Name _____ Section # _____

SID # _____

Engineering 25
Fall Semester 2019
Final Examination

Read the instructions carefully and make sure you answer all parts of each question.

Print your full name on top of every page, even if it is unused.

Time Limit: 3 hours
Closed Book Exam

Problem 1 _____ /20

Problem 2 _____ /20

Problem 3 _____ /20

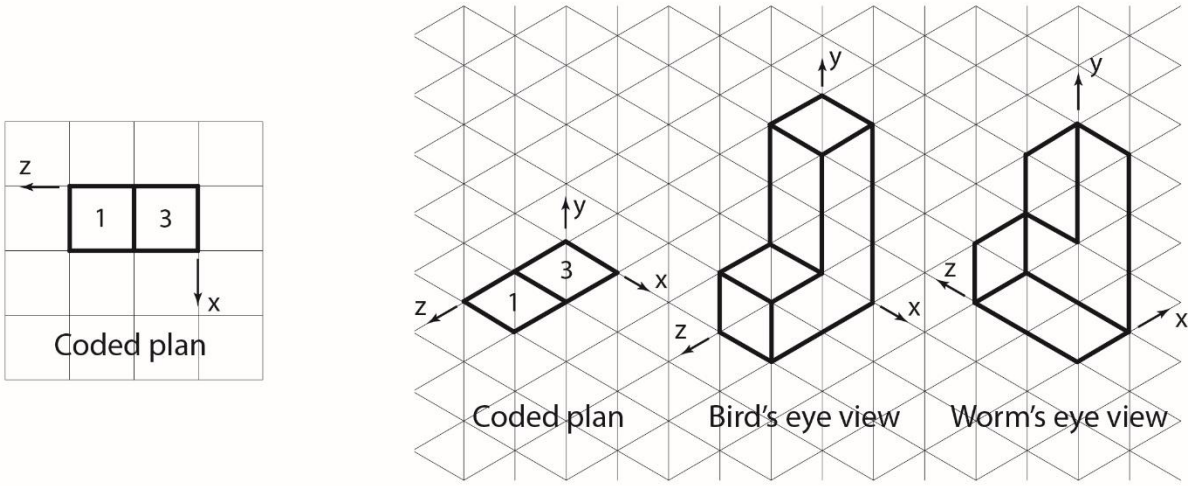
Problem 4 _____ /20

Problem 5 _____ /20

TOTAL EXAM SCORE _____ /100

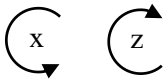
Problem #1 20 points

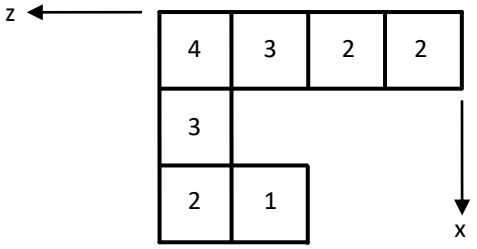
In class, we created isometric objects from coded plans using a "bird's eye view", i.e. looking at the object from the top down. A "worm's eye view" is created by looking at the same object from the bottom up. The difference is shown in the figure below.



