



## Chapter 1

# Design Factory

*Several people were trying to load a few massive boards wrapped in vibrant colours onto a vehicle. Some of the boards feature smiling faces, while others display tightly packed lines resembling dancing figures. A few are entirely filled with words. Scattered around, both big and small boards seem to be waiting for someone to pick them up.*

*As we stepped into the long veranda, lined on both sides with canvases covered in vivid drawings and writings, a man emerged. Wiping his hands on a piece of cotton waste and holding a brush that seemed ready to drip ink into one of the paint cups, he looked every bit the*

*artist. He and his friends had beautifully written the name of the school on the top of our new school building.*

*He invited us into a large, beautifully decorated room. Inside, several people were working on computers with large screens, alongside printing machines unlike any we had seen before. In this room, letters, lines, shapes, and colours come together to create paintings that speak volumes.*

*Even the simplest line in their work can bring joy to anyone who sees it.*

*"This is where graphic designing happens," he said.*

After visiting a design studio near the school and becoming quite familiar with graphic design, Sitara and her friends started preparing a description of it, as directed by their teacher.

## Graphic Designing: The World of Lines and Colours

Have you ever seen posters, banners, and boards used to promote ideas and products, and noticed their content and design?

Making posters and banners is a form of creative work. Many artists involved in designing posters and banners for various events in our region often use graphic editing software to assist in their work.

We have become familiar with various graphic design software in previous years. Free software such as GIMP, Krita, Inkscape, Scribus, and LibreOffice Draw, which are available on our school laptops, can be used for graphic editing tasks. Inkscape and LibreOffice Draw belong to the category of vector graphic editing software. The products created with these tools offer numerous advantages.

Inkscape is a free graphic designing software that both artists and web developers use to create high-quality vector designs. How about using Inkscape to design a digital poster to commemorate Hiroshima Day?

You have already created notices, wall magazines, and posters. What are the steps to design a poster on a computer?

- Creating canvas as per the requirement.
- Adding text in the right way to effectively share the message of the poster.
- Arrangement of drawings, images, and shapes to make the poster attractive.
- .....
- .....
- .....



### **Inkscape, a Design Factory**

Inkscape is a Free vector graphic designing software. Inkscape is widely used to design logos, illustrations, posters, brochures, and typography with accuracy and creativity. This software has many tools that are easy to use for tasks like drawing, shape creation, and editing.

Inkscape's default file format is Scalable Vector Graphics (SVG). Inkscape supports file formats such as SVG, AI, EPS, PDF, PS, and PNG.

Let's see how these elements can be put together in the poster to create a design that stands out and grabs the viewer's attention.

Open the Inkscape software on your computer to create a poster. Let's explore the window that opens up. (Fig 1.1)

On the left side of the screen, you can see the Inkscape tools and the **colour palette** below. Place the mouse on each tool to see its name.

Now, let's begin creating the poster.

First, we need to set up the canvas.

