

Contents

Part I Plenary Activities

Thirteenth International Congress on Mathematical Education: An Introduction	3
Gabriele Kaiser	
Uncovering the Special Mathematical Work of Teaching	11
Deborah Loewenberg Ball	
Mathematics, Education, and Culture: A Contemporary Moral Imperative	35
Bill Barton	
Mathematics Classroom Studies: Multiple Lenses and Perspectives	45
Berinderjeet Kaur	
“What is Mathematics?” and why we should ask, where one should experience and learn that, and how to teach it	63
Günter M. Ziegler and Andreas Loos	
International Comparative Studies in Mathematics: Lessons and Future Directions for Improving Students’ Learning	79
Jinfa Cai, Ida A.C. Mok, Vijay Reddy and Kaye Stacey	
Transitions in Mathematics Education: The Panel Debate	101
Ghislaine Gueudet, Marianna Bosch, Andrea A. diSessa, Oh Nam Kwon and Lieven Verschaffel	

Part II Awardees’ lectures

ICMI Awards Ceremony	121
Carolyn Kieran and Jeremy Kilpatrick	

Mathematics Discourse in Instruction (MDI): A Discursive Resource as Boundary Object Across Practices	125
Jill Adler	
The Challenging Relationship Between Fundamental Research and Action in Mathematics Education	145
Michèle Artigue	
Elementary Mathematicians from Advanced Standpoints—A Cultural Perspective on Mathematics Education	165
Alan J. Bishop	
Design and Development for Large-Scale Improvement	177
Hugh Burkhardt and Malcolm Swan	
Making Sense of Mathematics Achievement in East Asia: Does Culture <i>Really</i> Matter?	201
Frederick K.S. Leung	
Part III Reports of the Survey Teams	
Digital Technology in Mathematics Education: Research over the Last Decade	221
Marcelo C. Borba, Petek Askar, Johann Engelbrecht, George Gadanidis, Salvador Llinares and Mario Sánchez Aguilar	
Conceptualisation of the Role of Competencies, Knowing and Knowledge in Mathematics Education Research	235
Mogens Niss, Regina Bruder, Núria Planas, Ross Turner and Jhony Alexander Villa-Ochoa	
Assistance of Students with Mathematical Learning Difficulties—How Can Research Support Practice?—A Summary	249
Petra Scherer, Kim Beswick, Lucie DeBlois, Lulu Healy and Elisabeth Moser Opitz	
Mathematics Teachers Working and Learning Through Collaboration	261
Barbara Jaworski, Olive Chapman, Alison Clark-Wilson, Annalisa Cusi, Cristina Esteley, Merrilyn Goos, Masami Isoda, Marie Joubert and Ornella Robutti	
Geometry Education, Including the Use of New Technologies: A Survey of Recent Research	277
Nathalie Sinclair, Maria G. Bartolini Bussi, Michael de Villiers, Keith Jones, Ulrich Kortenkamp, Allen Leung and Kay Owens	

Part IV Reports from the Thematic Afternoon

European Didactic Traditions in Mathematics: Aspects and Examples from Four Selected Cases	291
Werner Blum, Michèle Artigue, Maria Alessandra Mariotti, Rudolf Sträßer and Marja Van den Heuvel-Panhuizen	
German-Speaking Traditions in Mathematics Education Research	305
Hans Niels Jahnke, Rolf Biehler, Angelika Bikner-Ahsbabs, Uwe Gellert, Gilbert Greefrath, Lisa Hefendehl-Hebeker, Götz Krummheuer, Timo Leuders, Marcus Nührenböcker, Andreas Obersteiner, Kristina Reiss, Bettina Rösken-Winter, Andreas Schulz, Andreas Vohns, Rudolf vom Hofe and Katrin Vorhölter	
What Is and What Might Be the Legacy of Felix Klein?	321
Hans-Georg Weigand, William McCallum, Marta Menghini, Michael Neubrand, Gert Schubring and Renate Tobies	

