

# INKSCAPE BASICS



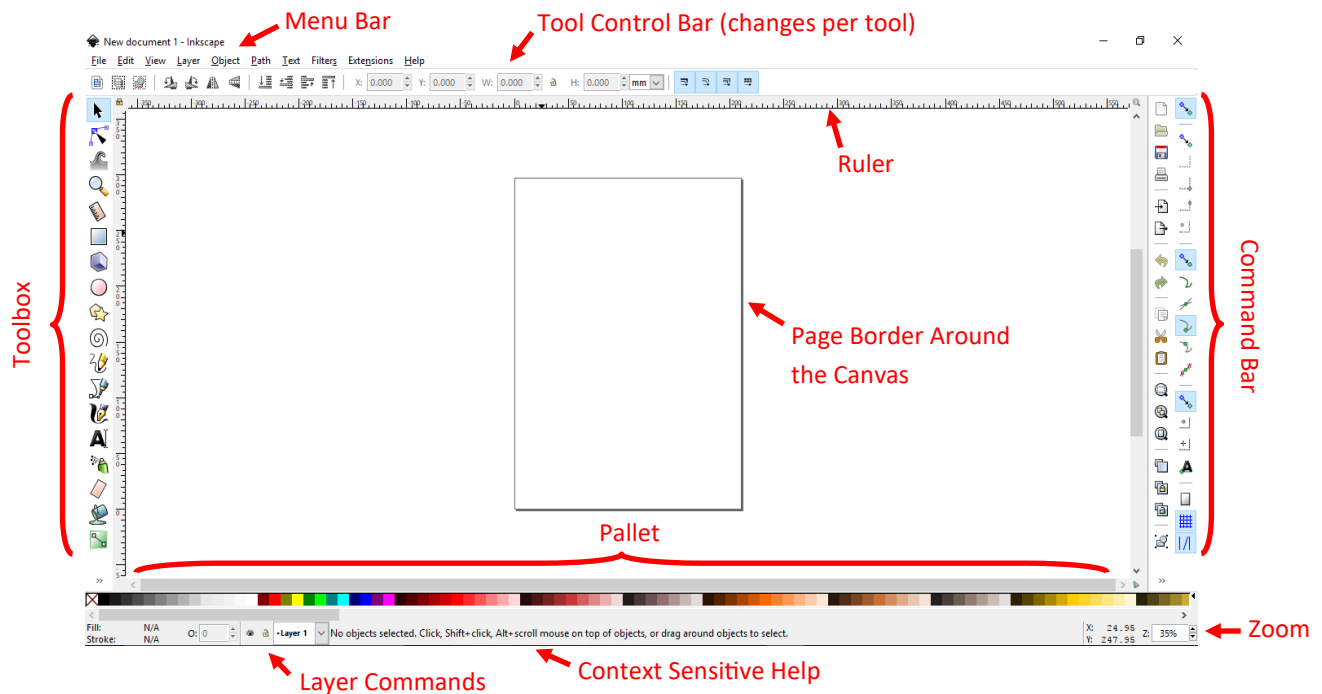
*Inkscape* is a free, open-source vector graphics editor. It can be used to create or edit vector graphics like illustrations, diagrams, line arts, charts, logos and more.

*Inkscape* uses Scalable Vector Graphics (SVG) file format when saving vector graphics. A SVG (.svg) file can be used to cut shapes and designs with the Makery's Laser Cutter! For more information or to download *Inkscape*, visit [inkscape.org](https://inkscape.org).

# GETTING STARTED

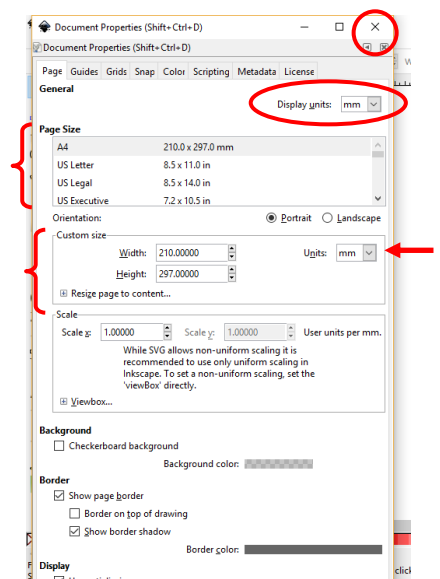
## The Layout

Similar to Adobe Illustrator, *Inkscape* has a graphics interface. Nearly every tool and function is depicted with an icon. If you are unfamiliar with the icon, simply hover your mouse over the icon and a label for the icon should appear. *Inkscape* also has keyboard shortcuts for nearly every tool and function. For a complete reference to the keyboard shortcuts, select **Keys and Mouse Reference** from the **Help** menu in the **Menu Bar**.



