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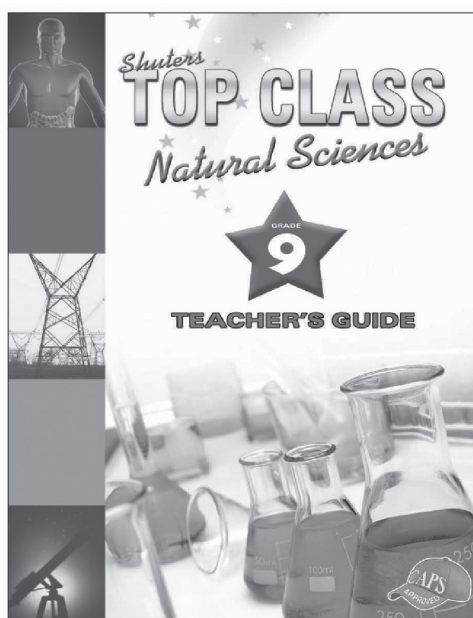
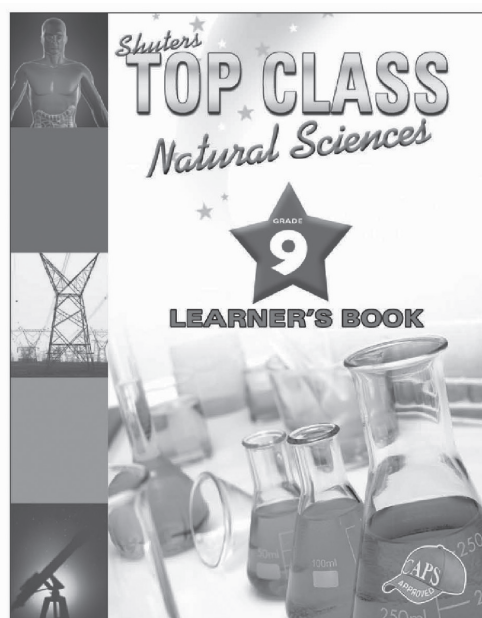
TOP CLASS

Natural Sciences



Grade

9



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TERM 1				
TIME	UNIT	PAGE	RECORDING	REFLECTION
2 weeks 6 hours	Unit 1: Cells as the basic units of life	TG p1-9 LB p2-15		
	• Cell structure	TG p2 LB p2		
	• Activity 1.1 Make a 3-dimensional model of a cell	TG p2 LB p4		
	• Activity 1.2 Draw, label and describe the structure of plant and animal cells	TG p2 LB p5		
	• Differences between plant and animal cells	TG p3 LB p5		
	• Activity 1.3 Identify and explain the main differences between plant and animal cells	TG p3 LB p6		
	• Cells in tissues, organs and systems	TG p4 LB p7		
	• Activity 1.4 Research and write about the history of microscopes	TG p4 LB p9		
	• Activity 1.5 Tabulate the functions of the different parts of a light microscope	TG p5 LB p9		
	• Activity 1.6 Prepare and examine microscope slides of animal and plant cells	TG p6 LB p10		
	• Activity 1.7 Examine and make labelled drawings from micrographs of cells	TG p6 LB p12		
	• Activity 1.8 Research, discuss and write about stem cell research and ethical issues involved	TG p7 LB p12		
2 weeks 6 hours	Unit 2: Systems in the human body	TG p10-16 LB p16-47		
	• Body systems	TG p11 LB p16		
	• Activity 2.1 Build a 2-dimensional model of a human	TG p12 LB p17		
	• The digestive system	TG p12 LB p18		
	• Activity 2.2 Research and write about the health issues related to the digestive system	TG p12 LB p21		
	• The circulatory system	TG p13 LB p21		
	• Activity 2.3 Research and write about the health issues related to the circulatory system	TG p13 LB p25		
	• The respiratory system	TG p13 LB p25		
	• Activity 2.4 Research and write about the health issues related to the respiratory system	TG p13 LB p29		
	• The musculoskeletal system	TG p13 LB p29		

