Design out the box

Time 40-50 mins approx

Level of difficulty ★ ★ ☆ ☆ ☆

- CAD stands for **C**omputer **A**ided **D**esign.

- It is the use of computer technology to aid in the design of something.

- CAD can create 2D and 3D virtual models of goods and products.

Lesson Objectives...

- To understand the basic tools used in 2D Design.

- To understand the advantages of using CAD

- To be able to successfully use CAD independently to complete a range of tutorials in 2D and then in 3D

- To develop advanced skills and problem solving skills when using 2D Design

Skills to be used in this project…

| Basic Skills	New and Higher Skills
Zoom tool	Rotate tool
Orbit tool	Move tool
Pan tool	Offset tool
Line tool	Arc tool
Rectangle tool	Text tool
Circle tool	Paint Bucket tool
Eraser tool	Bitmap tool
Delete part tool	Making Components

Basic skills are those required to do very basic drawings and are detailed as part of this presentation.

New and higher skills may be new to the novice and are the focus for learning in this presentation.

# Skills to be used in this project…

Basic Skills	New and Higher Skills
Zoom tool	Construction lines and points
Orbit tool	Tape Measure tool
Pan tool	Arc tool
Line tool	Contour Tool
Rectangle tool	Bitmap Tool
Circle tool	Paint Bucket tool
Eraser tool	
Delete Part tool	

Basic skills are those required to do very basic drawings and are detailed as part of this presentation.

New and higher skills may be new to the novice and are the focus for learning in this presentation.

