New Concepts

- "Exactly one…"

Problem Set #5

"The value of a problem is not so much coming up with the answer as in the ideas and attempted ideas it forces on the would be solver."

- I.N. Herstein

New Postulates and Theorems

- A line contains at least two points; a plane contains at least three points not all in one line; space contains at least four points not all in one plane (Postulate 5)
- Through any two points there is exactly one line (Postulate 6)
- Through any three points there is at least one plane, and through any three noncollinear points there is exactly one plane. (Postulate 7)
- If two points are in a plane, then the line that contains the points is in that plane. (Postulate 8)
- If two planes intersect, then their intersection is a line. (Postulate 9)

- Theorem 1 - If two lines intersect, then they intersect in exactly one point.
- Theorem 2 - Through a line and a point not in the line there is exactly one plane.
- Theorem 3 – If two lines intersect, then exactly one plane contains the lines.

Exercises:

p.25 #5-18

Problems:

5-1 Explain how each of the Theorems 1, 2 and 3 can be derived and justified from the postulates

5-2 p.25 #19

5-3 Bookstore Markers

Assume that new markers in our bookstore come in boxes of either 7 or 12. What is the largest positive integral number of markers that I can't purchase? (For example, I can purchase exactly 26 (26 = 7+7+12) or 28 (28 = 7+7+7+7) markers in the bookstore, but I can't purchase exactly 27 markers.