



## Unit 5 CAD

### Designing a Desk Organizer



You will need to design a desk organizer for your desk at home. Space is limited so you will need to be efficient and make things compact. The organizer will be made of plastic that is 5mm thick. Your organizer will need to hold the following items: **Pens/pencils, eraser, etc.**

#### Step 1: 30 mins.

Look on the internet for images of plastic desk organizers.

Sketch 4 ideas you see that suit the following requirements:

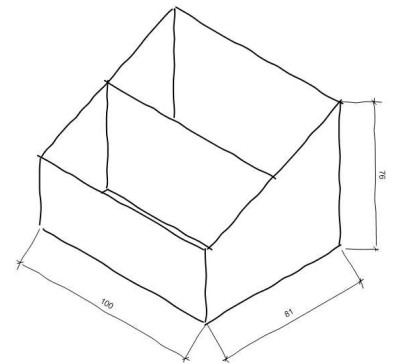
- a) Fairly simple but not too easy
  - multilevel
  - avoid drawers
  - 'pockets' from different directions
- b) plastic can only be 5mm thick everywhere
- c) Maximum dimension (height, width, or depth) is 300mm.



#### Sept 2: Remainder of the block

Design your organizer on 8 1/2" x 11" paper **FIRST!**

You will need an **isometric** (3D) sketch of your design **with dimensions** (length, height, and depth only) approved by the teacher **BEFORE** you are allowed on the computer.



#### Step 3: 6 classes

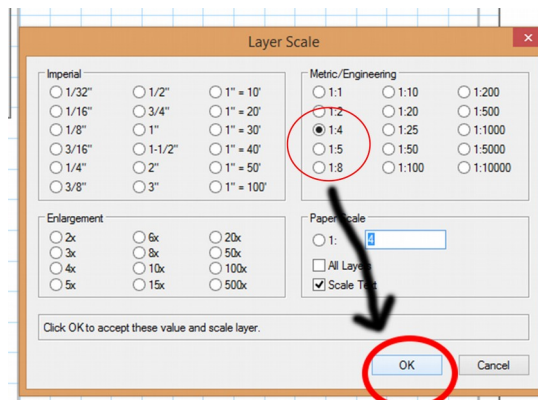
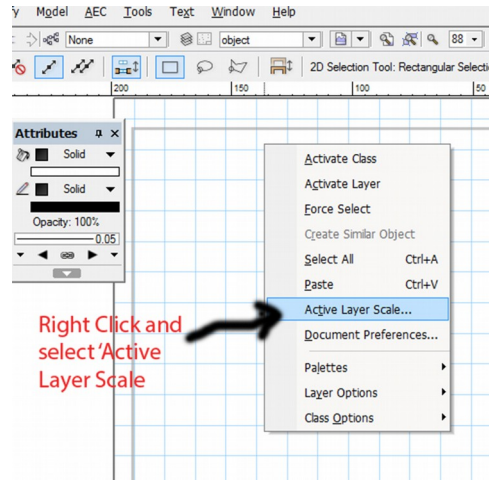
##### Computer Drawing 1 ORTHOGRAPHIC:

You will need to complete a 3-view (top, front, side) drawing of the organizer.

- 1) Based on the dimensions of your design determine on whether you need a portrait or landscape page and open your matching titleblock.
- 2) Go to **FILE, SAVE AS** immediately and save as '**DESK ORG ORTHO**'.

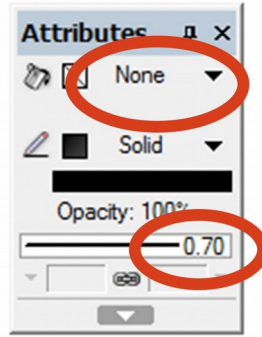
3) Go to your **OBJECT** layer. Change your scale to **1:4** or **1:5**. Mr B will have given you a suggestion when he saw your paper drawing.

**Right click**, select **Active Layer Scale**, Change the scale of the OBJECT layer to fit the 3 drawings (usually 1:4 or 1:5 scale).

