

LIFE SCIENCES GRADE 12 - PAPER 2
(Answers from past Assessment Guidelines)

MEIOSIS

STRUCTURE AND ARRANGEMENT OF CHROMOSOMES IN A NORMAL HUMAN KARYOTYPE

- Each chromosome comprises two chromatids✓
- held together by a centromere✓
- There are 23 pairs✓/46 chromosomes in
- human somatic cells✓/body cells
- which are arranged into homologous pairs✓
- that are similar in length✓
- carry genes for the same characteristics✓
- have alleles of a particular gene at the same loci✓and
- have the same centromere position✓
- Each somatic cell has 22 pairs/44 autosomes✓and
- a pair/2 gonosomes✓/sex chromosomes/X and Y chromosomes
- Autosomes are arranged in pairs from largest to smallest✓ in a karyotype
- Males have XY chromosomes✓
- Females have XX chromosomes✓
- The X chromosome is larger than the Y chromosome✓

BEHAVIOUR OF THE CHROMOSOMES DURING THE DIFFERENT PHASES OF MEIOSIS I

- During prophase✓ I
- chromosomes pair✓ up/homologous pairs /bivalents form
- Crossing over✓/exchange of genetic material occurs
- between chromatids✓/adjacent chromosome pairs
- During metaphase✓ I of meiosis
- homologous chromosomes✓/chromosome pairs are arranged
- at the equator✓ of the cell
- in a random✓ way
- with the chromosome attached to the spindle fibre✓
- During anaphase✓ I
- chromosome pairs separate✓/chromosomes move to opposite poles
- During telophase✓ I
- the chromosomes reach the poles of the cell✓

EVENTS THAT LEAD TO DOWN SYNDROME

- Non-disjunction occurred✓./A homologous pair of chromosomes
- at position 21✓
- failed to separate✓
- during anaphase✓
- resulting in one gamete with 24 chromosomes✓ / an extra chromosome /
- chromosomes at position 21
- The fertilisation of this gamete with a normal gamete✓/gamete
- with 23 chromosomes /1 chromosome at position 21
- results in a zygote with 47 chromosomes✓
- There are 3 chromosomes✓/an extra chromosome at position 21/ this is Trisomy 21

Essay Life Science Mindset 12

Rachel S Tattersall



Essay Life Science Mindset 12:

Mapping Scientific Method Gita Chadha, Renny Thomas, 2022-07-19 This volume explores how the scientific method enters and determines the dominant methodologies of various modern academic disciplines. It highlights the ways in which practitioners from different disciplinary backgrounds—the humanities, the natural sciences, and the social sciences—engage with the scientific method in their own disciplines. The book maps the discourse within each of the disciplines that critiques the scientific method from different social locations in order to argue for more complex and nuanced approaches in methodology. It also investigates the connections between the method and the structures of power and domination which exist within these disciplines. In the process, it offers a new way of thinking about the philosophy of the scientific method. Part of the Science and Technology Studies series, this volume is the first of its kind in the South Asian context to debate scientific methods and address questions by scholars based in the global south. It will be useful to students and practitioners of science, humanities, social sciences, philosophy of science, and philosophy of social science. Research scholars from these disciplines, especially those engaging in interdisciplinary research, will also benefit from this volume. *History of Intellectual Culture* 3/2024

Charlotte A. Lerg, Johan Östling, Jana Weiß, Anne Kwaschik, Claudia Roesch, 2024-10-21 The third issue of the yearbook *History of Intellectual Culture* (HIC) devotes a thematic section to experimental spaces for knowledge production. The articles in this section investigate the role of experimental environments as sites for knowledge production during the long nineteenth century, thereby extending the scope beyond the confines of traditional academic institutions such as academies, laboratories, and universities. By focusing on intentional communities, colonial gardens, agricultural colonies, and artistic colonies as experimental spaces, the authors investigate the intertwined social, natural, and aesthetic aspects of environments. An overarching aim is to develop a distinct perspective rooted in the history of knowledge wherein experiments are conceptualized both as a category employed by the historical actors and as a methodological concept. In addition, the third issue comprises several individual papers covering a wide range of topics, stretching from the U.S. patent system in the 1930s and anti-intellectualism in interwar Britain to the cultural translation of knowledge in the wake of the Holocaust and the circulation of economic knowledge in postwar Sweden. The issue also contains several theoretical, historiographical, and methodological interventions and reflections, including a conversation on decolonizing knowledge in academia and beyond.