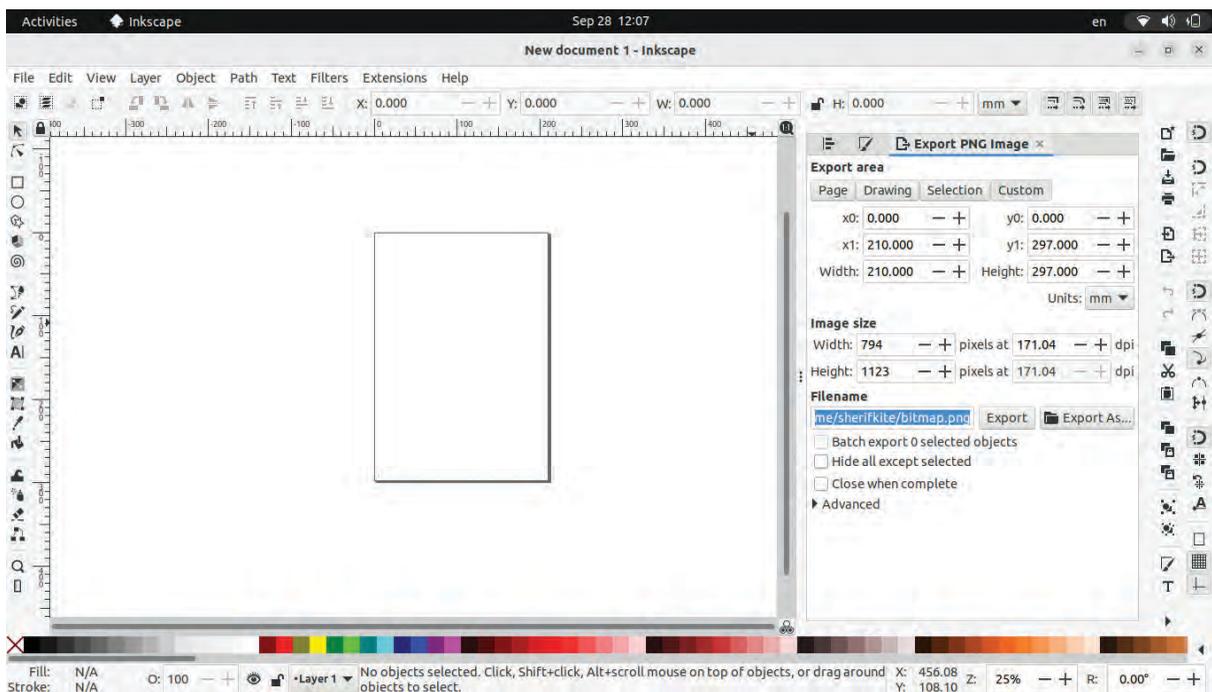


Fig 1.1 Inkscape Window

## Let's prepare the canvas

You can't create a picture without a canvas. The canvas serves as the foundation for the ideas on a poster to grow and develop. Inkscape allows you to choose a page size that best suits your design. You can change the page size, units, and orientation at any time while creating your poster.

The workspace in Inkscape includes the empty area outside the page as well. This area can also be used to create design elements.

We have to create a poster with dimensions of 300 mm x 350 mm. Open the **Document Properties** window in Inkscape and adjust the page size to match the dimensions of our poster.

### To Adjust the Page Size

- Open in the order of **File** → **Document Properties** (you can also use the shortcut key Shift + Ctrl + D).
- In the window that opens, you can either choose an existing page size or type the width and height in the units you want to create the page.
- Here, you can also select the page orientation. (Fig 1.3)

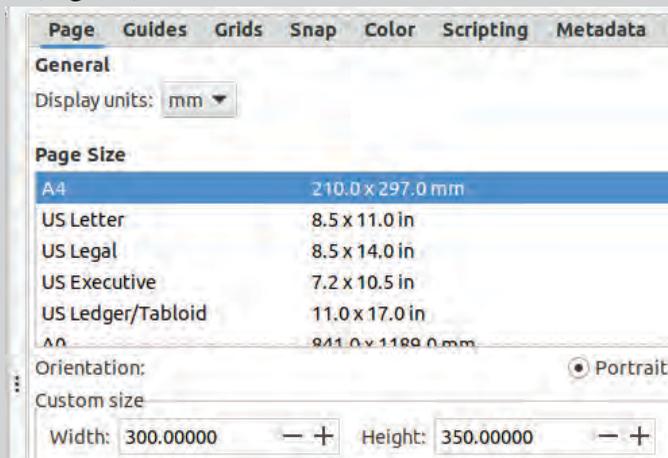


Fig 1.3 Document Properties Window

### Let's Draw, Write, and Explore Tools

Inkscape offers a wide range of tools for both simple and complex graphic design tasks. Select tools from the toolbar on the left side of the canvas, draw various shapes in the workspace, and explore their uses. Then complete Table 1.1.

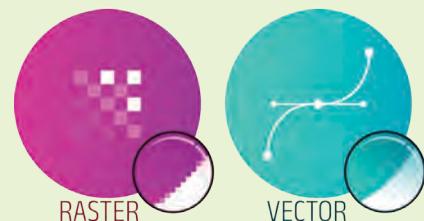


Fig 1.2 Raster and Vector

### Vector Images Raster Images

The software GIMP and Krita, which you have learned about in previous classes, are Raster image editing tools. Since Raster images are made up of pixels, they may become pixelated or lose quality when scaled. JPEG and PNG are examples of Raster file formats.

Vector images are those that can be resized without losing quality. They are created using mathematical equations that define the lines and shapes. Their features include ease of editing, the ability to scale without loss of quality, and small file size. SVG and EPS are vector file formats.

## Tools in Inkscape

- Select **Create Rectangle & Squares (R)** from the toolbar to draw a square.
- Clicking on this square a second time will allow you to rotate it, converting it into a Parallelogram (Fig 1.4).
- You can select objects using the **Select and Transform Objects (S)** tool to change their size.
- Resizing the object by pressing the Ctrl key, will resize the object's length and width proportionally.
- By clicking on the **colour palette** and selecting **Fill Color**, a colour can be applied to objects. Holding Shift while selecting a colour will add the color to the object's border (Stroke).
- Formatting can be done by taking the **Create & edit text objects (T)** tool from the toolbar and typing the text (text format options appear in the **Tool Controls bar** at the top of the window when text is selected - Fig 1.5).

