MS101 – MAKERSPACE

Spring 2023

IIT Bombay

SAMPLE TUTORIAL – LAB 1

ZERO POINTS

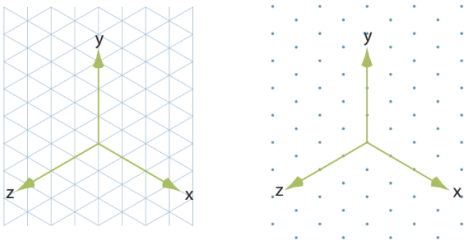
NAME:

ROLL NO.:

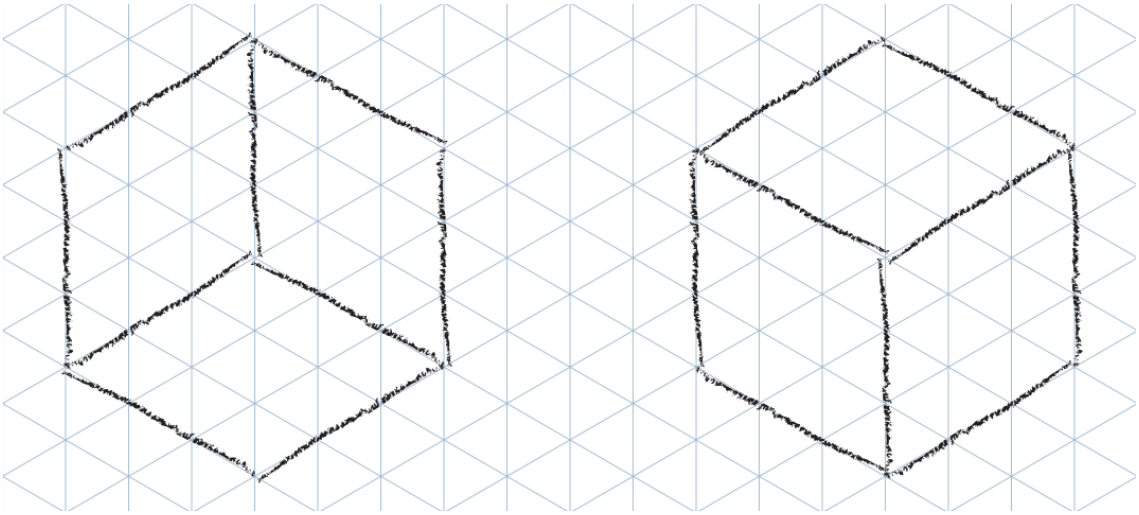
DEPARTMENT:

BATCH:

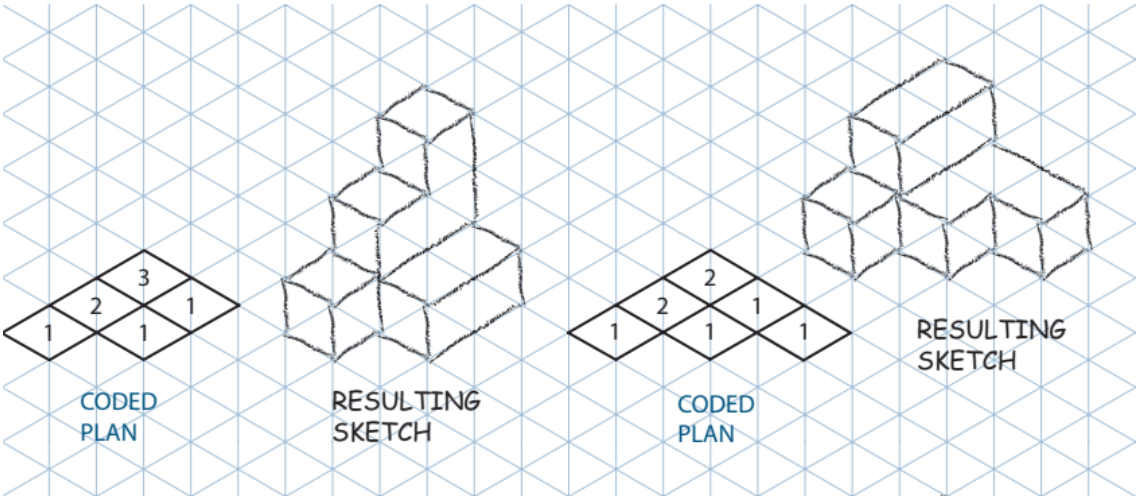
Important: Use the right-handed coordinate system, as shown here, for all solutions.



