MA241 Exam #2 Notes

You should be able to:

1. Estimate the area of irregular figures using grids of various sizes, and give clear explanations of how to do this.
2. Find rectangles of minimum and maximum perimeter with a given area, with and without the additional assumption that the rectangles have integer side lengths. Be able to fully justify your answers.
3. Find rectangles of minimum and maximum area with a given perimeter, with and without the additional assumption that the rectangles have integer side lengths. Be able to fully justify your answers.
4. Solve problems similar to our "garden" problems.
5. State the isoperimetric problem and its solution.
6. State, prove, and use the formulas for the areas of parallelograms, triangles, trapezoids, and regular polygons.
7. State, prove, and use the formula for the area of an equilateral triangle.
8. State, prove, and use the formula for the area of a triangle in terms of the lengths of two sides and the included angle.
9. State, prove, and use the Law of Sines.
10. State and use the Law of Cosines.
11. State and use the formula for the area of a triangle given the coordinates of its vertices, where one vertex has coordinates (0,0).
12. State and use Pick's Theorem (the formula for finding the area of a polygonal region whose vertices like on the vertices of a grid).
13. State, motivate, and use the formula for the area of a circle.
14. Understand base plans, front, back, and side views, and isometric drawings of a cube building.
15. Draw front, back and side views from a given base plan.

16. Draw isometric views from a given base plan.

17. Produce at least one possible base plan of a cube building given some views or isometric drawings.

18. Describe the (x, y, z) coordinates of cubes.

19. Describe what (x, y, z) translations of a given cube are necessary to produce a given cube building.