

#7

Drawing Tutorials

croquis sketches



Technical Drawing Part 1



1. Welcome

• Goal! Have myself sketch my own concepts

• Sketches are extremely important nowadays

Challenges: Quick activities for me to do

2. Why sketching?

• Even if you don't realize it you've probably sketched many times

• Sketching requires a ton of attention to detail and a strong "mental map"

• Sketching is important because it helps provoke thoughts and new ideas

• Important for capturing something that is fleeting

3. Sketching Speed

Ideas rarely come out of our heads fully formed so it's important to annotate and focus on profusion

Concept of flow: overthinking prevents yourself from getting into a rhythm

"Don't reinvent the wheel"

4. Conversational Sketching

You begin drawing something and you might try to choose a certain action after seeing how it looks.

Real conversation and sketching can facilitate thinking

Tons of STEM workers rely on sketches to better understand the idea like the solution or problems.

5. Exploring relationship: pen & computer



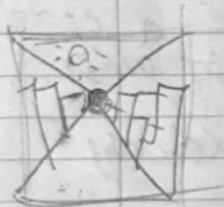
On certain programs, sketches are used by mainly using points, vertices, and cubes.

The software allows 2D sketches to be pulled up to make a 3D sketch.

Pen sketches are fixed in space.

6. Illusion of space

Sketches are visual illusions, not real.



Angle of site = pov or vanishing

Mirrors can help show the pov's

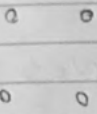
All lines converge to a single point in one-point sketches

Copper Hochman

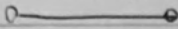
Technical Drawing Part 2

1. Sketching 2D (points, lines, & planes)

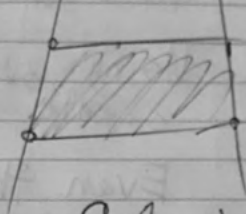
points



lines



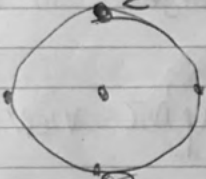
planes



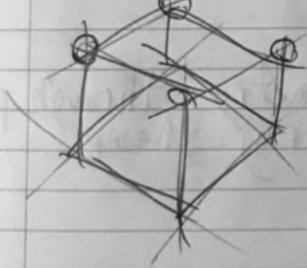
Cylinder:

- Material arrives as flat sheet
- Rolled 360°
- Has 4 points

End point



When we sketch, we jump from point-to-point.



Cube



pyramid



wedge

points make planes, planes make form

2. Drawing projections sys. overview

Projection sketches are just 3D sketches on 2D surfaces like paper

Using surfaces, points, & curves designers create recognizable forms

Even though projected geometry is an illusion, it seems 3D after drawing

Orthographic sketching can be done by thinking of an object in a box

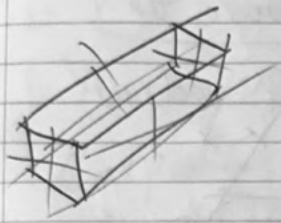


6 orthographic views

Constructing geometry through projection will be a recurring theme

3. Interrelationship of projection sketches

Isometric system is like "2.5D".



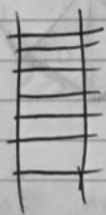
isometric view

Understanding the uniqueness is key for improving

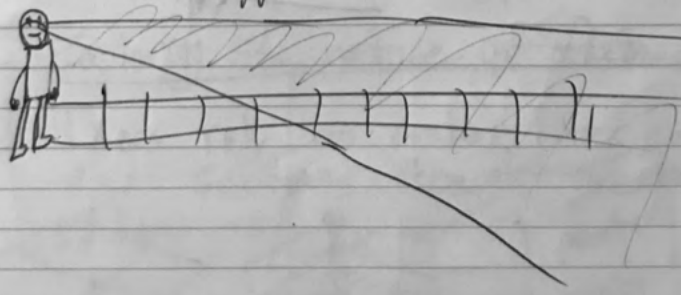


Train tracks "converge"

same set:



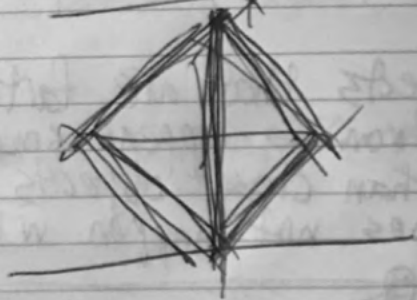
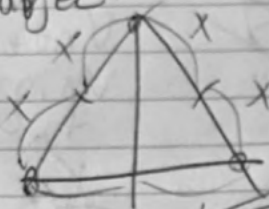
Objects that are farther from us appear smaller than closer objects (Does not happen with ortho sketches)



4. Challenge Sketch 2D Geo shapes & 3D.

Shape - something 2D

Form - 3D object



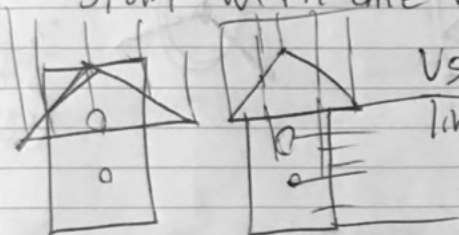
★ Orthographic Drawing ★

1. What is orthographic projection?

Analogy: Box in a box

Carpenters & Craftsmen rely on orthographic projections

To make a multi-view sketch, start with one view

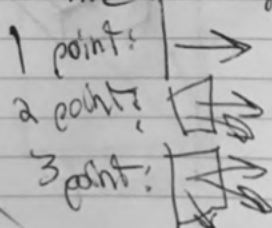
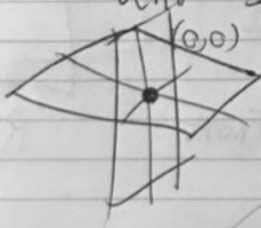


Use dotted "hidden" line to indicate objects not visible

Using 45° angles, any vertex can be projected up.

2. Exploring the nature of flatness

Hikers rely on contour lines, colors, and sections through the landscape



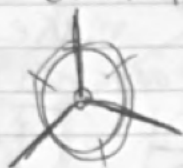
3. The power & dynamics of projection



Orthographic is not always accurate because everything isn't always



Top view:
of stool



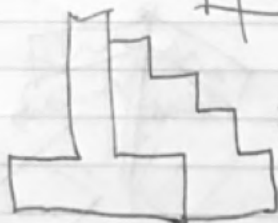
$\frac{180}{3} = 360$

3 even sides (curves)

