RECAP SLIDES: INTRO. TO AUTOCAD
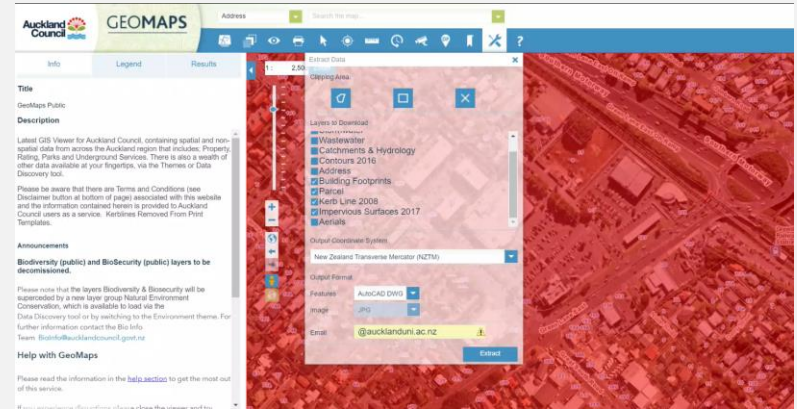
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CONTENTS OF THIS TUTORIAL

- Navigating the U.I
- Importing a DWG into AutoCAD
- Setting up the workspace
- Using key tools
- Using key modifying tools

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IMPORTING DWGS INTO AUTOCAD

- The screenshot shows the extraction of the site and surroundings as a DWG in GeoMaps. Tick layers that are needed for export especially the ones shown.

- You are also able to obtain DWGs from other data sources such as LINZ, Koordinates etc.

- **Please note:** You are able to download and use AutoCAD for free on your personal computer by requesting a student license from the Autodesk website.
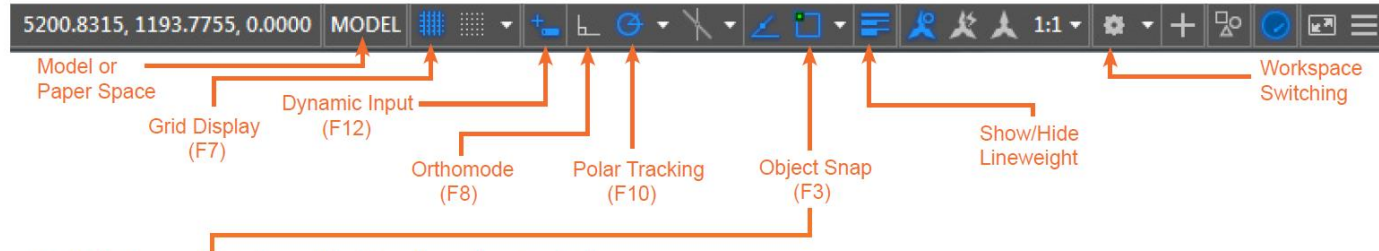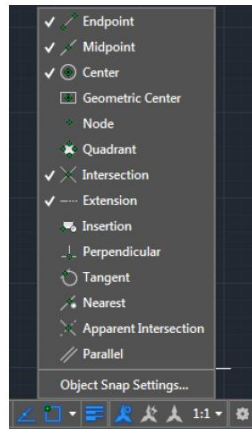