2D Design Basics
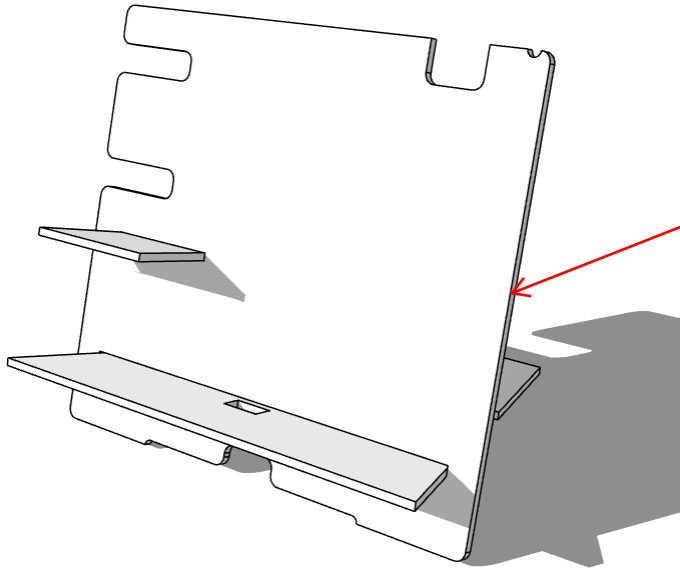
1. In *Sketch up* you have been using *3D* CAD to draw a desk tidy shown opposite. We are now going to use a *2D* piece of software to draw a design on it. First we need to learn the basics of 2D design….
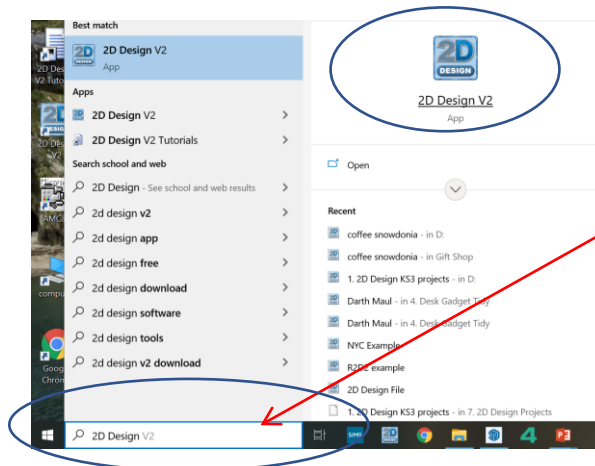
