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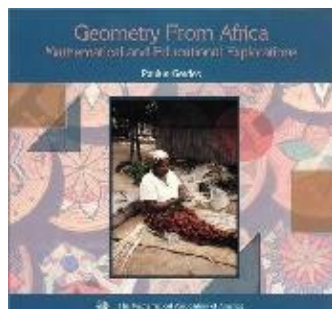
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May 2001

Reviews

'Geometry from Africa'

reviewed by John D. Barrow



Geometry from Africa

by Paulus Gerdes

This beautifully illustrated book by the world's leading authority on African mathematics provides us with a wide-ranging introduction to mathematical intuition in sub-Saharan African cultures. These cultures are extremely diverse and expressive in their creation of designs and motifs that embody geometrical and topological ideas. No one is better qualified to tell us about it than Paulus Gerdes, who has lived and worked in Mozambique for many years. He served as the President of the University of Mozambique and is deeply involved in the history and contemporary teaching of mathematics in Africa. As a result, this book provides the reader with more than a fascinating survey of traditional African applications of symmetry groups, summations of series, 'Euclidean' geometry, unusual proofs of Pythagoras' theorem embodied in weaving designs, knots, and plaited friezes and wall designs. It shows how these artistic applications can be used to teach the associated mathematics in innovative ways. Rolling mats of different coarseness provides a simple way to estimate the formulae for the areas of circles and volumes of cylinders and folding clasps on bags display the truth of Pythagoras' theorem.

Gerdes' book is strongly recommended to mathematicians and teachers wanting to learn something fresh about traditional truths of geometry and symmetry. The chapters are self-contained and well supplied with references to the wider literature at the end of each chapter for those who want to investigate further. Educators wanting to introduce a multicultural or non-Western background to mathematics will find this a wonderful place to begin. Gerdes avoids the trap of simply exhibiting numerous disconnected examples that can inspire little more than admiration. He has carefully organised the examples so that they form a systematic

'Geometry from Africa'

exploration of each area of geometry, symmetry, or space filling, and are couched in the language of exploration and discovery so that readers can go on to solve some of the problems posed or extend the designs even further. Simple equations and clear diagrams provide the mathematical background in each case. The last chapter about the network analysis of sona sand patterns provides a host of challenging ancient games and puzzles. This book will also appeal to artists and designers who are interested in African design and the latent mathematics behind it. An attractive and fascinating story of hidden mathematics which I strongly recommend to everyone.

Book details:

Geometry from Africa: Mathematical and educational explorations

Paulus Gerdes

210 pages (1999)

The Mathematical Association of America

ISBN 0-88385-715-4

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