

THE **ANSWER** SERIES

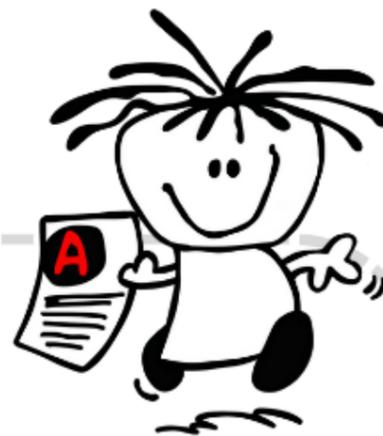
ATP & LESSON PLANNER

CONTENT, TRACKER & RESOURCES

GRADE

12

Physical Sciences



A **one-stop-teaching-tool** created by combining:

- the official DBE ATP
- The **Answer Series** Physical Sciences Class Text & Study Guide
- **TAS** resources
- curated online resources
- shared resources from our **TAS** WhatsApp Teacher Community

2026



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ACADEMIC WEEKS	CAPS TOPIC	CORE CONTENT & PAGE NUMBERS <i>Based on TAS Gr 12 PS 3-in-1 Class Text & Study Guide</i>		SUGGESTED EXERCISES <i>From TAS Gr 12 PS Class Text & Study Guide</i>	POSSIBLE PRACTICAL TASKS / CONSOLIDATION	DATE COMPLETED	
WEEK 1 14 – 16 Jan	MECHANICS 18 school days PAPER 1: 65 marks	Momentum and Impulse: What is momentum?	p. 17 – 18	p. 22: Q1 & Q2	- Formal Practical: Conservation of linear momentum - Example practical and memo		
		Vector nature of momentum	p. 18	p. 22: Q1.2 & Q3.2	Summary on Impulse and Momentum here		
		Newton II and the relationship between F_{net} and Δp	p. 19				
		Calculating Δp and F_{net} for different types of motion	p. 19 – 21	p. 22: Q3 & Q4 p. 63, 64: Q9 – Q12			
WEEK 2 19 – 23 Jan		What is impulse?					
		Impulse-Momentum theorem	p. 22 – 24	p. 26: Q1 & Q2 p. 35: Q1.1 & Q1.2 p. 63, 64: Q9 – Q12			
		Practical (<i>safety</i>) application of the impulse-p theorem	p. 24 – 26	p. 26: Q2.4	Watch the first 3 min 22 s of this video on impulse & momentum		
		Conservation of Momentum: Important terms	p. 26	p. 30: Q1			
		Law of Conservation of linear Momentum	p. 27	p. 30: Q2, Q3 & Q4.2 p. 64: Q13 – Q15, Q17.1 & Q18	- Watch this video on conservation of momentum - Simulations on conservation of momentum here & here		
		Elastic and inelastic collisions	p. 27 – 28	p. 30: Q4 p. 64: Q16 – Q18			
WEEK 3 26 – 30 Jan		Application: collision of two objects along same straight line	p. 28 – 30		- Conservation of momentum during collisions sims: here & here		
		Vertical projectile motion: Description of projectile motion Equations of motion	p. 31 – 32	p. 35: Q1.3 & Q1.4 p. 36: Q2 & Q3 p. 25, 26: Q19 – Q29	Formal Practical (Gr 11 p. 1.26 – 1.27): Determine the acceleration due to gravity		
	Representation of 3 different types of projectile motion	p. 33 – 35		Summary on Vertical Projectile Motion here			
	Revision of graphs; Graphs of motion for vertical motion: - position (y) - time (Δt) graph - velocity (v) - time (Δt) graph - acceleration (a) - time (Δt) graph Give equations for the y- Δt , v- Δt graphs	p. 36 – 39	p. 41: Q1 & Q2 p. 65, 66: Q20.4, Q23.2, Q25.4, Q27.1 & Q29.5				
WEEK 4 2 – 6 Feb	<i>Take note:</i> use y- Δt and v- Δt graphs to: - determine y, Δy , v, a - describe motion of a projectile in words	p. 38 – 41	p. 41: Q2 p. 66: Q28		<p>NOTE Not all shared resources are TAS creations – some are shared contributions from our Teacher WhatsApp group.</p>		
	Bouncing ball: graphs, calculations, descriptions	p. 41 – 44	p. 43, 44: Q1; p. 66, 67: Q30				



