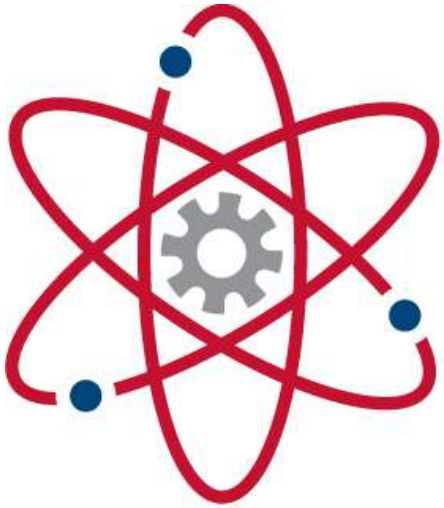


PROJECT LEAD THE WAY

PLTW

Igniting imagination and innovation through learning.

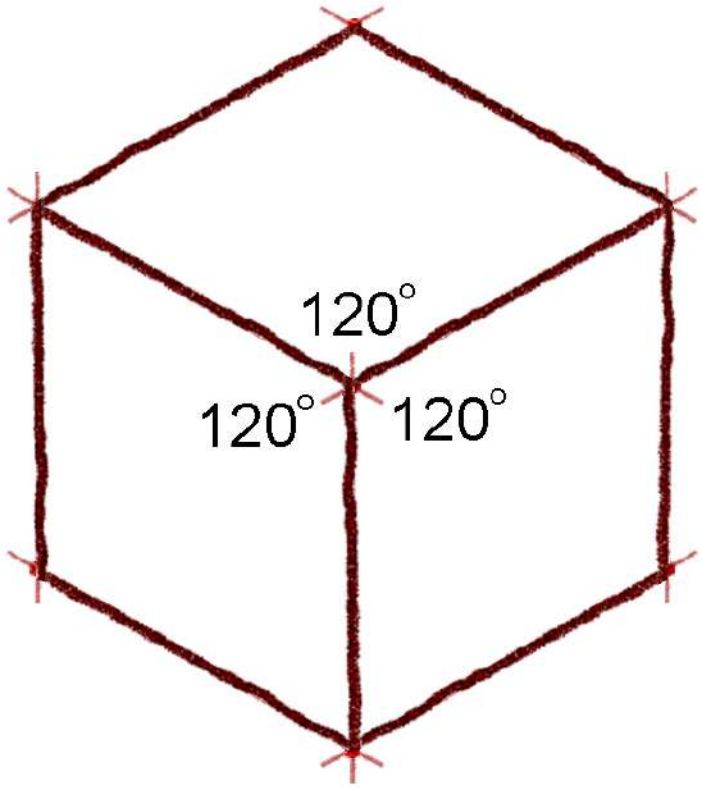
Isometric Pictorials

Isometric Pictorials

Isometric means *equal measure*.

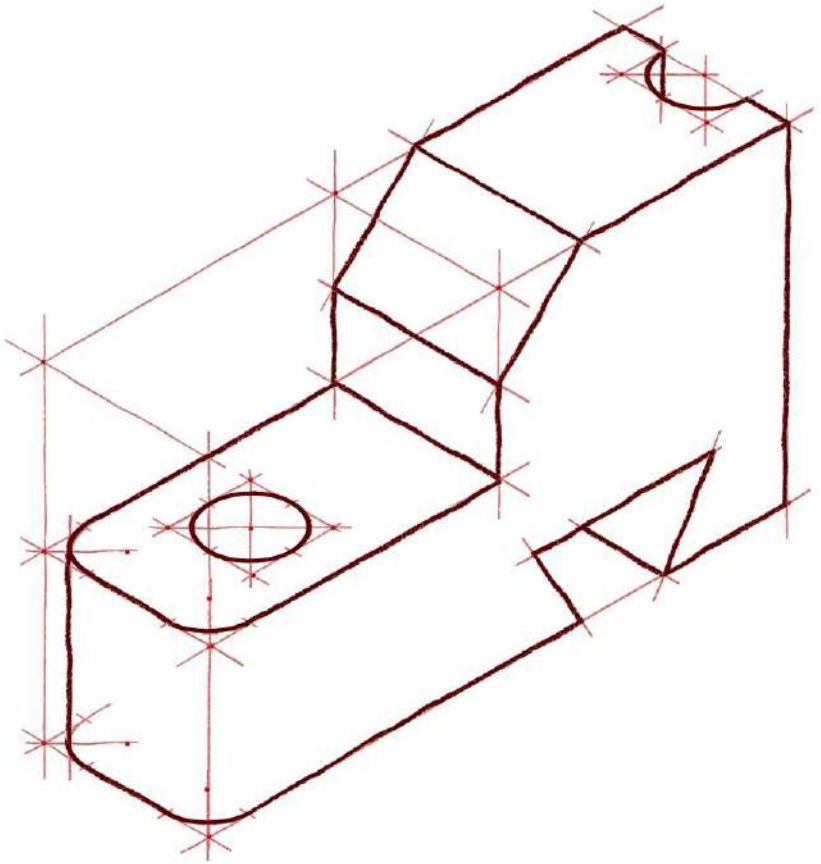
Three adjacent faces on a cube will share a single point. The edges that converge at this point will appear as 120 degree angles or 30 degrees from the horizon line.