## Preparing Document Size

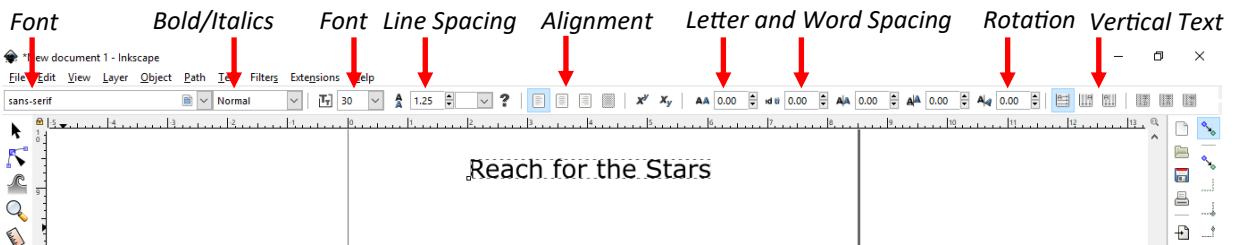
Before you begin designing, you will want to size the file for your project. Select **File** from the **Application Menu**. Then select **Document Properties**. A window will pop open for document settings. Default options include *US Letter*, *US Legal*, *Ledger/Tabloid*, and more. Use the **Custom Size** menu to create a custom paper size and desired unit of measurement. Default unit of measurement shown in the document ruler is millimeters (mm). To change, select **Inches** (or other desired measurement) from the **Display Units** dropped down menu. Exit from **Document Properties** menu to finalize adjustments.



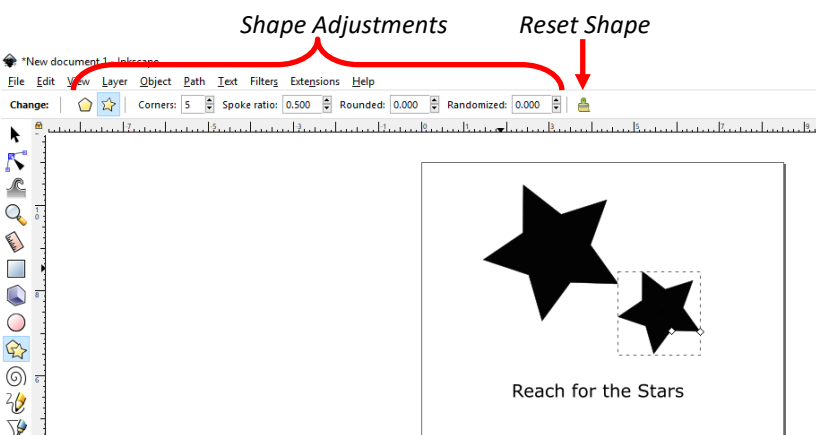
# TEXT AND SHAPES

## Activity 1: Inserting Text and Shapes

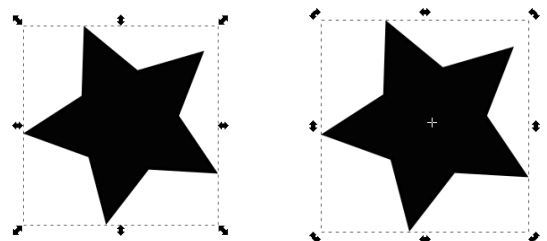
1. *Inkscape* is a robust tool that can be used to create gorgeous illustrations and technical vector designs, but for today's class, we are going to work with the basics: text and shapes. To insert text, select the **Text Tool** from the **Toolbox**. Once the **Text Tool** is select, you should notice that the cursor and the **Tool Control Bar** (located above the **Canvas**) has changed. Click on the **Canvas** to create a **Text Box**. Type "Reach for the Stars" in the text box. Select the text and use the **Tool Control Bar** to adjust font, font size, alignment, and more. *Note:* These adjustments are only available when the **Text Tool** is selected from the **Toolbox**.



