Project Make Cubby Box

Please do not write on this paper.

Each student will make their own five-sided box out of cardboard to cut out on the laser cutter and put together with hot glue. Cubby boxes need to be able to stack on top of each other (typically they will be in stacks of two on the shelves.)

Criteria:

- Your box bottom must be at least 9 by 12 inches.
- Your box sides must be at least 3 inches tall.
- Your box needs to be durable so that it lasts for the entire year.
- Your box needs to be stackable so two people's boxes can fit in a single cubby.
- Your box must be able to be cut out from a single piece of cardboard 23 by 17 inches.

You will make your box out of cardboard which we cut on the laser cutter. You will use a single sheet of 23 by 17 inch cardboard to make it.

You will design parts for a cubby box that you can fit on this single sheet of cardboard that meets the above criteria. Part of the challenge is to figure out how to lay out the pieces for laser cutting making wise use of cardboard.

Before you design the box in Inkscape, though, you will make a small scale model of it using manila folder and tape.

Steps:

1. Make a scale drawing on a half sheet of graph paper with the pieces laid out to fit on the required pieces of cardboard (see above) and all dimensions labeled. Use 1 square = 1 inch as the scale on the graph paper. The whole diagram needs to fit within 23 by 17 graph paper squares. Put your name on the drawing. Use this drawing to help you with the next step. If you need help, talk with a classmate, or Mr. Hays.

2. Make a scale model (1 cm = 1 inch) out of manila folder and tape. Use a ruler, draw the parts out on a piece of manila folder, cut them out and tape them together. Put your name clearly on the bottom. **Show Mr. Hays your graph paper scale drawing and your model to get checked off before proceeding.**

3. Create an Inkscape file with the box laid out as rectangles to cut on the laser cutter. See back for specific instructions.

4. After you have cut the box pieces out on the laser, assemble it using hot glue making sure that the side with your name showing is in front. Store your box in a cubby for your class period. Remember, we'll be stacking these two high in most cases.

See next page for instructions on creating the box in Inkscape.

Instructions for creating the cubby box design using Inkscape

Create a new Inkscape document. Go to Document Properties under the File menu. Set the Units to Inches (over on the right), then set the page width and height to be 23 by 17 inches like this:

Width: 23.00000
Height: 17.00000
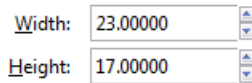
Draw a rectangle on the canvas. Use the entry fields to set the size in inches to what you need. Remember, you made a scale drawing of how the box pieces would fit on a 23 by 17 piece of cardboard. Refer to that drawing now.
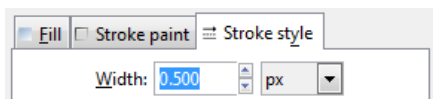
Set the size of your first rectangle using the fields up top (for example, below shows how it would look if you were making a rectangle that is 10 by 4 inches, you should enter the values for the box you are making). You can only get to these settings if you are using the selection tool (the top arrow in the tool toolbar on the left) and if something is selected.

W: 10.000   H: 4.000   in
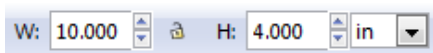
Once the rectangle is the correct size select the rectangle with the select tool and choose Fill and Stroke under the Object menu. Make sure the Fill is off (no paint). Click the Stroke paint tab and set the values to the following:

Fill Stroke paint Stroke style

× ▢ ▢ ▢ ▢ ▢ ?

Flat color

RGB HSL CMYK Wheel CMS

R: 255
G: 0
B: 0
A: 255
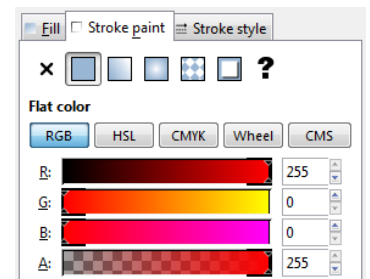
Next, set the Stroke Style as follows:

Fill Stroke paint Stroke style
Width: 0.500 px

Duplicate the rectangle using Duplicate in the Edit menu (or by right-clicking and choosing Duplicate). This makes a copy, sitting right on top of the original. Drag the copy to a free space and change its size, if necessary. Repeat until you have all the pieces of your box each set to the correct size per your scale drawing and model that will fit on this single 23 by 17 inch piece of cardboard. Place them all so that they do not overlap and so that they all fit on the canvas. You might need to flip some 90 degrees using these:

One more time, make sure all the rectangles are on the canvas, that they don't overlap, and that they are not touching (they should be at least a quarter inch apart.) Unselect everything by clicking to a side where there isn't an object. Type Control-A to select all objects. Go to Object Fill and Stroke and re-set the Stroke style to .5 pixels.

Identify the rectangle that will be the front of your box. Use the text tool to write you name in a fun and legible font. Size and place your name appropriately on the front rectangle. Select your name, open Object Fill and Stroke, turn off fill, turn on stroke, set the stroke paint to black and the stroke style to .5 pixels.

When you are done save the Inkscape file with your name and "cubby box" and turn it in to the Google Classroom for the cubby box assignment. Email the file to laser.ahs@wscuhsd.org and then go put your name on the queue at the big laser cutter.