These three edges represent height, width, and depth.



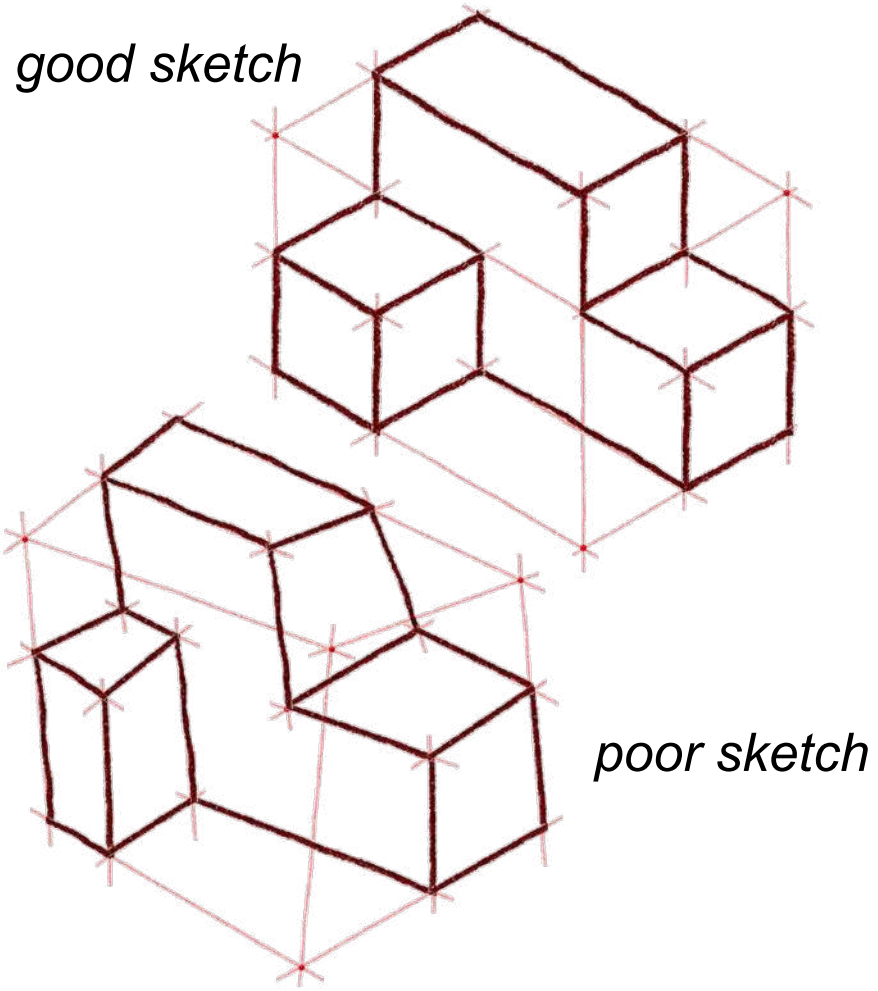
The Box Method

The *box method* is a technique used in sketching to maintain proportionality. It starts with a sketcher envisioning an object contained within an imaginary box.