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AUTOCAD U.I
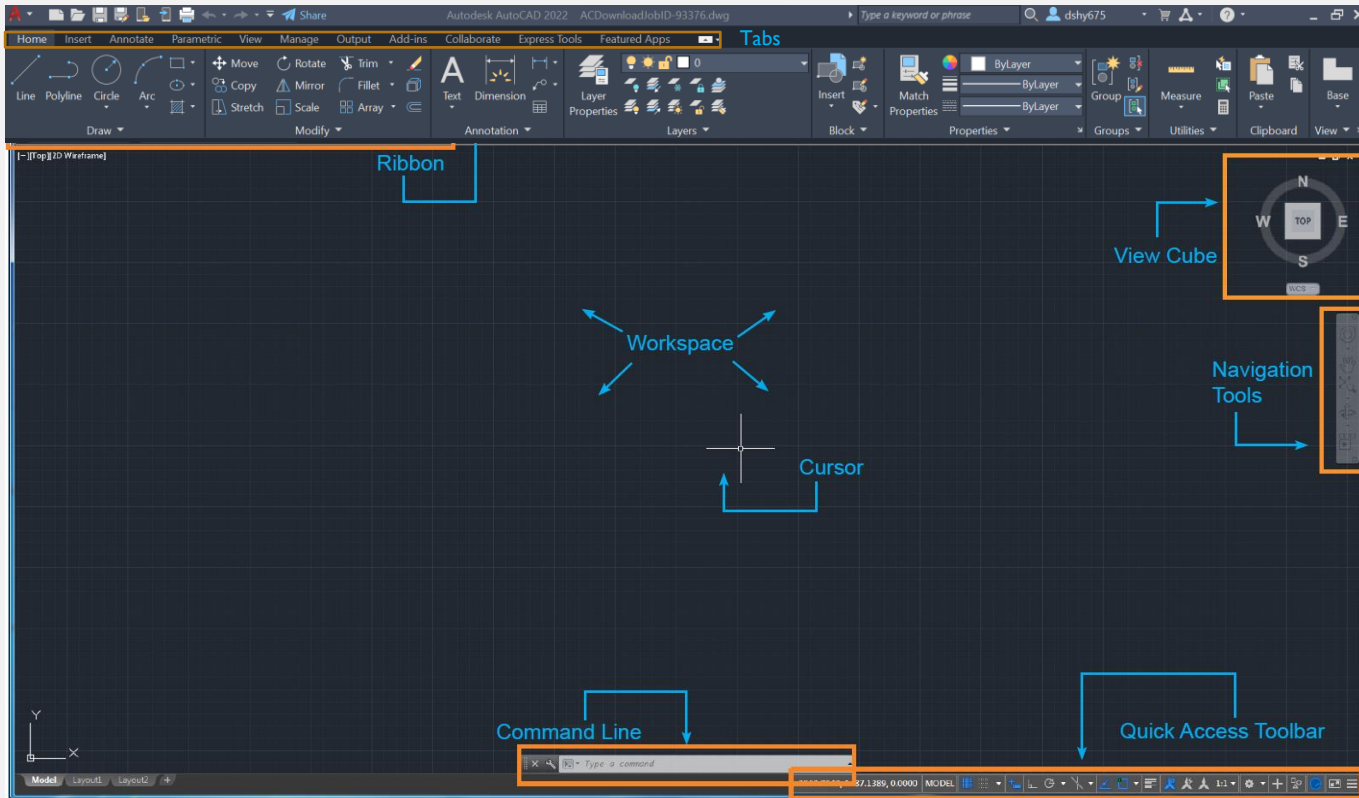
Please note: It is best practice usually to draw all your designs in metres/to scale with the correct units in AutoCAD.

AUTOCAD UI

The quick toggles bar along the bottom of the interface contains a number of buttons for turning features on and off quickly. Most of the ones on the left are to do with improving the precision/accuracy of drawing. Most have keyboard shortcuts for saving time. The most useful ones are shown below:

5200.8315, 1193.7755, 0.0000   MODEL

Model or Paper Space

Grid Display (F7)

Dynamic Input (F12)

Orthomode (F8)

Polar Tracking (F10)

Object Snap (F3)

Show/Hide Lineweight

Workspace Switching

Right Clicking on this button will lead to other options to which the cursor can snap to as shown below:

✓ Endpoint
✓ Midpoint
✓ Center
　Geometric Center
　Node
　Quadrant
✓ Intersection
✓ Extension
　Insertion
　Perpendicular
　Tangent
　Nearest
　Apparent Intersection
　Parallel
Object Snap Settings...

