1. Define the Four-Point Geometry as follows:

Points: A, B, C, D
Lines: $\{A, B\}, \{A, C\}, \{A, D\}, \{B, C\} \{B, D\}, \{C, D\}$
Lie On: "Is an element of"

Verify that this is a model for incidence geometry. Sketch a diagram representing the relationships between the points.

2. Do you think Five-Point, Six-Point, ... n-Point Geometries (defined similar to Three-Point and Four-Point Geometries) will be models for incidence geometry? Why or why not?

3. Define the 3-Student Geometry as follows:

Points: David, Eva, Fiona
Lines: Geometry Class, Calculus Class, Statistics Class
Lie On: "Is a member of a class"
Also given: David is only in Geometry and Calculus, Eva is only in Geometry and Statistics, and Fiona is only in Calculus and Statistics.

Verify that this is a model for incidence geometry.

4. Fano's Geometry is defined as follows:

Points: A, B, C, D, E, F, G
Lines: $\{A, B, C\}, \{C, D, E\}, \{E, F, A\}, \{A, G, D\}\, \{C, G, F\}, \{E, G, B\}, \{B, D, F\}$
Lie On: "Is an element of"

Determine whether this is a model for incidence geometry. If it is, is it finite or infinite?

5. The Klein Disk Geometry is defined as follows.

Points: Any point $(x, y) \in \mathbb{R}^{\nvDash}$ such that $x^2 + y^2 < 1$
Lines: The part of a Euclidean line (i.e. satisfies $ax + by + c = 0$) that lies inside the circle $x^2 + y^2 = 1$.
Lie On: "Lie on"

[A sketch may be helpful.]
Determine whether this is a model for incidence geometry. If it is, is it finite or infinite?

After answering problems #4 & 5, read Examples 2.2.7 and 2.2.10 in the book to make sure you understand them (and answered correctly).

Homework [Don't answer any part of the questions about the parallel postulates.]
Section 2.4, p. 23: #1(isomorphism "same properties"), 2, 3, 5, 11, 12[Use examples and previous exercises], Read Section 2.4