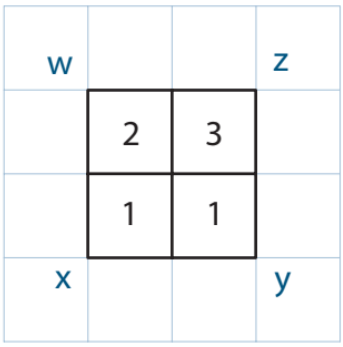
Example 1. On isometric grid paper, create isometric sketches of a 3×3×3 block



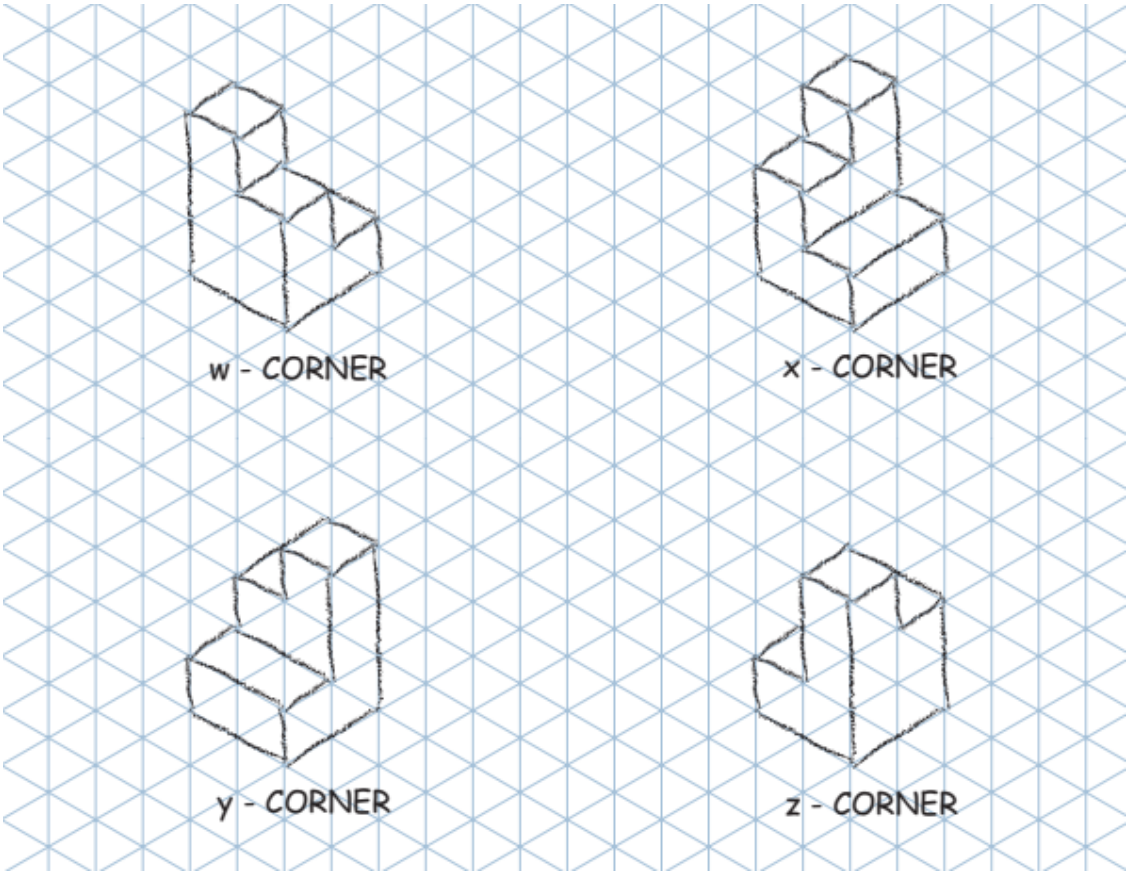
Example 2. On isometric grid paper, create isometric sketches from the following coded plans. (Note: the numbers indicate the height of the blocks)