4. Rent notes:



plan

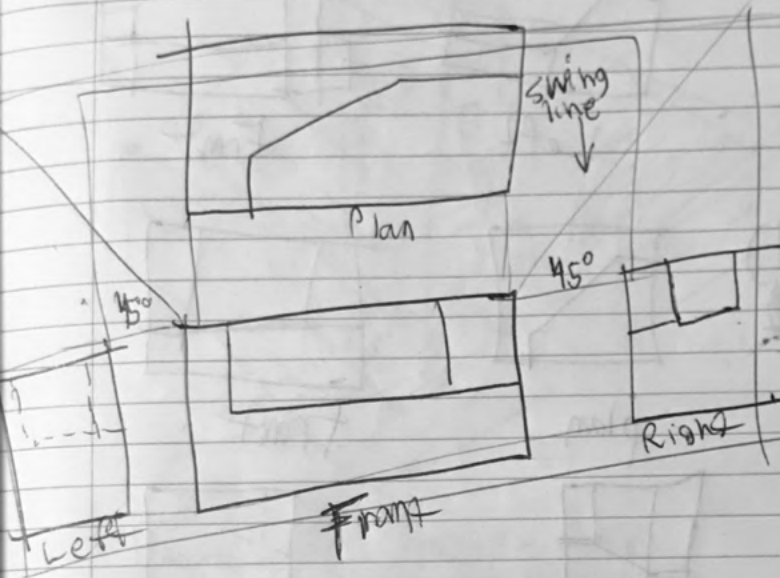


Front

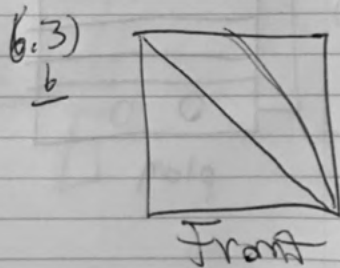
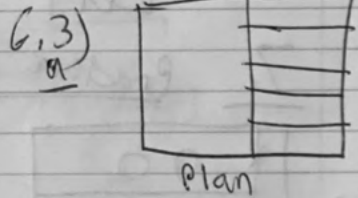
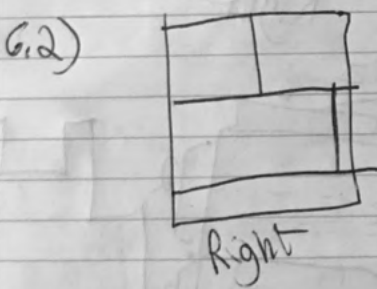