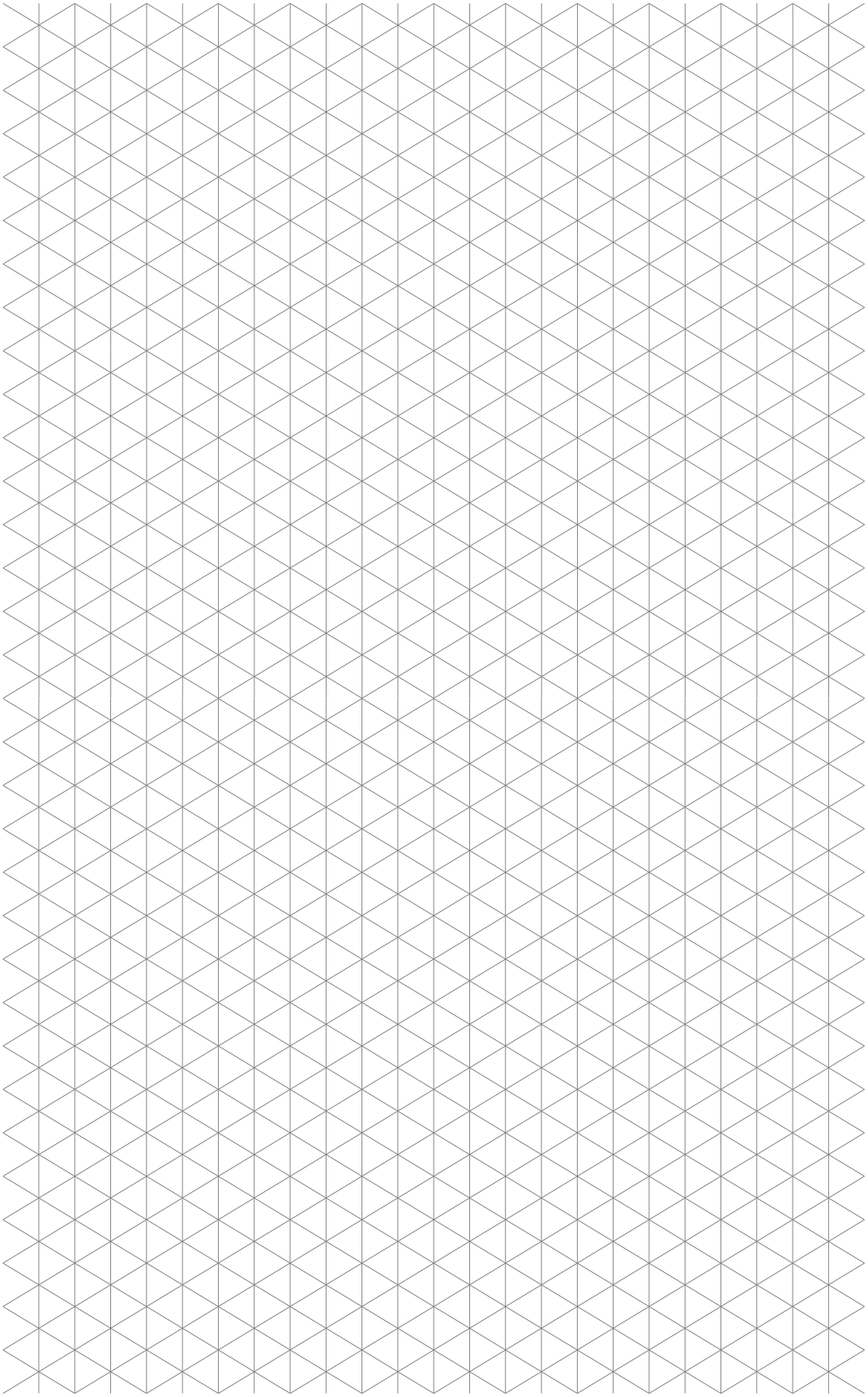
a) For the coded plan show below, sketch an isometric view of the structure as seen from the worm's eye view, using the coordinate system given. Draw and label the coordinate axes.

b) Starting with the isometric worm's eye view view of the object (created in part a of this problem), redraw the object after it has been rotated twice sequentially as prescribed below. Be sure to redraw the object after each rotation, to ease assignment of partial credit. Draw and label the coordinate axes in each view.





Note: Shading of pictorial sketches is not required for this exam.



