# Setting Up to Export to Other Programs

**(Mechanical and Architectural CAD)**

## Description

In this activity the teacher will demonstrate how to export/plot an object that has been drawn in CAD so it can be exported or printed to a variety of other applications. The intent is to show

that you can use CAD software to create objects that are more precise and sometimes easier to draw in CAD than in other software.

## Lesson Objectives

The student will be able to:

* Review how to create a layer and adjust the setting so that it can be exported to other software for printing or cutting
* Explain how to export a drawing in a different format
* Have students understand that you can move between software packages by exporting correctly

## Assumptions

The student will:

* Understand what layers are and how to set up limits
* Have previously completed the Setting Up Your Model Space activity

## Terminology

**Application menu**: The icon in the top left corner of the screen that contains commands such as New, Open, Save, etc.

**Drawing eXchange Format (DXF)**: a file format that AutoCAD can save in so that other programs can open the file. It is very useful when you want to open a drawing in other software (e.g., CorelDRAW, Adobe Illustrator, CNC plasma software and/or vinyl cutter software).

**Layers**: CAD layers are the digital equivalent of acetates in board drafting, and are powerful organizational tools for drawing. CAD layers are also referred to as levels in different software.

**Limits**: the extents of your drawing space (and of your zoom). These can be modified to suit each individual drawing.

## Estimated Time

15–30 minutes



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## Recommended Number of Students

20, based on *BC Technology Educators’ Best Practice Guide*

## Facilities

Computer lab installed with CAD software (Google SketchUp, AutoCAD, CADopia, etc.)

## Tools

Projector with computer and speakers, Internet access

## Materials

Handout for students with instructions: Student Activity: Setting Up to Export to Other Programs

## Resources

Instructional videos created using AutoCAD 2013:

* + 1. AutoCAD to Laser
  + 2. Exporting a Drawing

## Teacher-led Activity

Use a computer with a projector to demonstrate and explain the following:

* + Make a new layer and change the line colour and lineweight. This may be needed if you are going to print to a laser engraver. These settings may vary. Typically, though, the colour for a laser engraver to cut is red and the line thickness will be .001" or 0.05 mm.
  + Show how to export a file using the Save As command. Explain that not all software applications will allow you to open CAD files. The DXF format that CAD software can Save As may be opened by many applications such as CorelDraw, Adobe Illustrator, CNC plasma cutter software, and/or sign cutter software.
  + Demonstrate how to plot to another software application that runs a machine (laser engraver, vinyl cutter, etc.). Many of these machines allow you to plot directly out of CAD software. The trick is to ensure you have the correct settings to allow it to plot correctly.

## Student Activity

Initially, students may just watch the teacher demo how to export to another format and/or print to the laser engraver software. At a later date students may come back to this activity to export or print.

# Student Activity:

**Setting Up to Export to Other Programs**

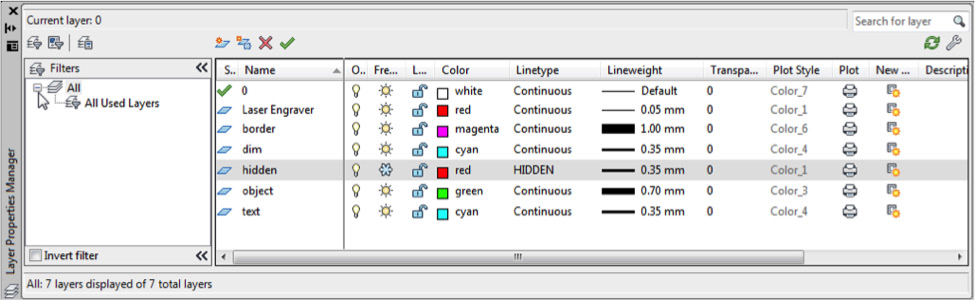
This activity will show you how to take an existing drawing and either export it to another program through Save As or plot the drawing to other software (laser engraver software).

## Procedure

1. Open a drawing file you have already created, or start a new drawing using the imperial template that you created in the CAD Orientation activity.
2. Depending on what you are doing with the drawing, you may want to change the drawing limits at this point to match the machine to which you’ll be exporting (laser engraver bed size, CNC bed size, etc.).
3. Layers: When exporting an object to another program, you will most likely want to turn off all layers except for the Object layer. There is no reason to export the border, text, or dimensions if you are going to cut a part out on a laser, CNC, or vinyl cutter.
4. Layers for laser engraver, CNC plasma, or vinyl cutter: some machines require specific line colours and/or lineweights to be able to “cut” on the object lines once your drawing has been brought into the software. You may want to create a new layer and change the Lineweight

or Color specifications to match what the machine requires. In Figure 1 below, a layer called

*Laser Engraver* was created with the colour red and a lineweight of .05 mm.