WEEK 5 9 – 13 Feb	MATTER & MATERIALS 25 school days PAPER 2: 58 marks	Organic Chemistry: The origin of organic compounds; the carbon C-atom (C)	p. 70 – 71		Summary on Organic Chemistry here
		Some homologous series and their functional groups	p. 71 – 72		
		Hydrocarbons: Saturated and unsaturated	p. 72		
		The different homologous series: formula and names of alkanes, alkenes, haloalkanes, alcohols, aldehydes, ketones, carboxylic acids, esters	p. 73 – 80	p. 84: Q1.3 – Q1.5, Q2.3 – Q2.5 p. 85: Q3 & Q4 p. 126: Q1, Q3 & Q4.1 p. 127: Q7.1 & Q8	- Formal Practical p. 94 – 95: Preparation of 3 esters - Preparation of esters: PRAC TEST & MEMO
Nomenclature rules for hydrocarbons (and other homologous series): Steps (<i>apply to max one functional group, two haloalkane functional groups and three alkyl (methyl and ethyl) groups</i>)		p. 81 – 88	p. 84: Q1.1, Q1.2, Q2.1 & Q2.2 p. 85: Q1 & Q2 p. 86: Q1 & Q2 p. 88: Q1 & Q2; p. 126: Q1, Q2 & Q4.2	Use this tool to draw organic structures	
Test for saturated and unsaturated hydrocarbons		p. 101	p. 130: Q21	Watch this video on addition reactions of alkenes; compare reactions: alkene + Br ₂ vs alkane + Br ₂ (p.101)	
Isomers: Chain, Positional, Functional		p. 80 – 81	p. 84: Q1.6 p. 88: Q1.5 & Q2.1.2; p. 127: Q5, Q6 & Q7.2		
Classification of physical properties		p. 88			
Intermolecular forces (revision Gr 11)		p. 88 – 89		Watch this video on intermolecular forces Gr 11	
Factors determining physical properties		p. 88 – 93	p. 92, 93: Q1 & Q2 p. 130: Q22 – Q24	Summary on Physical Properties of organic molecules here	
Combustion (oxidation) reactions			p. 129: Q16		
Esterification	p. 93 – 94	p. 88: Q1.3, Q2.2 p. 126: Q4.3 p. 129: Q18, Q19			
Addition, elimination, substitution reactions: equations and reaction conditions; Addition reactions (<i>of alkenes</i>)	p. 94 – 95	p. 103: Q1 – Q4 p. 127 – 129: Q7.3, Q7.4, Q8.9, Q9 – Q15, Q20			
Elimination reactions (<i>of haloalkanes & alcohols; cracking of alkanes</i>)	p.95 – 97	p. 103: Q2 – Q4 p. 127 – 129: Q9 – Q15, Q17, Q20			
Substitution reactions (<i>of alkanes, haloalkanes, alcohols</i>)	p. 97 – 98	p. 103: Q2 – Q4 p. 127 – 129: Q8.6, Q9 – Q15, Q20			
WEEKS 10 & 11 16 – 27 March	Time for consolidation and revision (10 school days)		Formal Assessments: Control Test (min 100 marks) & Experiment (min 50 marks)		