2. Next, let's add some shapes! Select the **Stars and Polygon Tool** from the **Toolbox**. Just like with the **Text Tool**, the cursor and **Tool Control Bar** will change. Move the cursor over the document where you want your star to start. Click and drag to create the star. The **Tool Control Bar** for every shape tool has options to manipulate the shapes. For the **Star and Polygon Tool**, there are options to increase the number of corners, star ratios, and rounded corners. Also, there are nodes (white boxes along the shape outline) that can be clicked and dragged to adjust the base and tip radius of the star, or polygon.

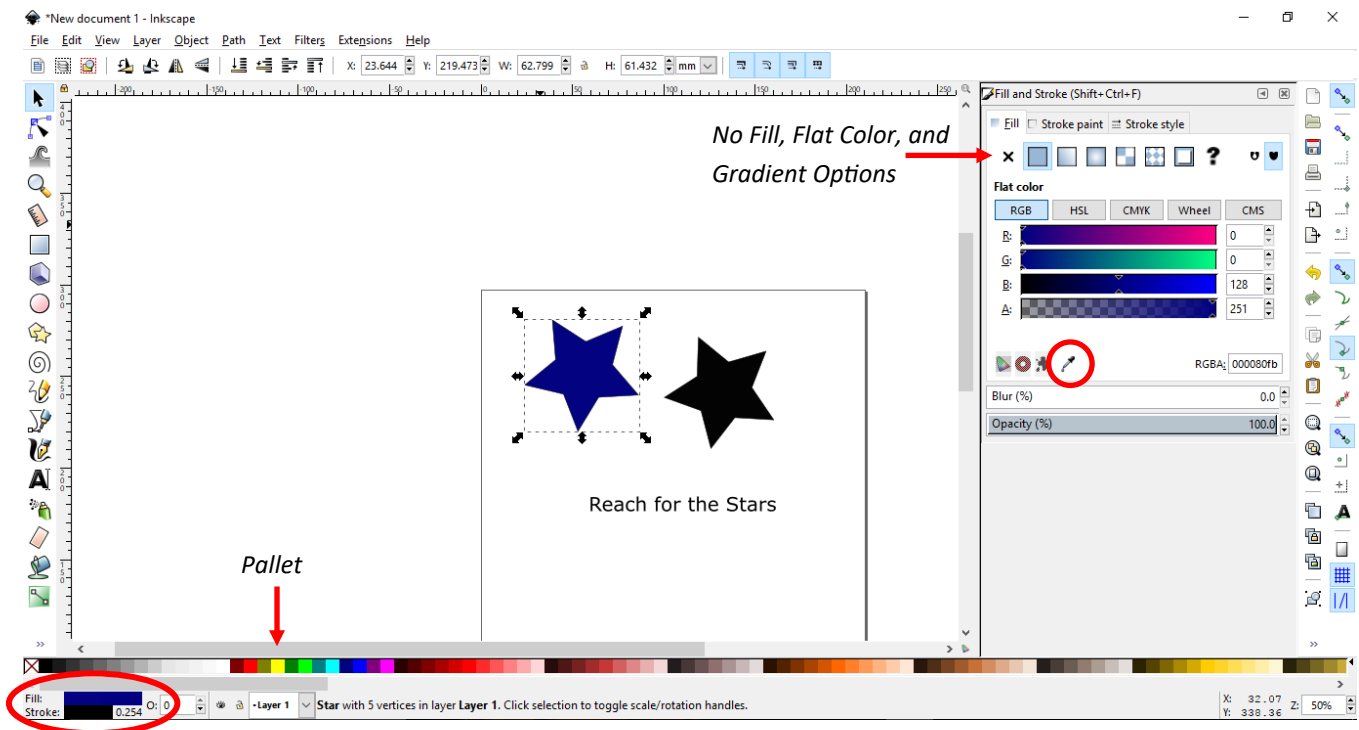


3. If needed, use the **Selection Tool** to move objects, text, and shape by clicking and dragging. Objects can also be rotated by using the **Selection Tool**. To **Rotate**, double click on the object. To get rotate arrow icons.