2. Click *Start* and then use the search bar to search for 2D design
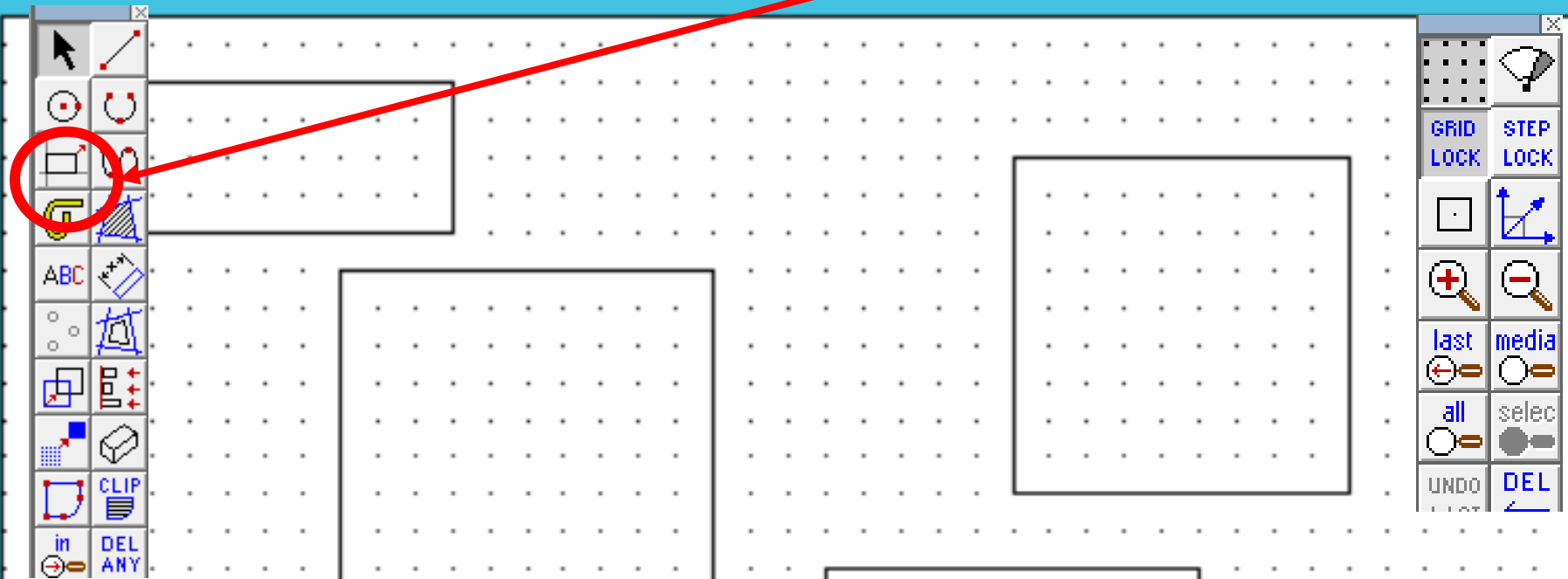
3. When the program opens it will look like this.
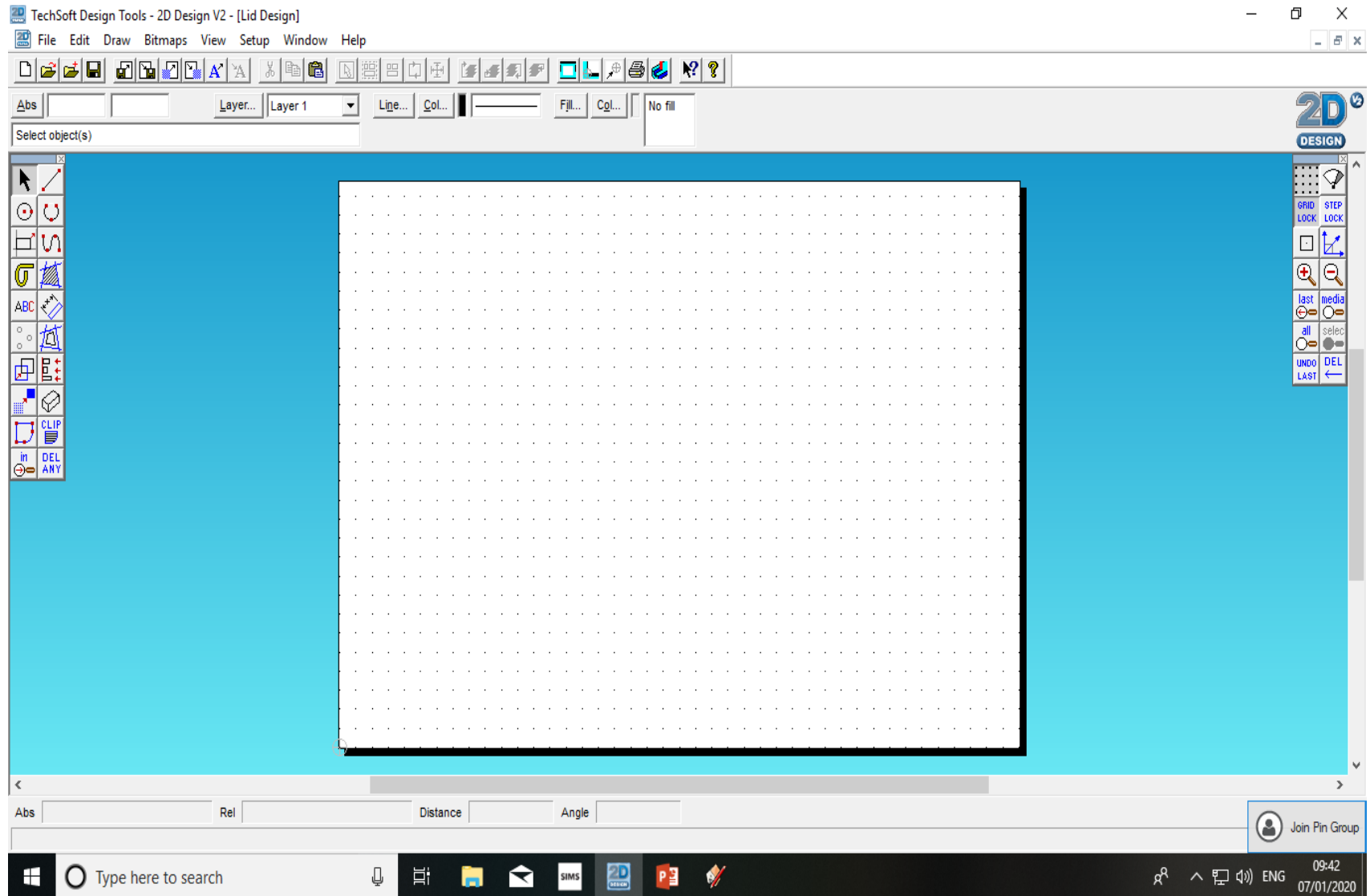
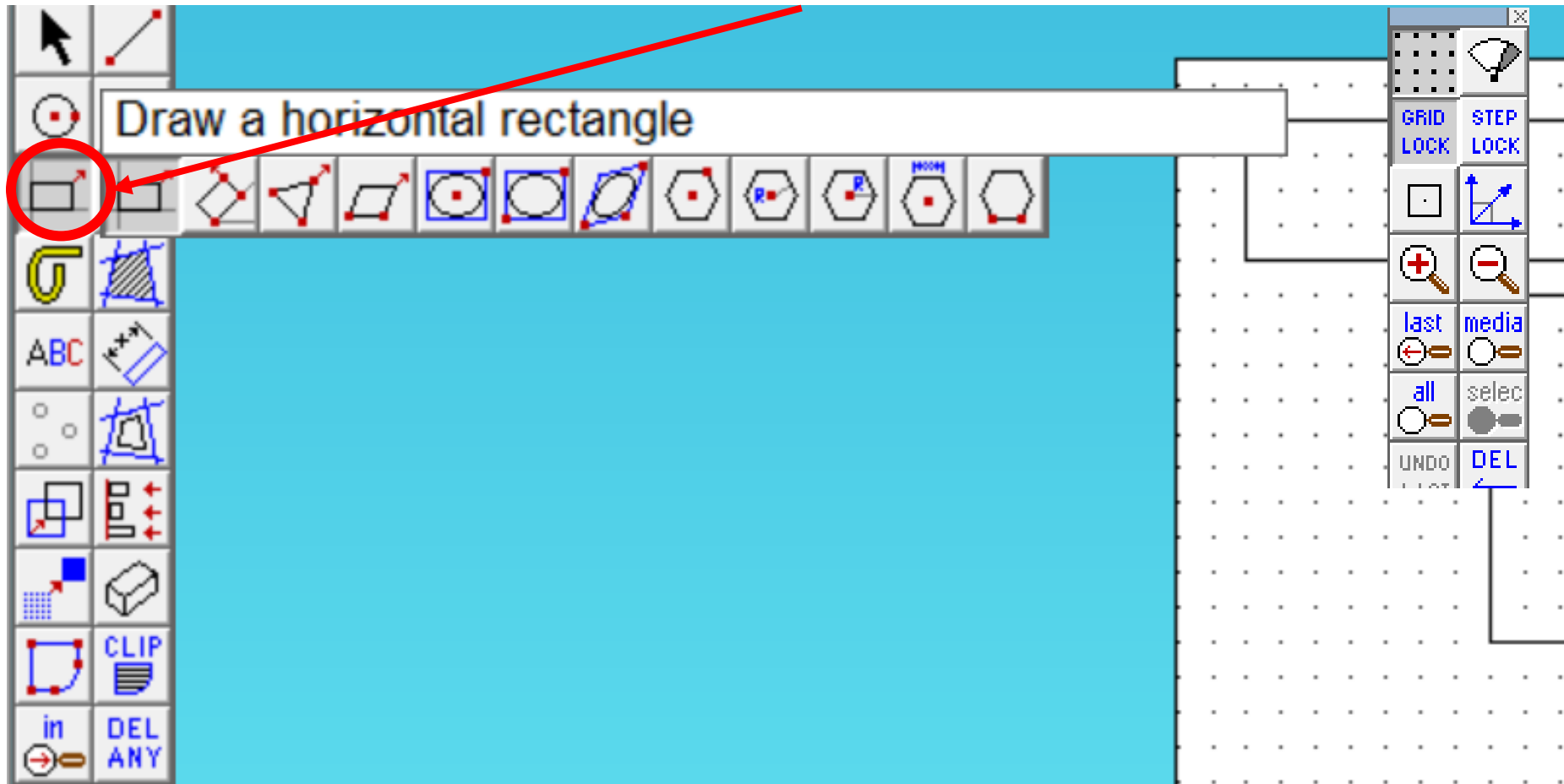4. Select grid lock shown on the opposite tool bar
