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**Alexander Fedorovich Mironychev\*** ([amironit@houstonisd.org](mailto:amironit@houstonisd.org)), 5601 West Loop South Freeway, Challenge Early College, Houston, TX 77081. *SAS and SSA Conditions for Congruent Triangles.*

The traditional set of theorems at the high school and undergraduate college level regarding congruent triangles include the following – SAS, ASA, AAS, SSS, and HL. However, the set of statements and theorems describing congruent triangles can be extended to include one more theorem which is often overlooked by most texts: SSA. For two triangles to be congruent, SAS theorem requires two sides and the included angle of the first triangle to be congruent to the corresponding two sides and included angle of the second triangle. If the congruent angles are not between the corresponding congruent sides, then such triangles could be different. It turns out that it is possible to describe four cases in which triangles are congruent even though congruent angles are not between the corresponding congruent sides. Such a theorem could be named, for example, SSA theorem. Many texts state that two triangles cannot be shown to be congruent if the condition of SSA exists. However, the author describes cases in which such triangles could be proven congruent with the SSA theorem. An immediate consequence of this new understanding is the necessity of revising many problems and answers in high school and college-level texts related to congruent triangles. (Received August 19, 2017)