

# **Rethinking Proof with Sketchpad 4**

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**Grades 9-12 & Math. Teacher Education**

Several of the activities have been extended and/or improved in the Revised Version of my book *Rethinking Proof with Sketchpad 4*, which was released in May 2003. All the sketches in Chapter 5 on the systematisation of quadrilateral definitions have been redesigned. The modelling perspective underlying some of the activities has also been made more prominent. Some free zipped sample sketches can be downloaded from page 4 of my homepage (see below) or directly from:

<http://mzone.mweb.co.za/residents/profmd/rethink2.zip>

If you do not have Sketchpad, download a free demo to view the and manipulate the sketches from:

<http://www.keypress.com/sketchpad/sketchdemo.html>

The book harnesses the power of dynamic geometry to engage students to make conjectures and thinking about proof in different ways. Rethinking Proof advocates a radically different approach to proof in dynamic geometry, namely, that students can be more meaningfully introduced to proof first as a means of explanation before dealing with other functions such as discovery, verification, challenge, and systematisation. After making conjectures, carefully constructed questions guide students to develop explanations of why their conjectures are true.

The underlying research approach has been similar to that of the Developmental Approach by the Freudenthal Institute in the Netherlands, which has involved, in a continual cyclical fashion:

- an epistemological analysis of the role of proof & experimentation in mathematics,
- empirical research on children's understanding of proof, in particular their needs for conviction and explanation
- theoretical and empirical research on children's spatial and geometric conceptualisation, guided by a Van Hiele perspective

- design, implementation, and evaluation of learning activities on the basis of the above three aspects

Comes with extensive teacher's notes, and includes a CD-ROM containing pre-made Sketchpad sketches. ISBN 1-55953-646-2, 216 pages, \$29.95

\* For ordering in USA, Canada, Mexico, go to

<http://www.keypress.com/catalog/products/software> (and then to Rethinking Proof).

\* For ordering in UK, contact QED books at [qed@talk21.com](mailto:qed@talk21.com), Tel: 01494772973; Fax: 01494793951.

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