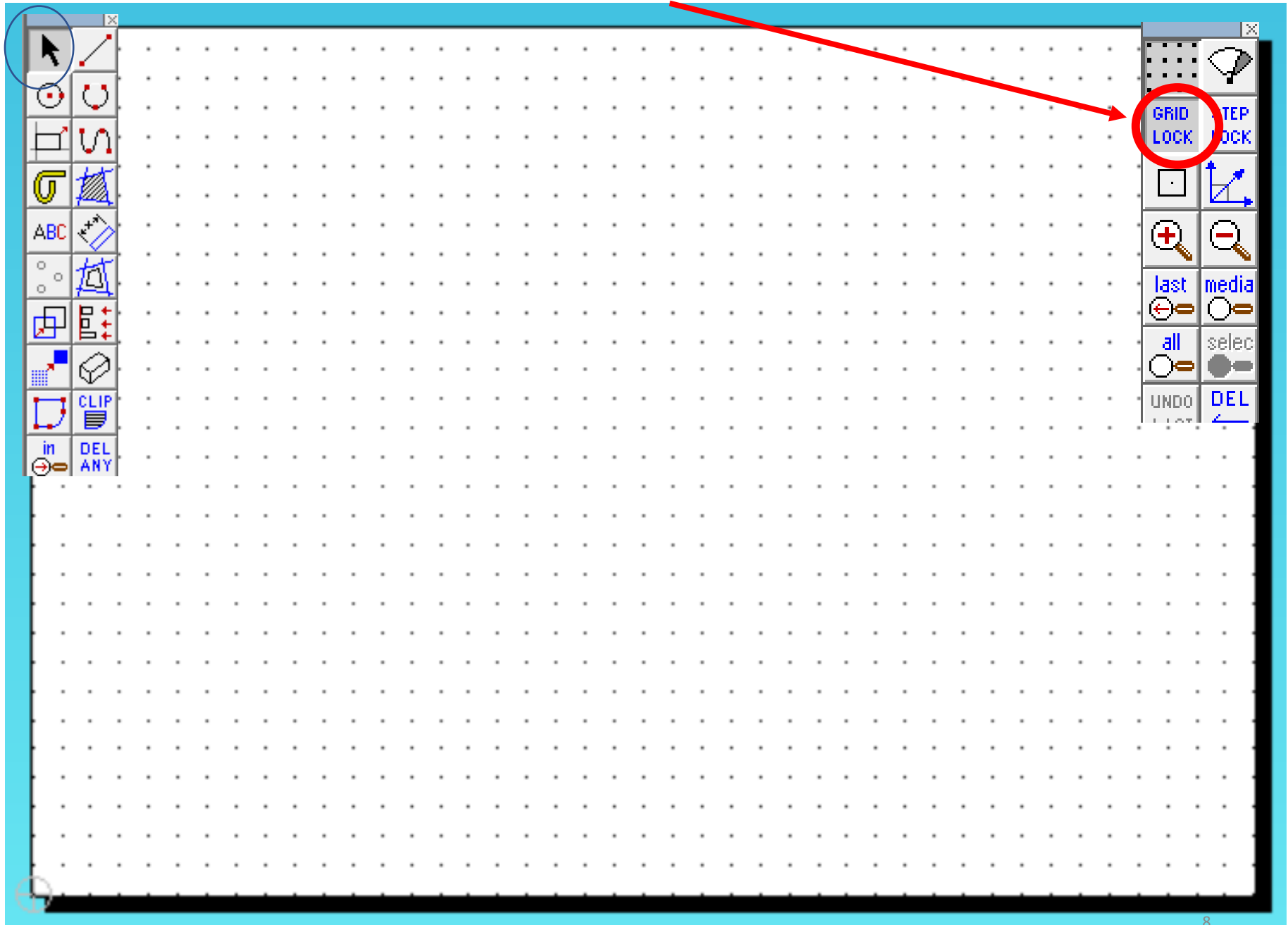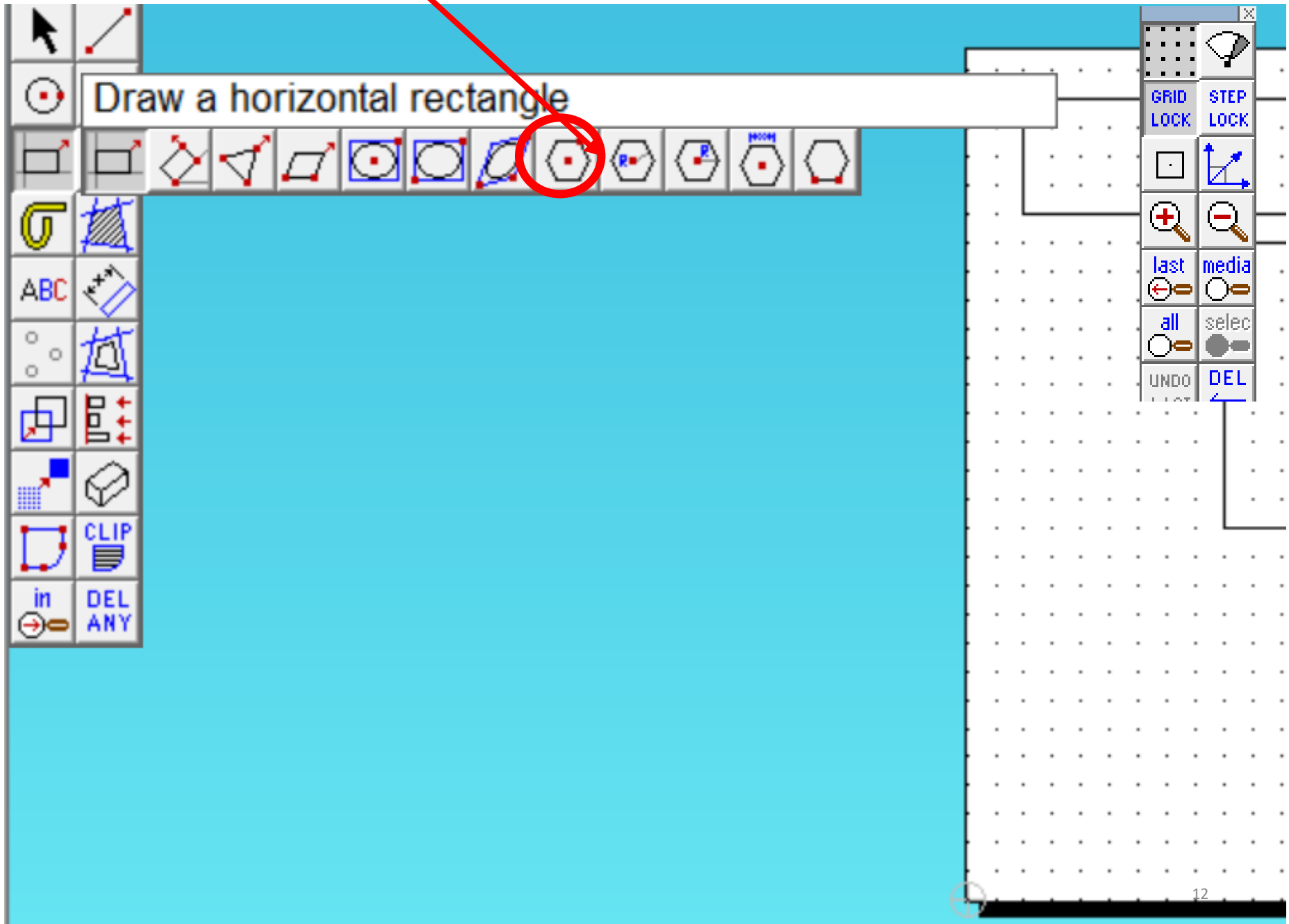
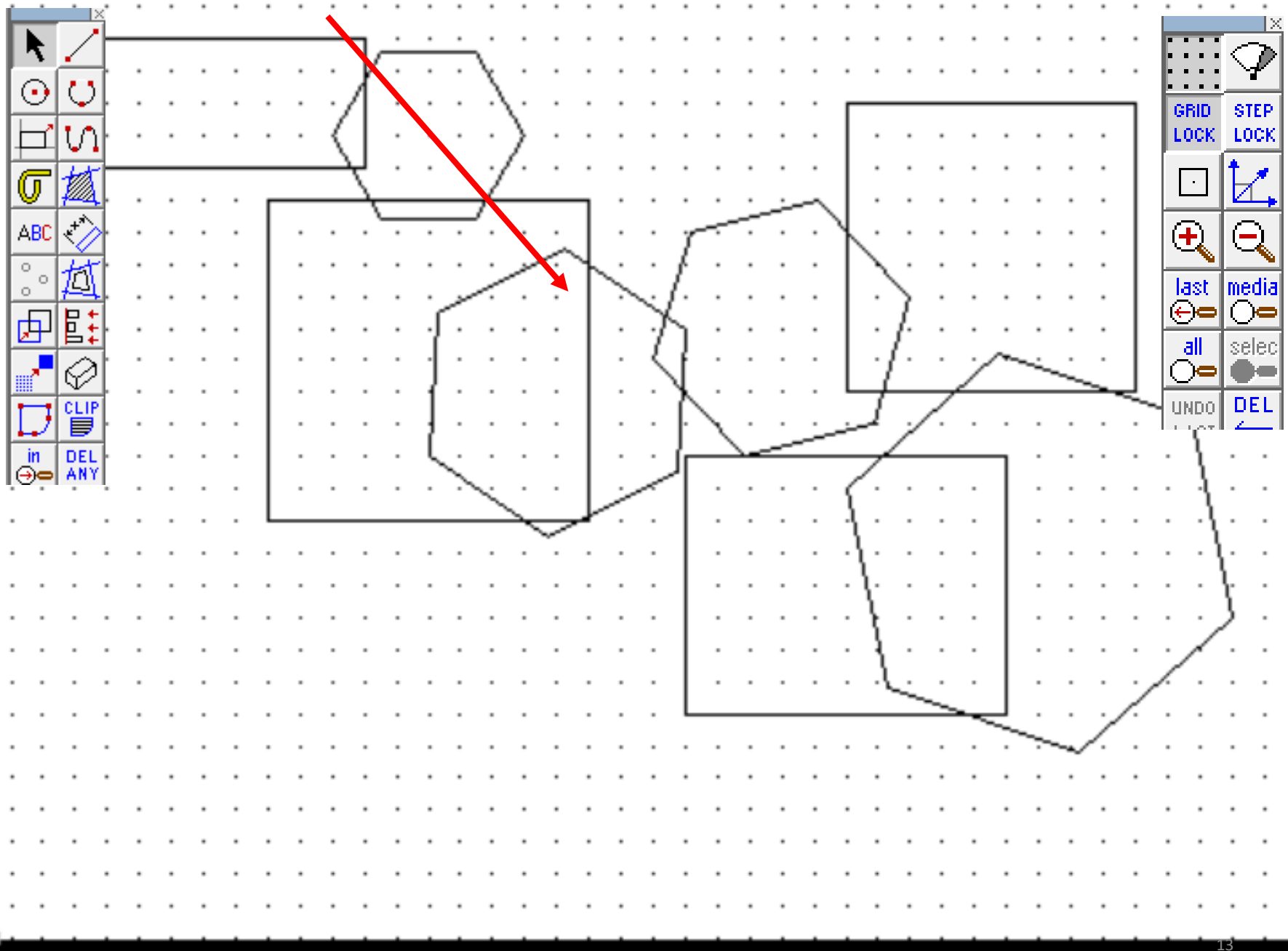5. Select the rectangle tool shown on the tool bar
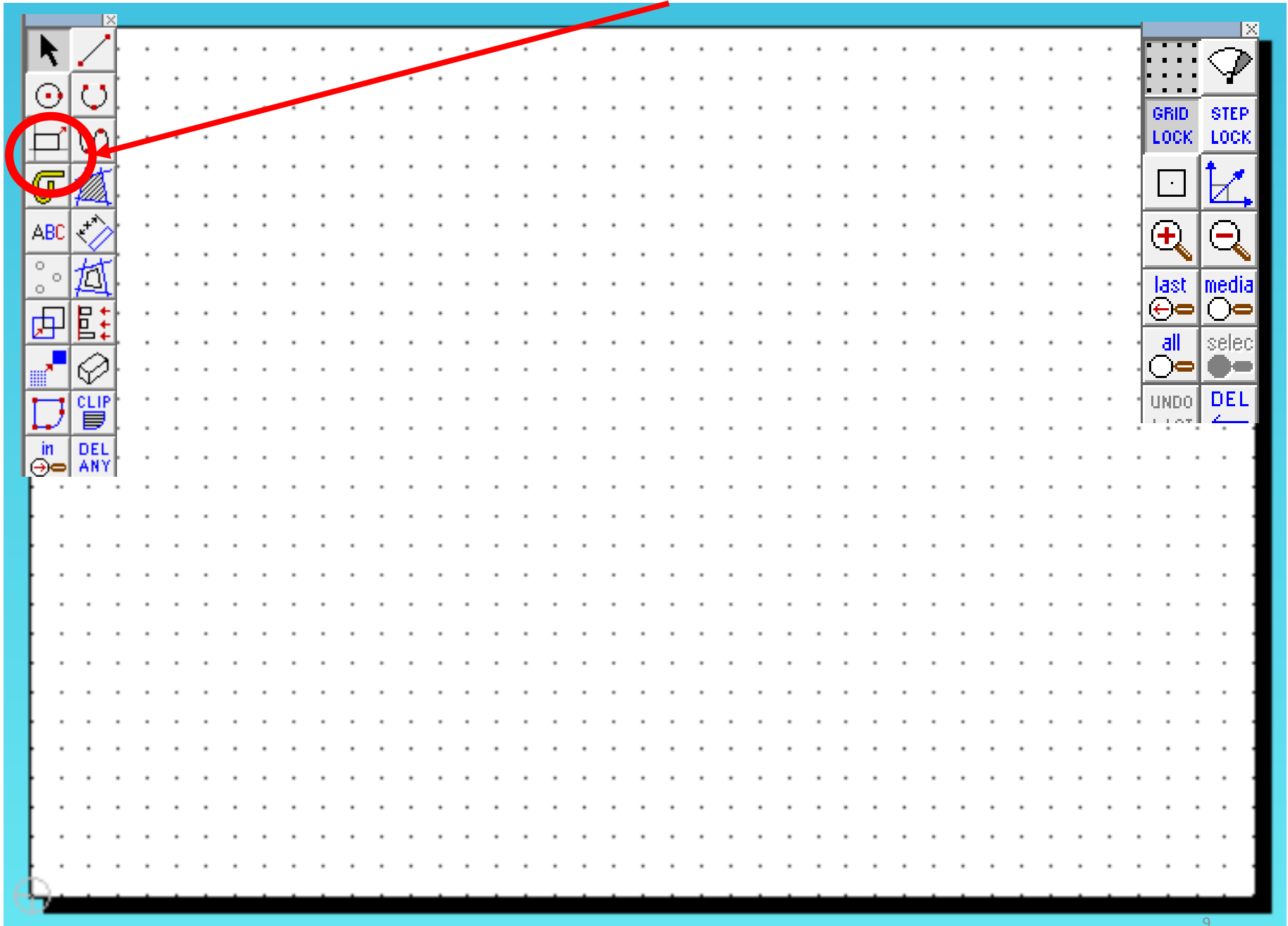
6. Select the rectangle tool shown on the tool bar