The Happiness Problem Sam Wren-Lewis, 2019-11-28 We appear to have more control over our lives than ever before. If we could get things right—the perfect job, relationship, family, body, and mind—then we'd be happy. With enough economic growth and technological innovation, we could cure all societal ills. *The Happiness Problem* shows that this way of thinking is too simplistic and can even be harmful: no matter how much progress we make, we will still be vulnerable to disappointment, loss, and suffering. The things we do to make ourselves happy are merely the tip of the iceberg. Sam Wren-Lewis offers an alternative process that acknowledges insecurity and embraces uncertainty. Drawing on our psychological capacities for

curiosity and compassion he proposes that we can connect with and gain a deeper understanding of the personal and social challenges that define our time

Best Practices in Literacy Instruction Lesley Mandel Morrow, Ernest Morrell, Heather Kenyon Casey, 2023-05-30 This authoritative text and PreK 12 teacher resource is now in a substantially revised seventh edition with 80% new material foregrounding advances in inclusive equitable instruction Teachers are guided through every major component of reading as well as assessment motivation teaching bilingual learners strengthening connections with families and communities and more The book presents principles and strategies for teaching literature and nonfiction texts organizing and differentiating instruction supporting struggling readers and promoting digital literacy Pedagogical features include chapter opening bulleted previews of key points reviews of the research evidence recommendations for best practices in action with examples from exemplary classrooms and end of chapter engagement activities New to This Edition Chapter on culturally responsive teaching plus more attention to social justice and equity throughout Chapter on supporting students in the invisible middle Important new focus on social and emotional learning SEL All chapters thoroughly revised or rewritten to reflect current research theory and instructional practices

Learning to Succeed in Science Saima Salehjee, Mike Watts, 2023-06-29 This book offers a positive and compelling exploration of how young south Asian women can be encouraged to study science further and to consider STEM as a career Drawing together both intersectional and personal perspectives the book celebrates south Asian culture sharing the stories of these individuals their multifaceted identities aspirations and successes At the micro level an intersectional analysis reveals complicated identity negotiations of being young female a science orientated student imigr Muslim a daughter and a sister as well as how these identities might interact nest and shift The chapters build on the authors previous work in science education developing models of science identity Sci ID and women s engagement with the study of science and their aspirations for a science based career

Creating Digital Literacy Spaces for Multilingual Writers Joel Bloch, 2021-01-27 This book argues for the value of digital literacy in the multilingual writing classroom Against the background of huge changes in literacy practices prompted by online communication and a growing acceptance of a broader definition of academic literacy that encompasses multimodality the book examines the relationship between digital and print literacies and addresses the design of literacy spaces for multilingual classrooms The author critically evaluates the latest developments in the use of technology in multilingual writing spaces and focuses on the role of teachers in their design it also addresses areas that are not often discussed in relation to multilingual students from blogging to publishing and intellectual property The book will help teachers meet the challenges created by rapidly shifting technology as well as making an innovative contribution to research on multilingual writing classrooms

The Christian Science Monitor Index ,1983 **Library Literature & Information Science** ,2009 An index to library and information science literature Midstream ,1983 **New Scientist** ,2005 **Future Survey Annual** ,1990 Choice ,2002 Sociological Abstracts ,2004-04 **Arts & Humanities**

Citation Index ,2003 Environmental Issues and Sustainable Futures Michael Marien,1996 This guidebook will change the way you think about environmental issues and the need for a sustainable future It knits together 450 abstracts selected from recent issues of Future Survey and Future Survey Annual The essential books and reports reviewed here were written by environmentalists futurists social scientists biologists journalists and politicians The categories are environmental issues toward sustainability and politics and planning The guide has five purposes 1 to record and highlight important books and reports on environment and sustainability published in recent years 2 to provide an illuminating taxonomy that suggests new pathways for action and analysis 3 to sketch a map of who says what about the most important environmental issues and related policy proposals 4 to offer guidance for the beginning student 5 to demonstrate the urgency of environmental issues and the worldwide quest for a sustainable future *Current Index to Journals in Education* ,1992 *Index de Périodiques Canadiens* ,2002 Fuse Magazine ,1997 *The Standard Periodical Directory* ,2001 **The Philosopher's Index** ,2008
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