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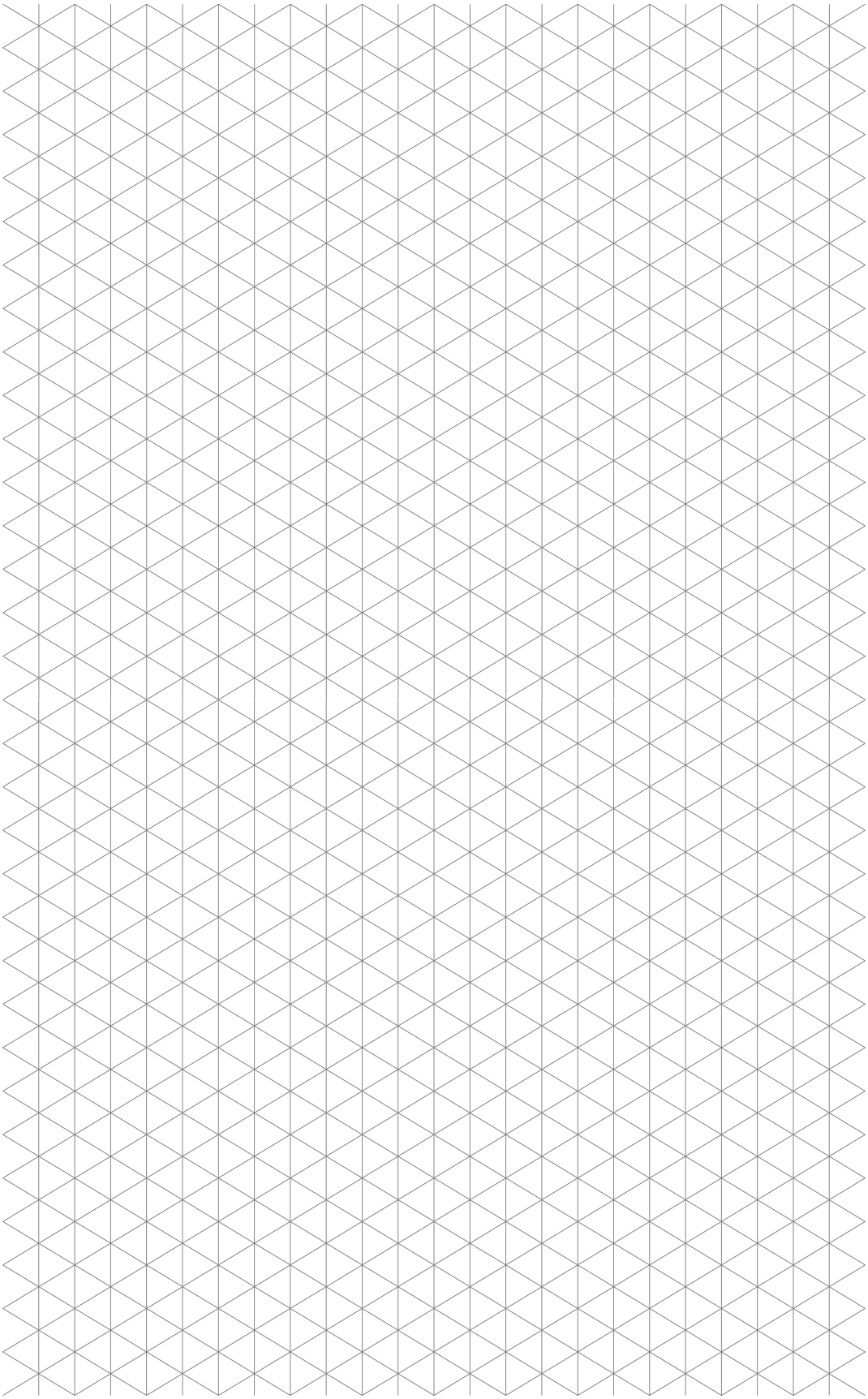

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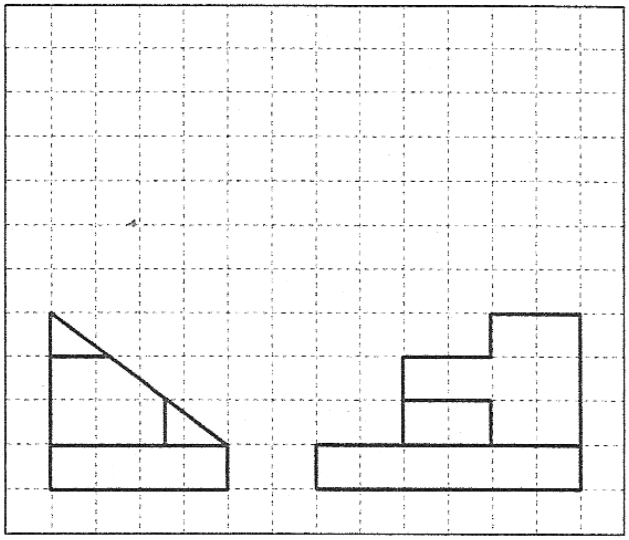
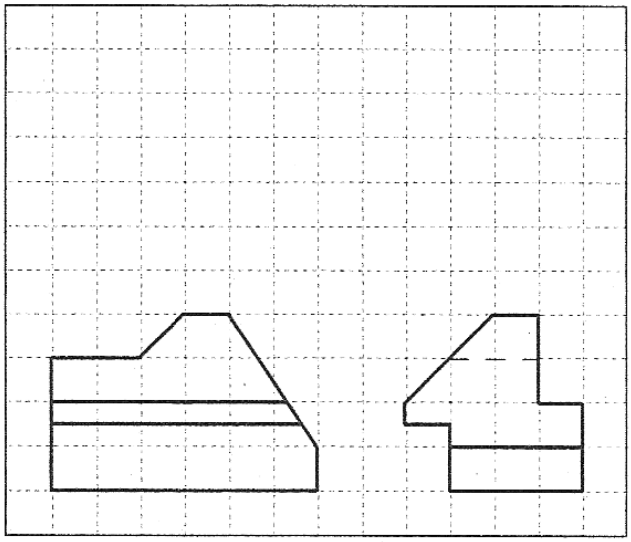
Problem 2 (20 points)