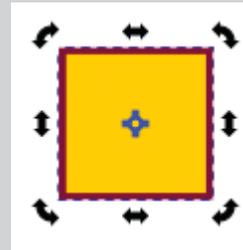


Fig 1.4 On clicking the object a second time

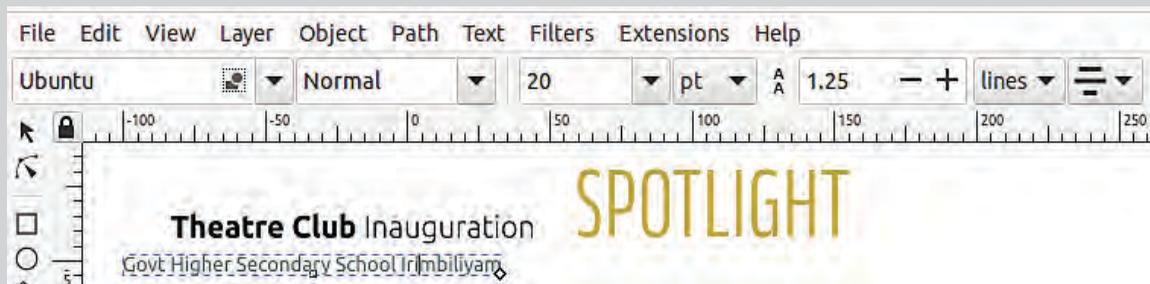


Fig 1.5 Text Format options

Tools	Use
Create circles, ellipses, and arcs (E)	To draw circle
Draw Bezier curves and straight lines (B)	
Draw free hand lines (P)	
Edit Path by nodes (N)	
Create and edit Gradients (G)	

Table 1.1 Some tools in Inkscape and their uses

## A Background for the Poster

The background of a poster gives it life. The background plays a significant role in the overall appeal and effectiveness of the product.

The background colour of the poster can be chosen based on the type of content that will be added later. Let's see how we can create a background for our poster.

You can use a single color (solid color), a blend of multiple colours (gradient colour), or an image, either individually or combined, for the background. Let's follow these steps to give our poster a solid colour background.

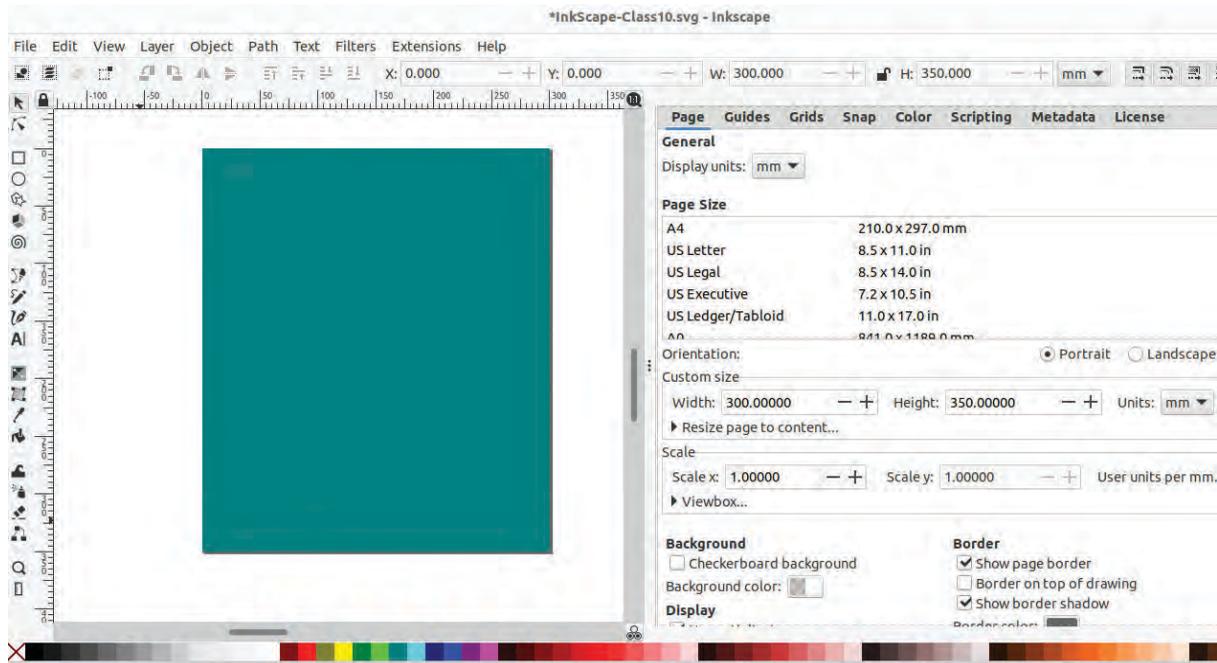


Fig 1.6 After Completing the Poster Background

### To Remove Colour

To remove the colour assigned to objects, simply use the X at the left end of the colour palette. Holding Shift while performing this action will remove the stroke colour.

### To make background for poster

- Select the **Create Rectangles & Squares (R)** tool from the toolbar and draw a square on the page as shown in Fig. 1.6.

- To adjust the size of the rectangle precisely, select the rectangle using the **Select Tool**, and then type Width & Height (the same values as previously entered for the page) in the **Tools Controls bar**.
- To position this square exactly on the page, set the X, Y values to 0 (zero) in the formatting toolbar.
- Select an appropriate colour from the palette below (the selected colour can be changed later if needed).

## Be Clear and Loud

The message on a poster is an important part of communicating its idea clearly. The style, size, colour, and arrangement of the text should be designed in an attractive way. Designers often focus on delivering the message using as few words as possible but in the most powerful way.

We are creating a poster for Hiroshima Day. Before you start designing, it's important to decide what message you want to share with people and how the design should look. Use the text tool to add an anti-war message to your poster, similar to the one in Fig. 1.7.



