POSTULATES IN GEOMETRY BY EDWIN MOISE

I-0. All lines and planes are sets of points.

I-1. Given any two different points, there is exactly one line containing them.

I-2. given any three different noncollinear points, there is exactly one plane containing them.

I-3. if two points lie in a plane, then the line containing them lies in the plane.

I-4. if two planes intersect, then their intersection is a line.

I-5. Every line contains at least two points. Every plane contains at least three noncollinear points. And S contains at least four noncoplanar points.

D-0. d is a function

$$d : S \times S \to \mathbb{R}$$

D-1. For every P, Q, $d(P, Q) \geq 0$.

D-2. $d(P, Q) = 0$ if and only if $P = Q$.

D-3. $d(P, Q) = d(Q, P)$ for every P and Q in S.

D-4. The Ruler Postulate. Every line has a coordinate system.

B-1. If $A - B - C$, then $C - B - A$.

B-2. Of any three points on a line, exactly one is between the other two.

B-3. Any four points of a line can be named in an order A, B, C, D, in such a way that $A - B - C - D$.

B-4. If A and B are two points, then (1) there is a point C such that $A - B - C$, and (2) there is a point D such that $A - D - B$.

B-5. If $A - B - C$, then A, B, and C are three different points of the same line.

PS-1. The plane-Separation Postulate. Given a line and a plane containing it, the set of all points of the plane that do not lie on the line is the union of two disjoint sets such that (1) each of the sets is convex, and (2) if P belongs to one of the sets and Q belongs to the other, then the segment $\overline{PQ}$ intersects the line.

SS-1. The Space-Separation Postulate. Given a plane in space. The set of all points that do not lie in the plane is the union of two sets H_1, H_2 such that (1) each of the sets is convex, and (2) if P belongs to one of the sets and Q belongs to the other, then the segment $\overline{PQ}$ intersects the plane.

M-1. m is a function $\mathcal{A} \to \mathbb{R}$, where $\mathcal{A}$ is the set of all angles, and $\mathbb{R}$ is the set of all real numbers.

M-2. Fro every angle $\angle A$, $m\angle A$ is between 0 and 180.

M-3. The Angle-Construction postulate. Let $\overrightarrow{AB}$ be a ray on the edge of the half plane H. For every number r between 0 and 180, there is exactly one ray $\overrightarrow{AP}$, with P in H, such that $m\angle PAB = r$.

M-4. the Angle-Addition Postulate. If D is in the interior of $\angle BAC$, then

$$m\angle BAC = m\angle BAD + m\angle DAC.$$

M-5. The Supplement Postulate. If two angles form a linear pair, then they are supplementary.