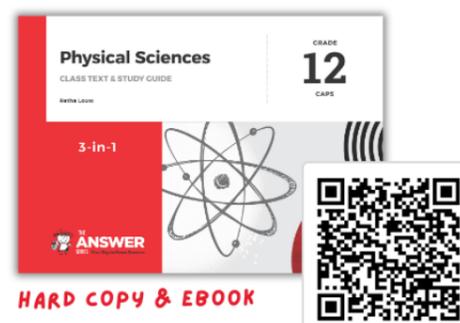
Gr 12 Fisiese Wetenskappe (KABV) 3-in-1



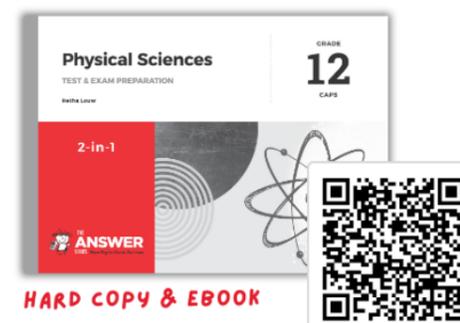
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Gr 12 Physical Sciences (CAPS) 3-in-1



Gr 12 Physical Sciences (CAPS) 2-in-1



CONTENT THAT WILL BE TESTED

PAPER 1: 50 MARKS

- Newton's law of motion
- Momentum and impulse
- Vertical projectile motion

PAPER 2: 50 MARKS

- Organic molecules





ACADEMIC WEEKS	CAPS TOPIC	CORE CONTENT & PAGE NUMBERS <i>Based on TAS Gr 12 PS 3-in-1 Class Text & Study Guide</i>		SUGGESTED EXERCISES <i>From TAS Gr 12 PS Class Text & Study Guide</i>	POSSIBLE PRACTICAL TASKS / CONSOLIDATION	DATE COMPLETED
WEEK 1 8 – 10 April	MECHANICS 13 school days PAPER 1: 65 marks	Work, Energy and Power: Work: Work done by individual forces and net work (<i>in horizontal, vertical and inclined planes</i>)	p. 44 – 50	p. 49 – 50: Q1 – Q3	- Summary on Work, Energy & Power here - Q&A on Work, Energy & Power here - Watch The Answer Series Videos on Work, Energy & Power in Afrikaans & English	
WEEK 2 13 – 17 April		Energy: Mechanical energy, E_k and work done	p. 50 – 51			
		Work-Energy Theorem ($W_{net} = \Delta E_k$)	p. 51 – 55	p. 54: Q1, Q2 p. 68 – 69: Q34 – Q36, Q38 & Q39		
		Gravitational E_p and work done; Conservative and non-conservative forces	p. 55 – 56	p. 58: Q1, Q2.2		
		Principle of conservation of mechanical energy	p. 56 – 58	p. 58: Q2.1 p. 67: Q31 & Q33.1	Ballistic pendulum - simulations on the conservation of mechanical energy here and here	
		Work done by non-conservative (external) forces ($w_{nc} = \Delta E_p + \Delta E_k$)	p. 58	p. 54: Q1 & Q2 p. 67 – 69: Q32, Q33.2, Q37, Q40.1 & Q40.3	Simulation to illustrate the conservation of mechanical energy here	
WEEK 3 20 – 24 April		Power (<i>define and calculate</i>) Power in terms of force and velocity ($P_{ave} = Fv_{ave}$)	p. 59	p. 61: Q1, Q2 p. 69: Q40, Q41		
	Power of borehole pumps; Min & max power	p. 59 – 60	p. 61: Q3			
WEEK 4 28 – 30 April	WAVES, SOUND & LIGHT 8 school days PAPER 1: 15 marks	The Doppler Effect with sound and ultrasound: The Doppler Effect (<i>define</i>); Stationary sound source, stationary listener; Moving sound source, stationary listener; Stationary sound source, moving listener (<i>change in the observed frequency/pitch of the sound ($f_L = \frac{v \pm v_L}{v \pm v_s}$) relative to when both the sound source and listener are stationary;</i>)	p. 135 – 137	p. 137 – 138: Q1 – Q3 p. 141 – 142: Q1 – Q8	- Simulation on the Doppler Effect here - Watch The Answer Series Videos on the Doppler Effect in Afrikaans & English	
Applications of the Doppler Effect (<i>ultrasound; medical and other uses</i>)		p. 138	p. 142: Q8.7			
Doppler Effect and light (<i>blue and red shifts; expanding of universe</i>)		p. 139 – 140	p. 142: Q9, Q10			
WEEK 5 4 – 8 May		Rate and degree of reaction: What is meant by rate of reaction? Collision theory (<i>requirements for a reaction to take place</i>) Factors affecting the rate of a chemical reaction (<i>list 5 factors</i>)	p. 145 – 146	p. 155: Q2 – Q4	<div style="border: 1px solid gray; padding: 5px; display: inline-block;"> NOTE Not all shared resources are TAS creations – some are shared contributions from our Teacher WhatsApp group. </div>	
WEEK 6 11 – 15 May	CHEMICAL CHANGE 20 school days	Nature of reactants; Temperature; Concentration; Reaction surface area of a solid; Catalyst (<i>explain each factor at the hand of the collision theory</i>)	p. 146 – 149	p. 155: Q5		
		Measuring of reaction rate: Reaction rate graphs (<i>experimental techniques; interpretation of reaction rate tables and graphs</i>)	p. 149 – 153	p. 155: Q6	- Formal Practical p. 150 – 152: Determine factors affecting rate of a reaction	
		Mechanism of a chemical reaction and of catalysis: Activation energy; The Maxwell-Boltzmann distribution curve (<i>increase in temperature & concentration</i>); Function of a catalyst	p. 153 – 155	p. 155: Q7		
WEEK 7 18 – 22 May	PAPER 2: 92 marks	Chemical equilibrium: Factors affecting chemical equilibrium: Open and closed systems; Reversible reaction; Dynamic equilibrium; Factors affecting equilibrium	p. 156 – 160	p. 170 – 171: Q2 & Q3	Watch videos on dynamic equilibrium here and here	
		Le Chatelier's Principle (<i>changes in equilibria and interpretation of graphs concerning concentration & reaction rate</i>)	p. 162 – 168	p. 171 – 172: Q3 & Q4.2	- Practical (informal Assessment) p. 161: Factors that influence equilibrium of CoCl_2 in H_2O , NO_2 & N_2O_4 - Watch this video as a visual illustration of the theory	
		The equilibrium constant K_c : Factors affecting K_c .	p. 157 – 158 p. 161 – 162	p. 170 – 171: Q1, Q3 & Q4.1		

WEEK 8 25 – 29 May	CHEMICAL CHANGE (cont.) 20 school days	Application: (Write expression for K_c from an equation; calculation on K_c values; high and low K_c values)	p. 158 – 160	p. 170 – 171: Q1 & Q4.1	
		Acids and bases: Acid-base reactions: Definition (Arrhenius; Lowry-Bronsted); Reaction equations of aqueous solutions	p.172 – 174	p. 176: Q1 & Q2 p. 214: Q26.1	
		Strength of acids and bases	p.174	p. 184: Q1.3 & Q2 p. 213: Q23.1, Q23.2 & Q24.1	Simulation on the strength of acids and bases here
		Concentration of acids and bases	p.174 – 175	p. 184: Q1.3& Q2	
		Conjugate acid-base pairs	p.175 – 176	p.176: Q3 p. 184: Q2.5 & Q2.6 p. 214: Q25.2.2	
WEEK 9 1 – 5 June	PAPER 2: 92 marks	Reactions of acids and bases (neutralisation); Salt hydrolysis; Indicators	p.176 – 179	p. 178: Q1 – Q3 p. 184: Q1.6 p. 213 – 214: Q24.2 & Q25.2.1	
		Acid-base titrations (calculations)	p. 179 – 181	p. 181: Q1 & Q2 p. 214: Q25.2.3, Q26.3 – Q26.5 & Q27	
		The auto-ionisation of water (K_w value)	p. 181 – 182	p. 184: Q3	
		Ionisation constants of acids and bases (K_a and K_b values)	p. 182	p. 184: Q1.2	
		pH scale (calculations; strong & weak acids & bases)	p. 183 – 184	p. 184: Q1.4, Q1.5 & Q1.7 p. 213 – 214: Q23.3, Q24.3 & Q25.1	
WEEKS 10 – 12 8 – 26 June	Time for consolidation and revision (13 school days)			Formal Assessments: June exams (Paper 1: 150 marks & Paper 2: 150 marks)	