Part V National Presentations

Argentinean National Presentation	337
Esther Galina and Mónica Villarreal	
Teachers' Professional Development and Mathematics Education in Brazil	345
Victor Giraldo	
Mathematics Education in Ireland	347
Maurice O'Reilly, Thérèse Dooley, Elizabeth Oldham and Gerry Shiel	
National Presentation of Japan	353
Toshiakira Fujii, Yoshinori Shimizu, Hanako Senuma and Toshikazu Ikeda	
National Presentations of Lower Mekong Sub-region Countries	361
Fidel R. Nemenzo, Masami Isoda, Maitree Inprasitha, Sampan Thinwiangthong, Narumon Changsri, Nisakorn Boonsena, Chan Roth, Monkolsery Lin, Souksomphone Anothay, Phoutsakhone Channgakham, Nguyen Chi Thanh, Vũ Như Thu Hương and Phương Thảo Nguyễn	
Teaching and Learning Mathematics in Turkey	367
Huriye Arikan	

Part VI Reports from the Topical Study Groups

Topic Study Group No. 1: Early Childhood Mathematics Education (Up to Age 7)	375
Elia Iliada, Joanne Mulligan, Ann Anderson, Anna Baccaglioni-Frank and Christiane Benz	
Topic Study Group No. 2: Mathematics Education at Tertiary Level	381
Victor Giraldo, Chris Rasmussen, Irene Biza, Azimehsadat Khakbaz and Reinhard Hochmuth	
Topic Study Group No. 3: Mathematics Education in and for Work	387
Geoff Wake, Diana Coben, Burkhard Alpers, Keith Weeks and Peter Frejd	
Topic Study Group No. 4: Activities for, and Research on, Mathematically Gifted Students	391
Florence Mihaela Singer, Linda Jensen Sheffield, Matthias Brandl, Viktor Freiman and Kyoko Kakihana	
Topic Study Group No. 5: Classroom Practice and Research for Students with Mathematical Learning Difficulties	397
Lourdes Figueiras, Rose Griffiths, Karen Karp, Jens Holger Lorenz and Miriam Godoy Penteadó	
Topic Study Group No. 6: Adult Learning	401
Jürgen Maaß, Pradeep Kumar Misra, Terry Maguire, Katherine Safford-Ramus, Wolfgang Schlöglmann and Evelyn Süß-Stepancik	
Topic Study Group No. 07: Popularization of Mathematics	405
Christian Mercat, Patrick Vennebush, Chris Budd, Carlota Simões and Jens Struckmeier	
Topic Study Group No. 8: Teaching and Learning of Arithmetic and Number Systems (Focus on Primary Education)	413
Pi-Jen Lin, Terezinha Nunes, Shuhua An, Beatriz Vargas Dorneles and Elisabeth Rathgeb-Schnierer	
Topic Study Group No. 9: Teaching and Learning of Measurement (Focus on Primary Education)	415
Christine Chambris, Barbara Dougherty, Kalyanasundaram (Ravi) Subramaniam, Silke Ruwisch and Insook Chung	

Topic Study Group No. 10: Teaching and Learning of Early Algebra	421
Carolyn Kieran, JeongSuk Pang, Swee Fong Ng, Deborah Schifter and Anna Susanne Steinweg	
Topic Study Group No. 11: Teaching and Learning of Algebra	425
Rakhi Banerjee, Amy Ellis, Astrid Fischer, Heidi Strømskag and Helen Chick	
Topic Study Group No. 12: Teaching and Learning of Geometry (Primary Level)	429
Sinan Olkun, Ewa Swoboda, Paola Vighi, Yuan Yuan and Bernd Wollring	
Topic Study Group No. 13: Teaching and Learning of Geometry—Secondary Level	435
Ui Hock Cheah, Patricio G. Herbst, Matthias Ludwig, Philippe R. Richard and Sara Scaglia	
Topic Study Group No. 14: Teaching Learning of Probability	439
Carmen Batanero, Egan J. Chernoff, Joachim Engel, Hollylyne Stohl Lee and Ernesto Sánchez	
Topic Study Group No. 15: Teaching and Learning of Statistics	443
Dani Ben-Zvi, Gail Burrill, Dave Pratt, Lucia Zapata-Cardona and Andreas Eichler	
Topic Study Group No. 16: Teaching and Learning of Calculus	447
David Bressoud, Victor Martinez-Luaces, Imène Ghedamsi and Günter Törner	
Topic Study Group No. 17: Teaching and Learning of Discrete Mathematics	453
Eric W. Hart, James Sandefur, Cecile O. Buffet, Hans-Wolfgang Henn and Ahmed Semri	
Topic Study Group No. 18: Reasoning and Proof in Mathematics Education	459
Guershon Harel, Andreas J. Stylianides, Paolo Boero, Mikio Miyazaki and David Reid	
Topic Study Group No. 19: Problem Solving in Mathematics Education	463
Peter Liljedahl, Manuel Santos-Trigo, Uldarico Malaspina, Guido Pinkernell and Laurent Vivier	
Topic Study Group No. 20: Visualization in the Teaching and Learning of Mathematics	467
Michal Yerushalmy, Ferdinand Rivera, Boon Liang Chua, Isabel Vale and Elke Söbbeke	

