Tarski's Axioms

Chapter 1

betweenness and congruence

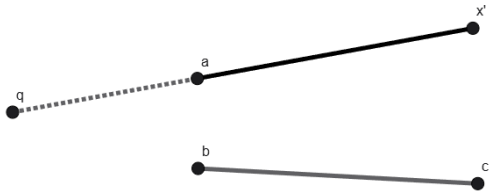
$Babc \leftrightarrow$ *b lies between a and c*

$ab \equiv cd \leftrightarrow$ *the distance between a and b is equal to the distance between c and d*

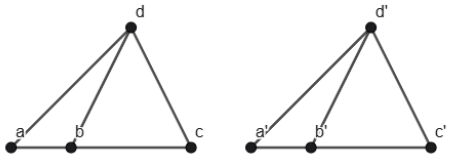
Axioms

A1	$ab \equiv ba$
A2	$ab \equiv pq \wedge ab \equiv rs \rightarrow pq \equiv rs$
A3	$ab \equiv cc \rightarrow a = b$
A4	$\exists x(Bqax \wedge ax \equiv bc)$
A5	$a \neq b \wedge Babc \wedge Ba'b'c' \wedge ab \equiv a'b' \wedge bc \equiv b'c' \wedge ad \equiv a'd' \wedge bd \equiv b'd' \rightarrow cd \equiv c'd'$
A6	$Baba \rightarrow a = b$
A7	$Bapc \wedge Bbqc \rightarrow \exists x(Bpxb \wedge Bqxa)$
A8	$\exists a \exists b \exists c(\neg Babc \wedge \neg Bbca \wedge \neg Bcab)$
A9	$p \neq q \wedge ap \equiv aq \wedge bp \equiv bq \wedge cp \equiv cq \rightarrow Babc \vee Bbca \vee Bcab$
A10	$Badt \wedge Bbdc \wedge a \neq b \rightarrow \exists x \exists y(Babx \wedge Bacy \wedge Bxty)$
A11	$\forall X \forall Y\{\exists a \forall x \forall y[x \in X \wedge y \in Y \rightarrow Baxy] \rightarrow \exists b \forall x \forall y[x \in X \wedge y \in Y \rightarrow Bxby]\}$

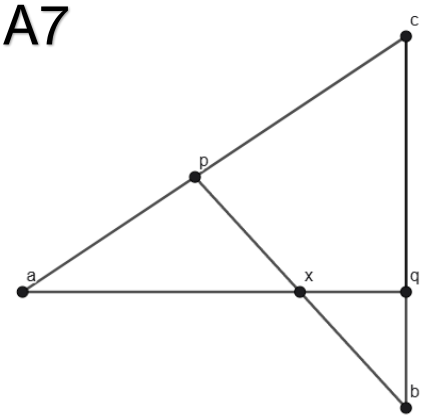
A4



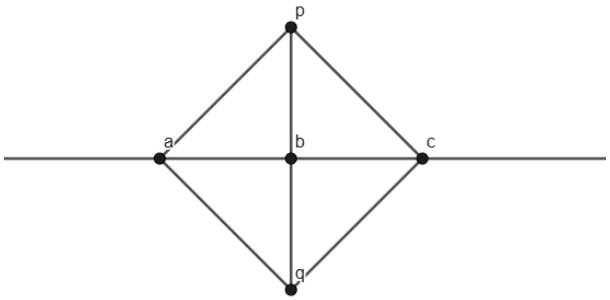
A5



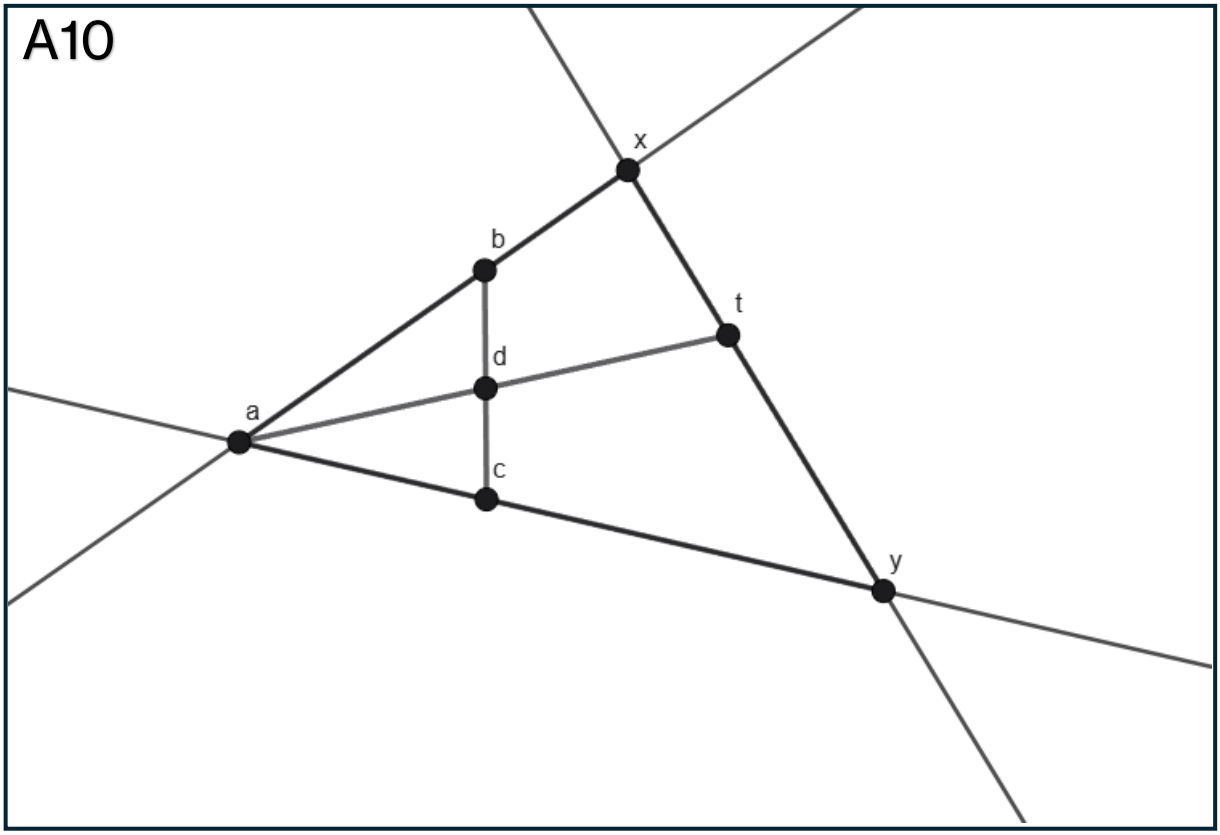
A7



A9



A10



(triadic/tetradic) relation	(dreistellige/vierstellige) Relation
(universal/existential) quantifier	(All-/Existenz-) Quantor
(ordered) field	(angeordneter) Körper
continuity	Stetigkeit
cartesian space	Kartesischer Raum

Try to sketch Axiom A9

$$p \neq q \wedge ap \equiv aq \wedge bp \equiv bq \wedge cp \equiv cq \rightarrow Babc \vee Bbca \vee Bcab$$