## Adding Text to the Poster

- Using the **Create and edit text objects (T)** tool, add the text to the poster. (Example: SAY NO TO WAR, AUG 06, HIROSHIMA DAY)
- It is better to type words that require different formatting in separate text boxes.
- Select the *Font Type, Size, Colour and Position* to make the text attractive. (Here, Font: Ubuntu Condensed, Size: 125 pt, Stroke Line Width: 2.5 mm are given.)
- To access the stroke settings, select **Fill and Stroke** from the **Object** menu.

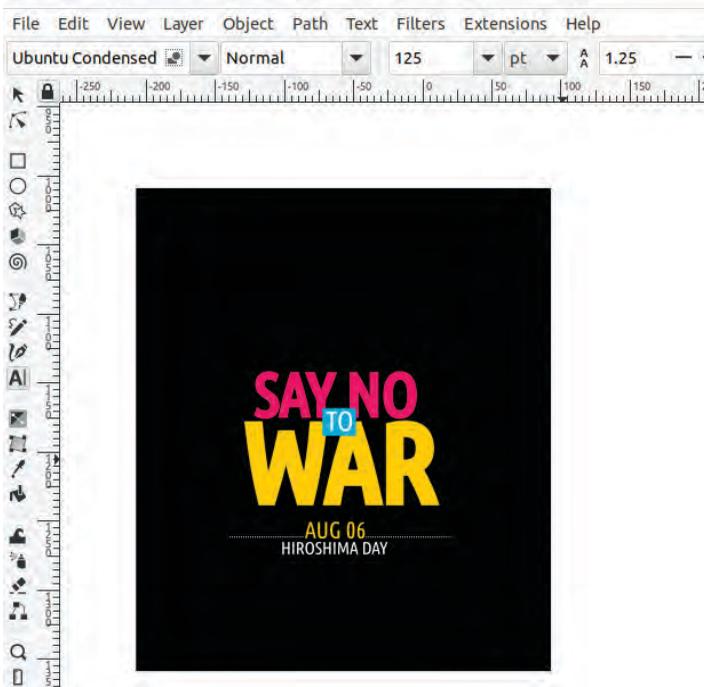


Fig 1.7 Text Formatting

Try arranging the typed message in the background as shown in Fig 1.7. Change the background colour according to the texts.

## Image Design and Editing

Including a picture or design that represents the idea in a poster helps to communicate easily with viewers. Inkscape provides facilities to draw simple images, add photos, and edit them as needed.

The message of Hiroshima Day is against war. White colour, olive branches, and doves are often used as symbols of peace.

Including an image of a dove flying with olive leaves in the poster would make this idea clearer. Shall we try it?

A drawing of a dove (dove.svg) created in Inkscape is available in the **School\_Resources** folder.

Open this file in Inkscape through **File** → **Open**, then copy the image and paste it onto the canvas. (Fig 1.8)

## Message in the Poster

We know that the events in Hiroshima and Nagasaki were unprecedented acts of inhumanity in history. Shouldn't the message against war be the focus of this poster?

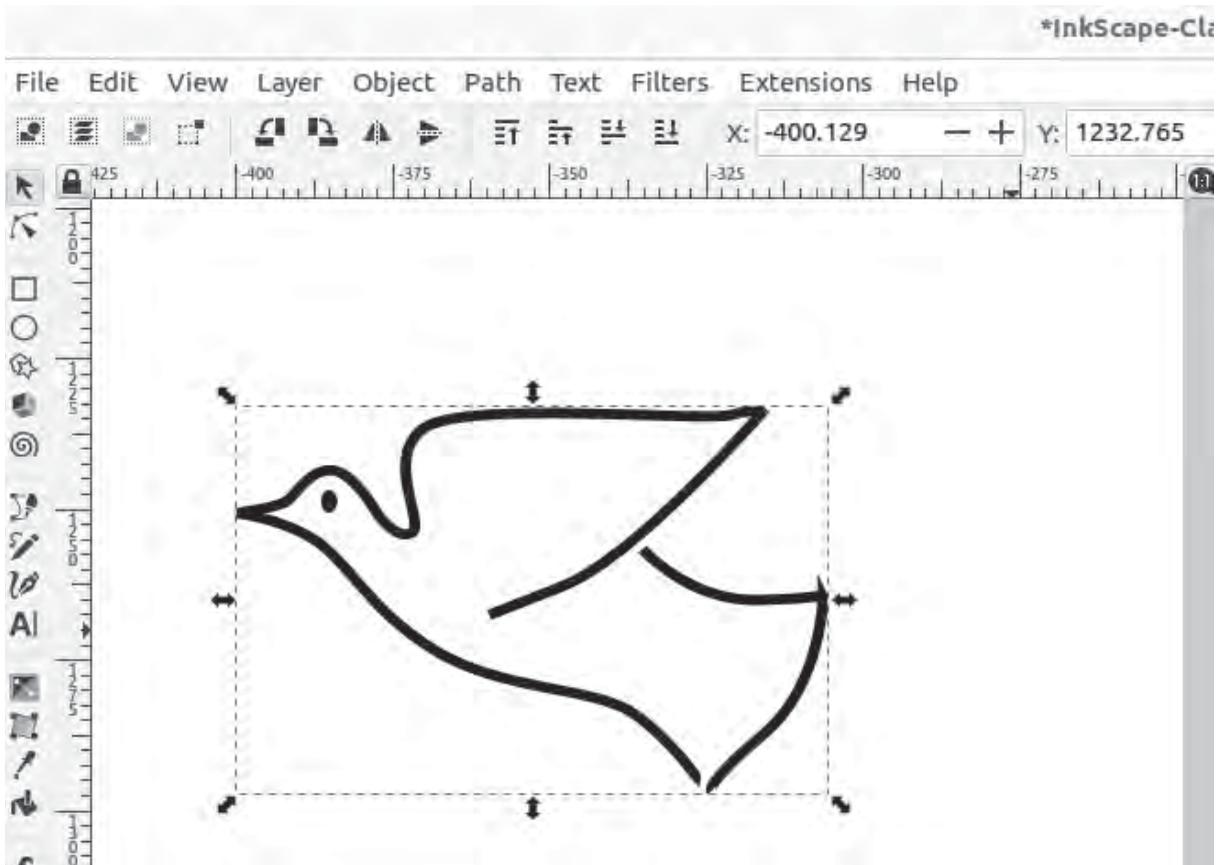
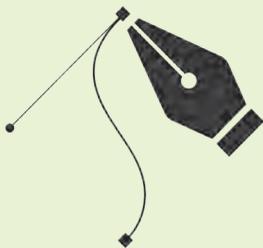