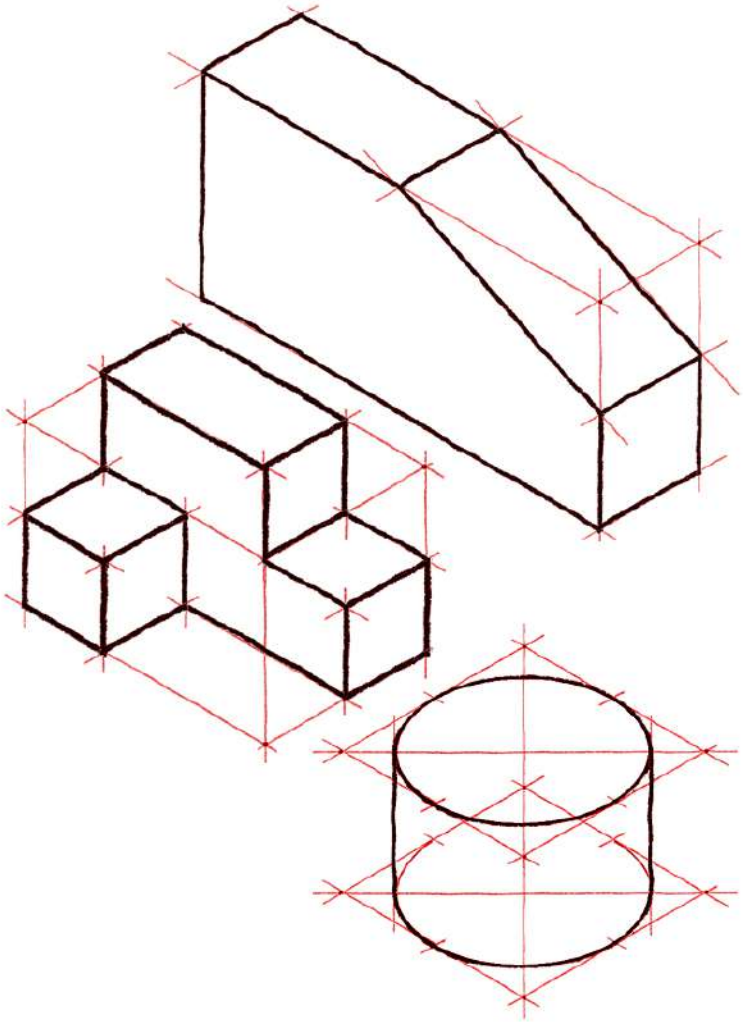
Proportion and Estimation

Good sketching requires a sense of proportion, and the ability to estimate size, distance, angles, and other spatial relationships.



Isometric Sketching

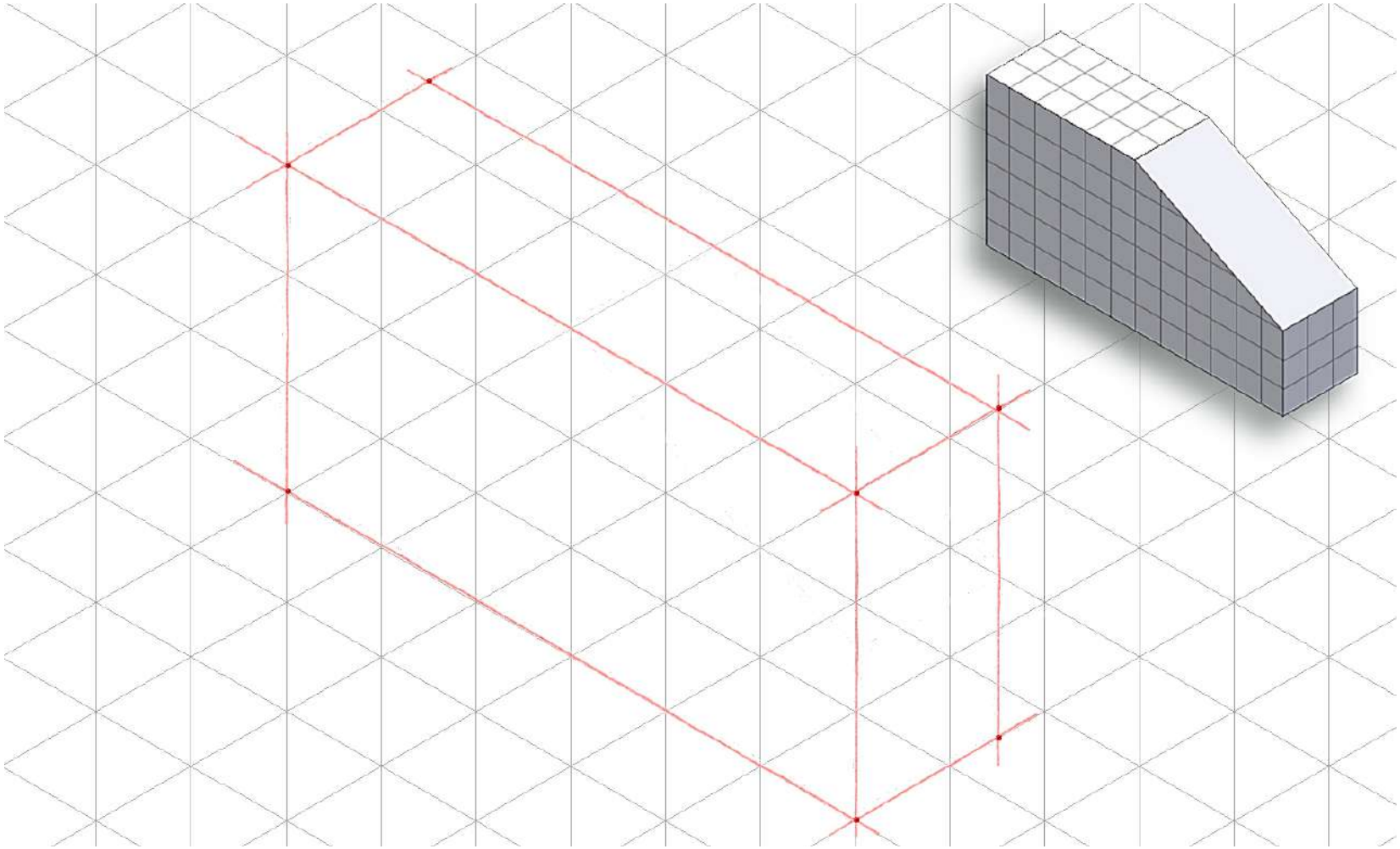
The following examples show the steps used to create isometric sketches of simple geometric objects, along with tonal shading techniques.



