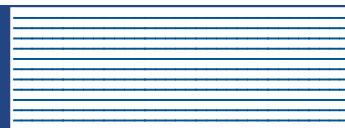
My	house	is	big
			small
	shirt		red
			green

- For Hiroshima Day, prepare a placard, "NO WAR, NO MORE WAR", to be used in the anti-war rally .

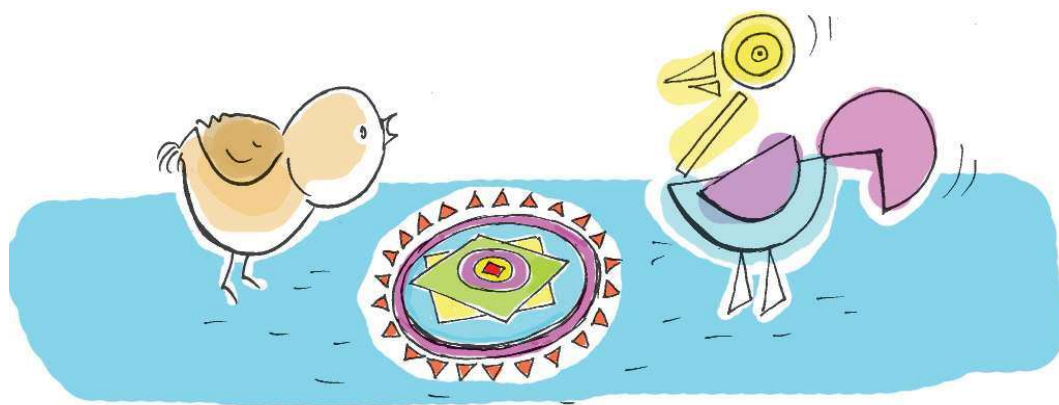


Extended Activities

- ◆ Prepare a notice using LibreOffice Writer on the precautions to be taken against diseases during the monsoon.
- ◆ Prepare an address slip showing your name, class and school.
- ◆ Type out a notice to be displayed in your school in connection with the inauguration of the English Club.



Chapter 5 Circular Figures



Observe the floral Onam carpet prepared by the mother hen for its chicks

Aren't there a few geometrical shapes in the floral carpet? Can you identify them?

- ◆ Circle
- ◆ Triangle
- ◆
- ◆

The circle is an integral shape of a floral design, isn't it?

You might have learnt about the characteristics of circles and how to create them in the chapter on *Circles* in your Mathematics textbook.

Look at the circles drawn for floral designs. (Figure 5.1). What are their special features?

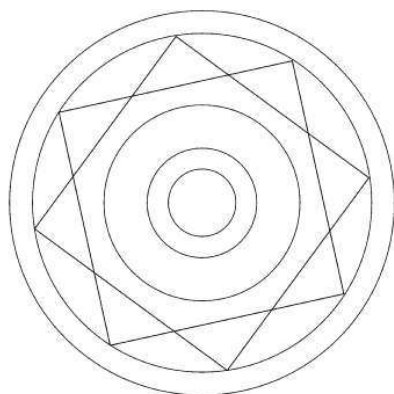


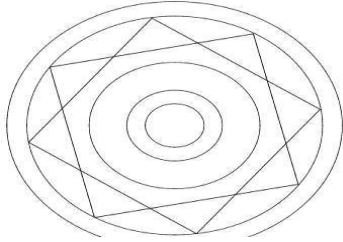
Figure 5.1 Outline for floral design

.....

Circles with same centre and different radii

Shall we draw these circles using the computer?

GeoGebra is a software which helps to construct geometrical figures. Various geometrical figures and patterns can be created with this software.



Activity 5.1

Circles within a circle

- ◆ Let's open the *GeoGebra* software

Applications ➡ Education ➡ GeoGebra

- ◆ Grids can be drawn in the window that opens(Figure 5.2)
- ◆ Click **Show or Hide grid tool** in the tool panel to use grids in *GeoGebra*. Observe what happens if the tool is clicked twice.

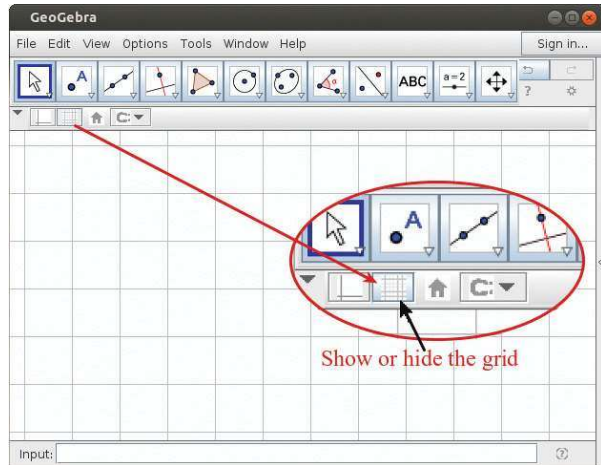
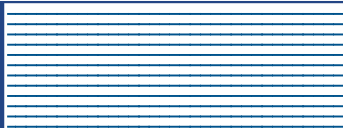



Figure 5.2 Grids shown in the window



Let's draw circles with the same centre and different radii using *GeoGebra software*

- ◆ Select the tool  (Circle with Center and through Point) Figure 5.3.

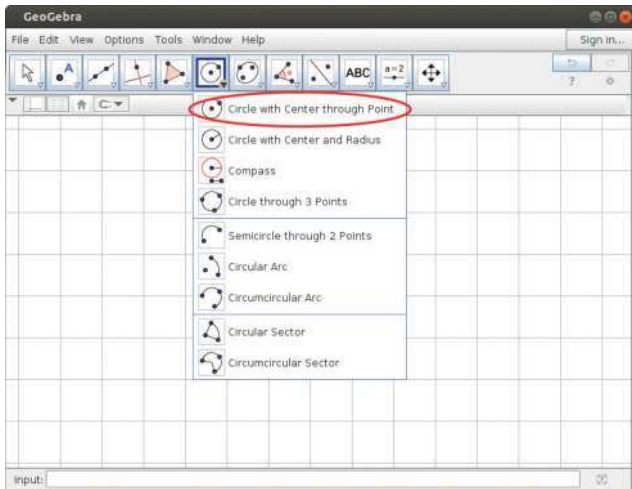


Figure 5.3 Window to select tool

- ◆ Click on any point on the surface for the centre of the circle. It can be drawn with accuracy if the point intersects with the grid.
- ◆ Click on another suitable point through which the circle can pass.
- ◆ Draw circles with different radii without changing the centre point.(Figure 5.4)