Grid Display/ Turns on and off a grid in the background.

Dynamic Input/ Enables a mini input box which makes it easier to type and see measurements.

Orthomode/ Constrains drawing to vertical and horizontal which is useful for drawing at right angles.

Polar Tracking/ Snaps and indicates certain angled guidelines when drawing

Object Snap/ Allows snapping to certain points which can be customised by right clicking the 'Object Snap' button - as shown on the left.

Show/Hide Lineweights/ Allows different thicknesses/lineweights to display on screen.

Model or Paper Space/ Used during the printing stage - checking what drawings will look like one paper

Workspace Switching/ Changes the workspace and panels into different modes (such as 3D Modelling)
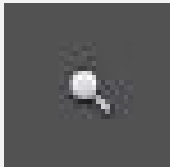
IMPORTING DWGS INTO AUTOCAD

- Launch AutoCAD. Go to **Open** on the left-hand-side, and find your DWG.

- Simply type **Units** and double-check you have the same settings as the image shown adjacent.

- Type in **Layer** to see the layer options in AutoCAD. Use the light bulb to turn on and off layers.

- Explore these settings.
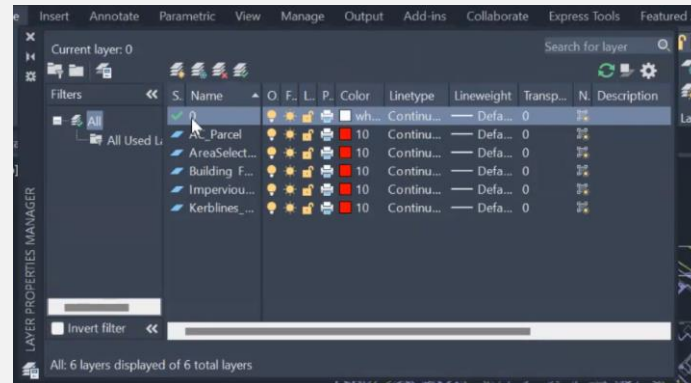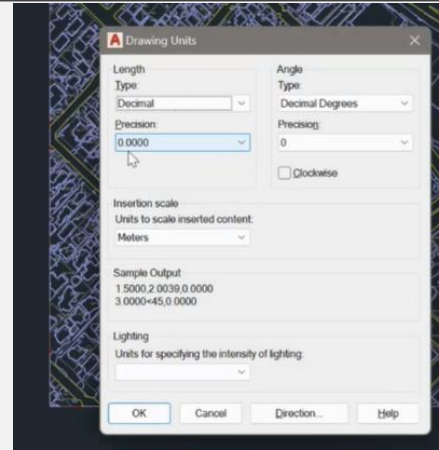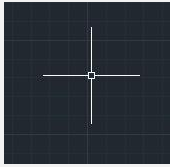
- **Select**
 - *Default tool (see image to left)*
- **Zoom in/out**

  - *By rolling the wheel of your mouse*
  - *Find the zoom tool in the toolbar (see image to left)*
  - ***Command: ZOOM***
- **Zoom to the extents of your drawing** *by clicking the mouse wheel twice*
- **Pan (like dragging across your drawing)**

  - *by holding the wheel down and moving your mouse*
  - *Find the pan tool in the toolbar (see image to left)*
  - ***Command: PAN***

PRACTISING WITH THE MAIN TOOLS/COMMANDS

- For these following pages on practising the main tools/commands, it is highly recommended to turn on **Grid lines** and **Snap Mode** (option next to Gridlines). This will make your drawings snap onto the grid lines.

- For most efficient use of AutoCAD, learning the commands (words you type) for the various tools is beneficial.