Right

5. Recreate Orthographic



6. Clear in missing views



6.4)
a



Left

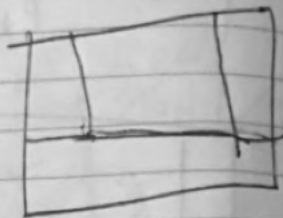


Front

6.4)
b



plan



Front



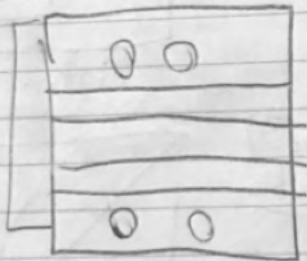
Left



Right

7. Practice Quiz 6

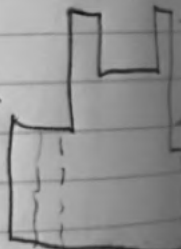
10



plan

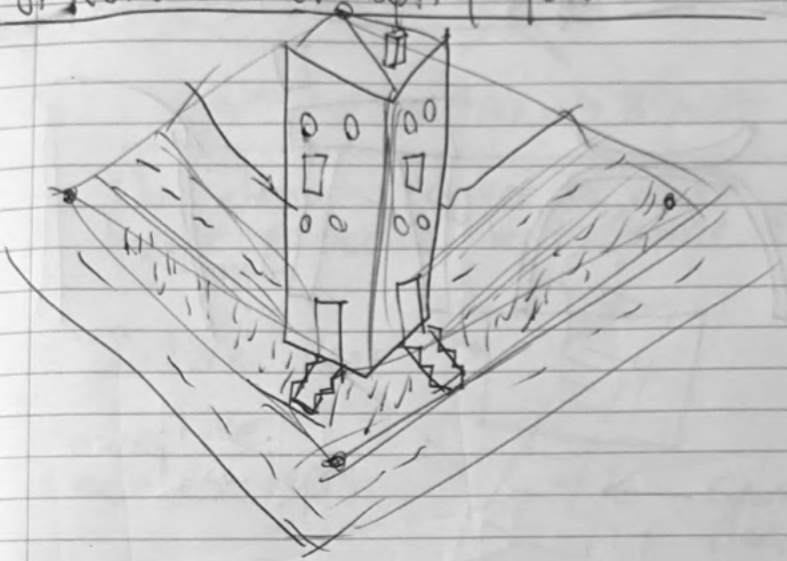


Front

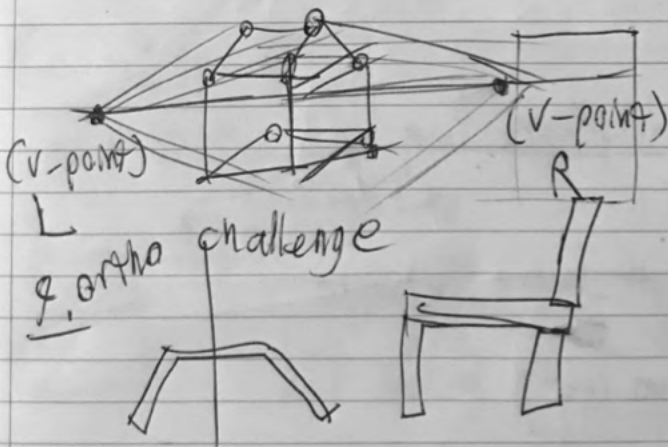


Left

8. Rotated view, 2pt. perspective



House 2pt. perspective



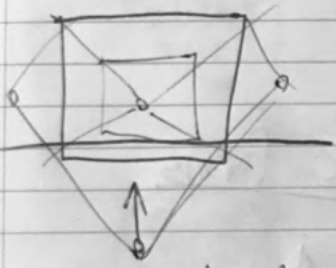
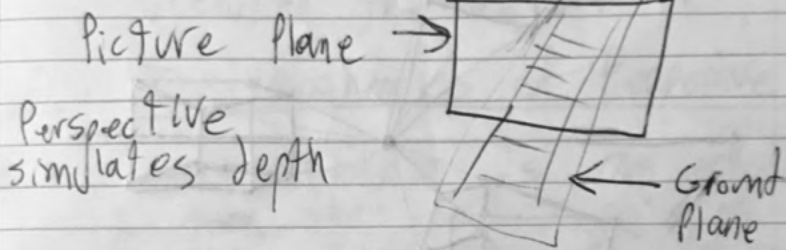
10. Orthographic Solution



★ Perspective ★

1. One point perspective → 3 point

The elements required to make 1-point perspective include some from 2-point



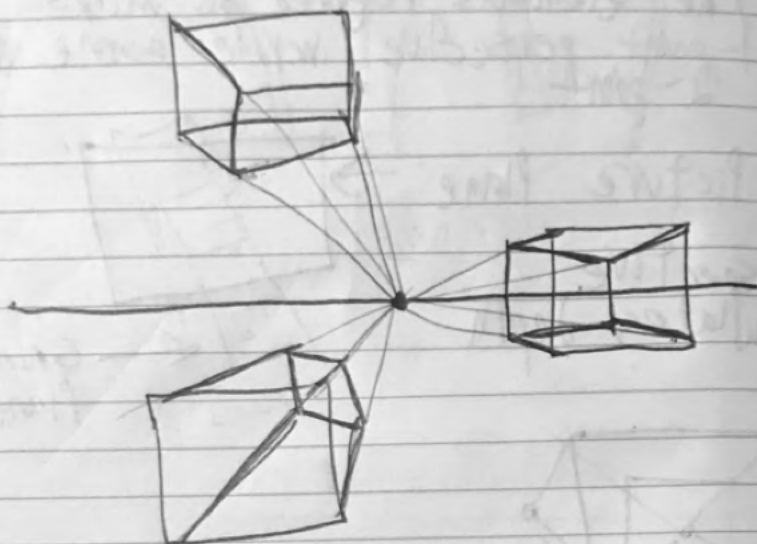
2. Guide to 1 point perspective drawing

↙ Horizon Line

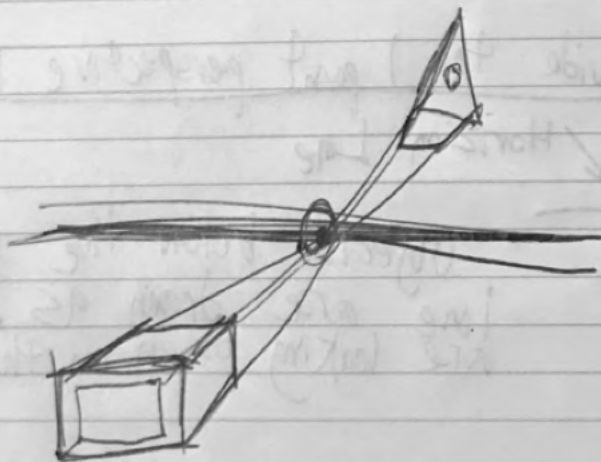


Objects below the horizon line are drawn as if you are looking down on them.