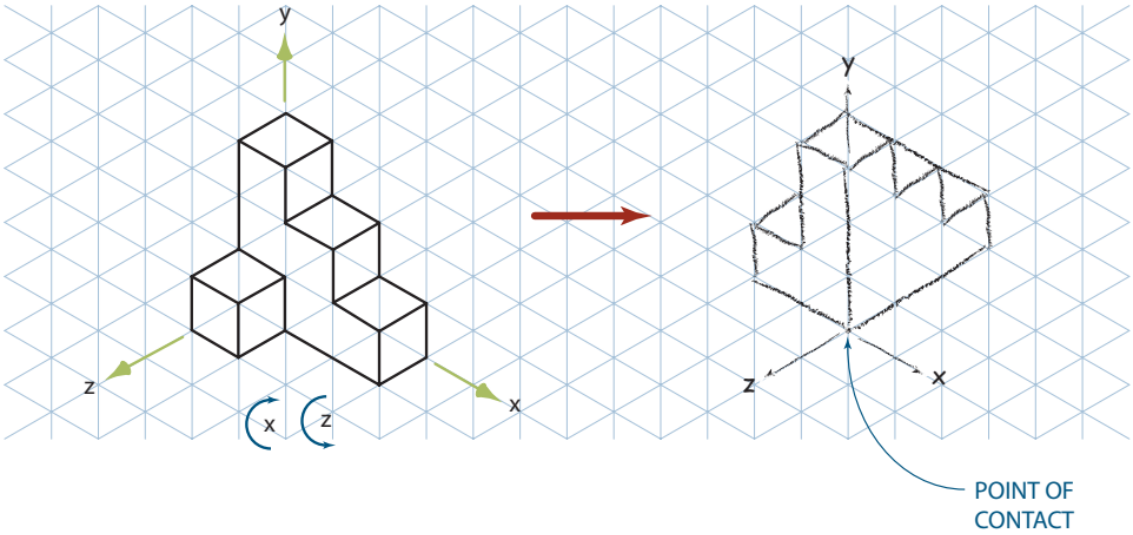
Example 3. On isometric grid paper, sketch the indicated corner view (marked as w, x, y, or z) as per the given coded plans.



