Theorems and Postulates

| Postulate 1-A Protractor Postulate | Given $\overrightarrow{AB}$ and a number r between 0 and 180, there is exactly one ray with endpoint A, extending on either side of $\overrightarrow{AB}$, such that the measure of the angle formed is r. |

| Definition of Right, Acute and Obtuse Angles | $\angle A$ is a right angle if $m\angle A$ is 90. $\angle A$ is an acute angle if $m\angle A$ is less than 90. $\angle A$ is an obtuse angle if $m\angle A$ is greater than 90 and less than 180. |

| Postulate 1-B Angle Addition | If R is in the interior of $\angle PQS$, then $m\angle PQR + m\angle RQS = m\angle PQS$. If $m\angle PQR + m\angle RQS = m\angle PQS$, then R is in the interior of $\angle PQS$. |

Vertical angles are congruent.

The sum of the measures of the angles in a linear pair is 180°.

The sum of the measures of complementary angles is 90°.

| Postulate 2-A Ruler | Two points on a line can be paired with real numbers so that, given any two points R and S on the line, R corresponds to zero, and S corresponds to a positive number. |

Point R could be paired with 0, and S could be paired with 10.
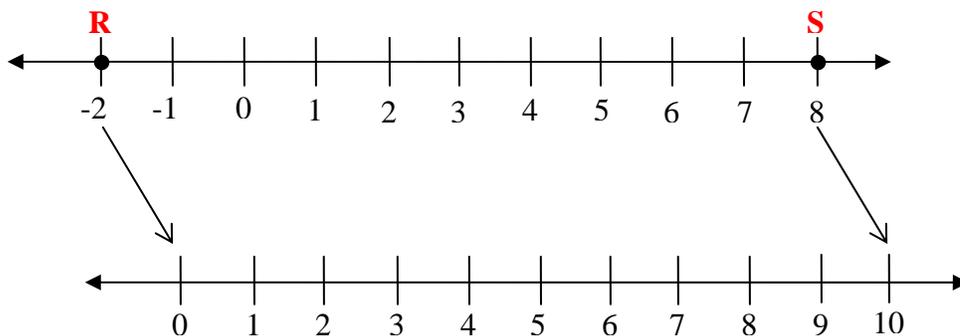
| Postulate 2-B Segment Addition | If N is between M and P, then MN + NP = MP. Conversely, if MN + NP = MP, then N is between M and P. |

Theorem 2-A **Pythagorean** **Theorem**	In a right triangle, the sum of the squares of the measures of the legs equals the square of the measure of the hypotenuse.
Distance Formula	The distance d between any two points with coordinates (x_1, y_1) and (x_2, y_2) is given by the formula $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.
Midpoint **Definition**	The midpoint, **M**, of $\overline{AB}$ is the point between **A** and **B** such that **AM** = **MB**.
Midpoint Formula **Number Line**	With endpoints of A and B on a number line, the midpoint of $\overline{AB}$ is $\dfrac{A+B}{2}$.
Midpoint Formula **Coordinate Plane**	In the coordinate plane, the coordinates of the midpoint of a segment whose endpoints have coordinates (x_1, y_1) and (x_2, y_2) are $(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2})$.
Theorem 2-B **Midpoint Theorem**	If M is the midpoint of $\overline{PQ}$, then $\overline{PM} \cong \overline{MQ}$.
Postulate 3-A **Law of** **Detachment**	If $p \Rightarrow q$ is true, and p is true, then q is true.
Postulate 3-B **Law of Syllogism**	If $p \Rightarrow q$ is true and $q \Rightarrow r$ is true, then $p \Rightarrow r$ is true.