Topic Study Group No. 21: Mathematical Applications and Modelling in the Teaching and Learning of Mathematics	471
Jussara Araújo, Gloria Ann Stillman, Morten Blomhøj, Toshikazu Ikeda and Dominik Leiss	
Topic Study Group No. 22: Interdisciplinary Mathematics Education	475
Susie Groves, Julian Williams, Brian Doig, Rita Borromeo Ferri and Nicholas Mousoulides	
Topic Study Group No. 23: Mathematical Literacy	481
Hamsa Venkat, Iddo Gal, Eva Jablonka, Vince Geiger and Markus Helmerich	
Topic Study Group No. 24: History of the Teaching and Learning of Mathematics	487
Fulvia Furinghetti, Alexander Karp, Henrike Allmendinger, Johan Prytz and Harm Jan Smid	
Topic Study Group No. 25: The Role of History of Mathematics in Mathematics Education	491
Constantinos Tzanakis, Xiaoqin Wang, Kathleen Clark, Tinne Hoff Kjeldsen and Sebastian Schorcht	
Topic Study Group No. 26: Research on Teaching and Classroom Practice	497
Yoshinori Shimizu, Mary Kay Stein, Birgit Brandt, Helia Oliveira and Lijun Ye	
Topic Study Group No. 27: Learning and Cognition in Mathematics	501
Gaye Williams, Wim Van Dooren, Pablo Dartnell, Anke Lindmeier and Jérôme Proulx	
Topic Study Group No. 28: Affect, Beliefs and Identity in Mathematics Education	507
Markku Hannula, Francesca Morselli, Emine Erkin, Maike Vollstedt and Qiao-Ping Zhang	
Topic Study Group No. 29: Mathematics and Creativity	511
Demetra Pitta-Pantazi, Dace Kūma, Alex Friedlander, Thorsten Fritzlär and Emiliya Velikova	
Topic Study Group No. 30: Mathematical Competitions	515
Maria Falk de Losada, Alexander Soifer, Jaroslav Svrcék and Peter Taylor	

Topic Study Group No. 31: Language and Communication in Mathematics Education	521
Judit Moschkovich, David Wagner, Arindam Bose, Jackeline Rodrigues Mendes and Marcus Schütte	
Topic Study Group No. 32: Mathematics Education in a Multilingual and Multicultural Environment	525
Richard Barwell, Anjum Halai, Aldo Parra, Lena Wessel and Guida de Abreu	
Topic Study Group No. 33: Equity in Mathematics Education (Including Gender)	531
Bill Atweh, Joanne Rossi Becker, Barbro Grevholm, Gelsa Knijnik, Laura Martignon and Jayasree Subramanian	
Topic Study Group No. 34: Social and Political Dimensions of Mathematics Education	537
Murad Jurdak, Renuka Vithal, Peter Gates, Elizabeth de Freitas and David Kollosche	
Topic Study Group No. 35: Role of Ethnomathematics in Mathematics Education	543
Milton Rosa, Lawrence Shirley, Maria Elena Gavarrete and Wilfredo V. Alanguí	
Topic Study Group No. 36: Task Design, Analysis and Learning Environments Programme Summary	549
Jere Confrey, Jiasheng Bao, Anne Watson, Jonei Barbosa and Helmut Linneweber-Lammerskitten	
Topic Study Group No. 37: Mathematics Curriculum Development	555
Anita Rampal, Zalman Usiskin, Andreas Büchter, Jeremy Hodgen and Iman Osta	
Topic Study Group No. 38: Research on Resources (Textbooks, Learning Materials etc.)	561
Lianghuo Fan, Luc Trouche, Chunxia Qi, Sebastian Rezat and Jana Visnovska	
Topic Study Group No. 39: Large Scale Assessment and Testing in Mathematics Education	565
Rae Young Kim, Christine Suurtamm, Edward Silver, Stefan Ufer and Pauline Vos	
Topic Study Group No. 40: Classroom Assessment for Mathematics Learning	571
Denisse R. Thompson, Karin Brodie, Leonora Diaz Moreno, Nathalie Sayac and Stanislaw Schukajlow	