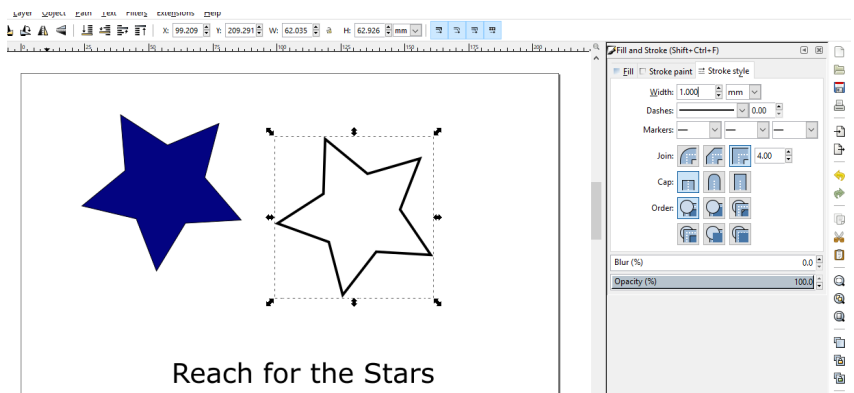


# CHANGING OBJECT COLORS

4. Next, let's change the color of the stars. Select the first star, then double click the **Fill** and **Stroke** color swatches in the bottom left. The **Fill and Stroke** menu will then open on the right. The **Fill** and **Stroke Paint** tabs have options to choose colors a variety of ways, including by **RGB**, **CYMK**, a color **Wheel**, or even using the **Pallet** at the bottom of the canvas. There is also an eyedropper tool to borrow colors from other images. Change the fill color of one of the stars using the **Fill** menu.

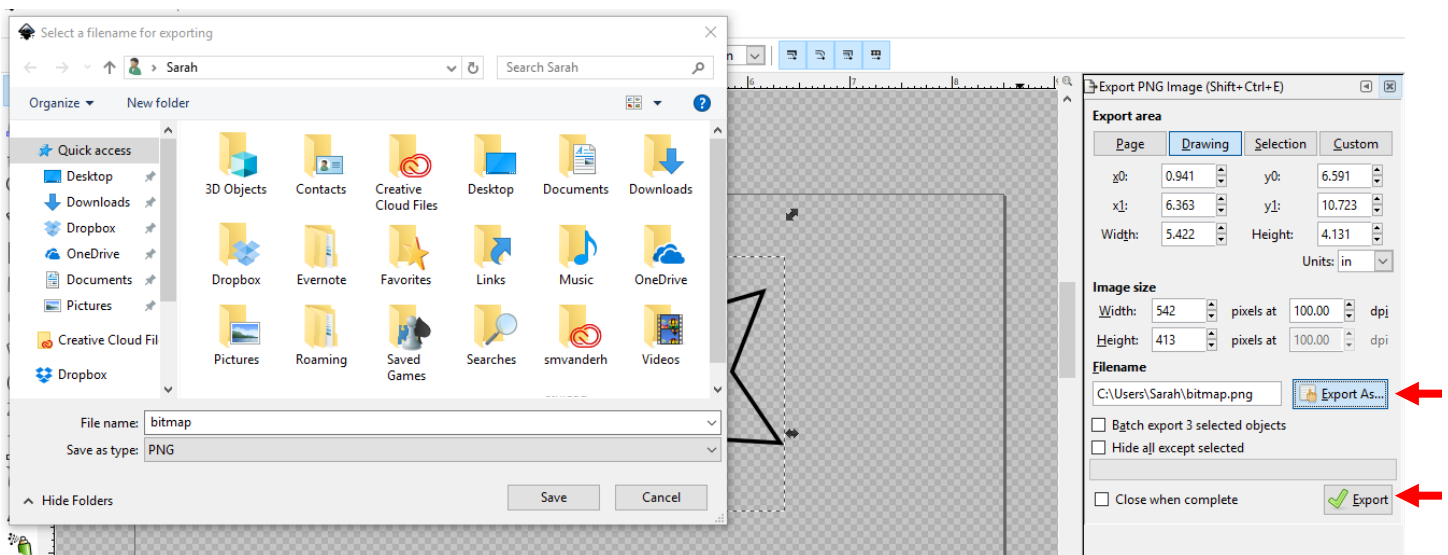
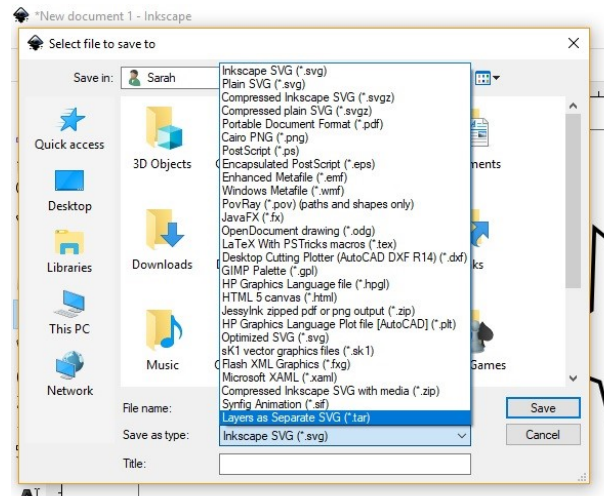