7. Hold the rectangle tool down to show a range of shapes shown on the tool bar

Draw a horizontal rectangle

8. Choose one of the other shapes.

Draw a horizontal rectangle

9. Draw shapes so that they over lap.

10. Select and hold the delete tool shown on the tool bar. The select delete part of an object

Delete any object
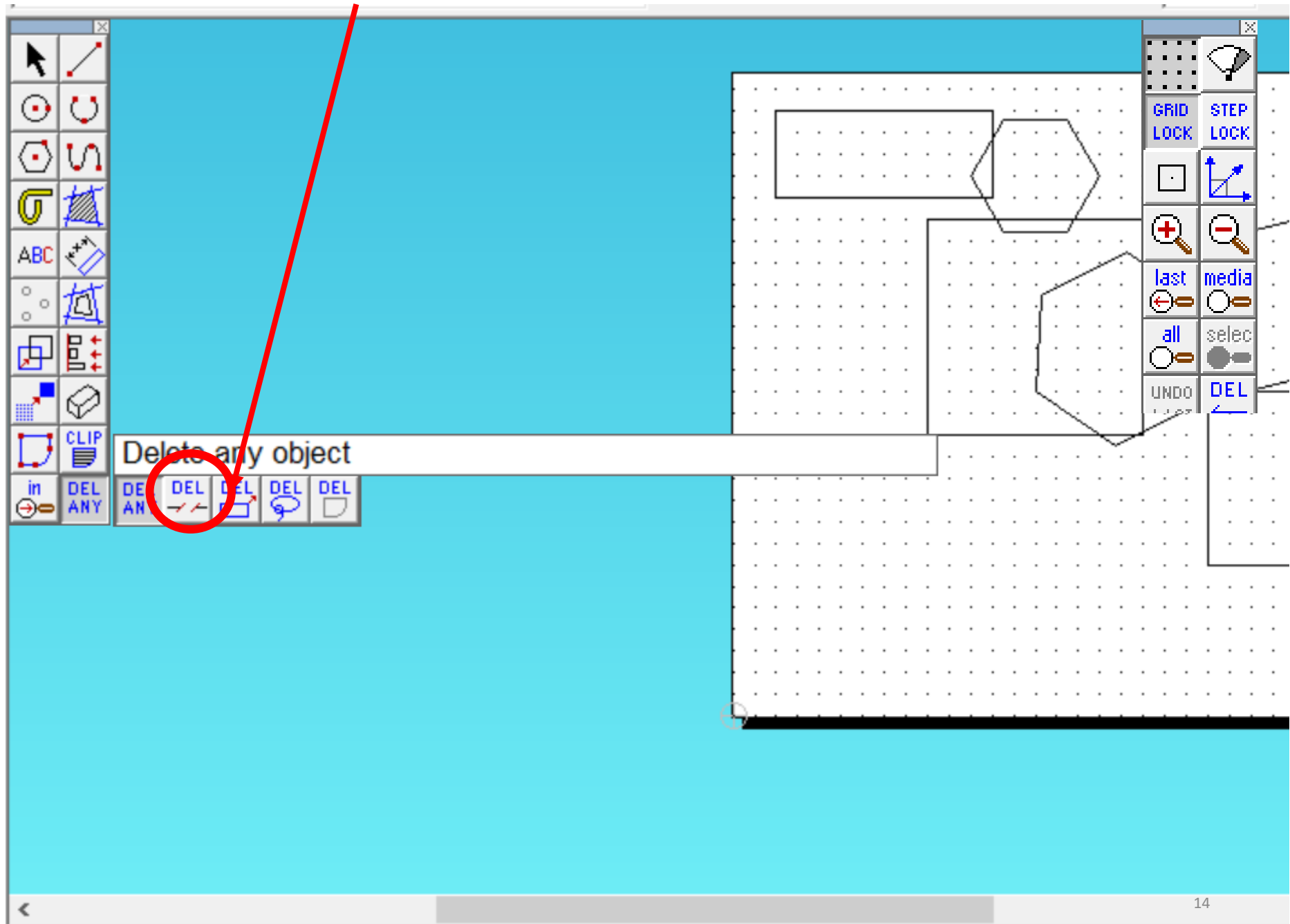
11. Delete where the lines intersect (cross over)
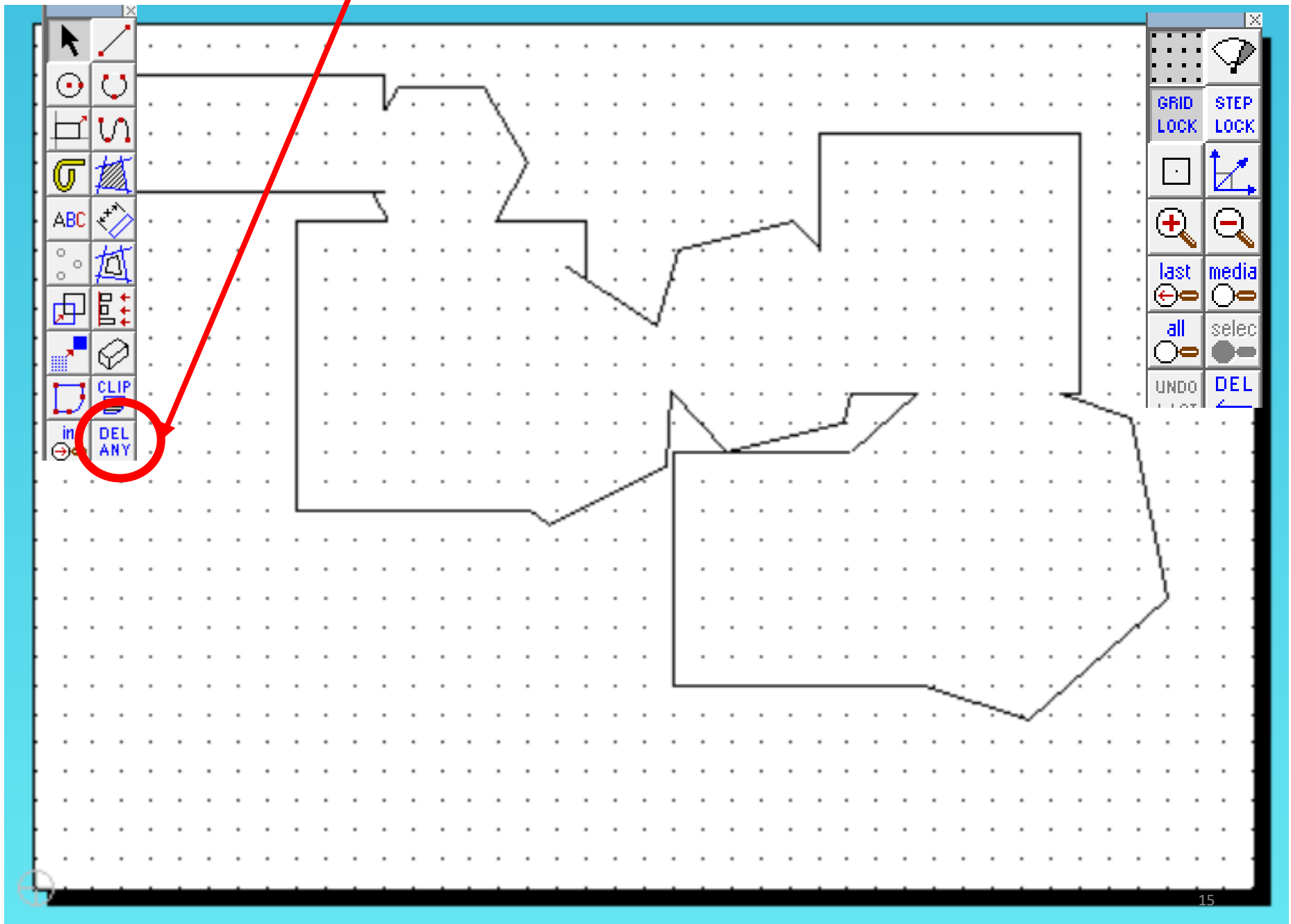
1. **Select** the **Circle tool** from the icon bar and draw a circle onto the workspace. Do this by clicking on the workspace moving the curser, then clicking when the circle is as large as you want it.
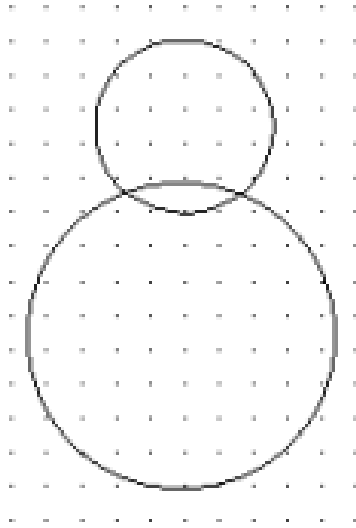
Draw another circle above the first one, make sure that they overlap, as shown.
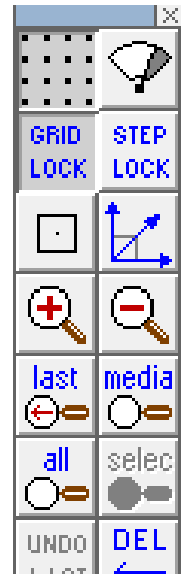
2. Select the **Delete icon**. Hold down until a selection of icons appear. Select **the delete part one on the right** as shown.