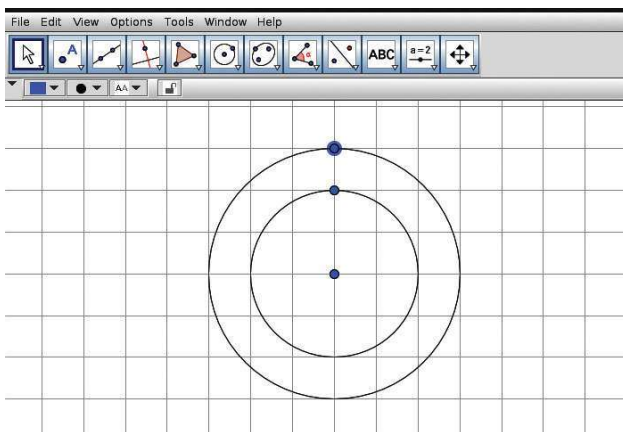


Figure 5.4 Circles with the same centre

Find the radius and diameter of the circles you have drawn and list them. (Table 1.1)

	Radius	Diameter
First circle		

Table 1.1 Radius and diameter of the circles

What is the relation between the radius and diameter of the circle?

.....

Activity 5.2

Mathematical Floral Carpet

Now we can design the floral carpet by means of circles. (Figure 5.5)

What are the features of these circles?

The following method can be used to draw circles to create this design.

Select this tool  (Circle with Centre and Radius) (Figure 5.6)

Count the lines in the grids to find the radius and diameter.

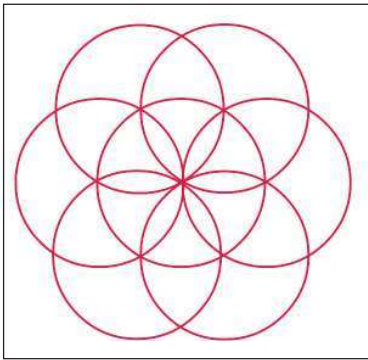
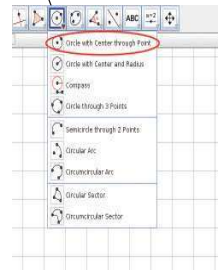


Figure 5.5 Floral carpet

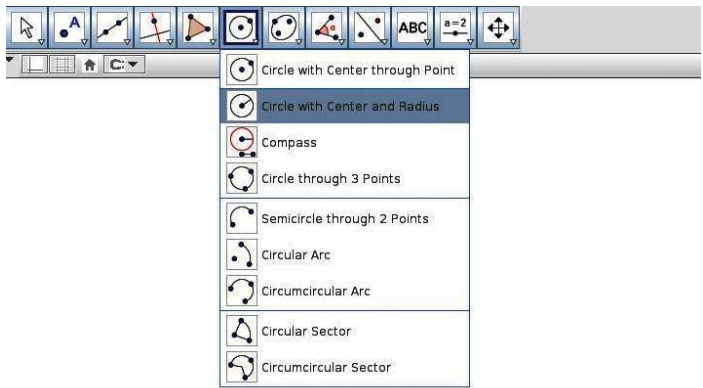


Figure 5.6 Window for circle with radius



- ◆ Click on the surface to draw a circle of the required radius. (Figure 5.7)

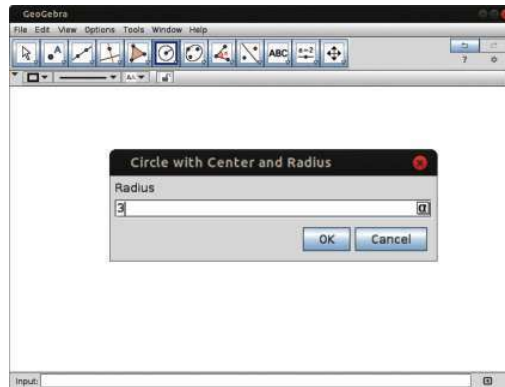
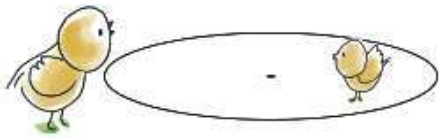


Figure 5.7 Window displaying the measurement of the radius

- ◆ Now click on any point in the circle and give the same radius again (Figure 5.8)

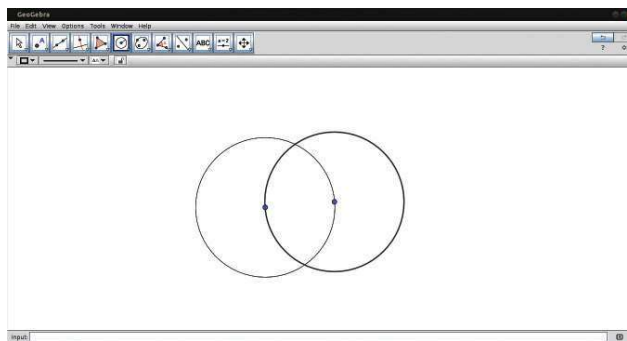


Figure 5.8 Second circle drawn by clicking on the circle

- ◆ Draw a circle of the same radius at the point of intersection of the two circles. (Figure 5.9)

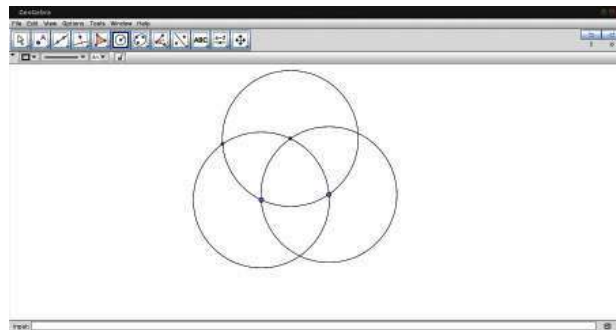


Figure 5.9 Another circle with the intersection points of the first two circles at the centre

- ◆ Draw all the circles and complete the figure.
(Figure 5.10)

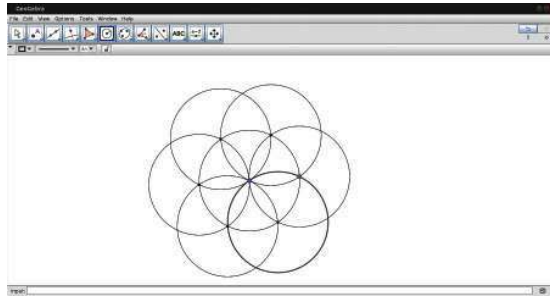
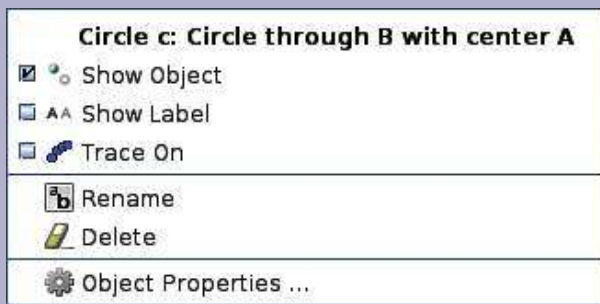


Figure 5.10 Mathematical floral design

Save the pictures drawn, to your folder.