Fig 1.8 Picture of Dove Drawn in Inkscape

The outline of the dove is drawn using the **Bezier Curve** tool. The **Bezier Curve** Tool (B) in Inkscape is used to create regular lines and curved shapes.

Now we need the olive leaf. Let's draw it using the **Bezier Curve** tool.

### Bezier Curve Tool



The **Draw Bezier curves and straight lines** tool (Pen Tool) in Inkscape is an important tool. This name is derived from the name of Pierre Bézier (1910-1999), a French engineer.

It is used to draw straight lines and curves that can be adjusted using Nodes and Handles

The Bezier Curve tool can be used to design complex shapes, logos, illustrations, and fonts.

First draw the Leaf Stalk as shown in Fig 1.9.

### To Draw the Leaf Stalk

- Select the Bezier Curve tool and click where you want to draw on the canvas (an anchor point is formed there).
- Move the mouse and click at the point where you want to end the line, then press **Enter**. (The line can also be ended by Double-click or Right-click at the endpoint).
- To curve the line on both sides, select the **Edit path by nodes** (N) tool and click on the parts of the line where you want to curve, then drag them (see Fig 1.9).

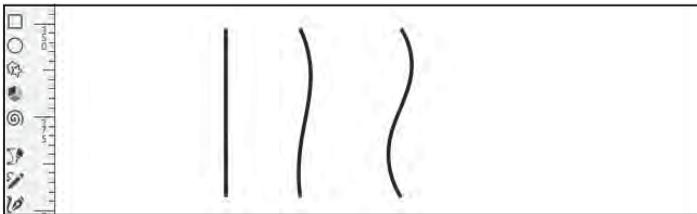


Fig 1.9 Olive Leaf Stalk Created with Bezier Curve tool

Now, using the tool **Create circles, ellipses and arcs** (E), olive leaves can be drawn

### To Draw the Olive Leaves

- Draw a small circle using **Create circles, ellipses, and arcs** (E).
- Duplicate it (Select the circle → **Edit** → **Duplicate** (Ctrl+D) and combine it in such a way that the halves meet together.
- Give a different colour to the second circle created and reduce its Opacity. (To reduce the Opacity, just enter a number below 100 in the Opacity window found below the colour palette. (Example: 70) - see Fig 1.10).
- Now the common part of the two circles is in the shape of a leaf. To retain only this part, select both circles together and click on **Intersection** in the Path menu.
- Take duplicates of this as needed and place them at various spots on the stem that was drawn earlier.

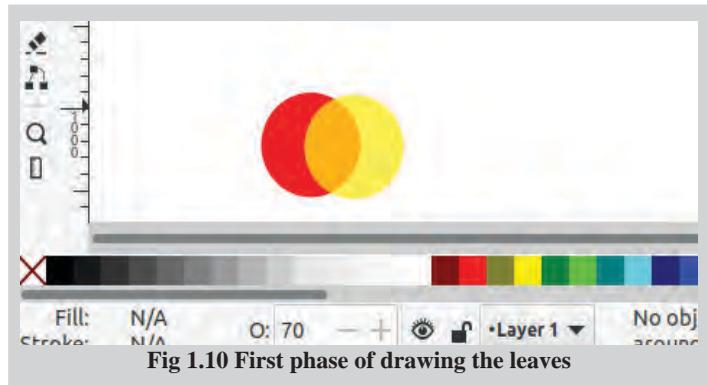


Fig 1.10 First phase of drawing the leaves

## Enhancing Shapes

Using **Fill and Stroke**, colours can be applied to both the interior and the border of shapes. The Stroke style window allows choosing different types of borders and adjusting their thickness.