Delete part of an
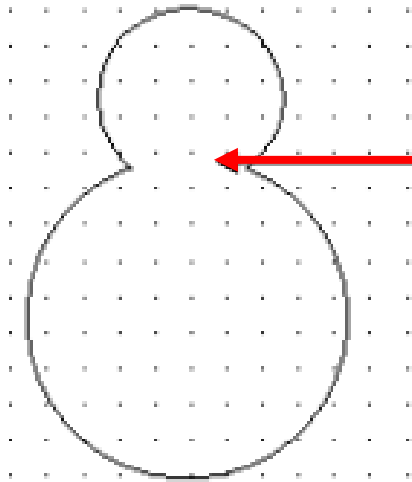
3. **Delete** on the lines that fall inside the 2 circles. Your drawing should now look like the one to the right.
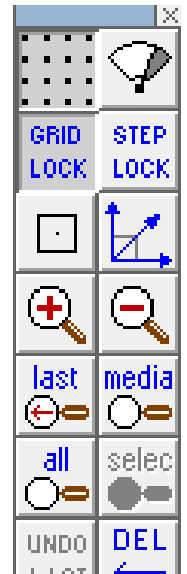
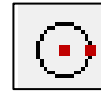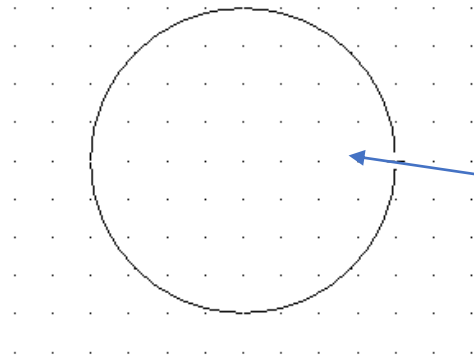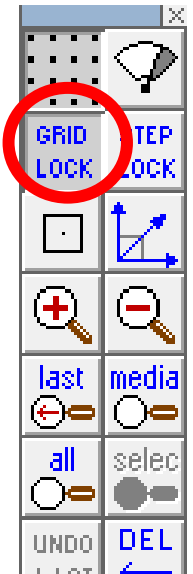4. **Click grid lock off**. Using the *circle tool* add two eyes and buttons on the snowman:
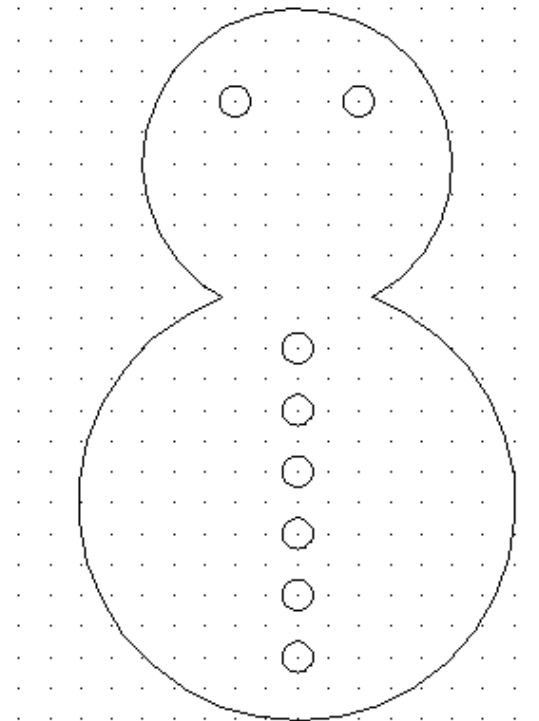
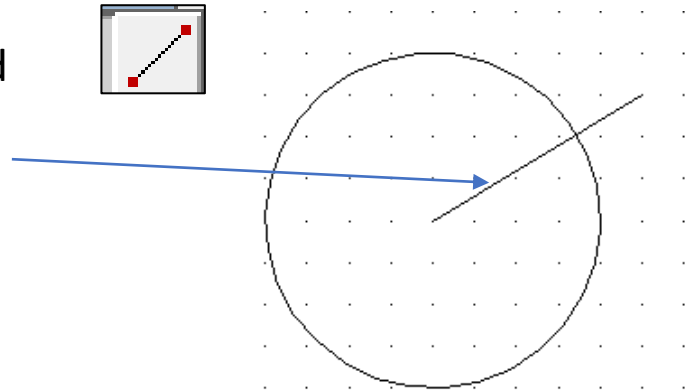5. **Click grid lock off**. Using the **tools can you** add other features?
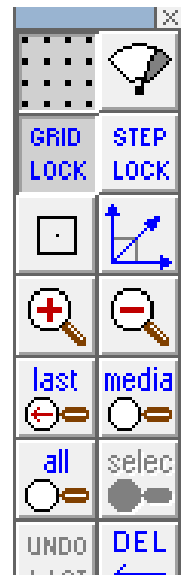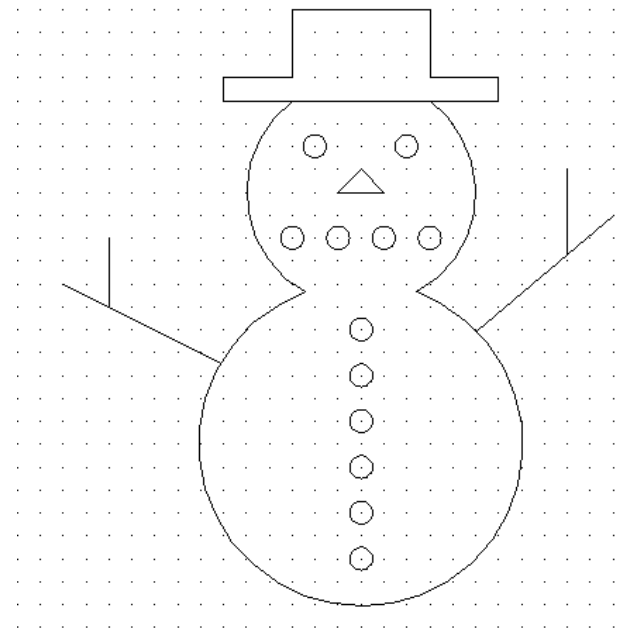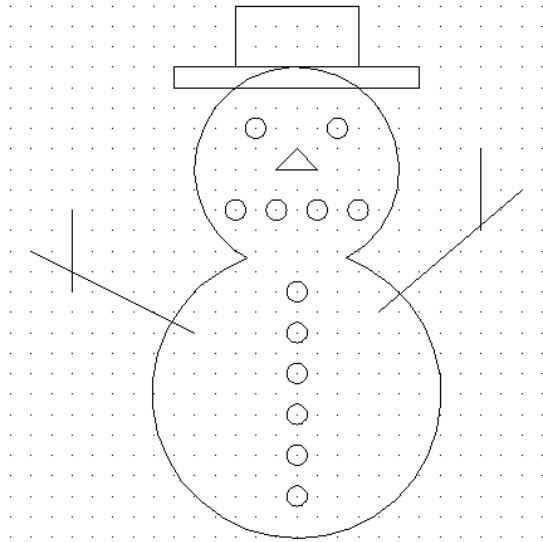
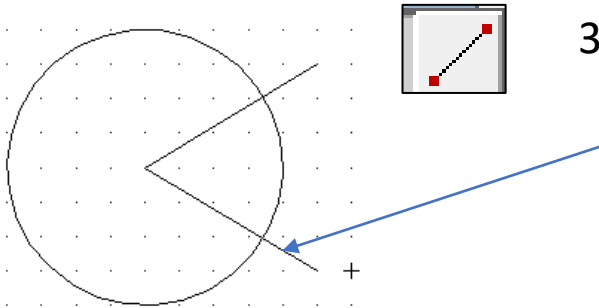# 2D Design Basics: Hand Drawn Pacman

1. Select file new, click grid lock and then the ***circle tool*** and draw a circle, size does not matter at this stage.
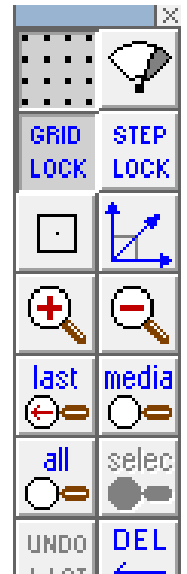
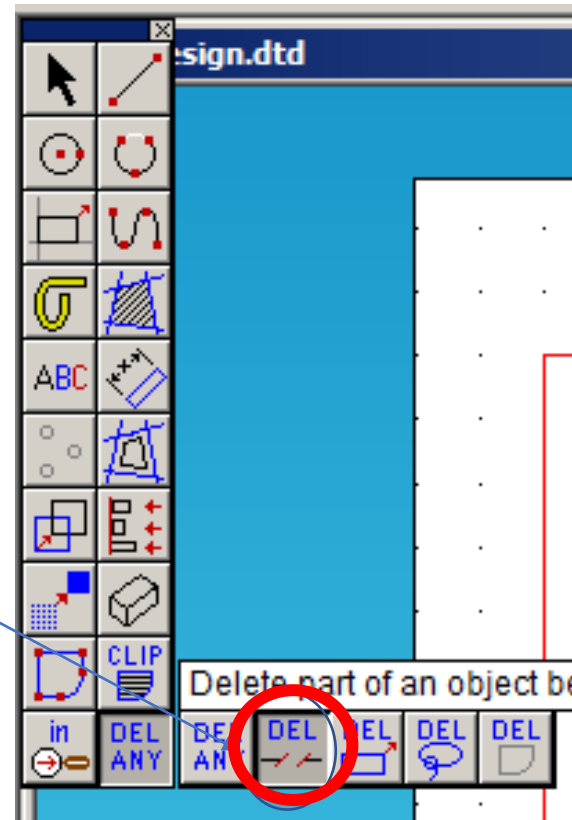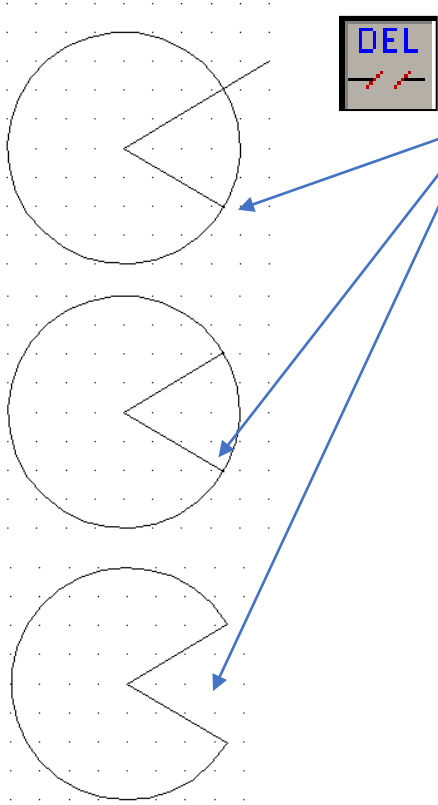2. Select the ***pencil tool*** and draw a diagonal line out from the centre of the circle.