Adding colour to circles

Right click on the circle and select Object Properties



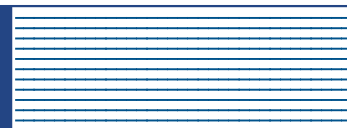
Make it attractive selecting suitable colours, clicking on the Colour Tab

Methods of drawing circles

GeoGebra shows many ways to draw circles.

	Circle with Center through Point	Using the centre and the point through which the circle passes
	Circle with Center and Radius	Giving centre and radius
	Compass	Giving centre and length of radius
	Circle through 3 Points	Using three points through which the circle passes

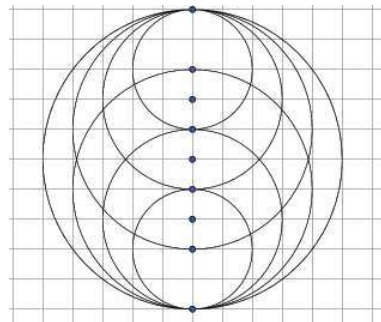
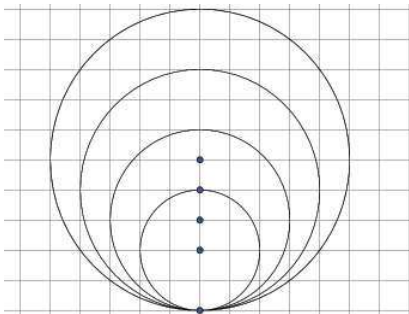
Many such activities based on mathematical logic are possible with GeoGebra. We will learn more in higher classes.





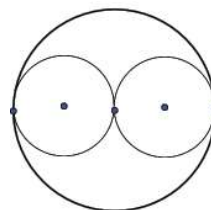
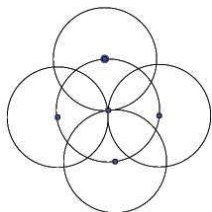
Let's assess

- ◆ Draw a circle with radius 5 cm. Draw another circle that passes through two points of this circle.
- ◆ Draw two circles that pass through the centres of each other.
- ◆ Draw the pictures given below.

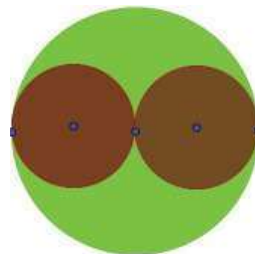
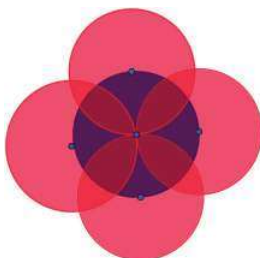


Extended Activities

Draw these diagrams using GeoGebra.



Select Object Properties of the circle, use the color tab to increase Opacity and draw these figures.



Chapter 6 My Malayalam



Cutting down one tree after the other, he moved to the last remaining tree to take rest under it. Placing the axe under that tree he rested there for a while. The tree gave him shade though it knew it would be the next target.

Don't you want to preserve the trees that provide shade even to the person who cuts it down?

In what ways are trees helpful to us?

What means would you use to spread awareness among your friends about the importance of planting and preserving trees?

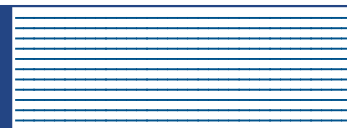
◆ Notice

◆

How about preparing a poster too?

“What messages shall we include in the poster?”

“മരം ഒരു വരം” can be a slogan, then.



Shall we include the lines given below?

“ഒരു തൈ നടുമ്പോൾ
ഒരു തണൽ നടുന്ന്”

Prepare a poster using these lines to highlight the significance of preserving trees.

The *Libreoffice Writer* that is already familiarised, can be used to type the sentences in the poster.

How shall we type in Malayalam?

Look at the picture given below.

Figure 6.1 will help you to use the keyboard in the right manner.



Figure 6.1 The layout of Malayalam keyboard.



Open the tree.ott from the **School Resources** in the home folder and start typing.

Open word processor and click on the **File - Open** option. Select and open tree.ott from the School Resources folder in the home folder. Don't forget to save the opened file.

Keyboard Indicator

Click on keyboard indicator at the top of the desktop panel. Keyboard layout can be changed to Malayalam when you click and select Malayalam.



Figure 6.2 Keyboard indicator

How can the keyboard layout be changed to Malayalam?



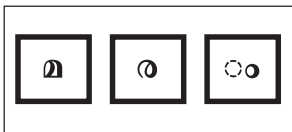
Activity 6.1

Familiarising the Malayalam keyboard

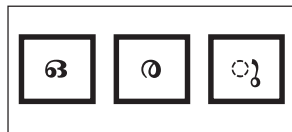
Which keys are to be used to type മരം ഒരു വരം?



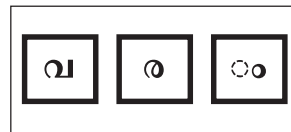
മരം



ഒരു



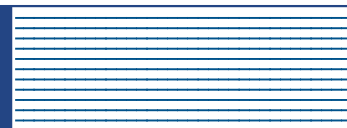
വരം



Compare the keyboard layout with Figure 6.1 to find the method of pressing the keys. In order to select the top letter of each key, press the shift key and type. Press the space bar to put a space in between the words.

Now let's type the lines given below.

ഒരു ഒരു നടുമ്പോൾ
ഒരു തണൽ നടുന്ന്





How to type letters
'ര, ശ'

Friend of compound letters

The key D is used to combine two letters.



ര + ള് + ഹ = രാ

ന + ള് + ന = ന്ന

Activities 6.2

Let's Type 'Chillaksharanga'

Let's see how to type 'chillaksharanga' like ര, ര, റ, റ, റ (Table 6.1).

ര			
ര			.....
ര		.....	.....
ര	.....	.....	.....
ര	.....	.....	.....



Table 6.1 Forming 'chillaksharanga'

How can pictures be inserted in a poster?