3. Draw 3 cube in 1-point perspective



4. Draw 2 complex forms



5. Intra 4a 2-part

As the object rotates, the projection lines & vanishing points move accordingly

Horizon line moves up and down depending on how you're viewing the object

6. The mechanics of perspective

Foreshortening is an optical illusion that causes objects further away from us to appear smaller



Joystick

Consider where objects would most commonly be seen at when you set the vanishing point

7. Using Perspective to Scaffold

Learn from the world around us.

Projection lines create subtle "V"s, v-configurations

← Scaffolding



Facilitates faster and more efficient use of geometry.



★ Complex 2-point perspective shapes challenge ★

1. Occluded Lines

In order for us to go inside geometry we need to go "through the walls".

Hidden edges are what scientists call occluded edges.



← plastic water bottle

Network of projected geometry may resemble

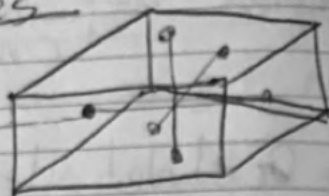
2. Manipulating Forms

It is important to know how to split and divide forms.

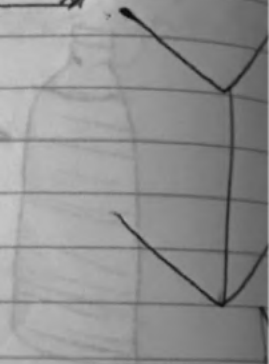
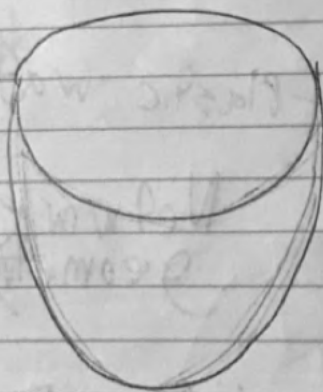
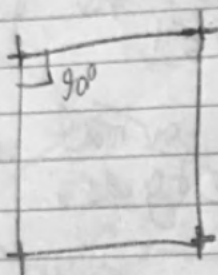
Diagonals and center lines can divide 3D shapes