To blend edges and bring shadows and a three-dimensional effect to designs, the blur option in the same window can be used. The Opacity adjustment is used to control the transparency of colours, making shapes partially or fully visible.

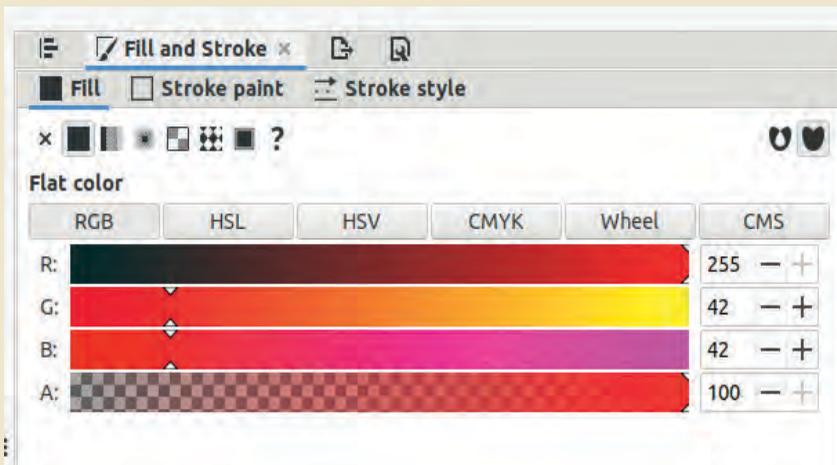


Fig 1.11 File and Stroke window

Make sure to adjust the size and orientation of the leaf accordingly. Don't forget to give colours that match the olive's stem and leaves. (Fig 1.12)

Once the activity is completed, select both the leaf and the stalk. Then, group them by pressing **Ctrl+G**. After attaching the brick to the dove's beak, the image of the dove flying with the olive leaf is completed.

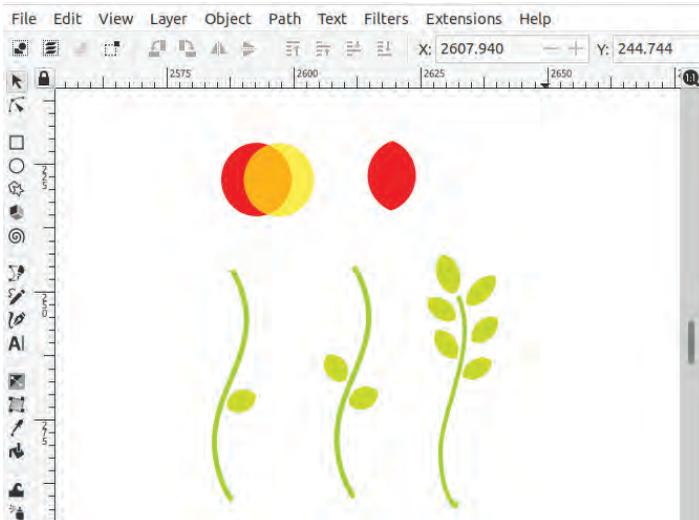


Fig 1.12 Olive Leaves Drawn in Inkscape

## Making the Picture Attractive

We can include the dove flying towards the sky with an olive leaf of peace in our poster. What can be done to make this image more attractive?

Draw a circle and add it to the background of the image.

### Drawing a Circle as the Background for the Picture

- Take the **Create circles, ellipses and arcs (E)** tool and draw a small circle. You can give the circle red colour.
- Bring the flying dove with the leaf into this circle.
- Right now, the circle is on top, and the dove is underneath. Use the **Pg Up** and **Pg Dn** keys to bring the dove to the top.
- To change the colour of the lines (Stroke colour) used to draw the dove (e.g. white), select the image and hold down the Shift key while clicking on the desired colour. (Fig 1.13)

How about improving the circle we created by adding a few smaller circles within it to form a pattern and make the design more attractive?

First, remove the dove from the circle, and then make changes to the background circle.



Fig 1.13 When background is added to the picture

Try the activities given below.

### Pattern can be Created by Joining Multiple Circles

- Duplicate a circle, reduce its size slightly, and arrange it inside the original circle. (Make sure the ratio of the circle does not change when altering the size).
- The new circle can be given a slightly darker colour than the existing one.
- Draw a few more circles in this manner, gradually decreasing in size, and arrange them so that they come to the centre of the circle, giving them more and more dark colours.
- Use Align and Distribute in the Object menu to align and arrange multiple shapes as desired (Figure 1.14).

### Align and Distribute

**Align & Distribute** is a powerful tool for arranging design elements with accuracy. It allows you to position multiple objects as intended, either next to each other or relative to the page.

You can open this window by pressing the Shift + Ctrl + A keys together.

The items can be arranged either by their page order or based on the first or last item selected.

The **Align & Distribute** feature is especially helpful for designs that require high accuracy.

