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Equivalence relations across the secondary school curriculum.

Math. Teach. (Reston) 106, No. 7, 508-512 (2013).

From the text: Must two triangles with equal areas and equal perimeters also be congruent? This question was introduced by *S. Rosenberg* et al. in their article [Math. Teach. (Reston) 101, No. 9, 656–663 (2008; ME 2008d.00311)], which also described the authors' subsequent investigation of a particular moduli space of triangles. *W. McCallum* ["The essential unity of mathematics: from a problem in high school mathematics to current research", Presentation at the Park City Mathematics Institute (2009)] suggested that this was likely the only Mathematics Teacher article to address a moduli space, a representation arising naturally across various branches of advanced mathematics. His comment, along with the original article, inspired us to explore the prerequisite topics of equivalence relations and equivalence classes and their appearance in secondary school mathematics. In particular, we describe an exploration of equivalence relations in the high school curriculum that builds explicit connections across various mathematical domains and provides teachers with a greater depth of understanding of the mathematics they teach.

Classification: E60 F40 H20 G60 I40

Keywords: equivalence relations; mathematical concepts; geometric concepts; trigonometry; algebra; arithmetic; analysis

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