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AMC 2016

THE ASIAN
MATHEMATICAL
CONFERENCE



Program & Abstracts

25 - 29 JULY 2016

B Bali Nusa Dua Convention Center
Bali Indonesia



Hosted by:

IndoMS
Indonesian Mathematical Society

SEAMS
South East Asian Mathematical Society

The Asian Mathematical Conference 2016

Program

Abstracts

July 25 – 29, 2016

BNDCC Nusa Dua, Bali, Indonesia

Hosted by : IndoMS (Indonesian Mathematical Society)
SEAMS (Southeast Asian Mathematical Society)

Organized by : ITB (Institut Teknologi Bandung)
Unpad (Universitas Padjadjaran)
UGM (Universitas Gadjah Mada)
UI (Universitas Indonesia)
UNUD (Universitas Udayana)

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IMU - International Mathematical Union
KMS - Korean Mathematical Society
MSJ - Mathematical Society of Japan
KIAS - Korea Institute for Advanced Study
CIMPA – Centre International de Mathématiques Pures et Appliquées
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Words of Welcome



Edy Tri BASKORO
Chair of Asian Mathematical
Conference (AMC) 2016



Budi Nurani RUCHJANA
President of Indonesian
Mathematical Society

This wonderful opportunity has finally come to Indonesia. The spirit of Mathematics is in the air. We are very proud to be able to hold this big event in the place where everyone would love to visit, Bali. Please accept our warm greetings to all of you! It is our great honor and pleasure to welcome all the participants of the Asian Mathematical Conference 2016 from July 25 to July 29 to Bali, Indonesia.

As one of the most prestigious gatherings of mathematicians in Asia, the Asian Mathematical Conference (AMC) has been conducted since 1990. This AMC2016 is the seventh one and hosted by the Indonesian Mathematical Society (IndoMS) and South East Asian Mathematical Society (SEAMS). We are very happy to have this great opportunity to hold such important event. This conference surely will give a very significant impact on promoting and enhancing mathematics in Indonesia as well as in the Asia region.

The program of this conference consists of plenary talks, special lectures, invited and contributed talks as well as posters and exhibitions. We are very grateful that more than 600 mathematicians from 33 countries attend this conference. In this conference, we also have a forum on the establishment of the Mathematical Union of Asia as well as a forum on Asian Women Mathematicians.

We would like to express our sincere gratitude to all the speakers, members of the steering, scientific, program and organizing committees of the AMC 2016 and Indonesian Mathematical Society, SEAMS council members, and distinguished guests from all mathematical societies in Asia. Special thanks go to the co-organizers: Institut Teknologi Bandung (ITB), Universitas Padjadjaran (Unpad), Universitas Gadjah Mada (UGM), Universitas Indonesia (UI) and Universitas Udayana (Unud). We also thank the Korean Mathematical Society (KMS), Mathematical Society of Japan (MSJ), Korea Institute for Advanced Studies (KIAS), International Mathematical Union (IMU), Commission of Women in Mathematics IMU, Centre International de Mathematiques Pures et Appliquees (CIMPA), the Ministry of Research Technology and Higher Education, the Ministry of Tourism, Badan Keamanan Laut (BAKAMLA), Persatuan Aktuaria Indonesia (PAI), PT Komatsu Indonesia for their invaluable supports.

Once again, welcome all of you, we hope all of you enjoy staying in the paradise island of Bali, Indonesia.

July 26 (Tue.)

Room: Pecatu Hall 3 and 5

15.00 - 17.00

15.00 - 17.00	<p>Attitude toward mathematics among the students at Nazarbayev University foundation year programme Akbota Mukhamediyeva^{*1}, Natarael Karjanto², Akaur Kozhagapar¹ ¹Nazarbayev University, Kazakhstan ²Sungkyunkwan University, South Korea [S01-P-01, p.141]</p>
15.00 - 17.00	<p>Affect of interactive media and manipulatives on improving mathematical abilities of 5th grades students Prih Hartanti¹, Yurniwati^{*2} ¹SDIT RPI Jakarta, Indonesia ²Jakarta State University, Indonesia [S01-P-02, p.142]</p>
15.00 - 17.00	<p>Reflective thinking in solving algebra problem: a case study of reflective-prospective teacher Agustan^{*1}, Dwi Juniati², Tatag YES² ¹Universitas Muhammadiyah Makassar, Indonesia ²Universitas Nagari Surabaya, Indonesia [S01-P-03, p.142]</p>
15.00 - 17.00	<p>Teaching mathematics to K-12 students using artifacts from Musco De La Salle Ma. Theresa Christine C. Valdez¹, Edwin S. Bunag, Les D. Maderal De La Salle University-Dasmariñas, Philippines [S01-P-04, p.143]</p>