Activity 6.3

Adding pictures to a poster

Choose a suitable picture from the Environment segment in the Gallery by clicking in the order:

Insert – Media – Clip Art Gallery. The process will be complete when the picture (Figure 6.3) is dragged to the poster.

Activity 6.4

Saving a Poster

Do you remember the method of saving notices mentioned in the previous chapter.

Save the poster prepared to your class folder in the home folder.

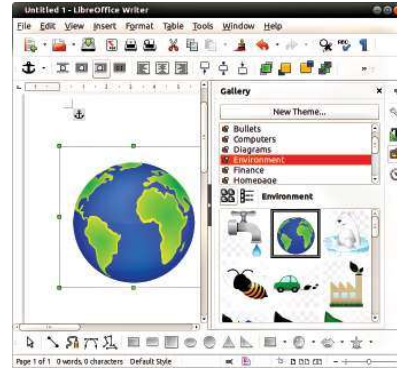


Figure 6.3 Gallery Window



Let's assess

- ◆ Prepare suggestions on Water Conservation to be displayed at various water outlets (Select font size 40, center alignment, etc.).
- ◆ Use Word Processor to prepare a collection of proverbs.
- ◆ Prepare a poster relating to the protection of our historical monuments. (Bold letters, font size 24. Include a picture too.)

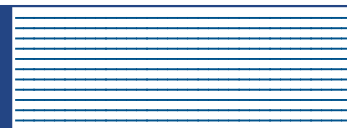


Extended Activities

- ◆ 14 December is observed as Energy Conservation Day. Prepare a poster to create awareness among the children on the conservation of energy using the sentence given below. Include a suitable picture too.

Energy Conservation is as good as Energy Creation

- ◆ Prepare a poster on the programme *Kaviparichayam* to be conducted by 'Vidyarangam Kala Sahityavedi'. Include a poem by Kunjunni Master.
- ◆ Draft the notice for a traffic awareness programme to be conducted by the Student Police Cadets in connection with Road Safety Week. Road safety rules should be included in the notice.



Chapter 7 When Fractions Combine



Haven't you heard the story of the monkey who helped to divide a piece of bread and tricked two cats?

You too share snacks with your friends, don't you?

While dividing, some portions may become big, some small.

Let's examine the pictures given below. (Figure 7.1)

Activity 7.1

Let's compare

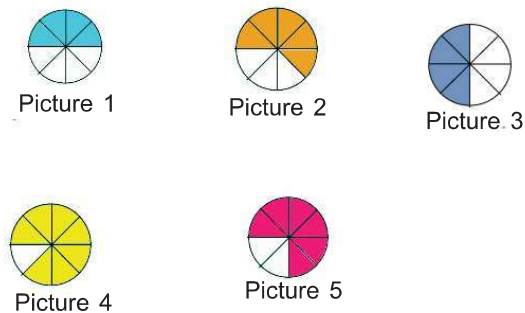
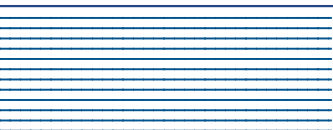


Fig 7.1 Diagrams of portions

Which pictures (shaded ones) are equal?

.....



Write the fractions of these pictures.

Shall we familiarise ourselves with a similar game in the computer?

The *JFractionLab* software in our computer has a set of games that include fractions. Let's open the software.

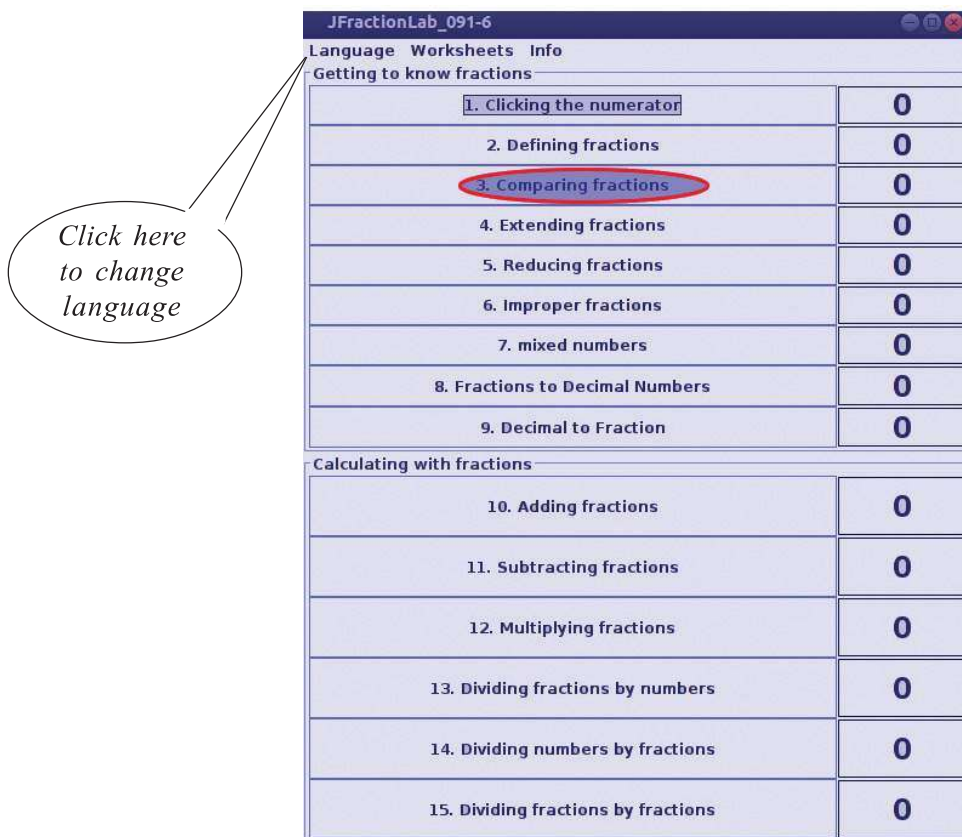
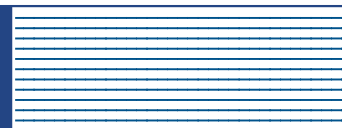


Figure 7.2 JFractionLab Main Menu

Select the game '**Comparing Fractions**' from the window that opens. (Figure 7.2)



You get double points if you play without diagrams. (Look at the Options Menu for this.)

