1. Read all the definitions of Euclid I. Then divide them into two categories.

    1. Definitions that are descriptive: they are trying to give a the reader a sense of what the object is in terms of their past experience.

    2. Definitions that are logical: they define a new object in terms of previously defined objects.

In modern mathematics, we have logical definitions, but we dispense with descriptive definitions in favor of accepting that some things just won't be defined.

2. Use Euclid I-1 to construct a regular hexagon. Your solution must include a hexagon constructed with a real straightedge and compass, as well as a description of the steps of the construction.

3. Read Euclid I-3 and discuss any gaps that you find.

4. Given a line segment, describe how to construct a square with that line segment as a side. You must also hand in a square constructed this way. Note that to do this problem, you will likely need to remind yourself how to draw a line perpendicular to another line (Euclid I-11).

5. A rectangle is a four-sided figure such that the four interior angles are all right angles.

    a) Prove that the opposite sides of a rectangle have equal length. Hint: You can use ASA (I-26).

    b) Prove that the diagonals have equal length.

    c) Prove that the diagonals bisect each other.

6. Prove that the exterior angles of a regular pentagon add to four right angles.