Isometric Sketches

Step #1: Layout the box within which the isometric view will occur using points and construction lines.

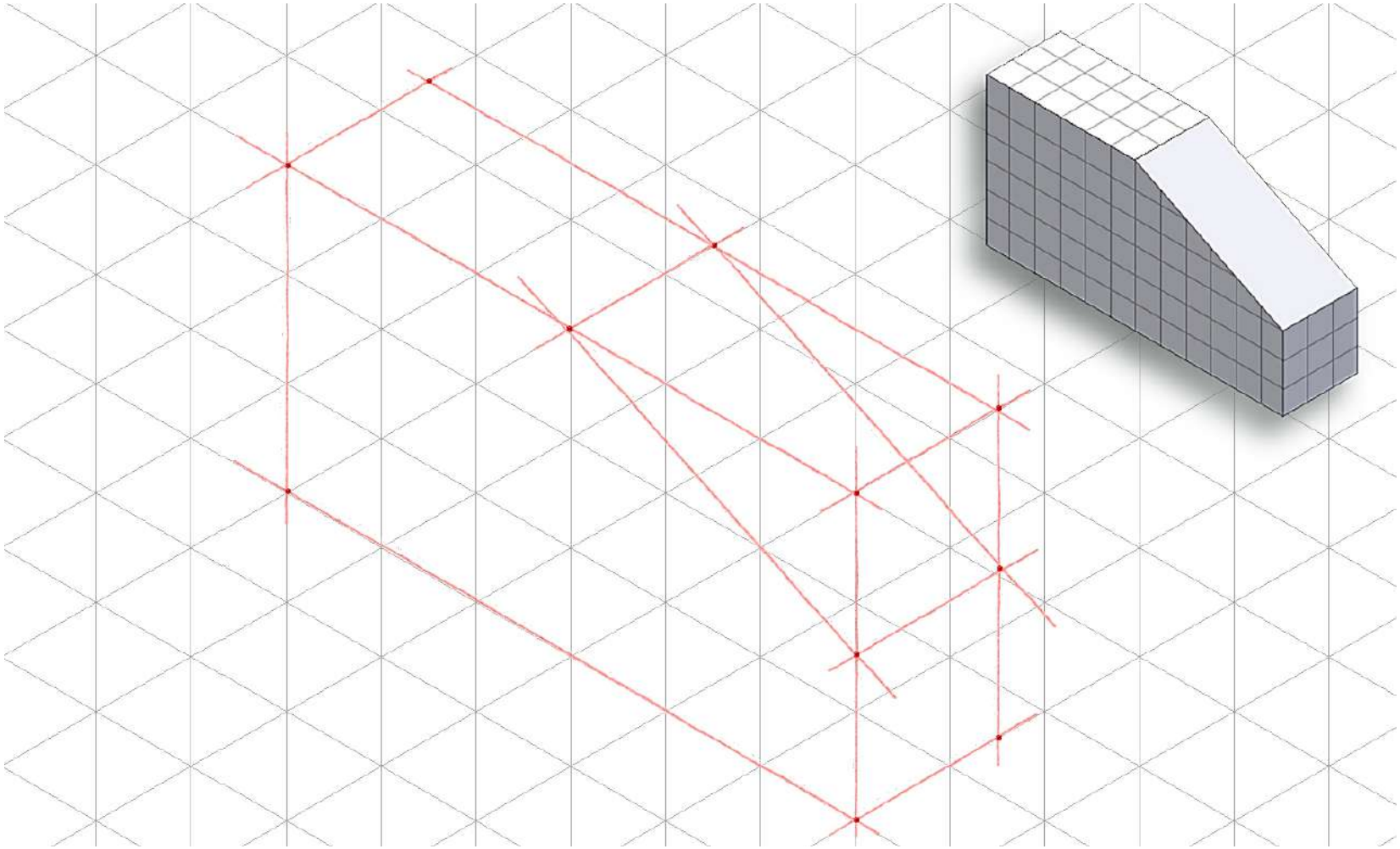
Step #1: Constructing The Box



Isometric Sketches

Step #2: Use points and construction lines to identify surfaces that are not parallel to the faces of the box.

