

**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

# Life Sciences Paper 1grade1

**International Atomic Energy Agency**

A red circular graphic with a gradient, appearing as a stylized sun or a lens flare, positioned to the right of the IAEA text bar.

## **Life Sciences Paper 1grade1:**

*The Mad Scientist teaches: Life science* Experiland,2010-09-23 Life science also known as biology consists of all fields of science that involve the scientific study of living organisms like plants animals and human beings and their vital processes Life is all around us from gigantic whales that live in the oceans to tiny germs that crawl around on your computer keyboard Life Science explores the origins evolution and expansion of life in all its forms Biologists learn how living things work how they interact with one another and how they evolve The 64 projects contained in this science experiment e book cover a wide range of Life Science topics from Botany Zoology to Human anatomy Ecology there are even experiments on mycology and entomology all designed for young students from grade 1 to 8 With this book you are sure to find a project that interests you When you are interested in a certain science topic you will have more fun and learn more too With the help of this book you will construct many weird wonderful and wacky experiments that you can have hours of fun with Amongst many others you will grow plants in your own hydroponic garden study how the amount of leaves affects the growth of a plant to learn about photosynthesis colour a white flower with food colorant to experiment with capillary action and create a device to see how much air can your lungs can hold Other fun experiments include Mummifying an orange studying if green plants produce oxygen faster in stronger sunlight testing if Vitamin E can slow down the aging process grafting two separate types of plants together using ordinary household items as food preservatives testing how much Vitamin C is in fruit juice building your own biosphere studying how ants communicate to find their food making a box trap to capture nocturnal insects mapping the positions of tastes of you tongue testing your friends reflexes with the knee reflex test making a device for listening to your heart making a Snellen chart to test your friends eyesight a Von Frey device a colourful fungus garden a Hummingbird feeder and many many more When making these gadgets you ll discover that science is a part of every object in our daily lives and who knows maybe someday you will become a famous inventor too Science can be real simple and is actually only about understanding the world you live in Science certainly does not need to be complicated formulas heavy text books and geeky guys in white lab coats with thick glasses Science experiments are an awesome part of science that allows you to engage in cool and exciting hands on learning experiences that you are sure to enjoy and remember By working through the science experiments in this book you will learn about science in the best possible way by doing things yourself Designed with safety in mind most of the items you will need for the experiments such as jars aluminium foil scissors and sticky tape you can find around your home Others such as magnets lenses or a compass you will be able to buy quite cheaply at a hobby shop or hardware store

**X-kit Fet G11 Life Sciences** Clitheroe, F,2010     *Life Sciences* Amy Bain,Janet Richer,Janet Weckman,2001-05-15 Everything you need to create exciting thematic science units can be found in these handy guides Developed for educators who want to take an integrated approach these teaching kits contain resource lists reading selections and activities that can be easily pulled together for units on virtually any science topic Arranged by subject each

book lists key scientific concepts for primary intermediate and upper level learners and links them to specific chapters where resources for teaching those concepts appear Chapters identify and describe comprehensive teaching resources nonfiction and related fiction reading selections then detail hands on science and extension activities that help students learn the scientific method and build learning across the curriculum A final section helps you locate helpful experiment books and appropriate journals Web sites agencies and related organizations      *Skill-Building Science, Grades 1 - 2*

Wheeler,2006-12-04 Hands on investigations give scientists in grades 1 2 the skills they need for success Skill Building Science includes lessons activities and writing exercises on physical science earth science and life science Biographies of scientists with accompanying activities increase student awareness of scientist as an occupation This 128 page book includes reproducibles aligns with state national and Canadian provincial standards and supports National Science Education

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*Course of Study in Elementary Science for Grades 1-2* Gerald Spellman Craig,1927      *Parliamentary Papers* Great Britain.

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**10th-14th, 16th-19th, 22nd-25th, 35th, 39th, ed** sir George Christopher T. Bartley,1884      **Digest** ,1904      **Literary**

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