3. Select the *pencil tool* and draw a second diagonal line out from the centre of the circle so it represents a pizza slice.

4. Select the *delete any tool* and hold down a pop out menu will appear. Select delete part of an object. The second one along.
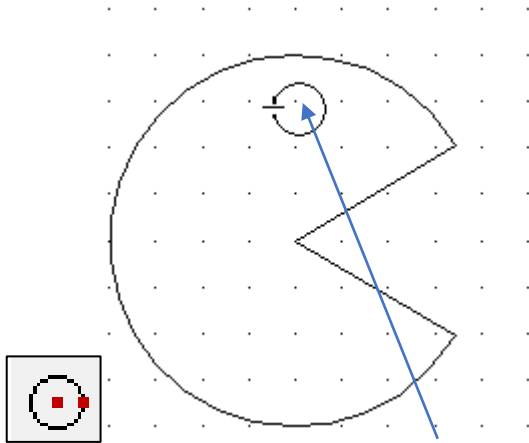
Delete part of an object be

5. Select the ***delete any part tool*** and trim and delete the lines outside the circle shown.
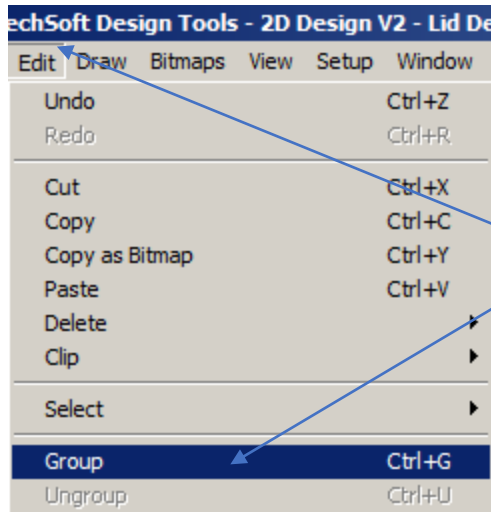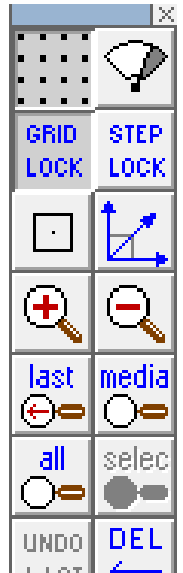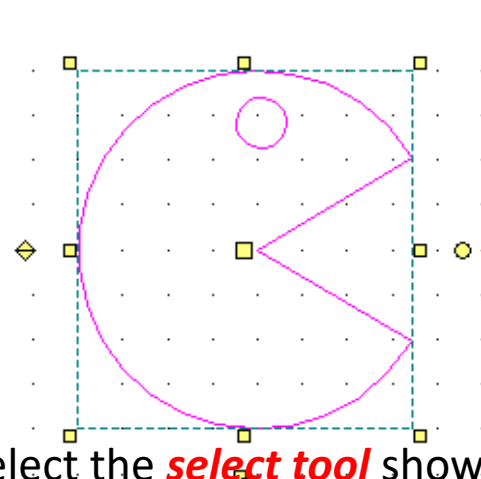
6. For the next part we need to ***click gridlock off.*** It can be found on the right hand side tool bar..

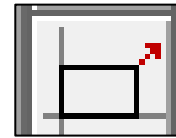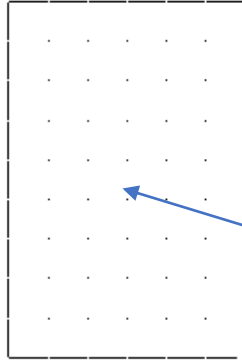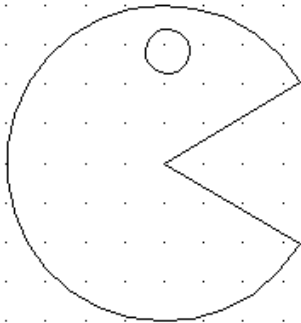7. Select the *circle tool* and draw an eye for the Pacman character

8. Select the *select tool* shown. **Highlight** the **entire drawing** as shown by dragging your select tool over it.

9. Select the *edit tool bar* shown at the top of the screen. **Scroll down** and **select group.**

echSoft Design Tools - 2D Design V2 - Lid De

Edit Draw Bitmaps View Setup Window

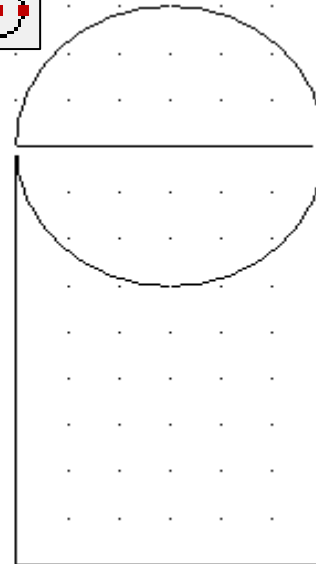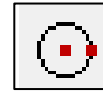|	
Undo	Ctrl+Z
Redo	Ctrl+R
Cut	Ctrl+X
Copy	Ctrl+C
Copy as Bitmap	Ctrl+Y
Paste	Ctrl+V
Delete	▶
Clip	▶
Select	▶
Group	Ctrl+G
Ungroup	Ctrl+U

