

Subject - Math AA(Standard Level)
Topic - Number and Algebra
Year - May 2021 - Nov 2022
Paper -1
Answers

Question 1

- (a) attempting to use the change of base rule

M1

$$\log_3(\cos 2x + 2) = \frac{\log_4(\cos 2x + 2)}{\log_4 9}$$

A1

$$= \frac{1}{2} \log_3(\cos 2x + 2)$$

A1

$$= \log_3 \sqrt{\cos 2x + 2}$$

AG

[3 marks]

- (b) $\log_3(2 \sin x) = \log_3 \sqrt{\cos 2x + 2}$

M1

$$2 \sin x = \sqrt{\cos 2x + 2}$$

A1

$$4 \sin^2 x = \cos 2x + 2 \quad (\text{or equivalent})$$

(*M1*)

$$\text{use of } \cos 2x = 1 - 2 \sin^2 x$$

$$6 \sin^2 x = 3$$

$$\sin x = (\pm) \frac{1}{\sqrt{2}}$$

A1

$$x = \frac{\pi}{4}$$

A1

Note: Award *A0* if solutions other than $x = \frac{\pi}{4}$ are included.

[5 marks]

Total [8 marks]

May 2013 Math Sl

**Tony Cline, Anthea Gulliford, Susan
Birch**



May 2013 Math Sl:

Introducing the IB Diploma Programme Marc Abrioux, Jill Rutherford, 2013-02-14 Schools wishing to introduce the IB diploma programme are faced with major investment in terms of time effort and money in order to become authorised This manual is a resource for schools already offering the diploma as well as for prospective diploma schools **Secondary Maths in Action** Emma McCrea, 2025-07-11 In *Secondary Maths in Action* experienced curriculum expert and maths teacher Emma McCrea offers insights into the complex task of teaching maths Taking an evidence informed stance Emma first explores the age old question of why we study maths and the important role it plays in our lives and in society Next she examines several pertinent debates in maths those of pupil grouping mastery and gender Finally we are taken on a grand tour of curriculum pedagogy and assessment as the fundamental pillars of great teaching Additionally the book includes four rich case studies revisited throughout the curriculum pedagogy and assessment chapters which help to showcase how these ideas can be applied in various contexts so you can really see what it all looks like In Action *Educational Paths to Mathematics* Uwe Gellert, Joaquim Giménez Rodríguez, Corinne Hahn, Sonia Kafoussi, 2015-05-18 This book offers fresh insight and understanding of the many ways in which children youth and adults may find their paths to mathematics The chapters of the volume offer and analyse promising new ways into mathematics The focus is on spaces and modalities of learning dialogue and inquiry embodiment and aesthetic experience information and communication technology and on the use of mathematics in public communication The chapters present new mathematical activities and conceptions enriching the repertoire of mathematics education practices Critical commentaries discuss the innovative potential of the new approaches to the teaching and learning of mathematics As a consequence the commentaries point to requirements and open issues in the field of research in mathematics education The volume is remarkably international Teachers and researchers from 14 countries authored 21 chapters and 7 commentaries The reader is invited to reflect on the particular effect of presenting avenues to mathematics contrived in diverse national settings in which the praxis of mathematics education might look different compared to what happens in the reader's place The book starts a series of sourcebooks edited by CIEAEM the Commission Internationale pour l'Etude et l'Amélioration de l'Enseignement des Mathématiques International Commission for the Study and Improvement of Mathematics Education **Educational Psychology** Tony Cline, Anthea Gulliford, Susan Birch, 2023-07-27 Now in its third edition *Educational Psychology* offers a comprehensive overview of how key advances in social developmental and cognitive psychology impact upon the role of educational psychologists working today Written by leading researchers the book also explores controversies and dilemmas in both research and practice providing students with a balanced and cutting edge introduction to both the field and the profession Fully revised throughout and with a new chapter exploring how educational psychologists work with schools to support children and young people's mental health this third edition aims to encourage students to integrate their understanding of core psychological disciplines as well as to

consider what evidence informed practice really means Organised into two broad sections related to learning and to social emotional and mental health the book features a selection of vignettes from educational psychologists working in a range of contexts as well as tasks and scenarios to support a problem orientated approach to study By integrating both research and everyday practice the book is unique in engaging a critical appreciation of both the possibilities and limitations of educational psychology It is the ideal book for any student wishing to engage with this important and evolving field of study

Mathematics in Early Years Education Ann Montague-Smith,Tony Cotton,Alice Hansen,Alison Price,2017-10-09 This fourth edition of the bestselling Mathematics in Early Years Education provides an accessible introduction to the teaching of mathematics in the early years Covering all areas of mathematics number and counting calculation pattern shape measures and data handling it provides a wide range of practical activities and guidance on how to support young children s mathematical development There is also guidance on managing the transition to KS1 and a strong emphasis throughout on creating home links and working in partnership with parents This new edition has been fully updated to incorporate the latest research and thinking in this area and includes why mathematics is important as a way of making sense of the world how attitudes to mathematics can influence teaching and learning how children learn mathematics and what they are capable of learning how technology can support maths teaching maths phobia and the impact society has on maths teaching material on sorting matching and handling data the importance of educating about finance in today s world ideas for observation and questioning to assess children s understanding examples of planned activities suggestions for language development assessment criteria This textbook is ideal for those training to be teachers through an undergraduate or PGCE route those training for Early Years Professional Status and those studying early childhood on foundation or honours degrees as well as parents looking to explore how their young children learn mathematics This will be an essential text for any early years practitioner looking to make mathematics interesting exciting and engaging in their classroom