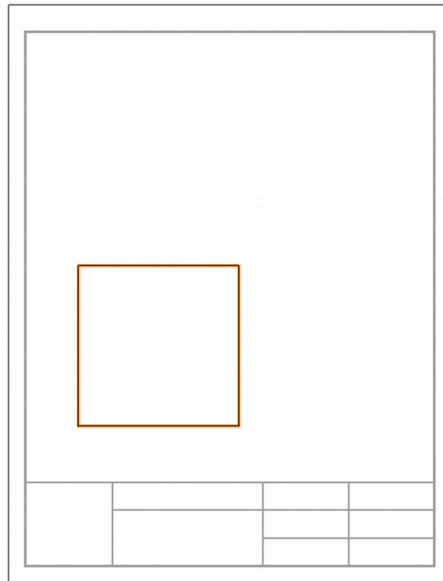


Since your Dimension layer needs to be the same scale as your object layer do the same to your **Dimension** layer.

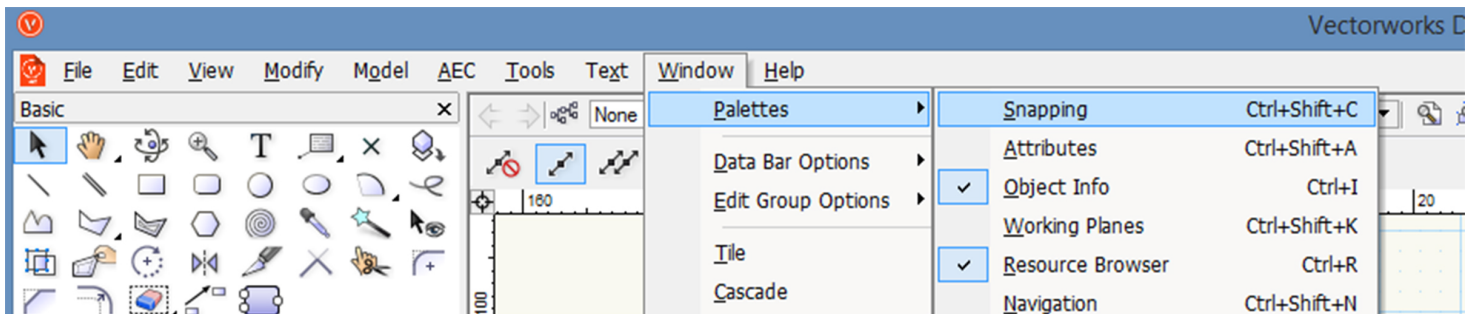
4) Before you start drawing your rectangles. In your **Attributes** box set Fill box to **None** and the **line thickness** to **0.7**.

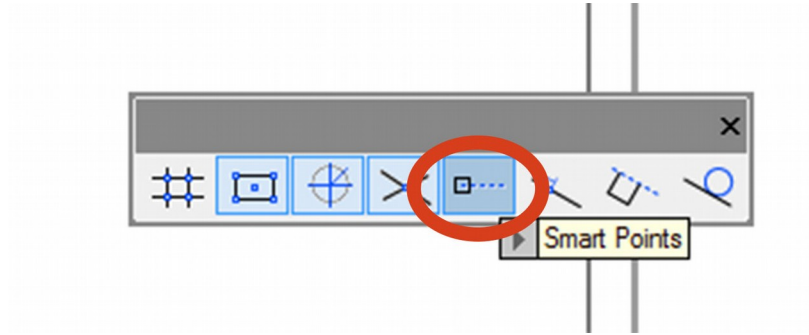


5) Use the **Rectangle** tool to draw the **Front** view of your desk organizer. Place it in the approximate correct spot.

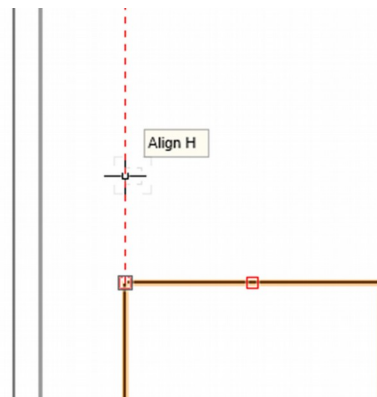
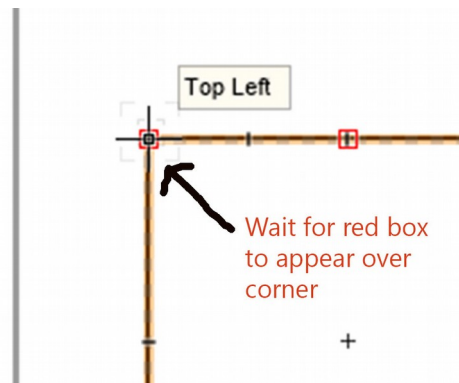