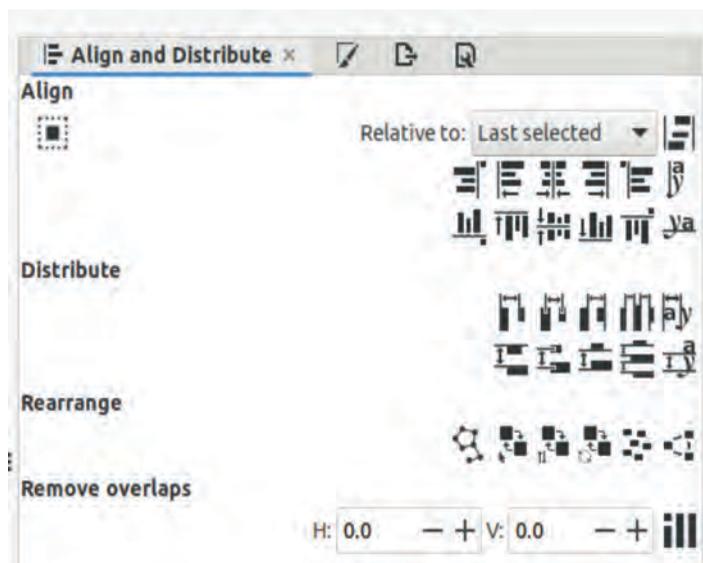


Fig 1.14 Align & Distribute Window

Find out the method in **Align and Distribute** which was used to arrange the circles concentrically.

The circle pattern is ready as the new background. Now, reattach the image of the flying dove holding the olive leaf at the top of the circle. Do you notice anything strange?

The dove and the olive leaf have gone below the circle, haven't they?

- Which key can be used to bring the dove to the top?
- What must be done to make this dove turn right as in Fig 1.15? Check the **Tool Controls bar** at the top of the canvas to see if this option is available.
- Can we position the dove's beak slightly outside the circle?

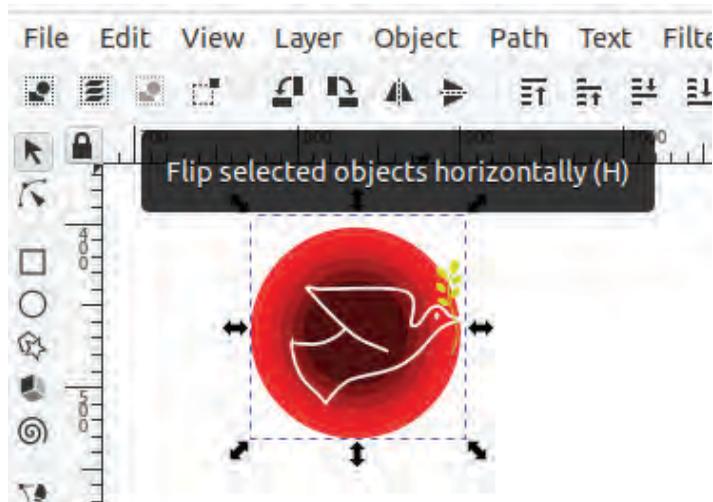


Fig 1.15 Flipped Image

Once the text, images, and other design elements needed for a poster are ready, the final step is to arrange them in an attractive and effective layout.

Arrange the image and text in appropriate positions above the square background of the poster. Ensure a balanced relationship between all the design elements.

When you revisit the poster and imagine yourself as a viewer with different preferences, you'll likely spot areas that can be improved. Use your creativity to



Digital posters are visual communication tools created using graphic designing software. They convey messages through design elements such as text, graphics, and imagery.

They are especially useful for sharing ideas on social media platforms. Digital posters differ from traditional posters due to their variety, ability to be continuously updated, and potential for widespread distribution.

add and refine details, making the poster more visually appealing (Fig 1.16).



Fig 1.16 The Completed Poster - Against War

### Exporting in Inkscape

Inkscape files can be exported to a variety of formats, including PNG, JPG and WEBP. Be sure to select the appropriate resolution, file size, and format for web and print projects. For screen/web display, a resolution of 96dpi is sufficient, while for print, 300dpi is preferred.

### Export the Poster from the Canvas

The anti-war poster for the Hiroshima Day campaign is now complete. **Save** the file once more.

Shouldn't the poster be exported from the canvas? We can convert the image to PNG format for convenient sharing through social media.

Export the poster you created to PNG format using the **Export PNG Image** option.

### Export to PNG from Inkscape

- Select and group all the objects in the poster together.
- Select **File** → **Export PNG Image**. (Fig 1.17)
- In the window that opens on the right side, select **Selection** from the Export area. (You can export either the entire page or only the selected portions.)

- Make necessary changes in Resolution.
- Name the file and choose the folder to save it in.
- Then export the file.