Data Fusion

Mathematics Jitendra R. Raol,2015-08-27 Fills the Existing Gap of Mathematics for Data FusionData fusion DF combines large amounts of information from a variety of sources and fuses this data algorithmically logically and if required intelligently using artificial intelligence AI Also known as sensor data fusion SDF the DF fusion system is an important component for use in va

Mathematical Models for Neglected Tropical Diseases: Essential Tools for Control and Elimination, Part B ,2016-10-16 Mathematic Modelling Improving the Implementation Monitoring and Evaluation of Interventions Part B the latest volume in the Advances in Parasitology series contains comprehensive and up to date reviews in the field of mathematic modeling and its implementation within parasitology The series includes medical studies of parasites of major influence such as Plasmodium falciparum and trypanosomes along with reviews of more traditional areas such as zoology taxonomy and life history all of which shape current thinking and applications Informs and updates on all the latest developments in mathematic modeling Contains contributions from leading authorities and industry experts Latest

installment in the Advances in Parasitology series

Approximate Number System and Mathematics Jingguang

Li,Xinlin Zhou,Marcus Lindskog,2019-11-25 Humans process quantity information without the aid of language or symbols to guide a variety of everyday life decisions The cognitive system that supports this intuitive skill is often referred to as the approximate number system ANS It has been argued that the ANS serves as the foundation of the formal symbolic number system mathematics Abundant empirical evidence is supportive of this view acuity of the ANS is positively correlated with symbolic math performance training of the ANS may cause improvements in symbolic math performance and the ANS and symbolic number processing may share a common neural underpinning However recently several theories and empirical data cast doubt on the role of the ANS in symbolic math processing This e book aims to advance our understanding of the underlying mechanisms of the overlap between the ANS and mathematics

Overview Of Gravitational Waves, An: Theory, Sources And Detection Gerard Auger,Eric Plagnol,2017-02-15 This book describes detection techniques used to search for and analyze gravitational waves GW It covers the whole domain of GW science starting from the theory and ending with the experimental techniques both present and future used to detect them The theoretical sections of the book address the theory of general relativity and of GW followed by the theory of GW detection The various sources of GW are described as well as the methods used to analyse them and to extract their physical parameters It includes an analysis of the consequences of GW observations in terms of astrophysics as well as a description of the different detectors that exist and that are planned for the future With the recent announcement of GW detection and the first results from LISA Pathfinder this book will allow non specialists to understand the present status of the field and the future of gravitational wave science

The Search for Justice Kumari Jayawardena,Kishali Pinto-Jayawardena,2016-11-21 The Sexual Violence and Impunity in South Asia research project coordinated by Zubaan and supported by the International Development Research Centre brings together for the first time in the region a vast body of knowledge on this important yet silenced subject Six country volumes one each on Bangladesh Nepal Pakistan Sri Lanka and two on India as well as two standalone volumes comprising over fifty research papers and two book length studies detail the histories of sexual violence and look at the systemic institutional societal individual and community structures that work together to perpetuate impunity for perpetrators The essays in this volume examine history and contemporary politics to understand the root causes of sexual violence in Sri Lanka They look at the polarization created around ethnic and linguistic identities during the three decades of ethnic conflict but also scrutinize the routine violence of communities towards their own women in daily life The authors argue that in this transitional post war phase Sri Lankan women must not only be treated as victims but as agents of change The writers highlight a hitherto unaddressed aspect of sexual violence that of the structures that enable impunity on the part of perpetrators be they security personnel and paramilitary forces members of armed rebel groups gangs local politicians and police or ordinary citizens including close family members They demonstrate how impunity for perpetrators is both a failure of the formal justice

process and a product of individual community and social conditions and indeed the choices that victims and families make that promote silence over truth At the end of more than a quarter century of conflict that has left some 100 000 dead 50 000 women headed households struggling to survive as well as countless victims and survivors of sexual violence the calls for justice can no longer be ignored

Reviewing **May 2013 Math Sl**: Unlocking the Spellbinding Force of Linguistics

In a fast-paced world fueled by information and interconnectivity, the spellbinding force of linguistics has acquired newfound prominence. Its capacity to evoke emotions, stimulate contemplation, and stimulate metamorphosis is truly astonishing. Within the pages of "**May 2013 Math Sl**," an enthralling opus penned by a highly acclaimed wordsmith, readers set about an immersive expedition to unravel the intricate significance of language and its indelible imprint on our lives. Throughout this assessment, we shall delve into the book's central motifs, appraise its distinctive narrative style, and gauge its overarching influence on the minds of its readers.

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