- Hit **Esc** to get out of a tool.
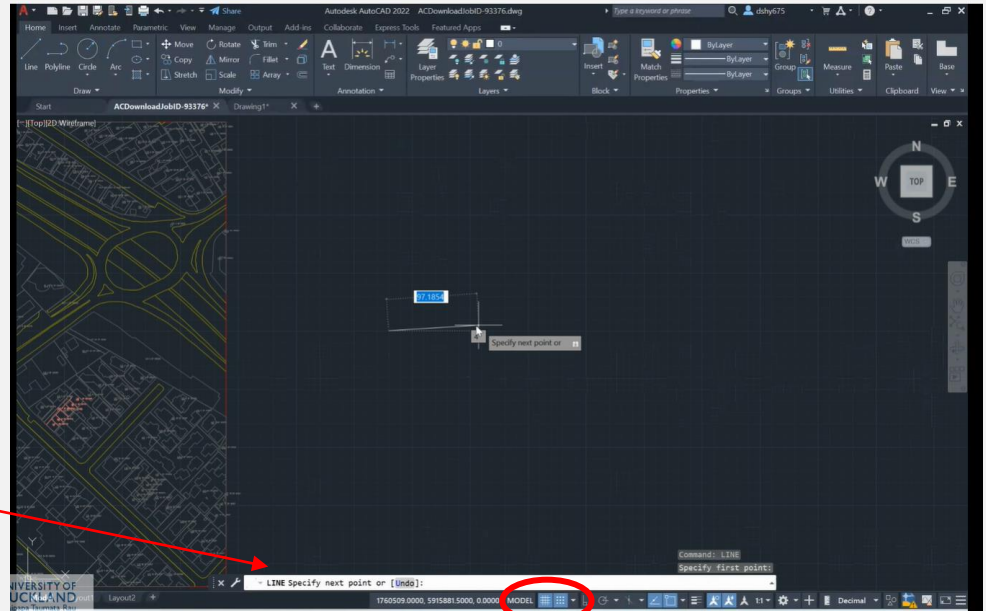
For creating walls, windows, columns, straight-edged objects.

- **Single line:**
  - *Command: LINE*
- **Multiple connected lines and polygons:**
  - *Command: PLINE*
- In AutoCAD, simply type in numbers to create a line of that dimension. Use the guides (green icons) to help you draw.

GEOMETRY - CIRCLE

Useful for creating doors.

- ***Command: CIRCLE***
  - *Then follow instructions (press **space bar** once you finish first instruction):*

> CIRCLE Specify center point for circle or [3P/2P/Ttr (tan tan radius)]:

> CIRCLE Specify radius of circle or [Diameter]:

For creating boxes etc.

- **Command: RECTANG**
- *Follow instructions*

>_▾ RECTANG Specify first corner point or [Chamfer/Elevation/Fillet/Thickness/Width]:

>_▾ RECTANG Specify other corner point or [Area/Dimensions/Rotation]:

- To move objects, *type the* **command MOVE.**
- The command line will give you the following instructions to follow.

```
>_ ▾   MOVE Select objects:
```

```
>_ ▾   MOVE Specify base point or [Displacement] <Displacement>:
```

```
>_ ▾   MOVE Specify second point or <use first point as displacement>:
```

Modifying Tools– Copying & Offset

● To copy an object, *command: COPY*
● To make a copy of an object <u>but at a certain distance from the original object</u>, *type the **command OFFSET.***
● Useful for making walls - to add thickness.
● The command line will give you the following instructions to follow:
  ○ Specify offset distance.
  ○ Select object you want to offset.

Modifying Tools– Trim

- ***Command: TRIM***
    - Trims objects.
    - Think of TRIM as using an object to trim or slice parts of another object.
    - Useful for making circles into doors.