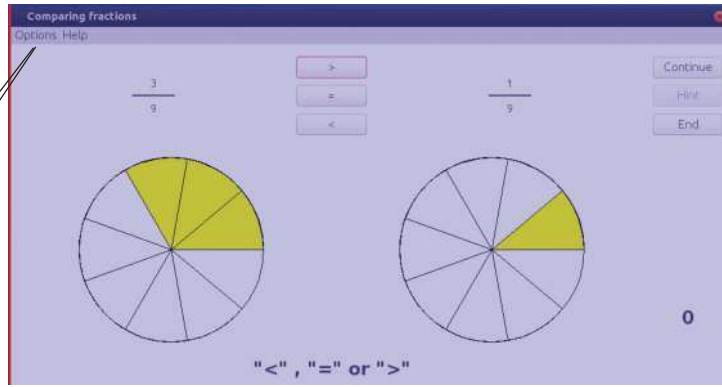


Figure 7.3 Game for comparing fractions

Compare the fraction on the left side of the window (Figure 7.3) with that given on the right side. If the fraction on the left side is greater, click '>', if the fractions are equal click '=' and if the fraction is less click the symbol '<'.

Activity 7.2

When fractions combine

Look at the pictures given (Figure 7.4). Write the fraction that represents the shaded area.

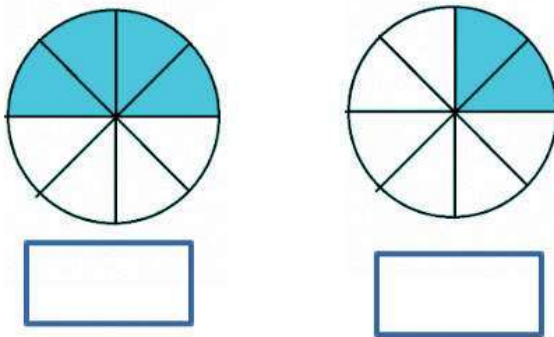


Figure 7.4 Let's write the fraction

Now, let's examine Figure. 7.5 and complete it by shading. Write the fraction also.

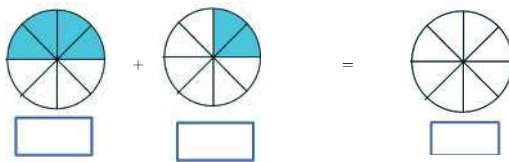


Figure 7.5 The sum of fractions

The *JFractionLab* also contains games that help us to find the sum of fractions. Examine the game 'Adding fractions' in *JFractionLab*. (figure 7.6).

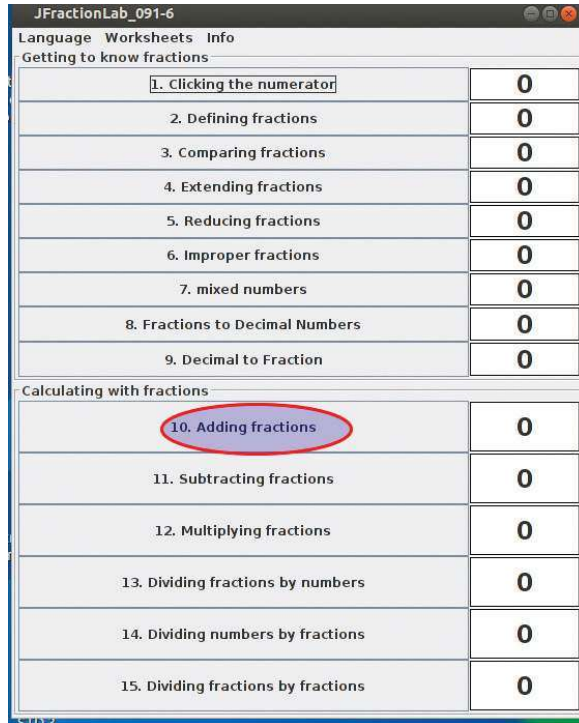


Figure 7.6 JFraction Lab - Main menu

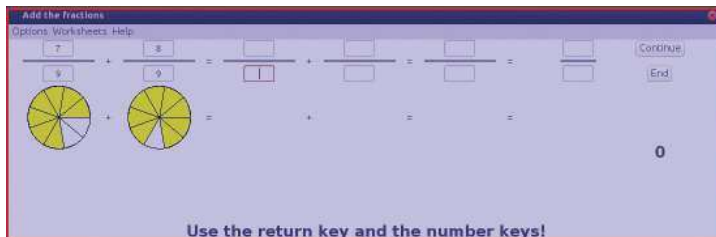
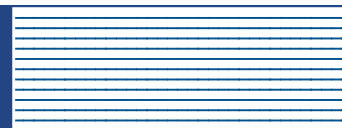


Figure 7.7 Add the Fraction Window

Play the game with the help of the keyboard. Use the number keys and Enter key.

We gave to find the sum of two fractions in the window that opens (Figure 7.7). How do we find the sum?

- ◆ Make the denominators of the fractions equal.
- ◆ Add suitable numerators.
- ◆
- ◆



Type the denominators first in the table for fractions in the window ‘Add the Fractions’. On pressing the Enter key you can get the answer, adding the suitable numerator. You get more points by reducing the fraction to the least possible.

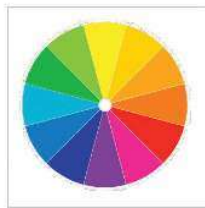
Familiarise yourselves with more games relating to fractions in JFractionLab.



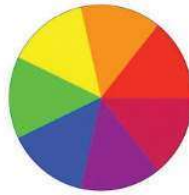
Let's assess

Let's complete the table.

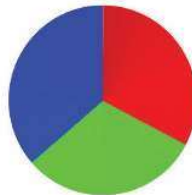
Examine the colour discs prepared by Abu, Aji and Alice of Standard VII for the Science exhibition. Now, complete the table given below.



Abu



Aji



Alice

Name	Total number of divisions	Number of divisions in blue	Fractions
Abu	12	3	$\frac{3}{12}$
Aji			
Alice			

Open *JFractionLab* and play the game ‘Finding Fractions’.



Extended Activities

- ◆ Examine the chapters ‘Equal Sharing’ and ‘Part Number’ in your Mathematics textbook. Which exercises in these chapters can be applied in *JFractionLab*? Present your findings in class. .

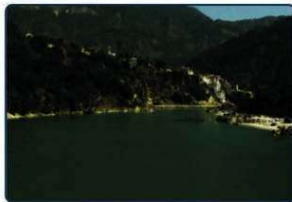
Chapter 8

Maps at your Fingertips



India - Rivers

We have discussed the major mountain ranges in India. Many of these mountain ranges are the sources of a number of rivers. The Indus, the Ganga, and the Brahmaputra originating from the Himalayas, and the Mahanadi, the Godavari, the Krishna, the Kaveri, the Narmada, and the Tapi originating from the high altitude regions of peninsular India are the major rivers of India.