Topic Study Group No. 41: Uses of Technology in Primary Mathematics Education (Up to Age 10)	575
Sophie Soury-Lavergne, Colleen Vale, Francesca Ferrara, Krongthong Khairiree and Silke Ladel	
Topic Study Group No. 42: Uses of Technology in Lower Secondary Mathematics Education (Age 10–14)	577
Lynda Ball, Paul Drijvers, Bärbel Barzel, Yiming Cao and Michela Maschietto	
Topic Study Group No. 43: Uses of Technology in Upper Secondary Education (Age 14–19)	579
Stephen Hegedus, Colette Laborde, Luis Moreno Armella, Hans-Stefan Siller and Michal Tabach	
Topic Study Group No. 44: Distance Learning, e-Learning, and Blended Learning	583
Rúbia Barcelos Amaral, Veronica Hoyos, Els de Geest, Jason Silverman and Rose Vogel	
Topic Study Group No. 45: Knowledge in/for Teaching Mathematics at Primary Level	585
Carolyn A. Maher, Peter Sullivan, Hedwig Gasteiger and Soo Jin Lee	
Topic Study Group No. 46: Knowledge in/for Teaching Mathematics at the Secondary Level	589
Ruhama Even, Xinrong Yang, Nils Buchholtz, Charalambos Charalambous and Tim Rowland	
Topic Study Group No. 47: Pre-service Mathematics Education of Primary Teachers	593
Keiko Hino, Gabriel J. Stylianides, Katja Eilerts, Caroline Lajoie and David Pugalee	
Topic Study Group No. 48: Pre-service Mathematics Education of Secondary Teachers	599
Marilyn Strutchens, Rongjin Huang, Leticia Losano, Despina Potari and Björn Schwarz	
Topic Study Group No. 49: In-Service Education and Professional Development of Primary Mathematics Teachers	605
Akihiko Takahashi, Leonor Varas, Toshiakira Fujii, Kim Ramatlapana and Christoph Selter	
Topic Study Group No. 50: In-Service Education, and Professional Development of Secondary Mathematics Teachers	609
Jill Adler, Yudong Yang, Hilda Borko, Konrad Krainer and Sitti Patahuddin	

Topic Study Group No. 51: Diversity of Theories in Mathematics Education	613
Tommy Dreyfus, Anna Sierpinska, Stefan Halverscheid, Steve Lerman and Takeshi Miyakawa	
Topic Study Group 52: Empirical Methods and Methodologies	619
David Clarke, Alan Schoenfeld, Bagele Chilisa, Paul Cobb and Christine Knipping	
Topic Study Group No. 53: Philosophy of Mathematics Education	623
Paul Ernest, Ladislav Kvasz, Maria Bicudo, Regina Möller and Ole Skovsmose	
Topic Study Group No. 54: Semiotics in Mathematics Education	627
Norma Presmeg, Luis Radford, Gert Kadunz, Luis Puig and Wolff-Michael Roth	
Part VII Reports from the Discussion Groups	
Classroom Teaching Research for All Students	635
Shuhua An, Steklács János and Zhonghe Wu	
Mathematical Discourse in Instruction in Large Classes	637
Mike Askew, Ravi K. Subramaniam, Anjum Halai, Erlina Ronda, Hamsa Venkat, Jill Adler and Steve Lerman	
Sharing Experiences About the Capacity and Network Projects Initiated by ICMI	639
Angelina Matinde Bijura, Alphonse Uworwabayeho, Veronica Sarungi, Peter Kajoro and Anjum Halai	
Mathematics Teacher Noticing: Expanding the Terrains of This Hidden Skill of Teaching	641
Ban Heng Choy, Jaguthsing Dindyal, Mi Yeon Lee and Edna O. Schack	
Connections Between Valuing and Values: Exploring Experiences and Rethinking Data Generating Methods	643
Philip Clarkson, Annica Andersson, Alan Bishop, Penelope Kalogeropoulos and Wee Tiong Seah	
Developing New Teacher Learning in Schools and the STEM Agenda	645
Pat Drake, Jeanne Carroll, Barbara Black, Lin Phillips and Celia Hoyles	
Videos in Teacher Professional Development	647
Tanya Evans, Leong Yew Hoong and Ho Weng Kin	

