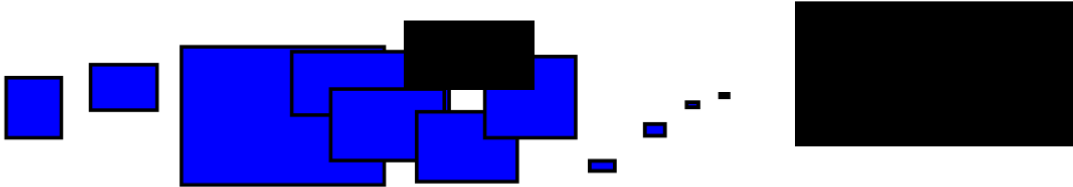


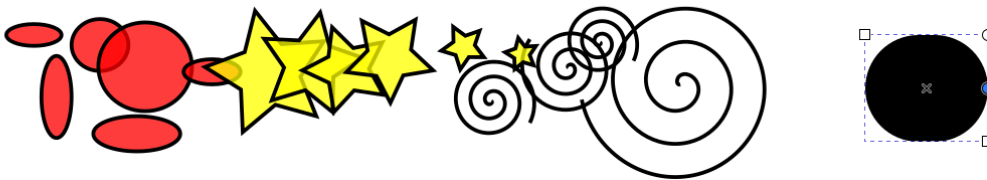
Introduction to 2D

Design for Laser Cutting

Time for some nice shapes! Click on the Rectangle tool in the toolbar on the left (or press **R**) and click-and-drag, either in a new empty document or right here:



As you can see, default rectangles come up with a blue *fill* and a black *stroke* (outline), and fully opaque. We'll see how to change that below. With other tools, you can also create ellipses, stars, and spirals:



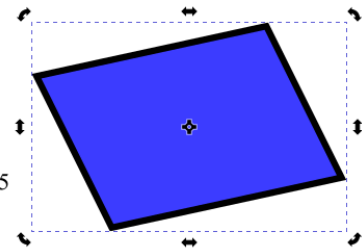
These tools are collectively known as *shape tools*. Each shape you create displays one or more *handles*; try dragging them to see how the shape responds. The Tool Controls bar for a shape tool is another way to tweak a shape; these controls affect the currently selected shapes (i.e. those that display the handles) *and* set the default that will apply to newly created

You will see eight arrow-shaped handles appear around the object. Now you can:

- *Move* the object by dragging it. (Press **Ctrl** to restrict movement to horizontal and vertical.)
- *Scale* the object by dragging any handle. (Press **Ctrl** to preserve the original height/width ratio.)

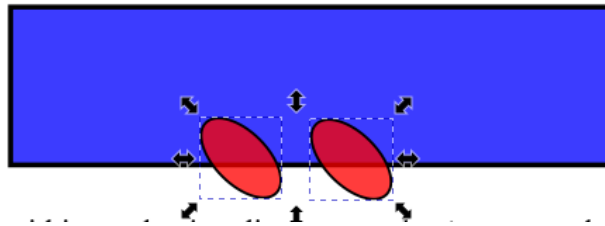
Now click the rectangle again. The handles change. Now you can:

- *Rotate* the object by dragging the corner handles. (Press **Ctrl** to restrict rotation to 15 degree steps. Drag the cross mark to position the center of rotation.)
- *Skew* (shear) the object by dragging non-corner handles. (Press **Ctrl** to restrict skewing to 15 degree steps.)



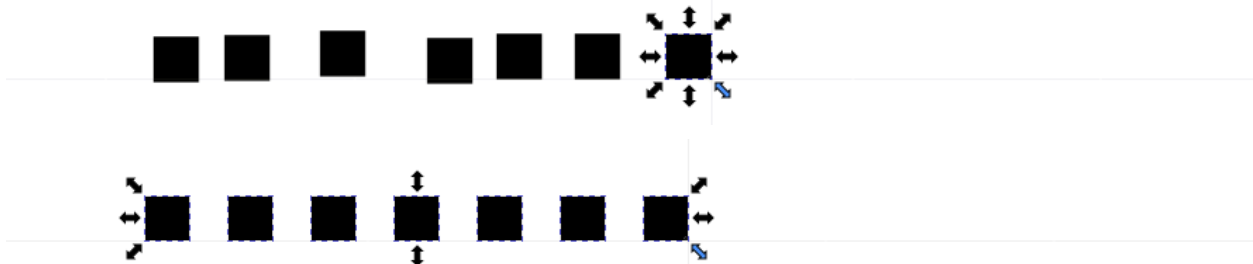
While using the Selector, you can also use the numeric entry fields in the Tool Controls bar (above the canvas) to set exact values for coordinates (X and Y) and size (W and H) of the selection.

Now, use rubberband (by drag or **Shift+drag**) to select the two ellipses but not the rectangle:



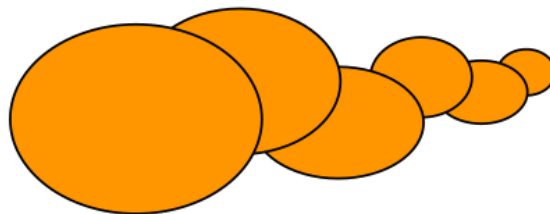
Duplication, alignment, distribution

One of the most common operations is *duplicating* an object (**Ctrl+D**). The duplicate is placed exactly on top of the original and is selected, so you can drag it away by **mouse** or by **arrow** keys. For practice, try to add copies of this black square in a line next to each other:

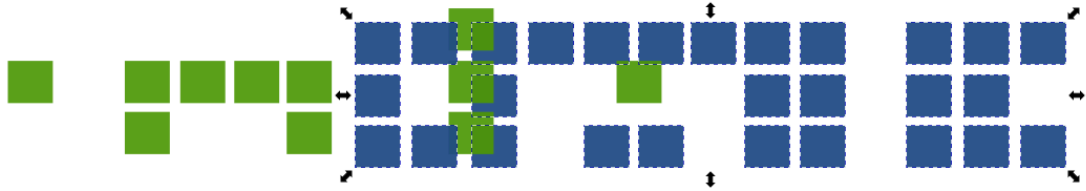


Chances are, your copies of the square are placed more or less randomly. This is where the [Object⇒Align and Distribute](#) dialog (**Shift+Ctrl+A**) is useful. Select all the squares (**Shift+click** or drag a rubberband), open the dialog and press the “Center on horizontal axis” button, then the “Distribute horizontally with even horizontal gaps” button (read the button tooltips). The objects are now neatly aligned and distributed with equal spaces in between. Here are some other alignment and distribution examples:

Practice using these commands by reversing the z-order of the objects below, so that the leftmost ellipse is on top and the rightmost one is at the bottom:



Inkscape can select other objects that are similar to the object that is currently selected. For example, if you want to select all the blue squares below, first select one of the blue squares, and use [Edit⇒Select Same⇒Fill Color](#) from the menu (**right-click** on the canvas). All objects with the same blue fill color are now selected.



Practice **Alt+click** and **Alt+drag** on the two brown shapes under the green transparent rectangle:

