

Grade 12 Life Sciences: Exam Preparation & Revision Guide

Grade 12 | Life Sciences | Study Guide | 2024

Free Study Resources for South African Matric Learners

1. Paper 1 Key Topics

- Meiosis: cell division producing gametes; 4 haploid cells; genetic variation
- Genetics: Mendel's laws; monohybrid/dihybrid crosses; codominance; sex-linkage
- DNA and RNA: structure (double helix), base pairing, replication, transcription, translation
- Human reproduction: male and female systems; fertilisation; development; birth control
- Nervous system: neurons, synapses, reflex arcs, human brain; drugs and nervous system
- Sense organs: eye and ear structure and function

2. Paper 2 Key Topics

- Photosynthesis: light reactions (thylakoid) and Calvin cycle (stroma)
- Respiration: glycolysis, Krebs cycle, electron transport chain; aerobic vs anaerobic
- Homeostasis: body temperature, blood glucose (insulin/glucagon), water balance
- Excretion: kidney structure (nephron); urine formation; liver (detoxification)
- Evolution: natural selection; evidence (fossils, comparative anatomy, biogeography)
- Human evolution: Australopithecus -> Homo habilis -> Homo erectus -> Homo sapiens

3. Drawing Tips

- Use pencil; ruler for labels and lines; do NOT shade (unless specified)
- Label lines must touch the structure being labelled; do not cross
- Title and magnification/actual size must be stated
- Cells must be neat and proportional to each other
- For diagrams of stages (mitosis/meiosis): show chromosomes clearly

4. Answering Genetics Questions

- Write the genotype key FIRST (e.g. T = tall, t = short)
- State the phenotype ratio (3 tall : 1 short) AND genotype ratio
- For sex-linked traits: X^A for dominant allele; X^a for recessive; Y has no allele
- Codominance: both alleles expressed; use different letters (C^R = red, C^W = white)
- Punnett square: always 4 boxes for monohybrid; 16 for dihybrid

TIP For genetics exam questions: always work out the cross step by step. Write parental genotypes, gametes, Punnett square, offspring genotypes, phenotypic ratio. Show ALL steps for full marks.