CONTENT THAT WILL BE TESTED

The two papers will include all the Gr 12 topics that were covered as well as the following Gr 10 and Gr 11 topics:

PAPER 1

- Newton's laws (Gr 11)
- Electrostatics (Gr 11)
- Electric circuits (Gr 11)

PAPER 2:

- Representing chemical change (Gr 10)
- Intermolecular forces (Gr 11)
- Energy and chemical change (Gr 11)
- Stoichiometry (application only) (Gr 11)

The official DBE ATP does not make provision for enough time for the June exams. Some of the content of week 9 and 10 was therefore moved to week 8 and 9, to also make week 10 available for the exam term.

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WEEK 1 21 – 24 Jul	ELECTRICITY & MAGNETISM 16 school days	Control Test: Discussion and corrections					
		Electric circuits: Potential difference between 2 points; Ohm's Law: Relationship between V, I and R Ohmic and non-ohmic conductors	p. 226 – 228	p. 253 – 254: Q9 & Q11			
		Networks of resistors: Resistors in series; Resistors in parallel; Circuit calculations (<i>excl int resistance</i>)	p. 229 – 230	p. 235: Q2.1 p. 253: Q10.1 – Q10.6			
Internal resistance: Emf and internal resistance of a battery; Relationship between emf and V_{ext} ; Switches in circuits; Calculations with internal resistance ($\epsilon = I(R + r)$)		p. 230 – 233	p. 235 – 236: Q1 – Q6 p. 253: Q10.7 p. 254 – 256: Q12 – Q20	Formal practical p. 236 – 238: Internal resistance of a battery and equivalent resistance of resistors in series & parallel			
Work done (W)/ Energy transferred (E); Power (P) in a circuit		p. 233 – 234	p. 236: Q5 & Q6 p. 256: Q21 – Q24				
WEEK 3 3 – 7 Aug		PAPER 1: 55 marks	Electrodynamics: Electrical machines (generators and motors): Electromagnetic induction; Induced emf	p. 239 – 240	p. 257 – 258: Q29 & Q30	- Videos on an AC generator here & here - Videos on a DC generator here & here - Simulation on a generator here	
			The electric generator: Alternating current (AC) generator; Direct current (DC) generator; Uses of AC and DC generators	p. 240 – 242, p. 250	p. 244 – 245: Q1 – Q4		
			The electric motor: Motor effect; The direct current (DC) motor; Differences between AC generator and DC motor	p. 247 – 250	p. 250 – 251: Q1 – Q4 p. 258: Q31 & Q32		
WEEK 4 11 & 12 Aug			Alternating Current (AC): Average current and potential difference in an AC circuit The root mean square (RMS) of potential difference and current strength; Average power	p. 242 – 245	p. 244 – 245: Q5 – Q7 p. 257: Q25 – Q28	<div style="border: 1px solid gray; padding: 5px; display: inline-block;"> <p>NOTE Not all shared resources are TAS creations – some are shared contributions from our Teacher WhatsApp group.</p> </div>	
			Advantages of alternating current	p. 246 – 247			
WEEK 4 13 & 14 Aug	MATTER & MATERIALS 7 school days	Optical phenomena and properties of materials: Transmission of electromagnetic radiation: EM spectrum; Visible light & UV rays Photoelectric effect: Quantum theory: Max Planck Work function; Threshold frequency & cut-off wavelength	p. 114 – 117	p. 131 – 132: Q1 – Q7	- Watch these videos on the photoelectric effect here and here - Watch a Phet simulation on photoelectric effect here		
WEEK 5 17 – 21 Aug	PAPER 1: 15 marks	Maximum kinetic energy of photoelectrons <i>The photoelectric equation ($\epsilon = W_0 + E_{kmax}$); Calculations</i>	p. 117 – 120	p. 120: Q1 & Q2 p. 132 – 133: Q8 – Q11			
		Nature of light: Wave nature; Particle nature (<i>Explain the effect of intensity and frequency of light on photoelectric effect</i>)	p. 118 – 120	p. 132 – 133: Q8 – Q11			
		Atomic spectra: Emission spectra; Absorption spectra	p. 120 – 125	p. 125: Q1 & Q2 p. 133: Q12 & Q13			



