

ZMATH 2015d.00673

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Signed numbers and algebraic thinking.

Kaput, James J. (ed.) et al., Algebra in the early grades. London: Routledge (ISBN 978-0-8058-5472-5/hbk; 978-0-8058-5473-2/pbk). Studies in Mathematical Thinking and Learning Series, 303-328 (2008).

From the text: In Chapter 12, the authors claim there is a mutually supportive relationship between negative numbers and algebraic thinking: Negative numbers can be meaningfully taught within an “algebrafied” curriculum and, likewise, negative numbers can facilitate the development of concepts important for the growth of algebraic thinking. The concepts in question include functions, equations, and especially the additive structure. The chapter further discusses the extension of the additive part-part-whole structure to deal with more than set inclusion situations.

Classification: H10 F40 C30 E40

Keywords: algebraic reasoning; signed number operations; negative numbers; integers; word problems; algebraic context; early education in algebra; primary education; graph of a function; comparing functions; composing transformations; equivalent transformations; algebraic concepts; mathematical models; didactical models; money; preservice teacher education; equations