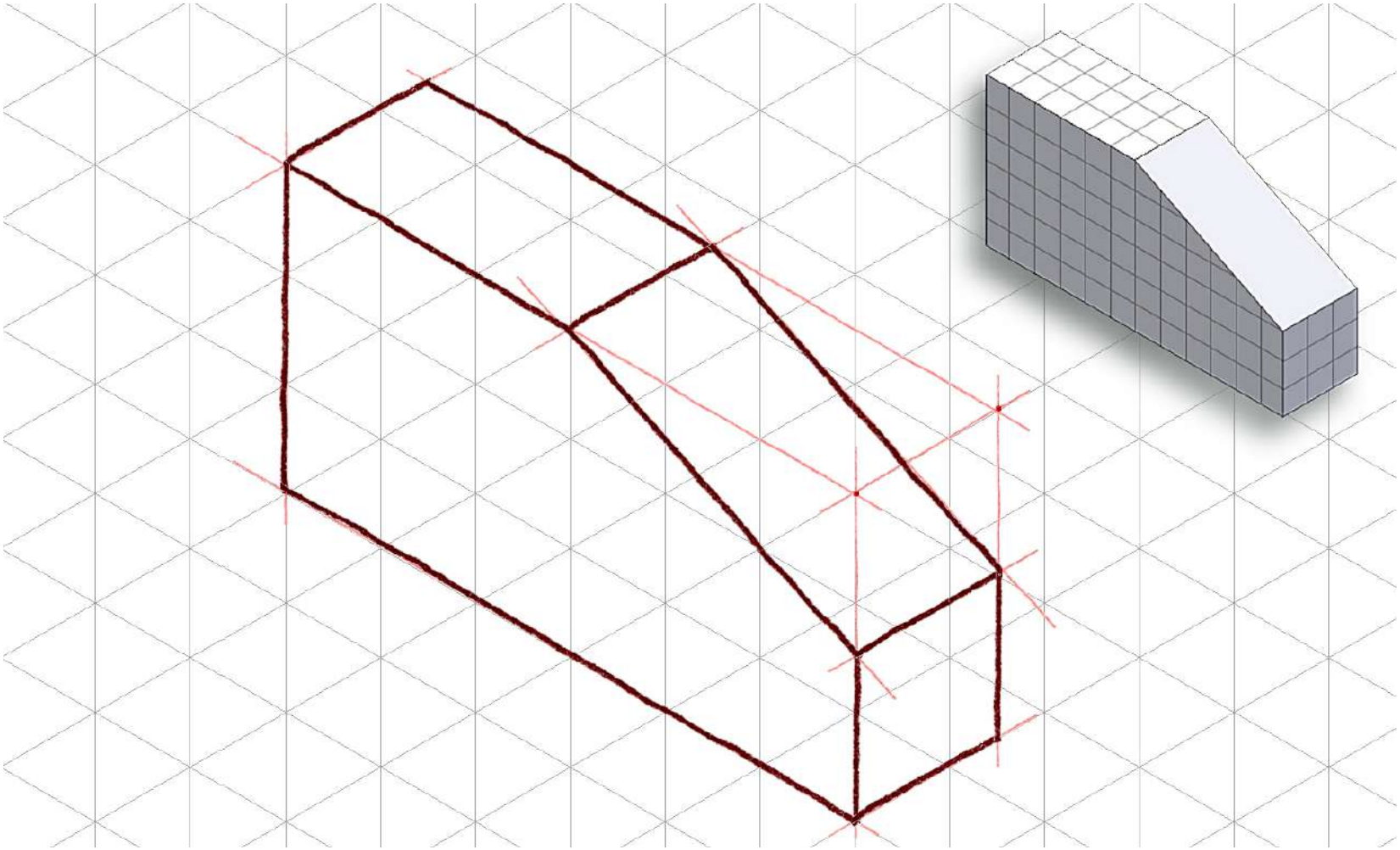
Step #2: Outside Faces



Isometric Sketches

Step #3: Trace out the visible edges of the part with thick, dark object lines.

