

ZMATH 2015e.00677

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Exploration of patterns in a calendar.

Math. Teach. (Reston) 108, No. 5, 336-342 (2014).

From the text: The importance of developing reasoning and justification has been highlighted in [*National Council of Teachers of Mathematics, Principles and standards for school mathematics*. Reston, VA: NCTM (2000)]. The Common Core State Standards for Mathematics further reiterates the importance of reasoning and proof in several standards for mathematical practice. Students of all grades are required to reason both abstractly and quantitatively, construct viable arguments, and critique the reasoning of others. However, studies on algebra learning have documented students' difficulties in algebra concepts and justification. Specifically, middle and high school students overwhelmingly rely on examples to justify statements. This article aims to demonstrate how a teacher can develop students' reasoning and justification in an algebra lesson through deliberate sequencing and productive discourse surrounding the implementation of tasks.

Classification: H20 E50 M90

Keywords: algebra; algebraic reasoning; mathematical applications; activities; pattern recognition; justification; reasoning; proof; proving; conjectures; refutation

<http://www.nctm.org/publications/article.aspx?id=43547>