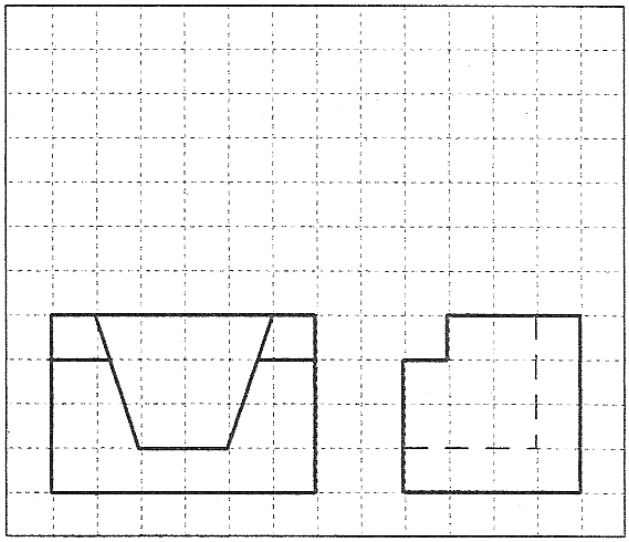
The orthographic drawings shown (in 3rd angle projection) below show the front and right side views of four different objects. For each of these drawings, add a top view that includes hidden lines.



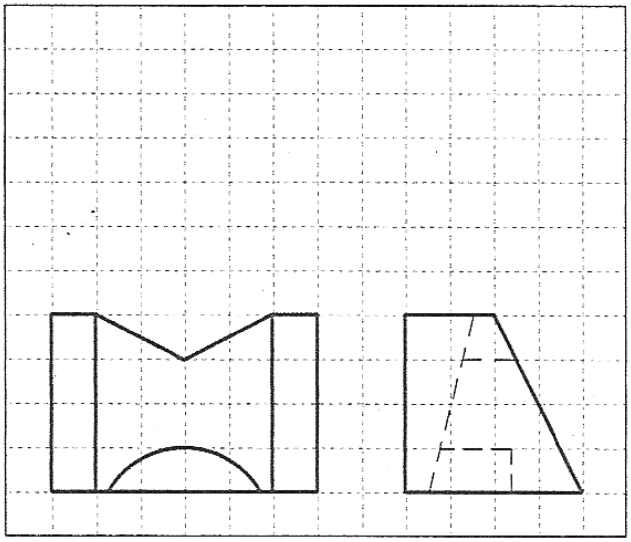
(a)



(b)



(c)



(d)