6) Set your **Smart Points** snaps to help line up your drawings.  
**Right click**, Select **Palettes**, Select **Constraints**, Make sure Smart Points is clicked. You will use this technique often!!!



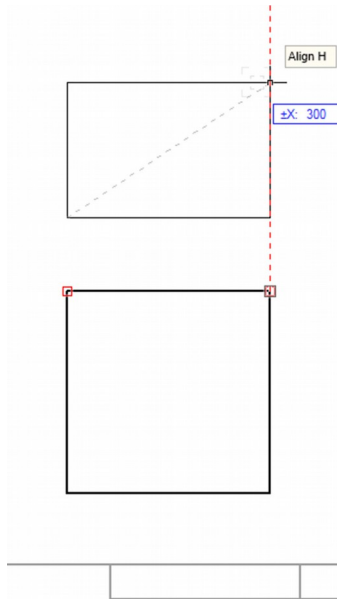


- 7) With the **Rectangle** tool selected move your cursor over the **top left** corner of your **Front** view rectangle. Wait for the **red box** to appear around the corner. Move your cursor up. This will give you a **guide line** to line to position the bottom left corner of your **Top** view.



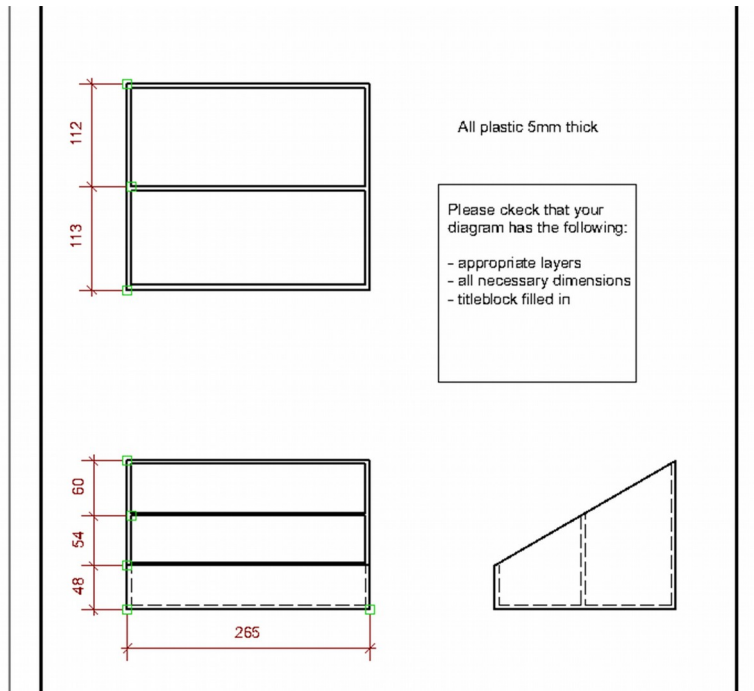
**Left click** to set to corner of your **Top** view. Move your cursor down to the **top right** corner of your **Front** view. Wait until the **red box** appears and move your cursor up. A **guide line** will appear to help you set the width of the **Top** view to match the width of the **Front** view AND both rectangles will be lined up one above the other.