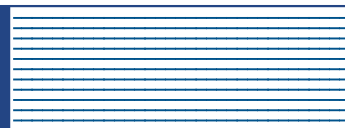


The River Ganga

You have learned about rivers in India in the chapter 'Our India' in your Social Science textbook. As an extended activity related to this chapter, shall we know more about the Ganga which originates at the Himalayas?

You can find it using the atlas, a map or a software that help us to learn Geography.

Teacher, how can I find the states through which the Ganga flows?



KGeography

There are several software solutions to help us learn geography. *KGeography* is one such. You can get a lot of information, such as international boundaries, national flags, names of states and their capitals using this software. It also has some games that help us to learn by ourselves.

You can change the language of KGeography

Select **Switch Application Language** from the **Help Menu** in *KGeography*. You can change the language if necessary, using **Primary Language** option in the window that opens.

KGeography is a software which helps us to learn Geography. Shall we find out the states through which the Ganga flows, using this software? The course of the Ganga is given in figure 8.1.

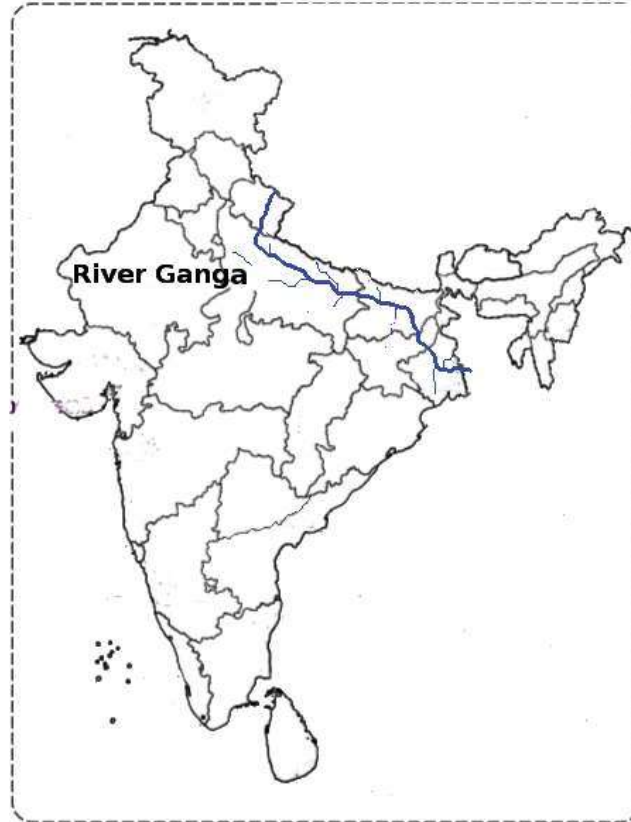


Figure 8.1 Map of India which shows the course of the Ganga

Activity 8.1

Let's find the states through which the Ganga flows.

Follow these steps.

- ◆ Open the *KGeography* software.



The map of India appears on the screen. (Figure. 8.2)

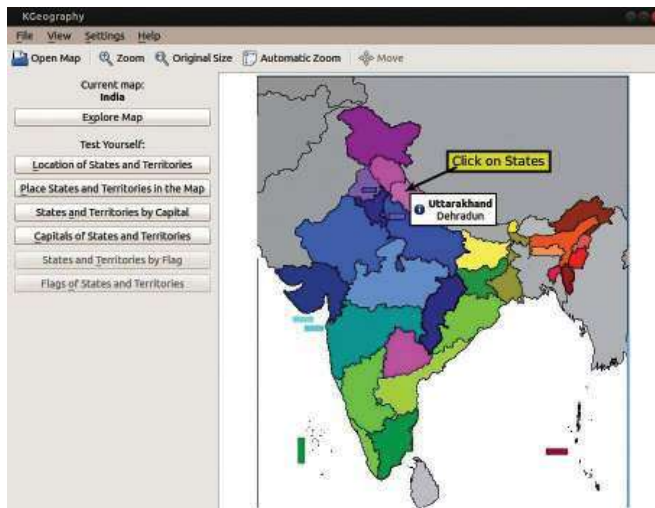


Figure 8.2 KGeography Window

- ◆ Examine the map (Figure 8.1) and identify each state through which the Ganga flows, using the *KGeography* software to click on them.
- ◆ Write your findings below.

States through which the Ganga flows

Uttarakhand,,,,



You have learnt how to find the names of Indian states using *KGeography* software. Now we will examine the names of the capitals of states.

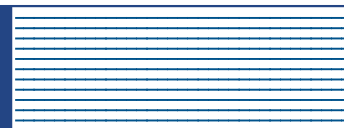
Activity 8.2

Let's find the names of the capitals of Indian states

Using *KGeography*, find the capitals of the states that are given in blue in the map given below (Figure 8.3) and complete the table. (Table 8.1)

For this

- ◆ Examine the states that are marked in Figure 8.3.
- ◆ Open *KGeography* software and click on these states one by one.



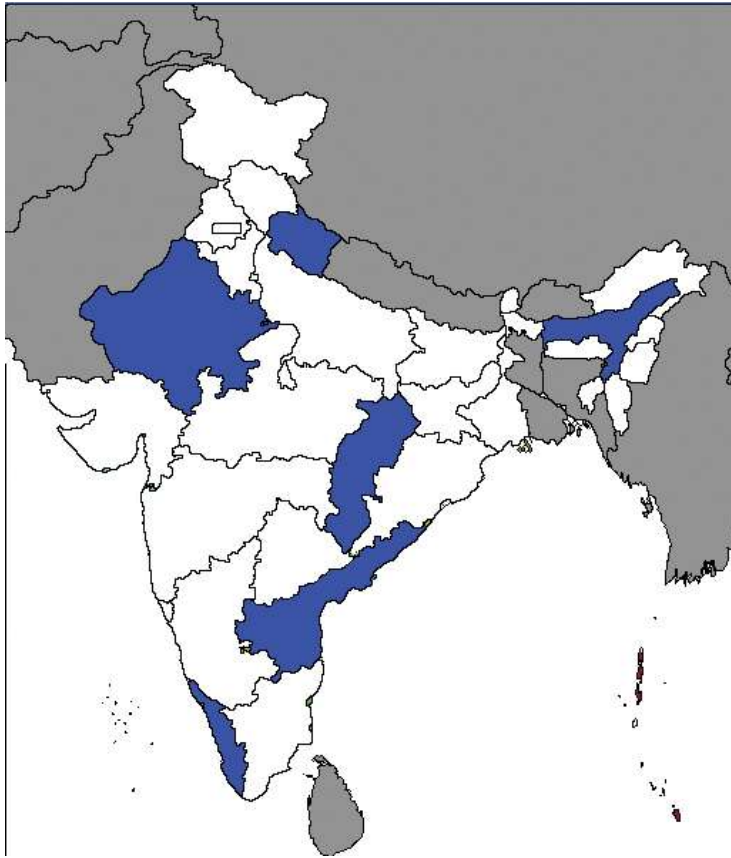


Figure 8.3 Map of India on which some states are marked

- ◆ Complete Table 8.1 on the basis of what you observed with the help of the software.