3. Cube Challenges



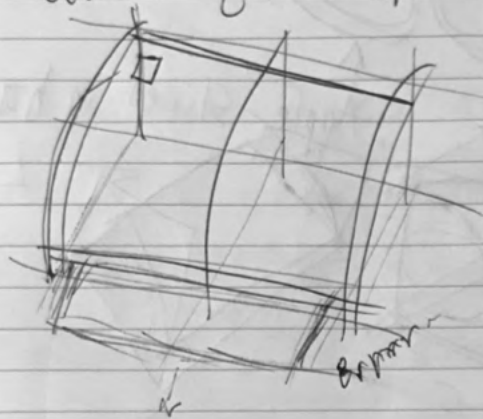
4. Challenge Solution nets as well



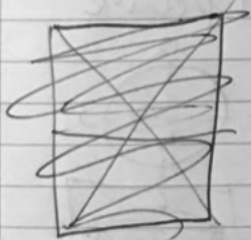
✱ Rectangular Planes with Centers ✱

1. A Printer in 2-point perspective

Rapid ideation sketching is about quick and smart decisions

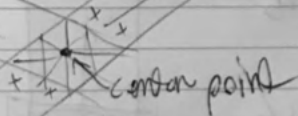


2. The Center Line



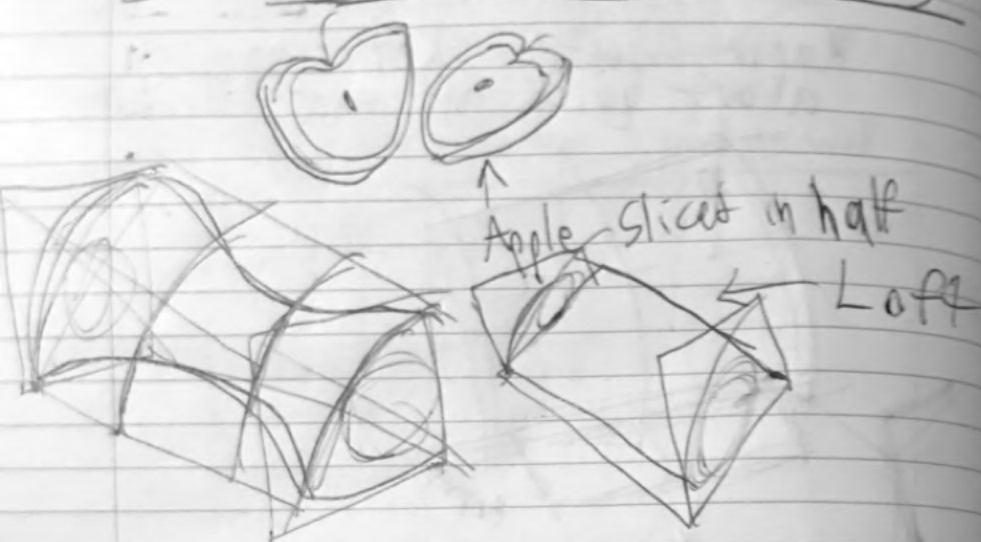
← center line

← center line



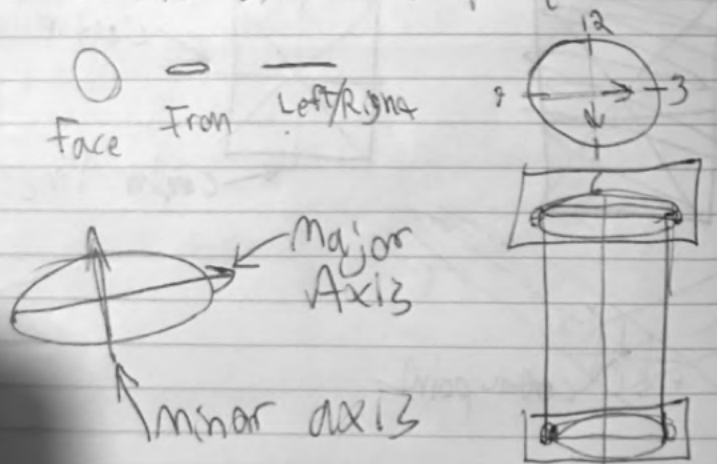
★ Curved Surfaces ★

1. The Prism & Section Cuts

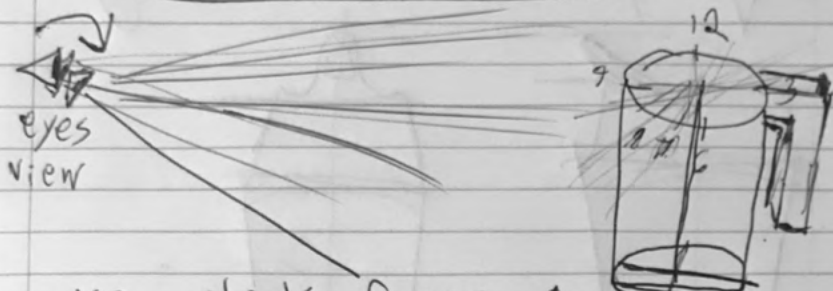


2. Cylinder in a Box

Circle viewed in perspective



3. Draw a Pitcher, curved connections



use clock faces as reference when dividing circular faces of forms

4. The Water Bottle

Compound curve surface: curves in at least 2 opposing directions and can't be laid flat.



← Water Bottle

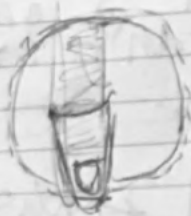
★ My first Product Design Sketch



Left



Front



Plane



Perspective