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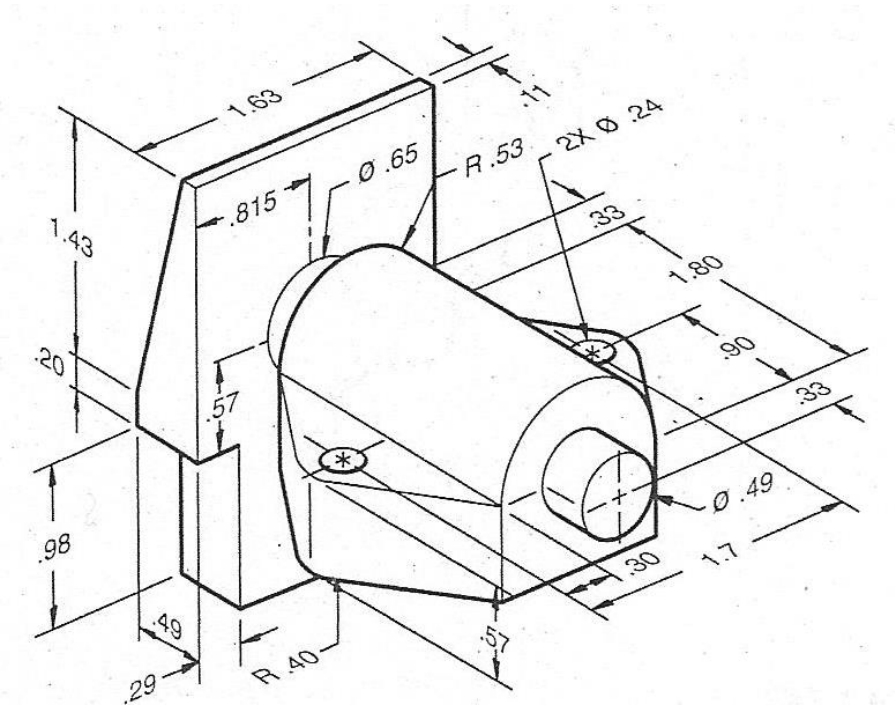
Problem 3 (20 points)

The pictorial below shows the front, top, and right side views of a tooling fixture. The units are inches. The part is symmetric so there is another .98 x .29 notch that cannot be seen on the wedge shaped feature on the pictorial. Create an orthographic drawing of the part, using 3rd angle projection, including hidden lines, centerlines, and center-marks. You do not need to add dimensions. It is desired to replace the two Ø .24 holes with threaded holes with a thread specification that reads "2X 1/4-28 UNF 2B". Add the appropriate thread specification to the drawing and explain what it means.



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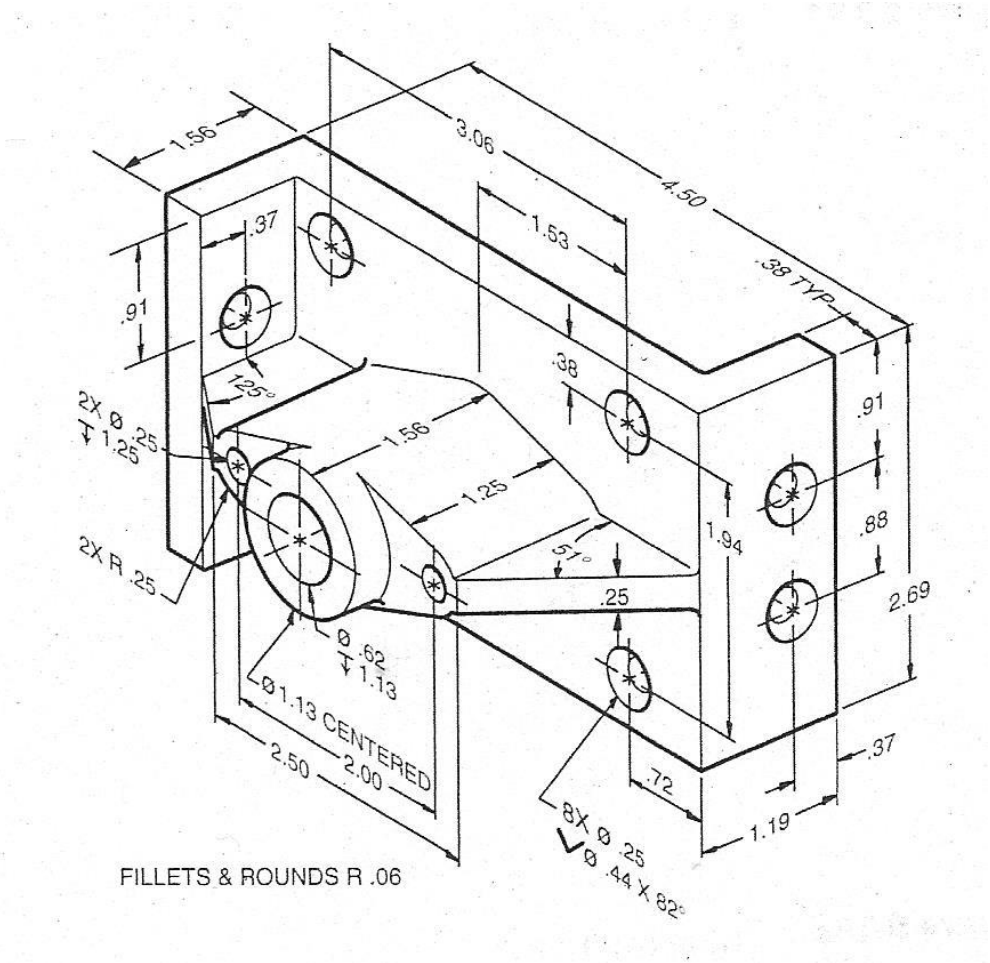
Problem 4 (20 points)

