

If two triangles  $\triangle ABC$  and  $\triangle A'B'C'$  are congruent then  $|AB|=|A'B'|$ ,  $|BC|=|B'C'|$  and  $|CA|=|C'A'|$ .

Isometries preserve length (definition of isometries).

If two triangles  $\triangle ABC$  and  $\triangle A'B'C'$  are congruent then  $\angle A=\angle A'$ ,  $\angle B=\angle B'$  and  $\angle C=\angle C'$ .

Isometries preserve angle measure. (Theorem 12 and 15c).

The base angles of isosceles triangle are equal.

Theorem 13 (Pons Asinorum) and 15c.

Every segment has the midpoint.

By Theorem 14 we can assign a number to each point.

**Definition.** We call *perpendicular segment bisector* a line perpendicular to the segment and passing through the midpoint. We call *angle bisector* a line that divides angle in two equal angles. We call *median* a line in the triangle connecting a vertex and the midpoint opposite side. We call *altitude* a line in the triangle passing through a vertex and perpendicular to the opposite side.

Perpendicular segment bisectors, angle bisectors, medians and altitudes always exist.

A circle centered at a point  $O$  and a ray  $\overrightarrow{OB}$  intersect at exactly one point.

A circle centered at a point  $O$  and a line  $\overrightarrow{OB}$  intersect at exactly two points.