Adjust the height of the **Front** view as necessary in the **Object Info** window



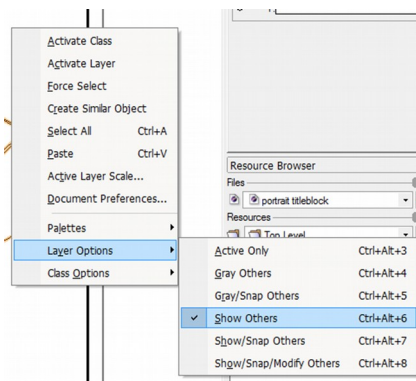
- 8) Use the same technique to line up your **Side** view.  
If necessary move the views (keeping them lined up) so that they're spaced evenly (by eye) on the paper – remember to leave room for dimensions.  
**Select** the objects you want to move and use your **SHIFT-ARROW** keys to move the objects.
- 9) Add all object lines (solid lines– thickness 0.7 and hidden lines– dashed with thickness 0.5) to your views. Measure the line positions accurately using tools like **Set Origin** and the **Object Info** window. Remember the plastic is only and exactly 5mm thick!
- 10) On your **Dimension** layer add ALL necessary dimensions to your views following standard dimensions practice. See the *Dimensioning Rules* sheet if you need reminders. **Dimension lines are solid and 0.5 thick.**
- 11) **Save** your drawing

You should end up with something more complicated than this.



12) **PREPARING** your documents for printing or marking. Please do this for every document you produce.

- Make sure ALL objects are on the proper layers. Check dimensions, text, etc.
- Make sure the proper printer is selected in **File, Page Setup, Printer Setup**
- Make sure your title block is filled in correctly for this drawing: Description, Scale, Date, etc
- Make sure all your lines are the correct thickness. **BASICS!!!**
- Make sure to show ALL layers: **Right click, Layer Options, Show All**

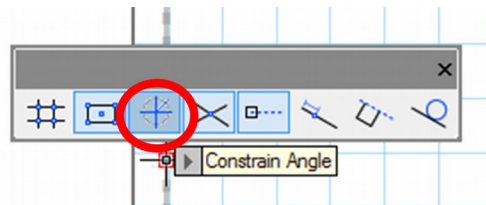


13) Check with Mr. B. BEFORE you print, then **SAVE**, print 1 copy.

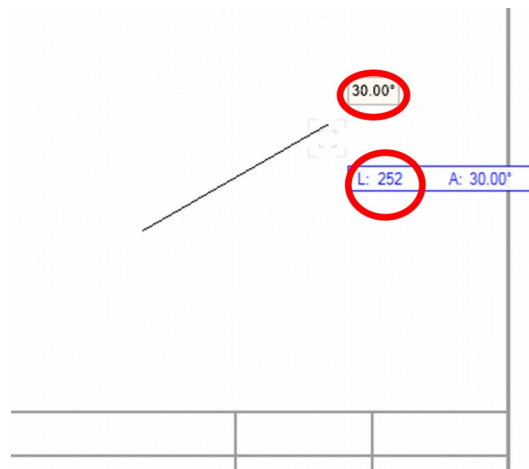
## Computer Drawing 2 ISOMETRIC:

- 1) Open a titleblock document (usually the same one you choose for your orthographic drawing) and SAVE AS '**DESK ORG ISO**'. See the example on the Claremont webpage.
- 2) Object Layer scale will be the same as your Orthographic drawing but there will be **no** DIMENSION layer on this drawing.
- 3) Isometric drawings have lines drawn at 30 degrees for your organizer.

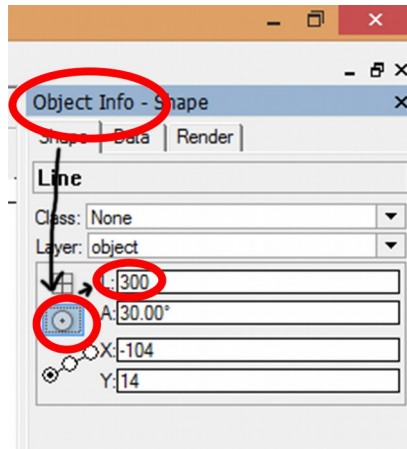
First make sure in your **Constraints** window the **Constrain Angle** is active. (Right click, Palettes, Constraints)