The figure below shows a pictorial drawing of a locating base. The pictorial shows the front, top and right sides of the part. The dimensions are in inches. Note that the part is symmetrical, and two holes cannot be seen in this pictorial.

a) Sketch a multi-view drawing of the bracket, using **1st angle projection**, showing the front, top, and right side views. Use hidden lines to ensure every feature is well-defined. Include a single full section view that hypothetically cuts through the Ø .62 in. bore, the two Ø .25 in. holes beside it, and the 0.25 in. support ribs.

   Include center lines and center marks. Exact sizes are not required, but reasonably accurate proportions are expected. You do not need to show the dimensions.

b) Sketch an isometric pictorial that shows the base after it has been hypothetically cut as specified above (i.e. showing partial front, partial right, and revealed top views). Crosshatch the areas that were formerly solid. You do not need to include hidden lines, dimensions, or shading in the pictorial.



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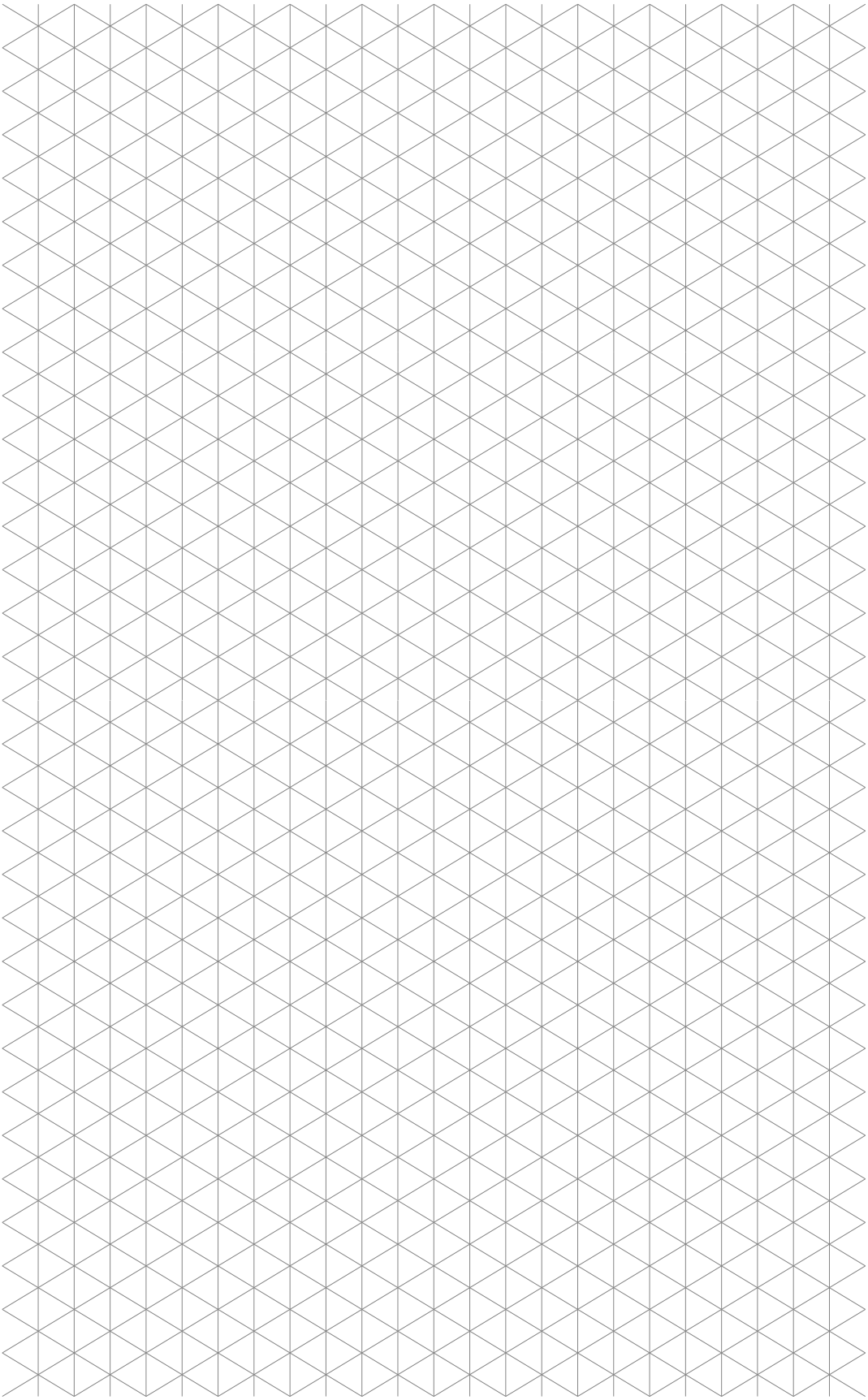