Step #3: Object Lines

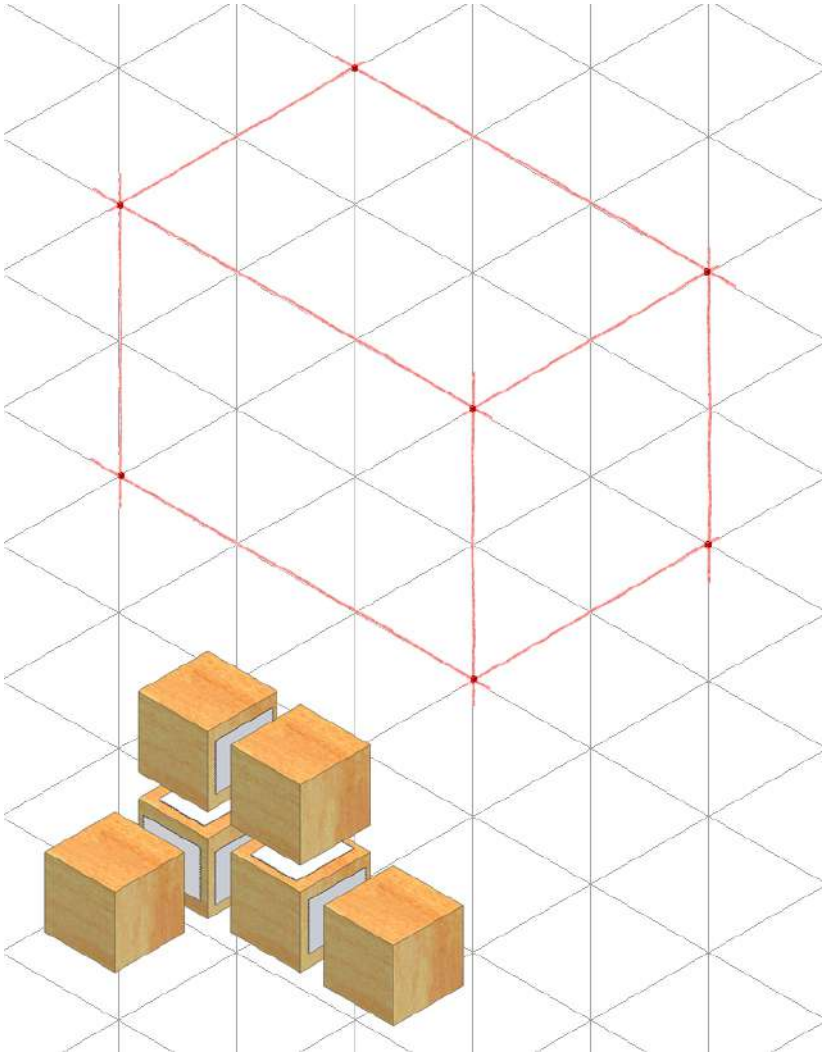


Step #1: Constructing The Box

Determine the overall dimensions of the object:

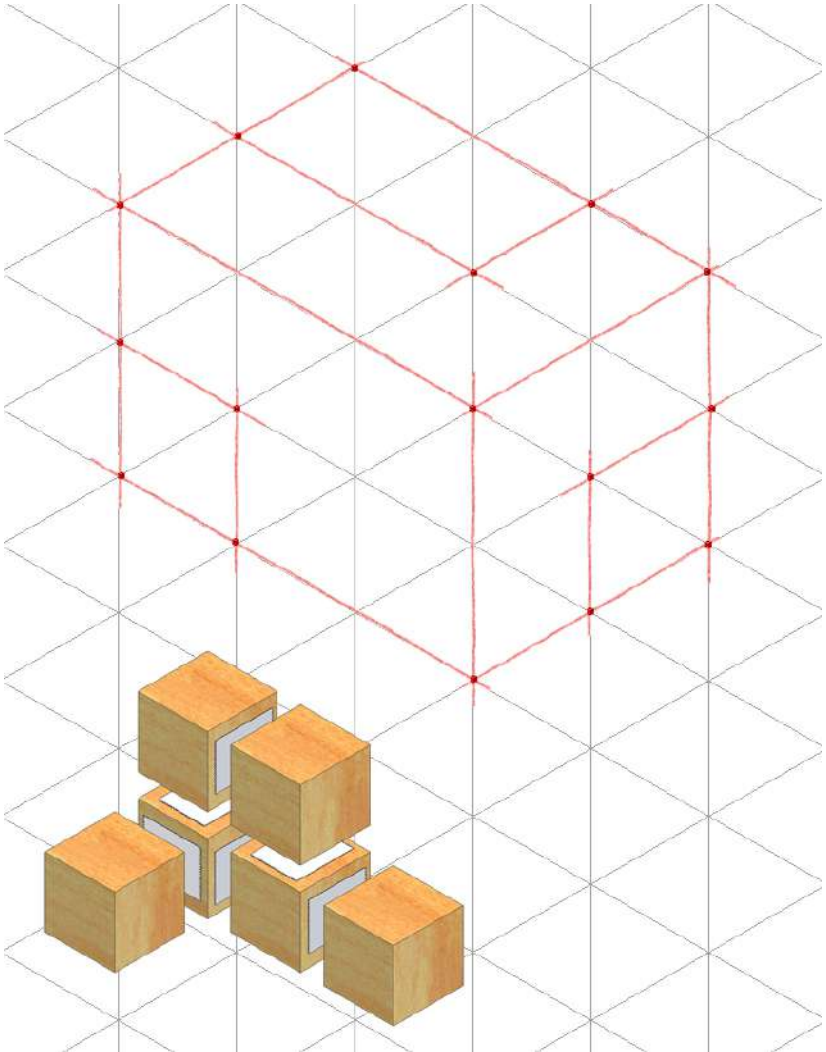
- 3 units wide
- 2 units tall
- 2 units deep

Use points and construction lines to layout the box.



