

**ZMATH 2007e.00287**

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**How meaning, invariant properties and symbolic representations influence the understanding of directed numbers. (Como significados, propriedades invariantes e representações simbólicas influenciam a compreensão do conceito de número inteiro relativo.)**

Educ. Mat. Pesqui. 6, No. 1, 73-100 (2004).

Summary: Based on Vergnaud this study investigated how problem solving is affected by the meanings involved, by invariant properties that were learned, and by systems of signs used to represent positive and negative numbers and the operations of addition and subtraction. In two experimental studies, with 60 children participating in each, it was observed that seven and eight-year-olds already have some understanding of directed numbers and are able to perform some additions and subtractions with these numbers long before they are formally introduced to this concept at school - usually four to five years later. The form in which children were asked to solve the problems strongly affected their performance. Thus, in the teaching of mathematical concepts, such as directed numbers, the meanings, properties and symbolic representations should vary, so as to allow students' understanding to develop widely within a conceptual field.

*Classification:* F42 C32 D22

*Keywords:* directed numbers; attitudes; problem solving; conceptual fields; empirical investigations; primary education

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