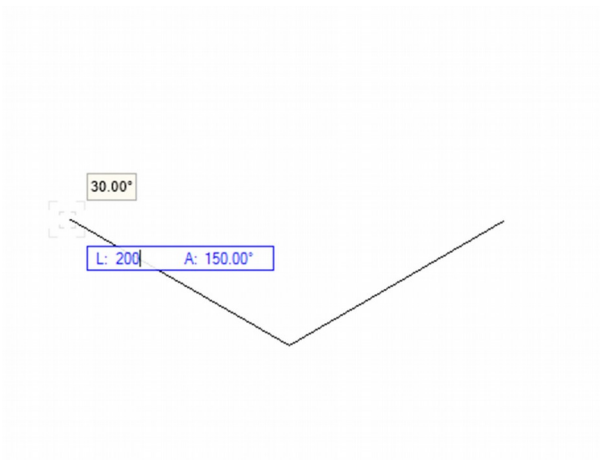
Select your **Line** tool and starting at the lower middle of your page draw a line to the upper right at approximately 30 degrees. You will see a box pop up when you are exactly at this angle. You can use the **upper** numbers on your keyboard to enter the correct depth of your organizer.



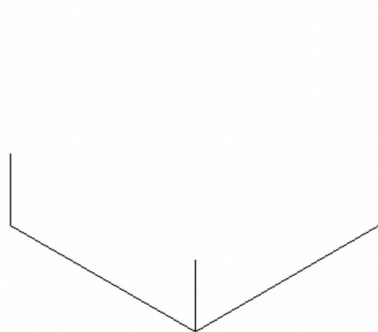
You can also enter the correct length using the **Object Info** window but need to click the '**circle**' symbol first and then enter the correct length in the **L:** box



Draw another line at 30 degrees starting at the front corner going towards to upper left.  
Enter the correct length.

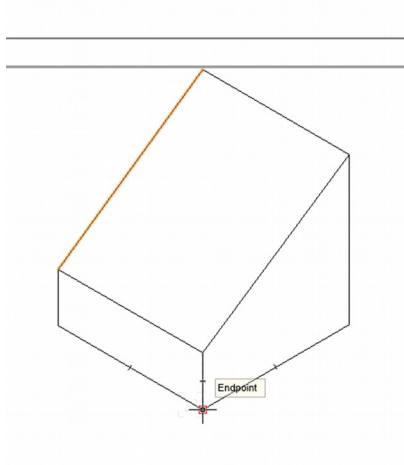


Draw your vertical lines the proper length.

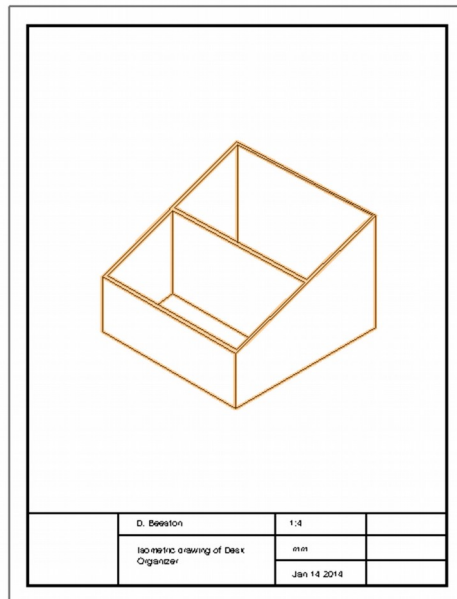


Connect the lines.





Add the plastic thickness. You should have a finished document like this.



- 4) Prepare your document for printing (see Orthographic instructions), check with Mr. B. BEFORE you print, then print 1 copy, staple it to your orthographic print and hand for marking.

**Marking:**

**4 RESEARCH SKETCHES**

Sketch 4 ideas you see that suit the following requirements:

- a) Fairly simple but not too easy
  - multilevel

- avoid drawers
- 'pockets' from different directions
- b) plastic can only be 5mm thick everywhere
- c) Maximum dimension (height, width, or depth) is 300mm.

### PAPER SKETCH

Isometric sketch with dimensions for height, width, depth.

#### 3-VIEW: (6)

Accuracy 2

- plastic is only 5mm thick
- drawings match

Dimensions 2

- all dimensions are present
- clear and easy to read

Difficulty 2

- complex shape with drawers, multi-level, etc
- difficult design with special tools necessary

#### ISOMETRIC: (4)

Accuracy 2

- matches 3-view
- all surfaces are correct

Difficulty 2

- complex shape with drawers, multi-level, etc
- difficult design with special tools necessary