National and International Investment Strategies for Mathematics Education	649
Joan Ferrini-Mundy, Marcelo C. Borba, Fumi Ginshima, Manfred Prenzel and Thierry Zomahoun	
Transition from Secondary to Tertiary Education	651
Gregory D. Foley, Sergio Celis, Hala M. Alshawa, Sidika Nihan, Heba Bakr Khoshaim and Jane D. Tanner	
Teachers Teaching with Technology	655
Ian Galloway, Bärbel Barzel and Andreas Eichler	
Mathematics Education and Neuroscience	657
Roland H. Grabner, Andreas Obersteiner, Bert De Smedt, Stephan Vogel, Michael von Aster, Roza Leikin and Hans-Christoph Nuerk	
Reconsidering Mathematics Education for the Future	659
Koeno Gravemeijer, Fou-Lai Lin, Michelle Stephan, Cyril Julie and Minoru Ohtani	
Challenges in Teaching Praxis When CAS Is Used in Upper Secondary Mathematics	661
Niels Groenbaek, Claus Larsen, Henrik Bang, Hans-Georg Weigand, Zsolt Lavicza, John Monaghan, M. Kathleen Heid, Mike Thomas and Paul Drijvers	
Mathematics in Contemporary Art and Design as a Tool for Math-Education in School	663
Dietmar Guderian	
Exploring the Development of a Mathematics Curriculum Framework: Cambridge Mathematics	665
Ellen Jameson, Rachael Horsman and Lynne McClure	
Theoretical Frameworks and Ways of Assessment of Teachers' Professional Competencies	667
Johannes König, Sigrid Blömeke and Gabriele Kaiser	
Using Representations of Practice for Teacher Education and Research—Opportunities and Challenges	669
Sebastian Kuntze, Orly Buchbinder, Corey Webel, Anika Dreher and Marita Friesen	
How Does Mathematics Education Evolve in the Digital Era?	671
Dragana Martinovic and Viktor Freiman	
Scope of Standardized Tests	673
Raimundo Olfos, Ivan R. Vysotsky, Manuel Santos-Trigo, Masami Isoda and Anita Rampal	

Mathematics for the 21st Century School: The Russian Experience and International Prospects	675
Sergei A. Polikarpov and Alexei L. Semenov	
Lesson/Learning Studies and Mathematics Education	677
Marisa Quresma and Carl Winsl�w	
Mathematics Houses and Their Impact on Mathematics Education	679
Ali Rejali, Peter Taylor, Yahya Tabesh, J�r�me Germoni and Abolfazl Rafiepour	
An Act of Mathematisation: Familiarisation with Fractions	681
Ernesto Rottoli, Sabrina Alessandro, Petronilla Bonisconi, Marina Cazzola, Paolo Longoni and Gianstefano Riva	
The Role of Post-Conflict School Mathematics	683
Carlos Eduardo Leon Salinas and Jefer Camilo Sachica Castillo	
Applying Contemporary Philosophy in Mathematics and Statistics Education: The Perspective of Inferentialism.	685
Maike Schindler, Kate Mackrell, Dave Pratt and Arthur Bakker	
Teaching Linear Algebra	687
Sepideh Stewart, Avi Berman, Christine Andrews-Larson and Michelle Zandieh	
Creativity, Aha!Moments and Teaching-Research	689
Hannes Stoppel and Bronislaw Czarnocha	
White Supremacy, Anti-Black Racism, and Mathematics Education: Local and Global Perspectives	691
Luz Valoyes-Ch�vez, Danny B. Martin, Joi Spencer and Paola Valero	
Research on Non-university Tertiary Mathematics	693
Claire Wladis, John Smith and Irene Duranczyk	
Part VIII Reports from the Workshops	
Flipped Teaching Approach in College Algebra: Cognitive and Non-cognitive Gains.	697
Maxima J. Acelajado	
A Knowledge Discovery Platform for Spatial Education: Applications to Spatial Decomposition and Packing.	699
Sorin Alexe, Cristian Voica and Consuela Voica	

Designing Mathematics Tasks for the Professional Development of Teachers Who Teach Mathematics Students Aged 11–16 Years 701
 Debbie Barker and Craig Pournara

Contributing to the Development of Grand Challenges in Maths Education. 703
 David Barnes, Trena Wilkerson and Michelle Stephan

The Role of the Facilitator in Using Video for the Professional Learning of Teachers of Mathematics 705
 Alf Coles, Aurelie Chesnais and Julie Horoks