State	Capital
Uttarakhand
Rajasthan
Chhattisgarh
Andhra Pradesh
Kerala
Assam

Table 8.1 States and their capitals

You have now used *KGeography* software to identify Indian states, their capitals and their location.

Now, shall we find the neighbouring countries of India, as suggested in your Social Science textbook?

India - Location and neighbouring countries

We have earlier discussed the continents. Can you identify the continent to which India belongs?

Find out India's neighbouring countries from the map of Asia.

You may use the atlas or wall maps for this.

Figure 8.4 Instructions for identifying the neighbouring countries of India

Activity 8.3

Let's find out the neighbouring countries of India

Using *KGeography* software, we can find the names of our neighbouring countries.

For this,

- ◆ Open *KGeography*.
- ◆ Click on each of the neighbouring countries of India.
- ◆ Observe their names and write them down.

Neighbouring countries of India

Pakistan

.....

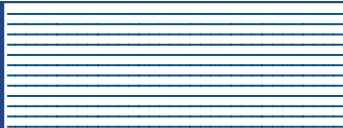
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.....

Yes, they are available. Click on the 'Open Map' button and select the required continents or countries.

You can identify the names of continents with the help of *KGeography* software in the same way that you examined India and her neighbouring countries.

Teacher, are the maps of other countries available in *KGeography*?



Activity 8.4

Let's examine our continent

Using *KGeography* software, write the names of any five countries in Asia in the table (Table 8.2).

For this

- ◆ Open *KGeography* software.
- ◆ Click the button ‘**Open Map**’ and select Asia (Figure 8.5).
- ◆ Complete the table after observing the names of various countries by clicking on them.

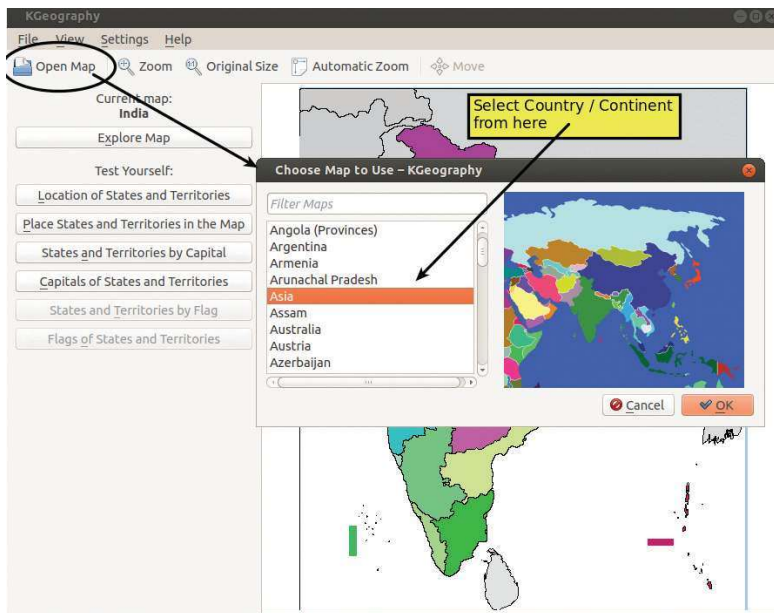


Figure 8.5 Window selecting Asia

Serial no.	Country
1	China
2
3
4
5

Table 8.2 Countries in Asia

You have now understood how to examine the location and boundaries of our country, its states, their capitals, our neighbouring countries, the continent of Asia, etc., using *KGeography* software. Let's learn a game to identify what we have found out.

Activity 8.5

Let's play the game 'Test Yourself'

For this

- ◆ Open *KGeography*.
- ◆ Click the button 'Locate States and Union Territories' in the section 'Test Yourself'.
- ◆ Arrange the number of questions in the window that opens.
- ◆ Examine the name of the state that appears at the bottom on the left side and click on the same on the *KGeography* map.
- ◆ If what you have clicked is correct, the section 'Correct Answer' will appear in green and if wrong, it will appear in red. Your score will also be shown.
- ◆ After this, the name of the next state will appear. Continue the activity.
- ◆ Continue the activity until all the questions are over.



We can adjust the size of maps in *KGeography*

The size of areas in the map can be adjusted by pressing the Ctrl Key and using the scroll wheel of the mouse. To get the actual size of the map, click 'Actual Size' in the View Menu.

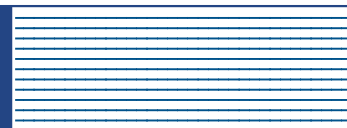
You can play other such games too



Let's assess

1. Complete the table given below with the help of *KGeography* software.

Serial no.	State	Capital
1.	Karnataka	.....
2.	.....	Itanagar
3.	.....	Bhopal
4.	Himachal Pradesh	.....
5.	Andhra Pradesh	.....
6.	.....	Aiswal



2. Identify the names of states which are bounded by the Indian Ocean using *KGeography* software.

Indian Ocean	State
Arabian Sea	Kerala
Bay of Bengal	

3. Do the following activities with the help of *KGeography* and write down the facts in your notebook.
- ◆ Find the states where harbours can be built.
 - ◆ Find the states which do not have a coastal line.
 - ◆ Find the country that shares the largest boundary area with India.



Extended Activities

1. With the help of *KGeography*, find the Indian states which share their boundary with Bangladesh. Then type the names of these states in LibreOffice Writer.
2. With the help of *KGeography* identify the Indian states which share their boundary with our neighbouring countries and prepare notes on these.



Chapter 9

Area and Perimeter



Once, a farmer came to see a king. He presented the king with the best of his harvest. The king was very pleased. He decided to reward the farmer with a suitable gift. He gave him a 200metre long rope and said, “Stretch this rope to its maximum in the shape of a rectangle . You are welcome to measure and take that much land for yourself.”

Can you construct a rectangle with a perimeter of 20 cm?

Did you read the story?

How can the farmer acquire the maximum land using his rope?

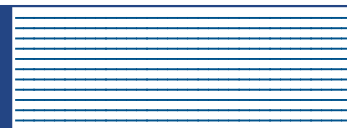
Let us help the farmer. Let us use 20 cm instead of 200m for this activity.