10. For the next part we need to *click gridlock back on.*

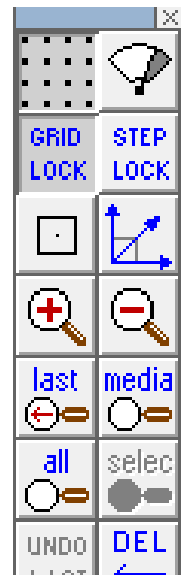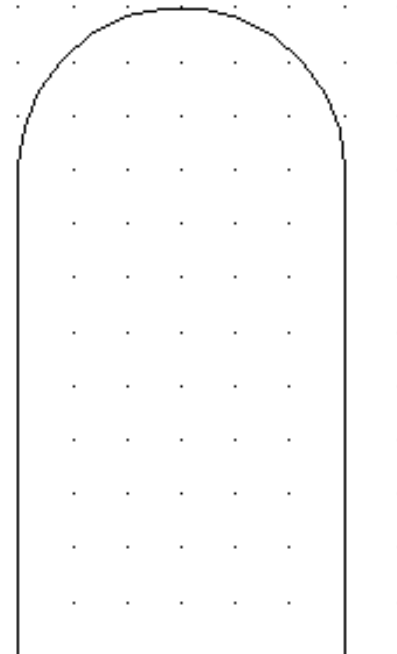11. Select the *rectangle tool* and draw a rectangle an even number of squares across.
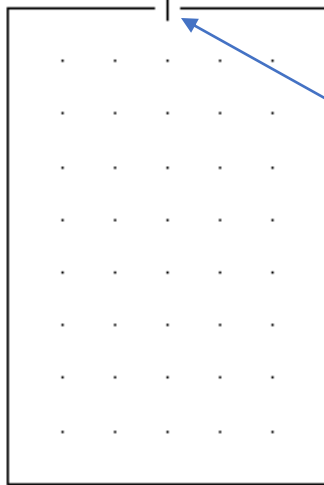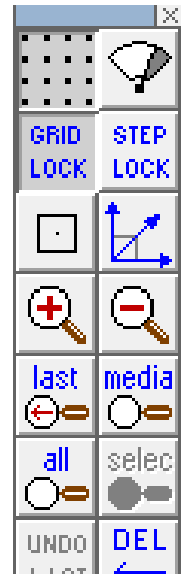
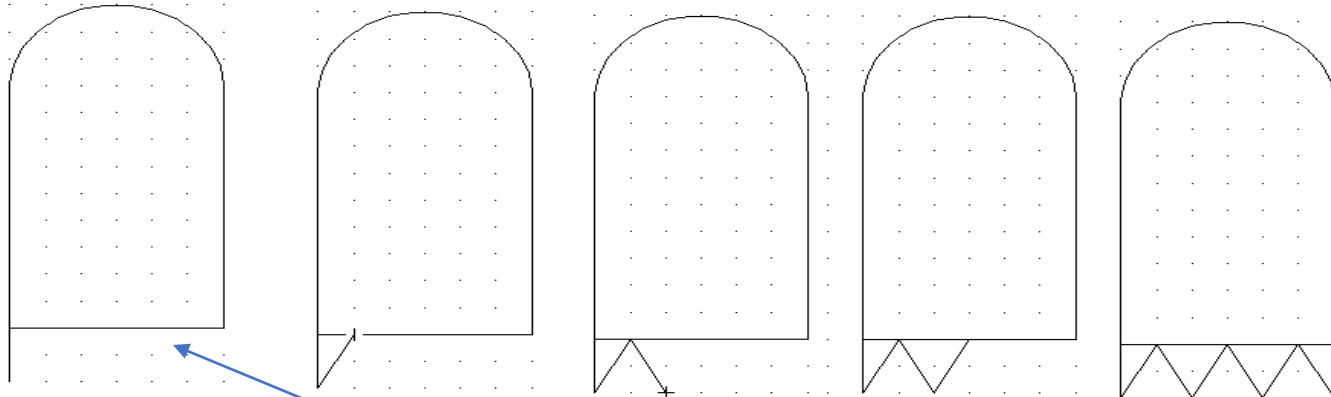12. Select the *circle tool* and start drawing from the midpoint at the top of the rectangle

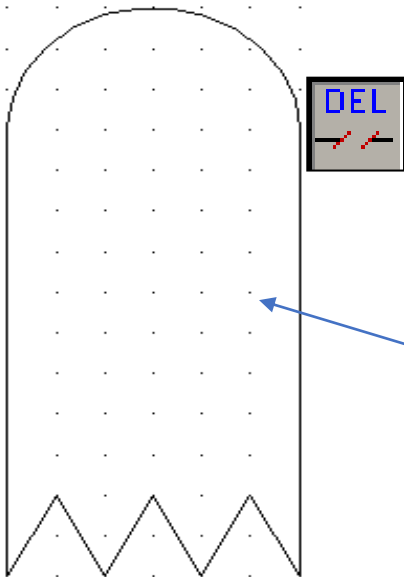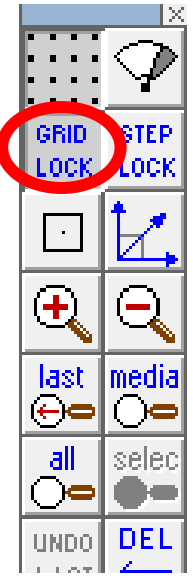13. Pull the *circle* out and touch the corner point of the rectangle shown
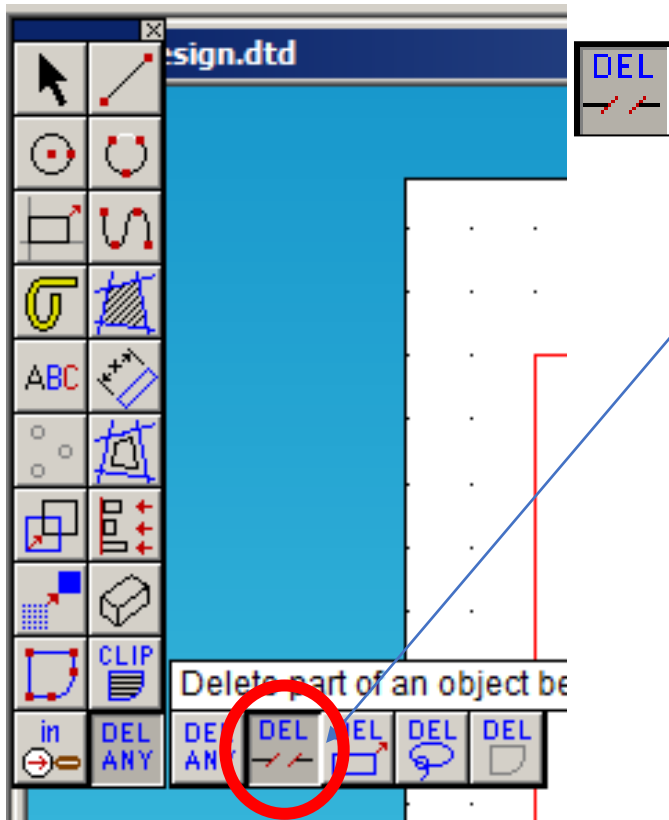
15. Select the ***delete any part tool*** and trim and delete the lines to leave the shape shown below.
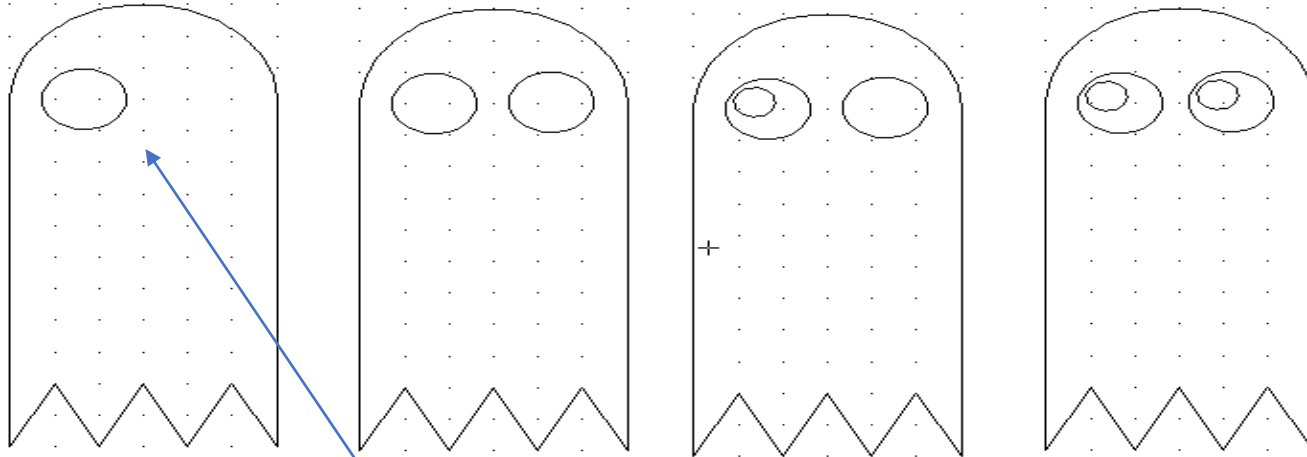
16. Select the *pencil tool* and follow the steps to draw the shapes above

17. Select the *delete any part tool* and trim and delete the lines to leave the shape shown opposite.

18. For the next part we need to *click gridlock back off.*

19. Select the circle *tool* and follow the steps to draw the shapes above