5. Let's change the second star so it only is an outline with no fill. After selecting the star, select the **No Fill** (indicated by an X) option from the **Fill** tab. Then go to **Stroke Paint** to change the color of the star's outline, if desired. Lastly, go to the **Stroke Style** tab. Confirm that the solid line is selected from the **Dashes** drop down menu. Increase the **Width** to 1.000 mm.



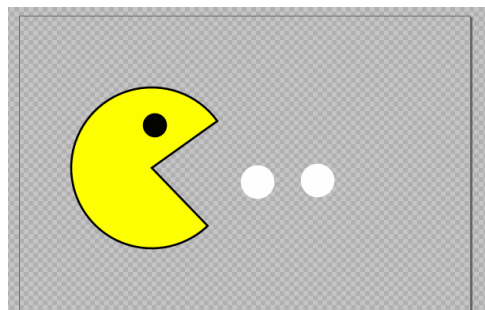
# SAVING AND EXPORTING

- To save your *Inkscape* artwork, select **File > Save** (or **Save As...** if you want to save a separate, updated version). *Inkscape* will allow you to save your file in several different file formats, the most popular being **Scalable Vector Graphics (.SVG)** or **Portable Document Format (.PDF)**.
- If you want to turn your design into a transparent Portable Network Graphics (.PNG), select **File > Export PNG Image...** (Shift+Ctrl+E). There is an option to export the entire page, just the area used for the drawing, or by selecting specific objects of your design. Pixel size and DPI can also be adjusted. Choose **Export As...** to give the .PNG file a name and storage location. Select **Export** to finalize. *Hint: Use "Checkerboard Background" in Document Properties.*



## On Your Own Activity!

Use the **Circle Tool** and adjustments located in the **Circle Tool's Tool Control Bar** to recreate Pacman! *Hint: Hold Ctrl to prevent the circle from turning into an oval.*

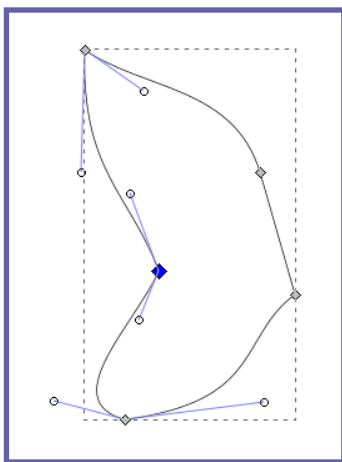
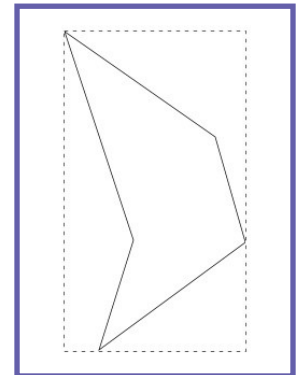


# BUTTERFLY EFFECT

## Activity 2: A Butterfly

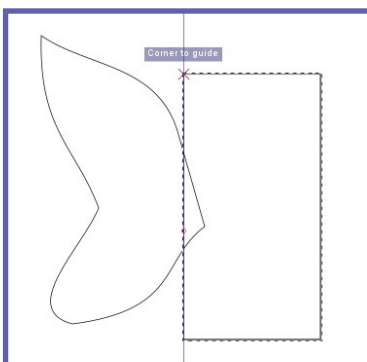
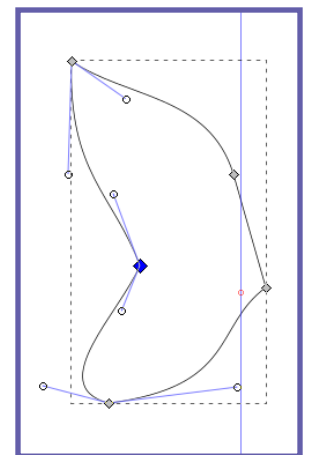
The Butterfly Effect is a method used to create half of your design and then duplicate and mirror to create a complete, symmetrical design. A perfect example of this would be to create butterfly wings, which will also provide practice for making lines and curves.