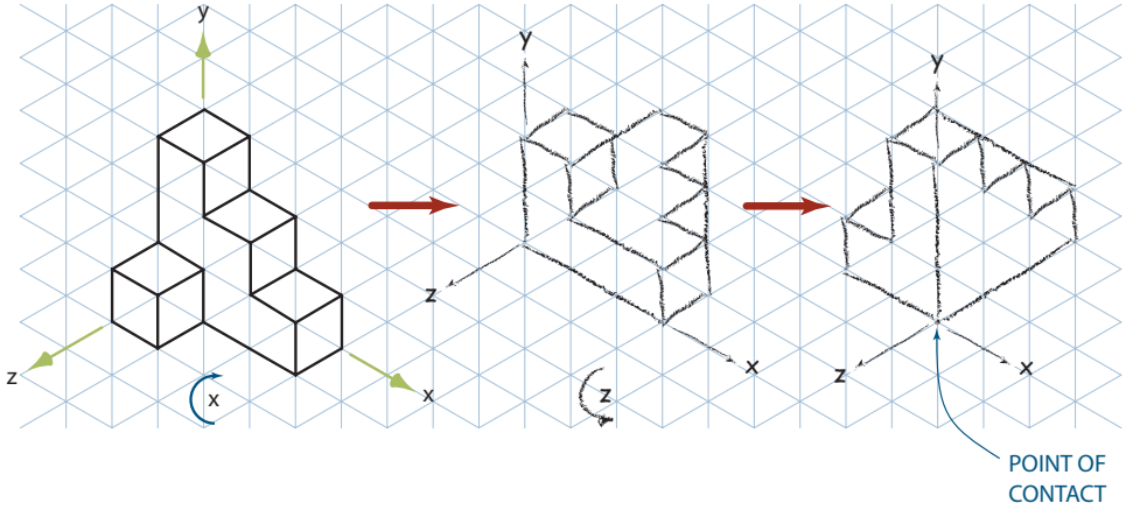
CODED PLAN IN
2-D SPACE



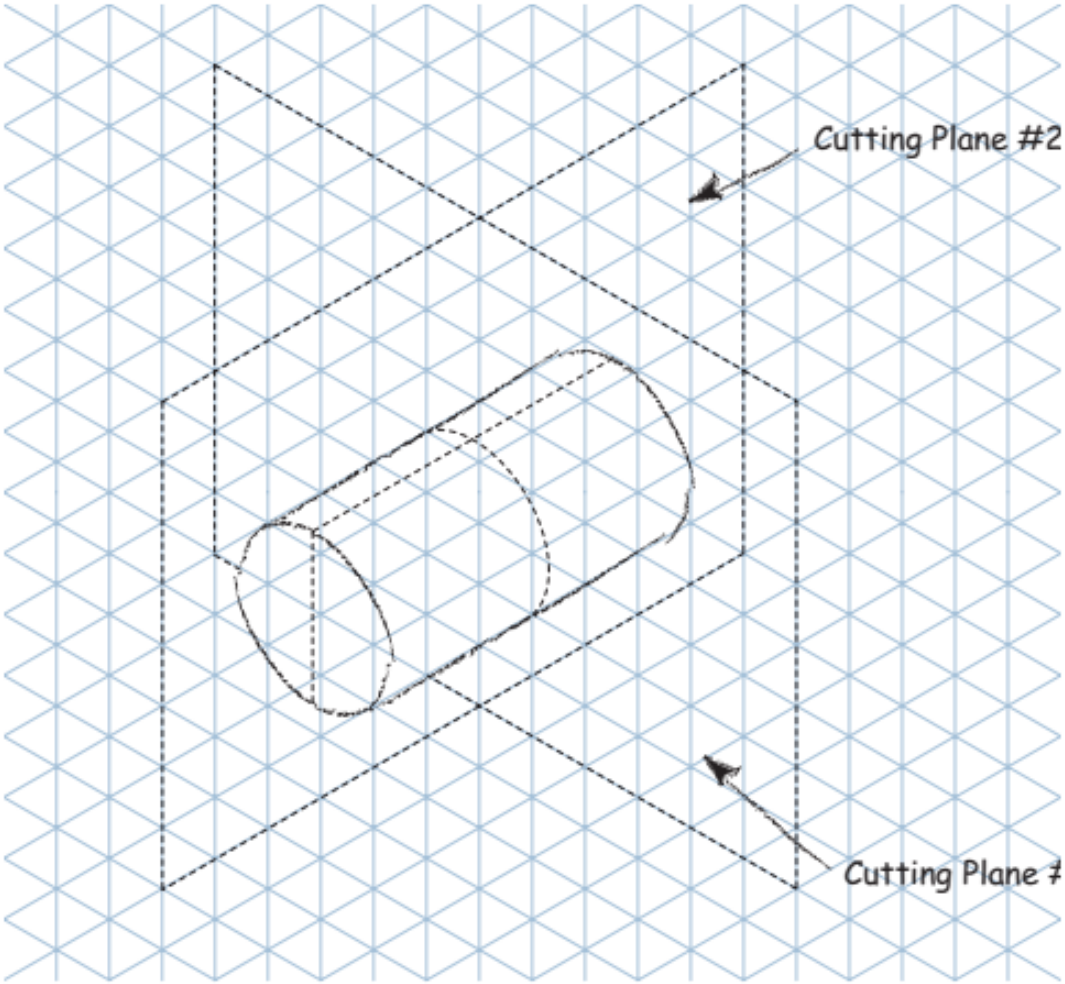
Example 4. The object shown (left) is rotated clockwise by 90 degrees about the x-axis, followed by a counter-clockwise rotation by 90 degrees about the z-axis to obtain the rotated view (right). Note that only the object rotates, while the coordinate axes remain fixed. Arrows indicate the direction of rotation.



This can be broken down into two steps, as shown below.

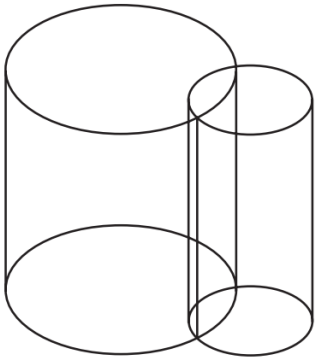


Example 5. Sketch the cross-section obtained between the intersection of the object and the corresponding cutting plane shown.

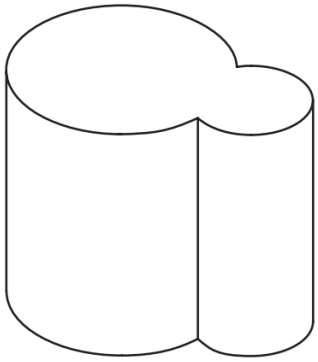


Cross Section #1 Cross Section #2

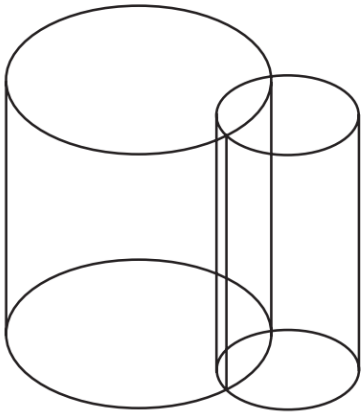
Example 6. Sketch the result of combining the following objects by the indicated method.



Overlapping Objects

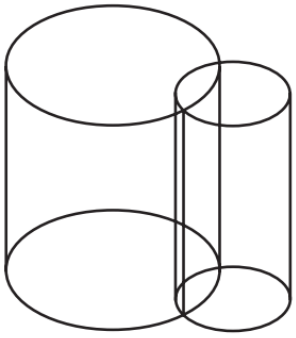


Objects Joined

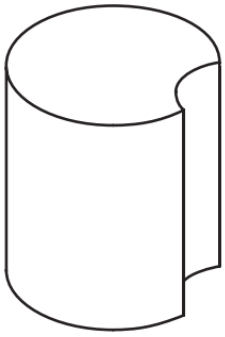


Overlapping Objects

Objects Intersected



Overlapping Objects



Small Cylinder Cuts
Large Cylinder

Large Cylinder Cuts
Small Cylinder

Example 7. Triangular volume A, triangular volume B, and rectangular volume C are shown intersecting in space. On the dashed outline drawings, darken and add edges to show all visible edges of the final volume created by the indicated Boolean operations.