- 15.00 - 17.00 **Probabilistic thinking of elementary school students in solving probability task using experiments and non experiments**
 Dwi Ivayana Sari^{*1}, I Ketut Budayasa², Dwi Juniati²
¹STKIP PGRI Banghalan, Indonesia
²Universitas Negeri Surabaya, Indonesia [S01-P-05, p.143]
- 15.00 - 17.00 **Metacognitive profile of a female prospective teacher with cognitive field independent style in solving limit problem**
 Pathuddin*, I Ketut Budayasa, Agung Lukito
 Surabaya State University Indonesia [S01-P-06, p.144]
- 15.00 - 17.00 **Adaptive reasoning and strategic competence in solving mathematical problem: a case study of female-field independent (F1) student**
 Andi Syukriani^{*1}, Dwi Juniati², Tatag YES²
¹STKIP-Pembangunan Indonesia Makassar, Indonesia
²Universitas Negeri Surabaya, Indonesia [S01-P-07, p.145]
- 15.00 - 17.00 **Prospective teachers conception about limit function**
 Usman¹, Dwi Juniati², Tatag Yuli Eko Siswono²
¹Syiah Kuala University, ²Surabaya State University [S01-P-08, p.145]
- 15.00 - 17.00 **Straight line equation scheme of student in grade 8 Christian Junior High School Salatiga**
 Herlina*, Kriswandani
 Satya Wacana Christian University [S01-P-09, p.146]

July 27 (Wed.)

Room: Pecatu Hall 3 and 5

08.30 - 10.00

- 08.30 - 10.00 **Student metacognition in solving open-ended problems**
 Zainur Wijayanto
 UST, Indonesia [S01-P-10, p.146]
- 08.30 - 10.00 **Characteristics fragmentation of structure students thinking in solving mathematical problems**
 Kadek Adi Wibawa^{*1}, Toto Nusancara², Subanji², I Nengah Parta²
¹University Mahasaraswati of Denpasar, Indonesia
²Malang State of University, Indonesia [S01-P-11, p.147]
- 08.30 - 10.00 **The mathematical proficiency of elementary student winning the national olympiad medals in science in making equation**
 Syarifatal Maf'ulah^{*1}, Dwi Juniati², Tatag Yuli Eko Siswono²
¹STKIP PGRI Jombang, Indonesia
²Universitas Negeri Surabaya, Indonesia [S01-P-12, p.148]
- 08.30 - 10.00 **The effect of mathematical investigation on students' intention to conduct mathematical research**
 Jonny Hernas Pernel
 University of the Philippines Visayas, Philippines [S01-P-13, p.149]

2010 MATHEMATICS SUBJECT CLASSIFICATION: 68T20.

Keywords: problem solving, fragmentation structure thinking, hole's understanding, pseudo understanding.

P-12. The mathematical proficiency of elementary student winning the national olympiad medals in science in making equation

Syarifatul Ma'fulah^{*1}, Dwi Juniati², Tatag Yuli Eko Siswono²

¹STKIP PGRI Jombang, Indonesia, ²Universitas Negeri Surabaya, Indonesia

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Abstract. The importance of a skill in making equation was highly considered by the researcher while giving arithmetical tasks " $\dots - 79 = 412$ " to 86 fifth graders. They were asked to fill the blank. It was found that there were 85 pupils answered the tasks incorrectly. If the abilities in making equation are well-applied, then they would be able to determine what they should fill in the blank, because the pupils will probably think that the equivalent equation could be made is " $\dots = 412 + 79$ ". Thus, an ability of making equation should be considered since early stage. On the other hand, there is particular factor supporting pupils in solving the tasks which is mathematical proficiency, including (1) conceptual understanding; (2) procedural fluency; (3) strategic competence; (4) adaptive reasoning; and (5) productive disposition. Then, this mathematical proficiency will optimize the ability in constructing equation. Therefore this study aims to describe mathematical proficiency of elementary student in making equation. The subject of this study is the student winning the National Olympiad medals in science, as he is the national assets that should be well-preserved, concerned, and used as role-models for his peers. This study is qualitative by using test and interview as the methods. The test conducted contains an initial equation, " $18 + d = 12$ ". The subject is then asked to make as many as equations equivalent to the initial one. The result is analysed based on particular indicator of mathematical proficiency in making equation. The result shows that; for conceptual understanding, the subject has made 37 equations equivalent to the initial one with different concepts such as square, square roots, and fraction. For procedural fluency and strategic competence, he has made particular equations as many as 12 strategies. One of interesting strategies is by squaring the both sides of the initial equation although the square roots have not been taught in elementary grades. For adaptive reasoning, he argues that there is a relationship between an initial equation and the new one because both equations have similar d value. And for productive disposition, he has fluently made such 37 new equations by various ways or strategies through well-procedures in about 30 minutes. This study concludes that the mathematical proficiency of elementary grade students winning the National Olympiad medals of science has been well-applied in making equation.

2010 MATHEMATICS SUBJECT CLASSIFICATION: 97A30.

Keywords: mathematical proficiency, olympiad medal, making equation.