#### Volume 40 • Number 1



'Semiregular tiling 3-4-6-4 (Small rhombitrihexagonal)' by R.A. Nonenmacher. Retrieved from https://commons. wikimedia.org/wiki/file:tiling\_ semiregular\_3-4-6-4.small\_ rhombitrihexagonal.svg

#### **Editor-in-Chief**

Alwyn Olivier Stellenbosch University (retired), South Africa

Associate Editors

Anthony Essien University of the Witwatersrand, South Africa Faaiz Gierdien Stellenbosch University, South Africa Michael Murray University of KwaZulu-Natal, South Africa Rajendran Govender University of the Western Cape, South Africa

# **Editorial Board**

Iill Adler University of the Witwatersrand, South Africa Bill Barton University of Auckland, New Zealand Marcelo Borba São Paulo State University, Brazil Doug Clarke Australian Catholic University, Australia Jeremy Kilpatrick University of Georgia, United States of America Gilah Leder La Trobe University, Australia Stephen Lerman Southbank University, United Kingdom Frederick Leung University of Hong Kong, SAR, China Liora Linchevski Hebrew University of Jerusalem, Israel John Malone Curtin University, Australia Andile Mji Tshwane University of Technology, South Africa Willy Mwakapenda Tshwane University of Technology, South Africa

#### John Olive University of Georgia, United States of America David Reid University Bremen, Germany Paola Valero Stockholm University, Sweden Renuka Vithal

University of the Witwatersrand, South Africa Anne Watson Oxford University, United Kingdom

# PYTHAGORAS

ISSN: 1012-2346 (print) ISSN: 2223-7895 (online)

# Information for Authors and Readers

# **Original Research**

ii

1

- Social science students' concept images and concept definitions of anti-derivatives Eunice K. Moru, Makomosela Qhobela
- **13** Towards validation of a rational number instrument: An application of Rasch measurement theory *Jeremiah Maseko, Kakoma Luneta, Caroline Long*
- 25 Comparison of geometric proof development tasks as set up in the textbook and as implemented by teachers in the classroom

Lisnet Mwadzaangati

- **39** The use of semiotic representations in reasoning about similar triangles in Euclidean geometry *Ifunanya Ubah, Sarah Bansilal*
- **49** Using standard setting to promote meaningful use of mathematics assessment data within initial teacher education programmes

Qetelo M. Moloi, Anil Kanjee, Nicky Roberts

- 63 The standard written algorithm for addition: Whether, when and how to teach it *Nicky Roberts*
- 80 A commognitive perspective on Grade 8 and Grade 9 learner thinking about linear equation *Anthea Roberts, Kate le Roux*
- 95 Mathematics teachers' levels of technological pedagogical content knowledge and information and communication technology integration barriers *Gabrielle de Freitas, Erica D. Spangenberg*
- **108** Keeping sites in sight: Conversations with teachers about the design of toolkits peculiar to a continuous professional development initiative

Faaiz Gierdien, Charles Smith, Cyril Julie

**119** The professional development of primary school mathematics teachers through a design-based research methodology

Piera Biccard

129 Webs of development: Professional networks as spaces for learning Kenneth Ngcoza, Sue Southwood

# **Book Review**

**136** Book review: International reflections on Realistic Mathematics Education *Stanley A. Adendorff* 

# Correction

**139** Erratum: A commognitive perspective on Grade 8 and Grade 9 learner thinking about linear equation

Anthea Roberts, Kate le Roux

# 140 Reviewer Acknowledgement

# 141 Guidelines for Authors