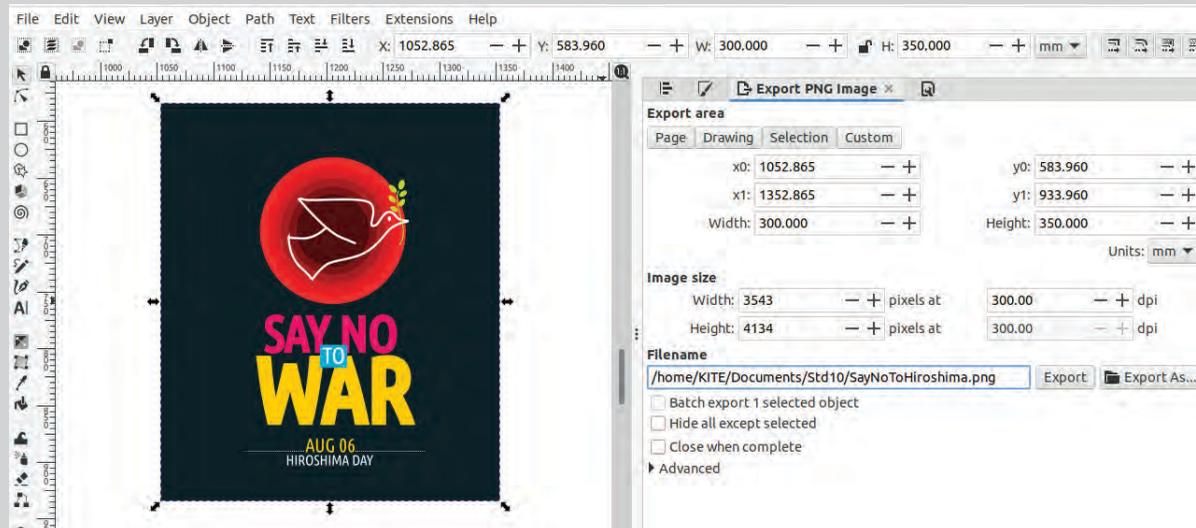


Fig 1.17 Inkscape - Export window

By the time the poster was finished, everyone had become skilled at designing. Now, prepare another poster on your own using Inkscape.

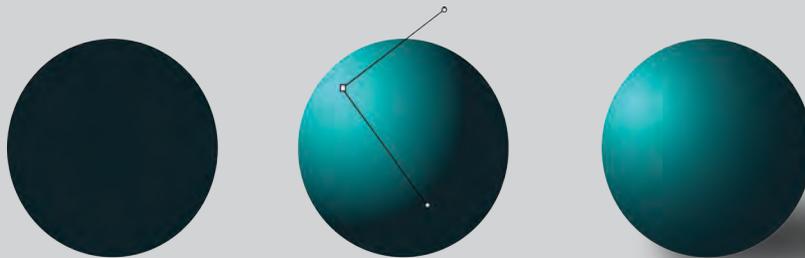
## Shadows and Light in Harmony

It is easy to draw three-dimensional shapes using Inkscape. This is done by using shading that creates a sense of the glow and shadow that is created when light falls on an object. Inkscape's Gradient tool and Blur effect can be used for this purpose. Let's see how to draw a ball using these.

- Select the **Create circle and ellipses, arcs (E)** tool in Inkscape and draw a circle (you may need to hold down the Ctrl key to make it a full circle).
- A dark colour (e.g., dark blue) can be applied to the circle.
- Make a copy of the circle and place it on top (Ctrl+D).
- After selecting the **Create and Edit Gradients (G)** tool, choose **Radial Gradient** from the **Tool Controls bar**. Then, click on the upper circle and drag (the Gradient Handles will appear on the circle).
  - For shapes in a straight line, **Linear Gradient** should be used.

- Then, using the Edit paths by Nodes (N) tool, click on the middle of the Gradient Handles to give it a lighter colour (e.g. light blue) and click on the edges to give it a darker colour.
- Adjust the brightness of the light and the depth of the darkness on the opposite side by dragging, stretching, and repositioning the Gradient Handles as needed.

To add the ball's shadow, draw an ellipse beneath it and adjust its position and size. Set the colour to black, and in the **Fill and Stroke** window, adjust the Blur and Opacity settings as needed. Use the **Pg Dn** key to position the shadow below the ball.



### Let's Assess

- ♦ Which tool should be used in Inkscape to create custom shapes by editing nodes and curves?
  - a) Rectangle Tool
  - b) Circle Tool
  - c) Pencil Tool
  - d) Bezier Tool
- ♦ What happens when two shapes are combined and selected in Inkscape, and the 'Path → Difference' operation is applied?
  - a) The two shapes combine to form one.
  - b) The part where the two shapes join is removed from the figure below..
  - c) Copies of both shapes are created.
  - d) The two shapes are divided into two parts.
- ♦ What happens if you set the Transparency of an object to 0% in Inkscape?
  - a) The object becomes transparent and cannot be seen.
  - b) The object turns white.
  - c) The object turns black.
  - d) The object is removed from the canvas.



## Extended Activities

1. Use Inkscape to create more smilies similar to these.



2. Draw the shape given below in Inkscape. Use 'Linear gradient' to design the outside of the cylinder.



3. A 6'x3' banner is needed to be placed behind the stage at the releasing ceremony of a short film made by teachers and students of the school. Design this banner in Inkscape and export it as a PNG file.
4. Prepare a cover page for the magazine that is intended to be published by the Vidyarangam Kala Sahithyavedi.
5. Imagine your school is hosting the Little Kites District-level camp this year. Use Inkscape to design a badge for the children participating in the camp.