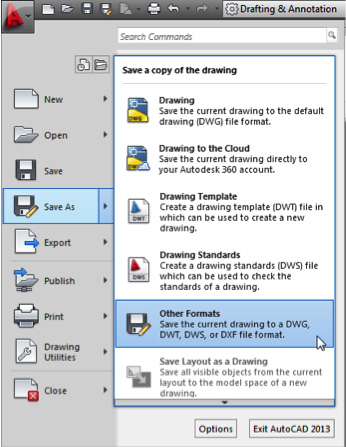
**Figure 1**

1. Highlight your object and change to the laser you may have set up so you can export to the next software.

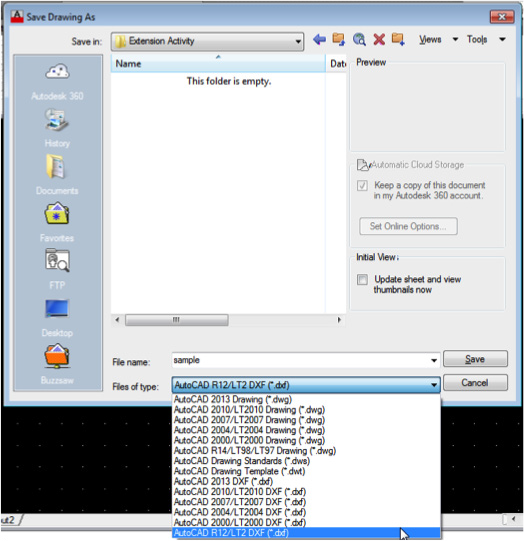
## Exporting a DXF File

* 1. A DXF is a generic type of file that other programs may be able to open. To save in the DXF format, go to the Application menu and select Save As. Then select Other Formats

(Figure 2). The rule of thumb for exporting is to always go with the lowest version of software possible. As you can see in Figure 3 under “Files of type,” the one selected is AutoCAD R12/ LT2 (\*.dxf). By selecting this format you will most likely have a format that other software applications will read.



**Figure 2**



**Figure 3**

* 1. Save the file. Go to the other application software to which you wanted to export and try to open it. Did it work? Remember, ***not all software applications will open AutoCAD files***.

## Printing a Drawing File to a Machine’s Application Software

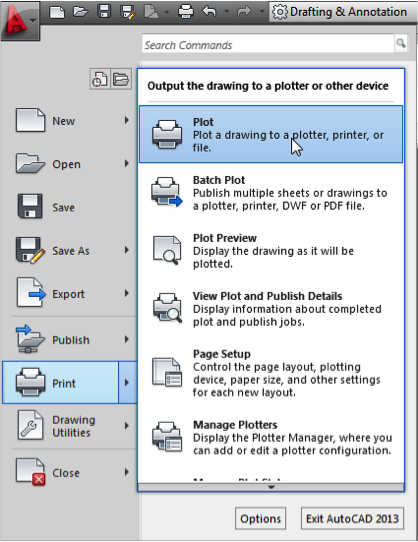
1. Some machines (laser engraver, CNC plasma cutter, vinyl cutter) have a special piece of software to which you can print directly. If needed, make sure you have the object you want to print on the layer you may have set up in Step 4 above.
2. Open up the Plot dialog box by going to the Application menu and selecting “Plot” (Figure 4). As you can see in Figure 5, the following settings have been chosen:

**Plotter/Printer**: the laser engraver has been selected for this example.

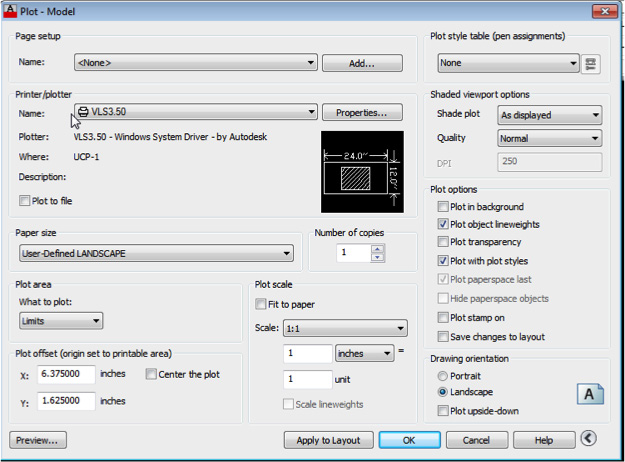
**Paper size**: set to “User-Defined” (matches the laser engraver bed of 24" wide and 12" high in this case).

**What to Plot**: set to “Limits” to match the drawing limits AND the bed of the laser engraver.

**Plot Scale**: set to 1:1. ***This is important***: If you want your object to come out the correct size (full size), make sure this is set to 1:1.



**Figure 4**



**Figure 5**

1. Click **Preview** to look at your object. If it looks good, print it to your other software.
2. Open up the application software to which you printed. Did it work? If so, carry on in that software.