1. To begin, use the **Bezier Tool** to create a shape like the one to the right.



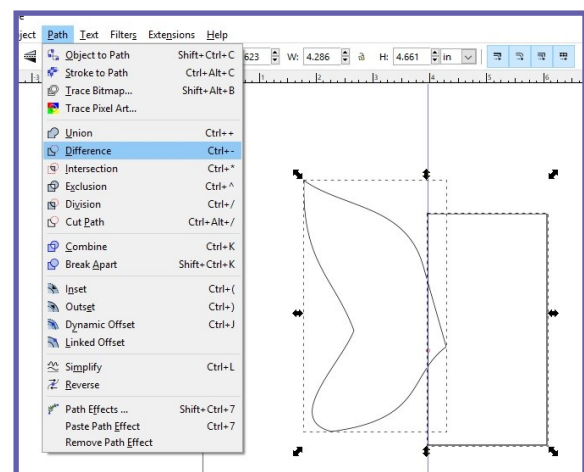
2. Next, use the **Edit Paths by Nodes** tool to manipulate the straight lines into curved lines. Click and drag the nodes (white or grey boxes) to adjust the intersection of the paths. Click and drag the line segment to produce a curve.

3. Next, create a **Guideline** to indicate the “spine” of the butterfly or design. To make a **Guideline**, click on the ruler on the far left and drag towards the canvas.



4. Use the **Rectangle Tool** to create a rectangle with **No Fill**. Verify the **Snap to Guide** function is selected from the **Command Bar**. Move the rectangle until it **Snaps** to the guideline.

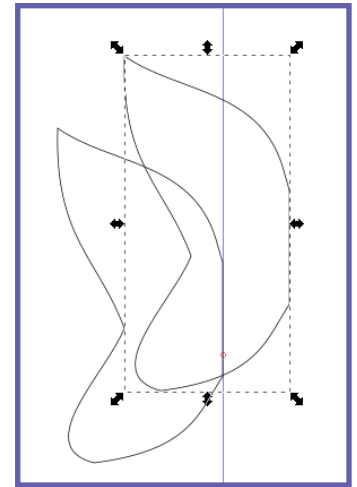
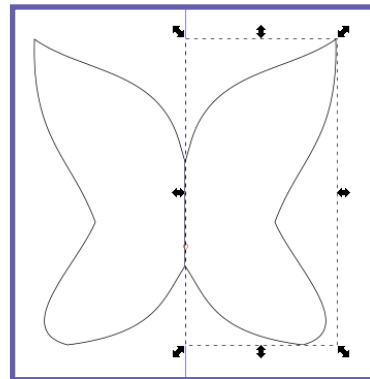
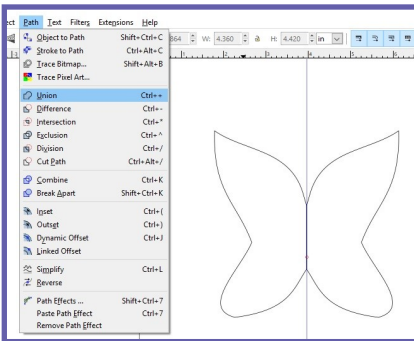
5. Use the **Selection Tool** to select both objects by clicking and holding **Shift**. Once selected, used the **Difference** option located in the **Path** menu from the **Application Menu**.



# BUTTERFLY EFFECT

6. Next, create a duplicate of the wing by either **Copying** (Ctrl + C) and **Pasting** (Ctrl + V), or by using the **Duplicate** (Ctrl + D) function.

7. Flip the duplicated wing horizontally by pressed the **H** key. Snap the wings together so they meet at the center.



8. Lastly, select both wings and use the **Union** function from the **Path** menu in the **Application Menu** to merge the objects together and eliminate the center line. Drag and remove guideline if desired.

## Activity 3: Tracing Bitmaps

Bitmap images (example: .JPEG and .PNG) files can be imported and tracked into *Inkscape*. To **Import**, select **File** from the **Application Menu** and then **Import**. Choose your file to import. To **Trace**, select **Path** from the **Application Menu**, then select **Trace Bitmap...** A menu will appear to choose your tracing options. Click **OK** to finalize. *Inkscape* will then create a series of traced paths and shapes on top of your original image. Move the traced image to the side. Delete the original bitmap, if desired. Your traced image can now be manipulated with tools such as the **Edit Paths by Nodes**.

