Franziska Thiele

Right angles and reflection of a point through a line

Definition of a right angle:

$$8.1.\ Rabc \leftrightarrow ac \equiv aS_b(c)$$

Characteristics of right angles

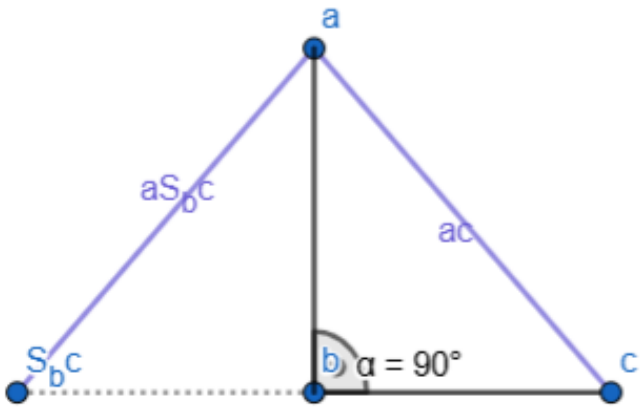
8.2 $Rabc \rightarrow Rcba$

8.3 $Rabc \wedge a \neq b \wedge Colbaa' \rightarrow Ra'bc$

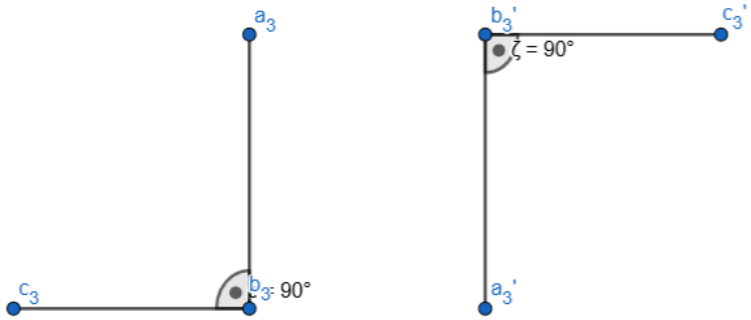
8.4 $Rabc \rightarrow RaS_b(c)$

8.5 $Rabb$

8.6 $Rabc \wedge Ra'bc \wedge Baca' \rightarrow$ _____

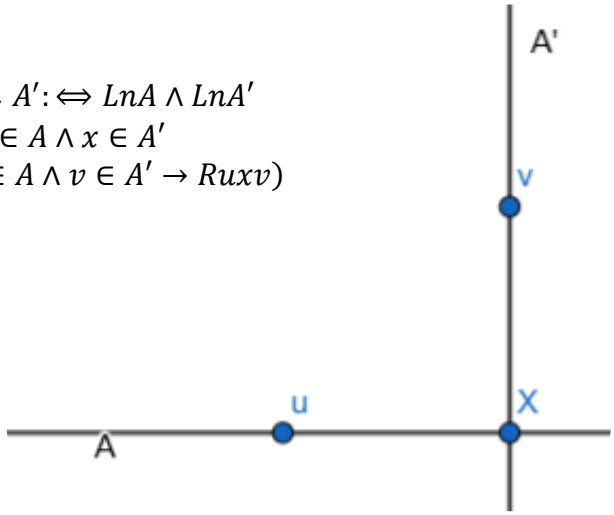


8.10 $Rabc \wedge (abc) \equiv (a'b'c') \rightarrow Ra'b'c'$



Right angles between lines:

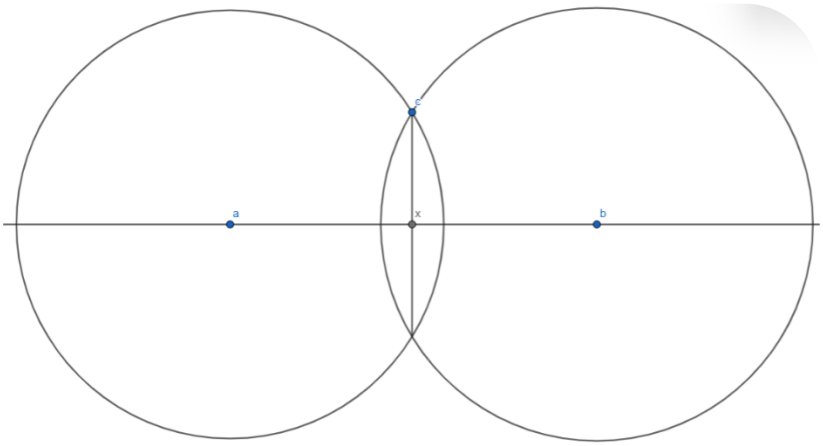
$$8.11.\ A \perp_x A' :\Leftrightarrow LnA \wedge LnA'$$
$$\wedge\, x \in A \wedge x \in A'$$
$$\wedge\, \forall u \forall v: (u \in A \wedge v \in A' \rightarrow Ruxv)$$



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Theorem of the perpendicular

8.18 $\neg Colabc \rightarrow \exists!\, x\, [Colabx \wedge ab \perp cx]$



Middle points:

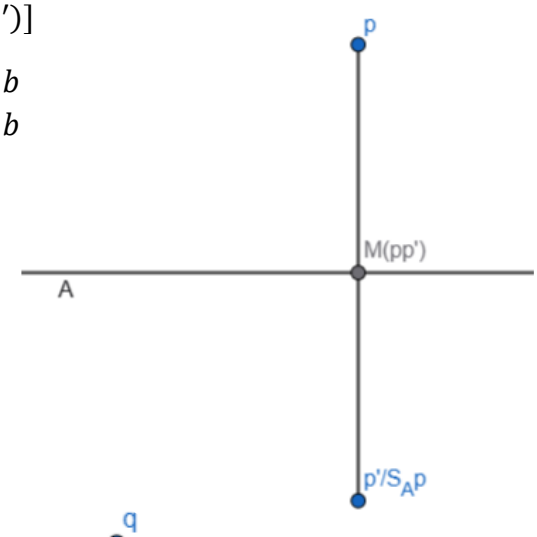
10.1 $M(ab) = xMaxb$



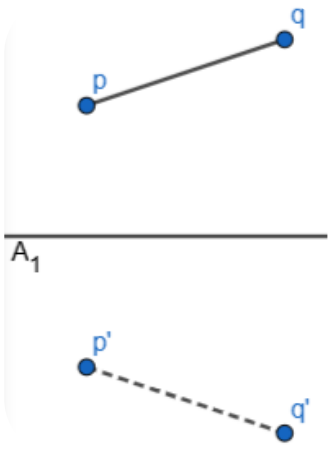
Reflection of a point through a line

10.3. $S_A p = S_A(p) := p'[M(pp') \in A \wedge (A \perp pp' \vee p = p')]$

$$S_{ab} := \begin{cases} S_{L(ab)} & \text{if } a \neq b \\ S_a & \text{if } a = b \end{cases}$$



10.10. $LnA \rightarrow pq \equiv S_A(p)S_A(q)$



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Theorem 8.6

Sketch the conditions of theorem 8.6 and try to find out the conclusion.