Making Middle School Maths Real, Relevant and Fun 707
 Kerry Cue

“Oldies but Goodies”: Providing Background to ICMI Mission and Activities from an Archival Perspective. 709
 Guillermo P. Curbera, Bernard R. Hodgson and Birgit Seeliger

Using Braids to Introduce Groups: From an Informal to a Formal Approach. 711
 Ester Dalvit

Curious Minds; Serious Play 713
 Jan de Lange

International Similarities and Differences in the Experiences and Preparation of Post-Graduate Mathematics Students as Tertiary Instructors 717
 Jessica Deshler and Jessica Ellis

Using LISP as a Tool for Mathematical Experimentation 719
 Hugo Alex Diniz

Mathematics Teachers’ Circles as Professional Development Models Connecting Teachers and Academics. 721
 Nathan Borchelt and Axelle Faughn

Exploring and Making Online Creative Digital Math Books for Creative Mathematical Thinking 723
 Pedro Lealdino Filho, Christian Bokhove, Jean-Francois Nicaud, Ulrich Kortenkamp, Mohamed El-Demerdash, Manolis Mavrikis and Eirini Geraniou

The Shift of Contents in Prototypical Tasks Used in Education Reforms and Their Influence on Teacher Training Programs. 725
 Karl Fuchs, Christian Kraler and Simon Plangg

Analysis of Algebraic Reasoning and Its Different Levels in Primary and Secondary Education	727
Juan D. Godino, Teresa Neto and Miguel R. Wilhelmi	
Designing and Evaluating Mathematical Learning by a Framework of Activities from History of Mathematics	729
Lenni Haapasalo, Harry Silfverberg and Bernd Zimmermann	
Sounding Mathematics: How Integrating Mathematics and Music Inspires Creativity and Inclusion in Mathematics Education	731
Caroline Hilton and Markus Cslovjecssek	
Adopting Maxima as an Open-Source Computer Algebra System into Mathematics Teaching and Learning	733
Natanael Karjanto and Husty Serviana Husain	
The Power of Geometry in the Concept of Proof	735
Damjan Kobal	
Workshop: Silent Screencast Videos and Their Use When Teaching Mathematics	737
Bjarnheiður Bea Kristinsdóttir	
Shout from the Most Silent Nation, North Korea: Can Mathematics Education Be Politically Neutral?	739
JungHang Lee	
Workshop Theme: “Use of Educational Large-Scale Assessment Data for Research on Mathematics Didactics”	741
Sabine Meinck, Oliver Neuschmidt and Milena Taneva	
Curriculum Development in the Teaching of Mathematical Proof at the Secondary Schools in Japan	743
Tatsuya Mizoguchi, Hideki Iwasaki, Susumu Kunimune, Hiroaki Hamanaka, Takeshi Miyakawa, Yusuke Shinno, Yuki Suginomoto and Koji Otaki	
Symmetry, Chirality, and Practical Origami Nanotube Construction Techniques	745
B. David Redman Jr.	
Reflecting Upon Different Perspectives on Specialized Advanced Mathematical Knowledge for Teaching	747
Miguel Ribeiro, Arne Jakobsen, Alessandro Ribeiro, Nick H. Wasserman, José Carrillo, Miguel Montes and Ami Mamolo	
Collaborative Projects in Geometry	749
José L. Rodríguez, David Crespo and Dolores Jiménez	

Workshop on Framing Non-routine Problems in Mathematics for Gifted Children of Age Group 11–15	751
Sundaram R. Santhanam	
Enacted Multiple Representations of Calculus Concepts, Student Understanding and Gender	753
Ileana Vasu	
Using Inquiry to Teach Mathematics in Secondary and Post-secondary Education	755
Volker Ecke and Christine von Renesse	
Making of Cards as Teaching Material for Spatial Figures.	757
Kazumi Yamada and Takaaki Kihara	
Creative Mathematics Hands-on Activities in the Classroom.	759
Janchai Yingprayoon	
Part IX Additional Activities	
Teachers Activities at ICME-13.	763
Nils Buchholtz, Marianne Nolte and Gabriele Kaiser	
Early Career Researcher Day at ICME-13.	765
Gabriele Kaiser, Thorsten Scheiner and Armin Jentsch	



<http://www.springer.com/978-3-319-62596-6>

Proceedings of the 13th International Congress on
Mathematical Education

ICME-13

Kaiser, G. (Ed.)

2017, XVIII, 766 p. 55 illus., Hardcover

ISBN: 978-3-319-62596-6