WEEK 6 24 – 28 Aug	CHEMICAL CHANGE 10 school days PAPER 2: 92 marks	Electrochemical reactions: Galvanic (voltaic) cells; Electrolytic cells	p. 186 – 187		Formal practical: Verify the reactions that take place in a galvanic cell (p.192 – 193) and an electrolytic cell (p.200)
		Oxidation numbers: Rules for allocation of oxidation numbers	p. 187 – 191	p. 191 – 192: Q1 – Q4	
		Redox reactions in galvanic cells: Direct & indirect electron transfer (<i>structure and working of the galvanic cell, half reactions, salt bridge, cell notation</i>)	p. 192 – 194	p. 199 – 200: Q1 – Q5 p. 203: Q3.5 & Q3.6 p. 214 – 215: Q28 – Q31	Watch these videos on a galvanic cell here and here
		Standard electrode (cell) potential: Standard conditions; Determining standard electrode potential ($\epsilon_{half-cell}^{\theta}$); (Standard hydrogen electrode as reference electrode) Table of standard reduction potentials; Calculate cell potential/emf ϵ_{cell}^{θ}	p. 194 – 197	p. 199 – 200: Q1 – Q5 p. 215 – 216: Q33 – Q38	
		Equations for oxidation-reduction reactions	p. 197 – 198	p. 199 – 200: Q1 – Q5	
		Relationship between reaction rate and current strength and between ϵ_{cell}^{θ} /emf and equilibrium	p. 198 – 199	p. 200: Q4 & Q5	
WEEK 7 31 Aug – 4 Sept	CHEMICAL CHANGE (cont.) 10 school days PAPER 2: 92 marks	Redox reactions in electrolytic cells: Functioning of an electrolytic cell; Decomposition of copper chloride; Electrolysis of a concentrated saline solution	p. 200 – 201	p. 203: Q1 – Q3	Watch a video on electrolysis of a molten salt here
		Applications of electrolytic cells: Electroplating; Purifying /refining of metals	p. 202 – 203	p. 203: Q3 p. 216: Q39 – Q41	Watch these videos on electroplating here and here
		Electrolysis of a concentrated solution of sodium chloride (salt water)	p. 203	p. 217: Q43	Watch these videos on the electrolysis of brine (NaCl) here and here
WEEK 8 – 10 7 – 23 Sept	Time for consolidation and revision (13 school days)			Formal Assessments: Trial exams (Paper 1: 150 marks & Paper 2: 150 marks) & Experiment (min 50 marks)	