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Problem 5 (20 points)

The front and top views of an object are shown below in 3rd angle projection. The same drawing is on the next page, where there is more space for constructions. Note that the object includes oblique surfaces, i.e. they are not visible in edge view in any of the six standard (glass box) views.

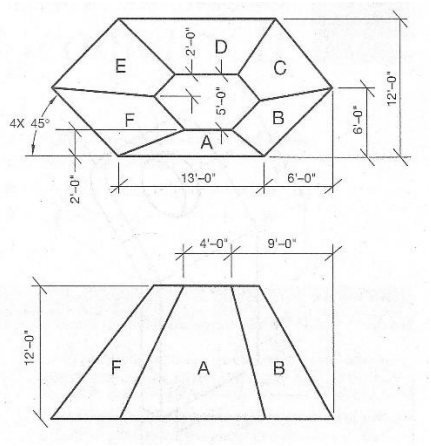
a) Create a left side view, including hidden lines.

b) Construct a partial auxiliary view that shows surface A in its true shape.

c) Construct a partial auxiliary view that shows surface B in its true shape.

d) Assume that you are using AutoCAD as a drawing tool, and assume that the front, top, and left side views are provided in native AutoCAD. Using text and graphics, detail the commands, steps, and entries necessary for the construction of the true shape view of surface A in part (b) above.

Do not erase your (lightweight) construction lines. You do not need to add dimensions, but some reasonable drawing accuracy is expected.



Please make constructions on the next page

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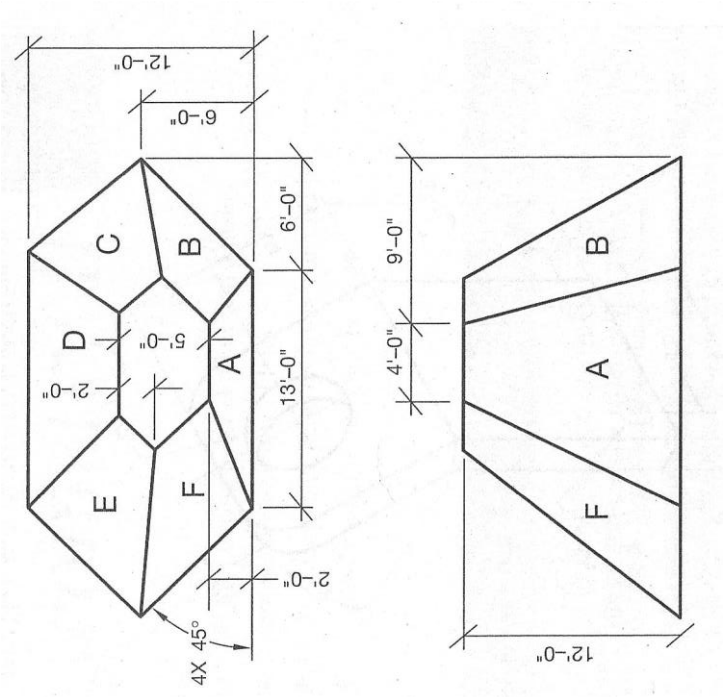

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