Modifying Tools– Trim

● Using *TRIM* to make a door:
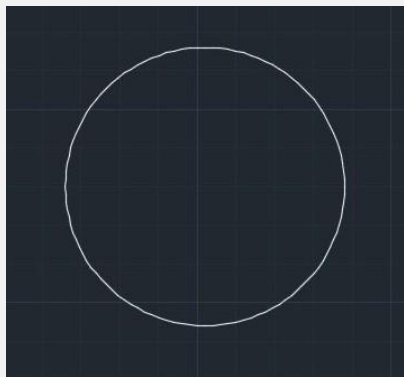
Create a circle.
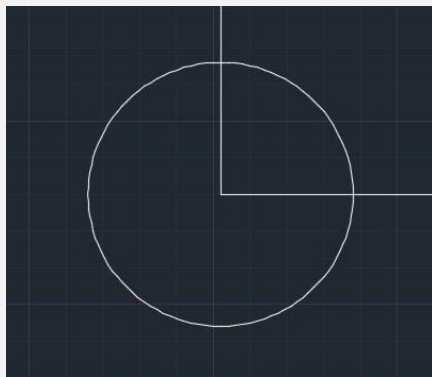
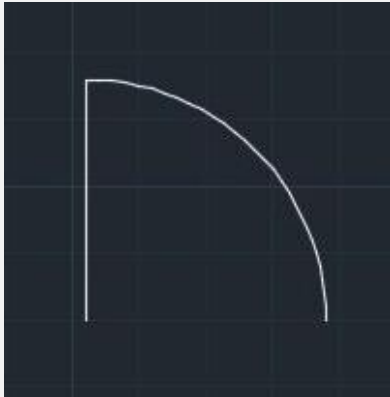*Add lines from centre of circle.*
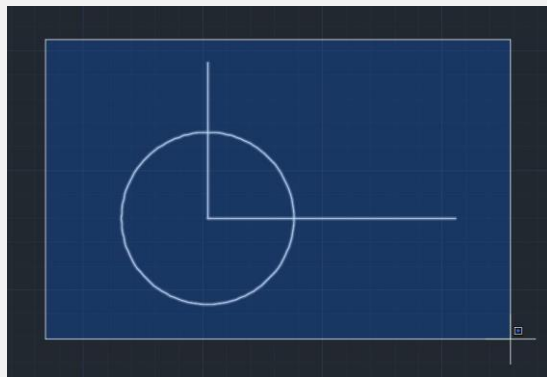
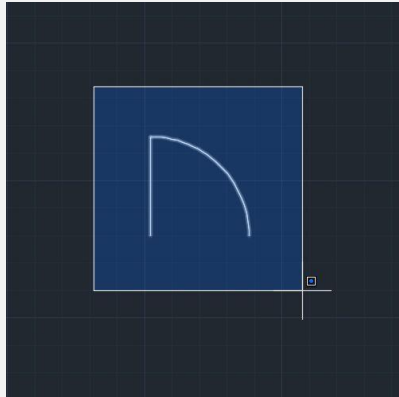*Select all objects.*
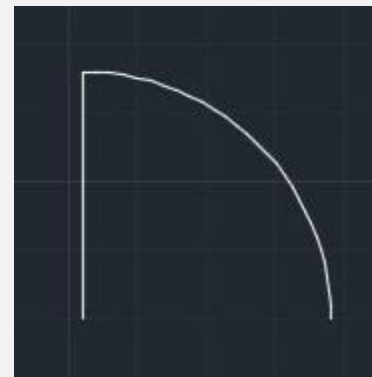
Select parts you want to delete.