CONTENT THAT WILL BE TESTED

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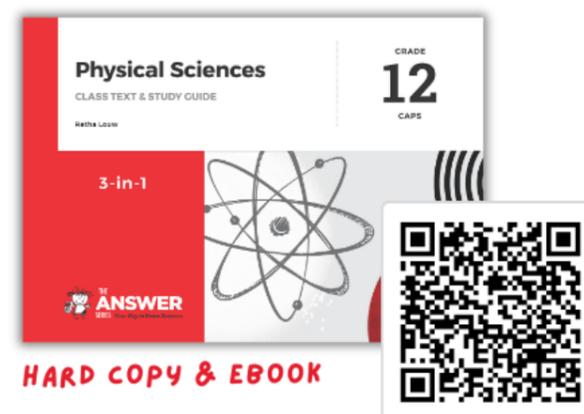
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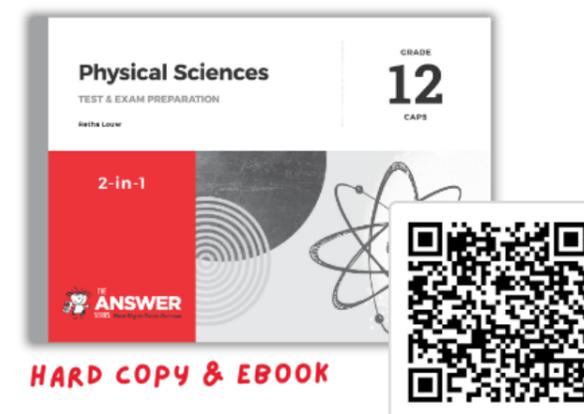
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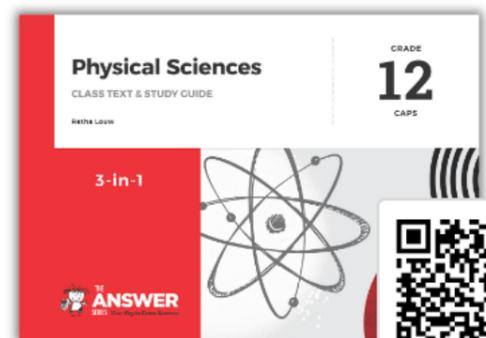


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WEEK 1 6–9 Oct	ALL TOPICS	Trial Examination: Discussion, corrections, and remedial work of trial examination	Trial examination; exercises, exam type questions and past papers in study guides		
WEEK 2–8 12 Oct–30 Nov		Time for consolidation and revision (36 school days)	Final Examination: Paper 1: 150 marks Paper 2: 150 marks		

FINAL EXAMINATION	
PAPER 1 (150 marks)	PAPER 2 (150 marks)
Mechanics (65 marks) <ul style="list-style-type: none"> Momentum and impulse Vertical projectile motion Work, energy & power Newton’s laws (Gr 11) 	Chemical change (92 marks) <ul style="list-style-type: none"> Rate & extent of reaction Chemical equilibrium Acids & bases Representing chemical change (Gr 10) Energy & chemical change (Gr 11) Stoichiometry (application only) (Gr 11)
Waves, Sound & Light (15 marks) <ul style="list-style-type: none"> Doppler effect 	Matter & Materials (58 marks) <ul style="list-style-type: none"> Organic molecules Intermolecular forces (Gr 11)
Electricity & Magnetism (55 marks) <ul style="list-style-type: none"> Electric circuits Electrodynamics Electrostatics (Gr 11) Electric circuits (Gr 11) 	
Matter & Materials (15 marks) <ul style="list-style-type: none"> Optical phenomena and properties of materials 	

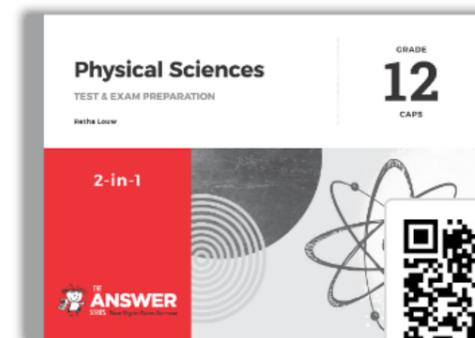
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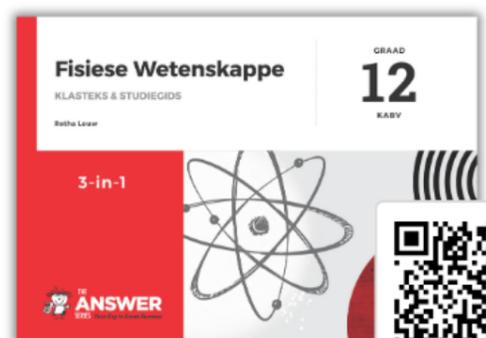
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