

Postulates

Postulate 1 (Ruler Postulate)

1. The points on a line can be paired with the real numbers in such a way that any two points can have coordinates 0 and 1.
2. Once a coordinate system has been chosen in this way, the distance between any two points equals the absolute value of the difference of their coordinates. (p. 12)

Postulate 2 (Segment Addition Postulate) If B is between A and C , then

$$AB + BC = AC. \quad (\text{p. 12})$$

Postulate 3 (Protractor Postulate) On \overleftrightarrow{AB} in a given plane, choose any point O between A and B . Consider \overrightarrow{OA} and \overrightarrow{OB} and all the rays that can be drawn from O on one side of \overleftrightarrow{AB} . These rays can be paired with the real numbers from 0 to 180 in such a way that:

- a. \overrightarrow{OA} is paired with 0, and \overrightarrow{OB} with 180.
- b. If \overrightarrow{OP} is paired with x , and \overrightarrow{OQ} with y , then $m\angle POQ = |x - y|$. (p. 18)

Postulate 4 (Angle Addition Postulate) If point B lies in the interior of $\angle AOC$, then $m\angle AOB + m\angle BOC = m\angle AOC$. If $\angle AOC$ is a straight angle and B is any point not on \overleftrightarrow{AC} , then $m\angle AOB + m\angle BOC = 180$. (p. 18)

Postulate 5 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. (p.23)

Postulate 6 Through any two points there is exactly one line. (p. 23)

Postulate 7 Through any three points there is at least one plane, and through any three noncollinear points there is exactly one plane. (p. 23)

Postulate 8 If two points are in a plane, then the line that contains the points is in that plane. (p. 23)

Postulate 9 If two planes intersect, then their intersection is a line. (p. 23)

Postulate 10 If two parallel lines are cut by a transversal, then corresponding angles are congruent. (p. 78)

Postulate 11 If two lines are cut by a transversal and corresponding angles are congruent, then the lines are parallel. (p. 83)

Postulate 12 (SSS Postulate) If three sides of one triangle are congruent to three sides of another triangle, then the triangles are congruent. (p. 122)

Postulate 13 (SAS Postulate) If two sides and the included angle of one triangle are congruent to two sides and the included angle of another triangle, then the triangles are congruent. (p. 122)

Postulate 14 (ASA Postulate) If two angles and the included side of one triangle are congruent to two angles and the included side of another triangle, then the triangles are congruent. (p. 123)