Due February 15

$\overline{\hspace{4cm}}$
Name

For this homework set you are allowed to work with other members of either of the geometry classes. However, must cite everyone with whom you have discussed your problem.

In addition, you may **NOT** consult with anyone (except me) when you write your paper explaining your problem(s).

"Poetry is a subject as precise as geometry." -Gustave Flaubert, novelist (1821-80)

"A proof tells us where to concentrate our doubts." — Morris Kline

Problems

- (Not turned in for a grade) Be able to explain any and all of the proofs in the Projective Plane Worksheet.

- (Not turned in for a grade) Be ready to discuss Major Exercises 11 and 12 of Chapter 2.

Remember that you may use any previous problem as part of the justification for your problem(s).

1. (**Emily, Jana**) Do Major Exercise 2 of Chapter 2. Note that the hint in the text only gets you 90% of the way.

2. (**Chelsea, Kristin**) Do the first part of Major Exercise 3 of Chapter 2. That is, show that if you start with a projective plane **B** and remove a line m and all points incident with m, then the result is an affine plane **A**.

3. (**Extra Credit**) Do the rest of Major Exercise 3 of Chapter 2. That is, show that if **A** is the affine plane resulting from removing a line m and all points incident with m from a projective plane **B** then the projective completion of **A** is isomorphic to **B**.

4. (**Everyone**) Do one (1) of the following.

   (a) Major Exercise 4 of Chapter 2.

   (b) Major Exercise 6 of Chapter 2. Specifically, show that the statement "For any two lines l and m there exists a one-to-one correspondence between the set of points lying on l and the set of points lying on m." is independent of incidence geometry.

   (c) Major Exercise 8 of Chapter 2.

5. (**Sarah, Alec**) Do Major Exercise 7 of Chapter 2.

6. (**Jane, Erik**) Do Major Exercise 9 of Chapter 2.