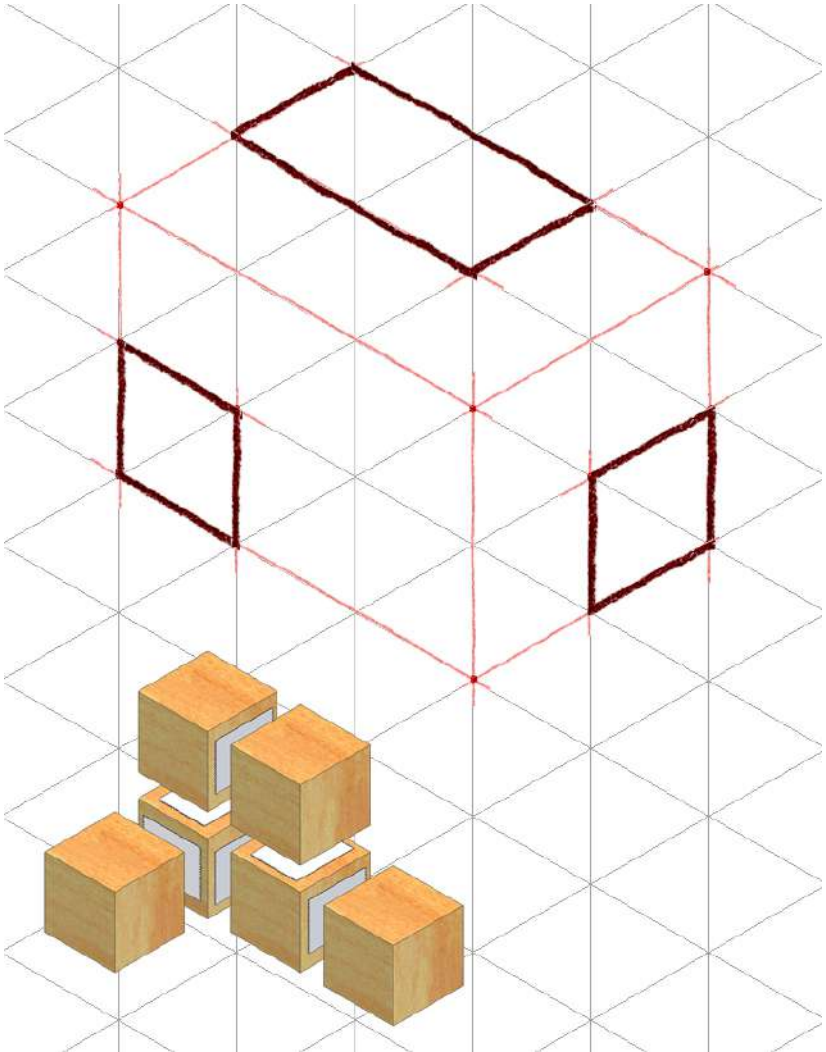
Step #2: Outside Faces

Use points and construction lines to identify the corners and edges of the object faces that occur on the surface of the box.