Threads of 20cm length are given to all.

If you construct rectangles using threads of 20 cm each, what would be the perimeter of each rectangle?

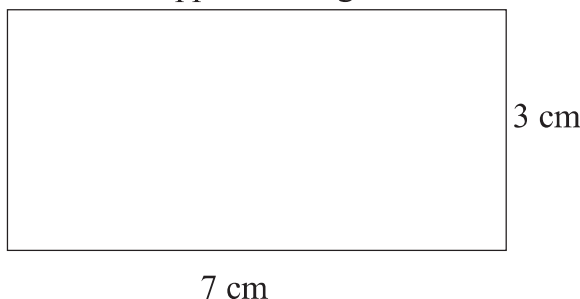
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Can you make a rectangle of 20 cm perimeter?

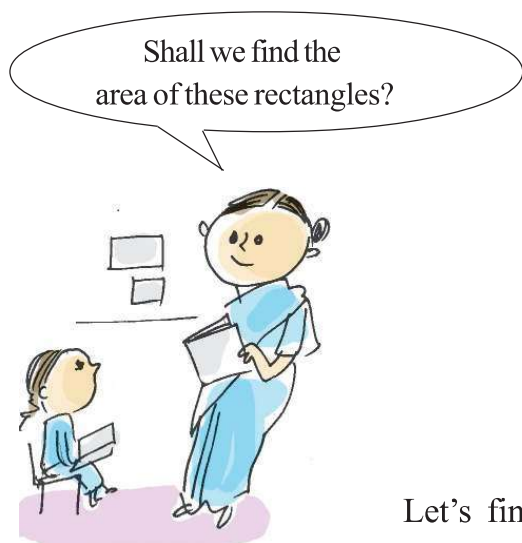


The children take up the task with great enthusiasm. They construct different rectangles with their threads .

This is Appu’s rectangle



How many rectangles of this kind can be constructed? Find the length and breadth of these rectangles. Complete the table. (Table 9.1)



Length	Breadth

Table 9.1 Length and breadth of the rectangles

Let’s find the area of the rectangles in the table.

Activity 9.1

Area and Perimeter of rectangles

Hope you remember how we constructed rectangles from squares in the lesson ‘Area’. The software Area Builder in PhET will help us to do this activity on our computers. Let us familiarize ourselves with how to operate this software.

- ◆ Let’s open Area Builder.

Applications ➡ School Resources ➡ PhET ➡ Area Builder

Click the option 'Explore'  on the window.

- ◆ Let's know more about *Area Builder* Window. (Figure 9.1)

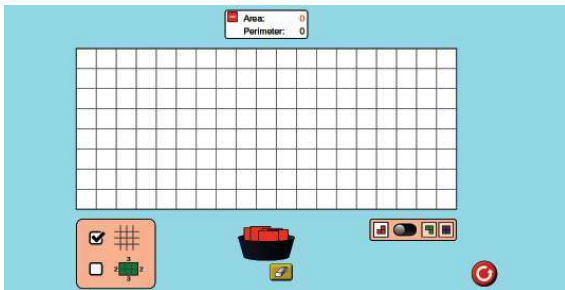




Figure 9.1 Area Builder Window

- ◆ Let's fill the grid by placing small squares from the bowl given below and construct rectangles. (Table 9.1)
- ◆  Click the tool for deleting the squares created earlier.
- ◆ To compare 2 rectangles created at the same time, turn  this button to the right.
- ◆ Now try to construct the two rectangles. Figure.9.2.

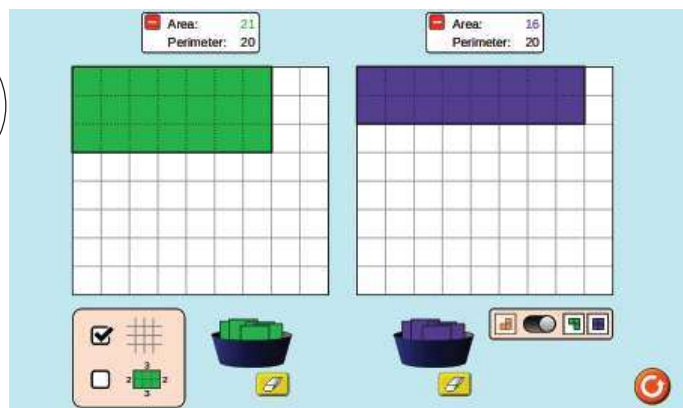
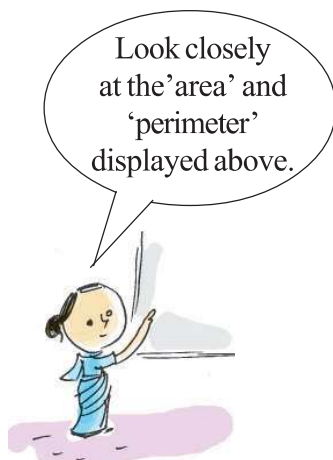
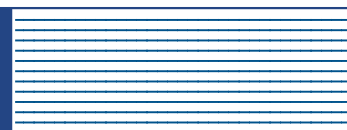


Fig.9.2 Two rectangles



- ◆ Find the measurements of the rectangles using Area Builder and complete the table.(Table 9.2)

Length	Breadth	Perimeter	Area
7	3	20	21

Table 9.2 Measurements of rectangles

Which rectangle has the greatest area in the table given above? Note your findings below.

.....

Now find the measurements of the rectangle the farmer needs to create to acquire the maximum possible land?

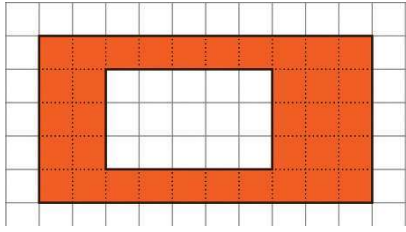
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 **Let's assess**

- ◆ Construct a rectangle having an area of 20 sq.cm using Area Builder. Fill the table given below with the proposed numerical values of length and breadth.

	length	breadth
1
2

- ◆ Construct a rectangle with perimeter 24cm. and breadth 5cm. Note down its length and area in your notebook.



- ◆ Construct the above picture using Area Builder.

Find the areas of the small and the large rectangles. Find how these are related to the area given by the software.



Extended Activities

- ◆ Construct a rectangle with an area of 15 sq.cm. using Area Builder and do the following activities.
 - Create figures with less area without changing the perimeter.
 - Create figures with less area, increasing the perimeter.
 - Without changing the area, form other shapes by increasing the perimeter.