Modifying Tools– Mirror

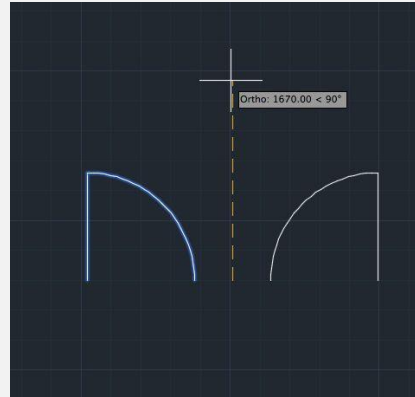- ## *Command: MIRROR*
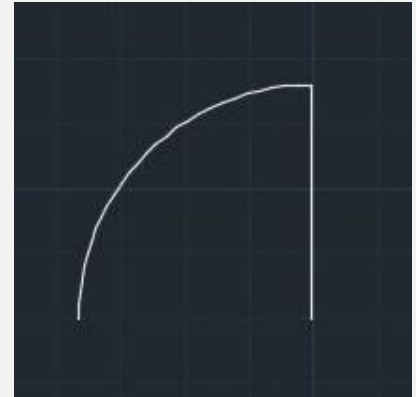   - ○ Creates a mirrored copy of an object.

Identify object.
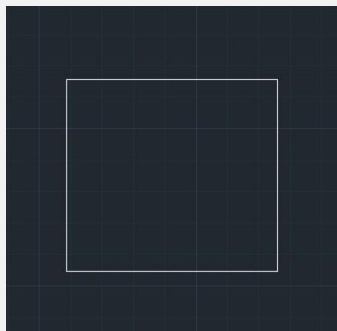
Select object.

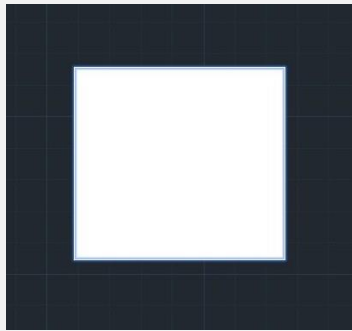*Identify mirror line.*

Mirrored object.

Modifying Tools– Hatching

- ## *Command: HATCH*
    - ○ "Hatches" are used in architectural drawings to represent solid masses and materials to be used.
    - ○ Think of *hatch* as adding texture or fill inside a shape.

Without hatch pattern
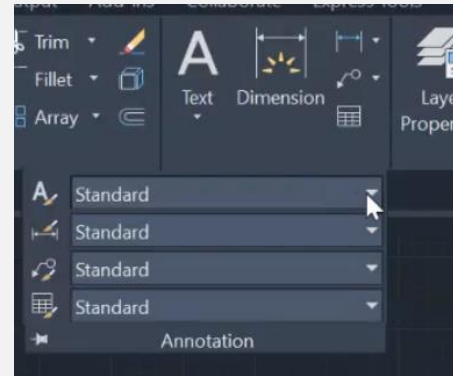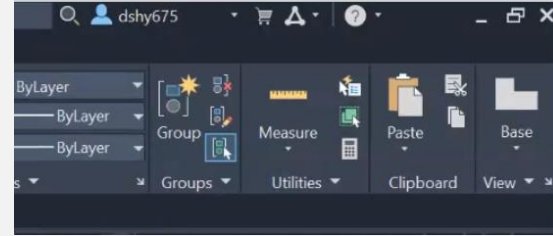
With fill / hatch pattern

- **Polar tracking:** Guides the movement of your cursor in certain directions (horizontal 0° or vertical 90°)
    - *Status bar:*
- **Locking angles:** Draw lines at a specific angle
    - ***Command: LINE** > type the angle you want "<ANGLE" **e.g. <45***
    - *<u>OR</u> lock lines at 0° or 90° with **Command: ORTHO***
- **Object snaps:** Automatically connect your line to particular points on other objects.
    - *Status bar:*
    - ***Command: OSNAP***
    - *Hit F3 button*

DIMENSIONS

- To measure objects, use the intuitive **Measure Tool.**

- To add dimensions to your site plan or design, go to **Annotations> Standard Text arrow> Manage Text styles>** And change the **Text Height t**o suit your drawing.

- 1.4 can be a good choice, and hit **Apply** and **Set Current** for future use.

- Then go to **Dimension** and click on the first and end points of the line you are measuring.

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