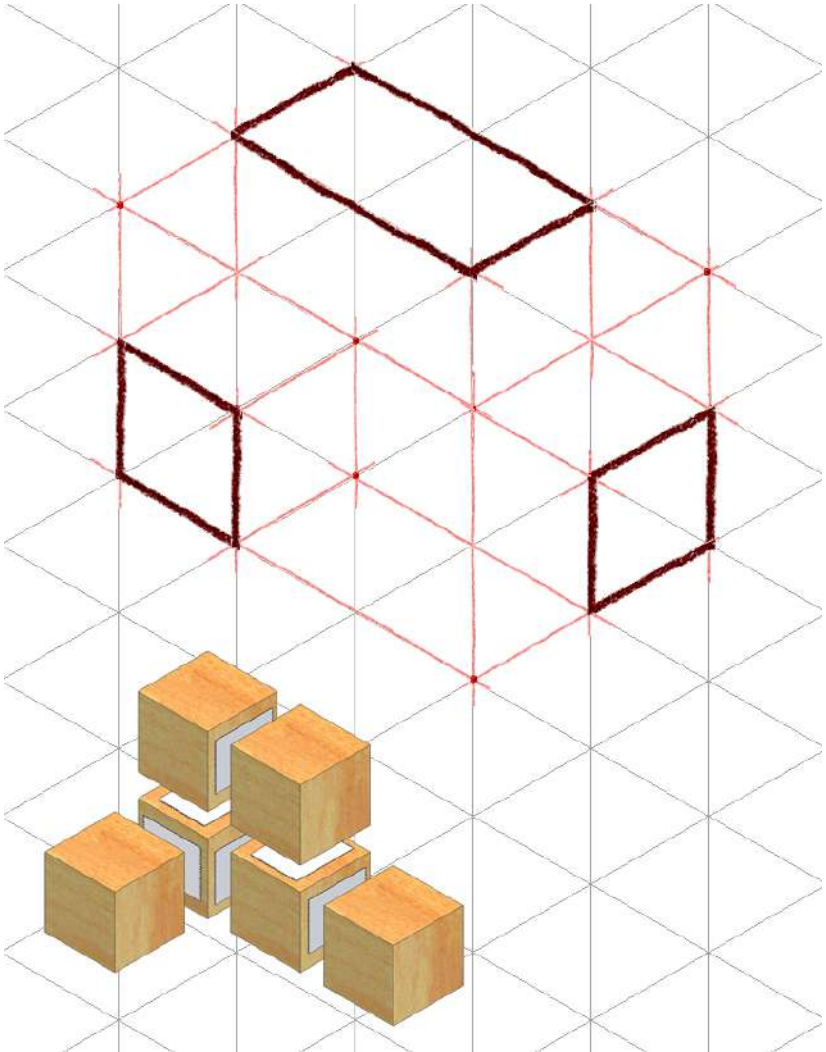
Step #2: Outside Faces *cont.*

Before the sketch becomes too noisy with construction lines, trace out the visible edges identified thus far with object lines.



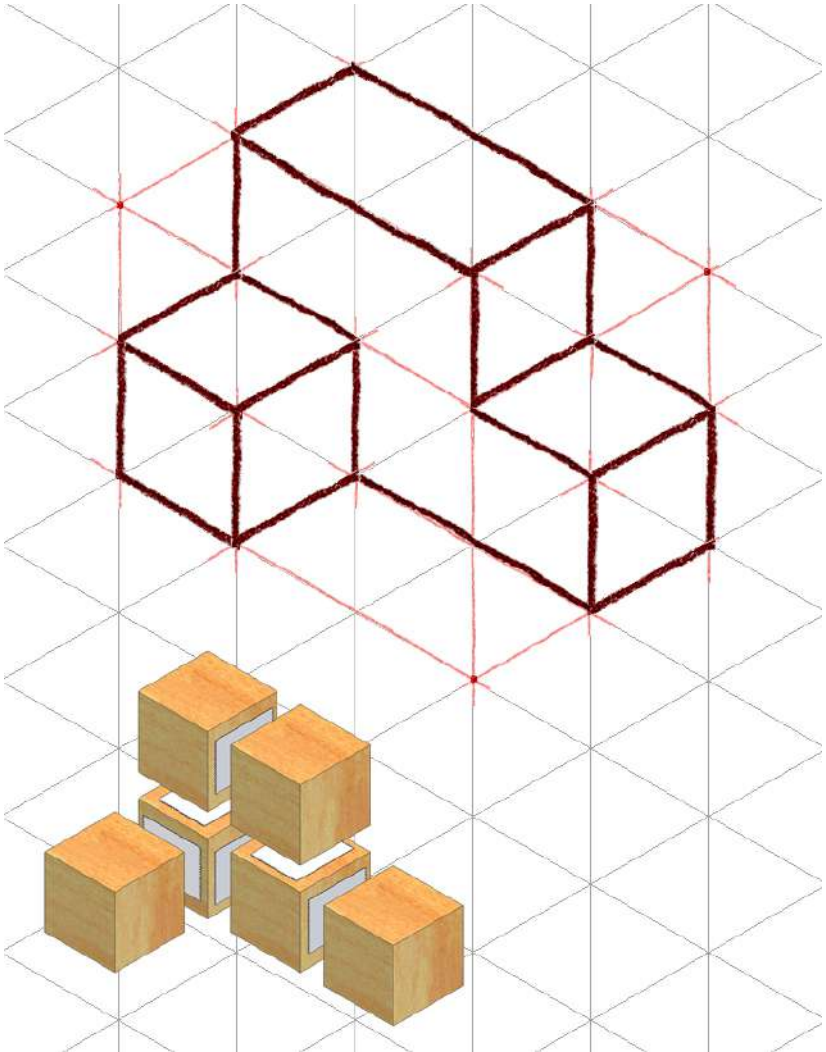
Step #3: Inside Faces

Use points and construction lines to identify the corners and edges of the object faces that occur inside the box.



Step #3: Inside Faces *cont.*

Trace out the remaining visible edges with object lines.



Step #4: Tonal Shading

Decide where the light source is coming from, and add tonal shading to two of the three views with parallel lines drawn closely together. Increase the contrast by cross-hatching the lines on the darkest face.