TERM 1				
TIME	UNIT	PAGE	RECORDING	REFLECTION
	<ul style="list-style-type: none"> Activity 2.5 Research and write about the health issues related to the musculoskeletal system 	TG p14 LB p33		
	<ul style="list-style-type: none"> The excretory system 	TG p14 LB p33		
	<ul style="list-style-type: none"> Activity 2.6 Research and write about the health issues related to the excretory system 	TG p14 LB p36		
	<ul style="list-style-type: none"> The nervous system 	TG p14 LB p36		
	<ul style="list-style-type: none"> Activity 2.7 Research and write about the health issues related to the nervous system 	TG p14 LB p40		
	<ul style="list-style-type: none"> The reproductive system 	TG p14 LB p41		
	<ul style="list-style-type: none"> Activity 2.8 Research and write about the health issues related to the reproductive system 	TG p14 LB p45		
2 weeks 6 hours	Unit 3: Human Reproduction	TG p10-16 LB p48-59		
	<ul style="list-style-type: none"> Purpose and puberty 	TG p18 LB p48		
	<ul style="list-style-type: none"> Reproductive organs 	TG p18 LB p50		
	<ul style="list-style-type: none"> Stages of reproduction 	TG p18 LB p52		
	<ul style="list-style-type: none"> Activity 3.1 Label diagrams and explain processes about reproduction 	TG p18 LB p56		
	<ul style="list-style-type: none"> Activity 3.2 Draw a flow chart to show the stages of reproduction 	TG p20 LB p57		
	<ul style="list-style-type: none"> Activity 3.3 Research the effect of harmful substances on foetal development 	TG p21 LB p57		
	<ul style="list-style-type: none"> Activity 3.4 Hold a debate about how scientific knowledge should be used responsibly 	TG p21 LB p57		
1 ½ weeks 3 ½ hours	Unit 4: Circulatory and respiratory systems	TG p24-31 LB p60-71		
	<ul style="list-style-type: none"> Gaseous exchange, circulation and respiration 	TG p24 LB p60		
	<ul style="list-style-type: none"> Activity 4.1 Measure and compare heart rates before and after exercise 	TG p25 LB p67		
	<ul style="list-style-type: none"> Activity 4.2 Draw up a table of differences between arteries, veins and capillaries 	TG p26 LB p68		
	<ul style="list-style-type: none"> Activity 4.3 Label diagrams of the respiratory system 	TG p27 LB p68		
	<ul style="list-style-type: none"> Activity 4.4 Dissect a pig or sheep's heart and lungs 	TG p28 LB p69		
	<ul style="list-style-type: none"> Activity 4.5 Draw up a flow chart of respiration 	TG p29 LB p70		
	<ul style="list-style-type: none"> Activity 4.6 Research and write about a health issue related to the respiratory and circulatory systems 	TG p29 LB p70		

TERM 1				
TIME	UNIT	PAGE	RECORDING	REFLECTION
1 ½ weeks 3 ½ hours	Unit 5: The digestive system	TG p32-38 LB p72-83		
	• Healthy diet	TG p33 LB p72		
	• The alimentary canal and digestion	TG p33 LB p77		
	• Activity 5.1 Conduct a starch test and a grease test on a variety of foods	TG p34 LB p80		
	• Activity 5.2 Discuss a variety of unhealthy dietary components	TG p35 LB p81		
	• Activity 5.3 Compare balanced diets for different cultural traditions	TG p36 LB p82		

TERM 2				
TIME	UNIT	PAGE	RECORDING	REFLECTION
1 week 3 hours	Unit 6: Compounds	TG p39-42 LB p85-90		
	• Review and revise concepts learnt in Grade 8	TG p40 LB p85		
	• The Periodic Table	TG p40 LB p85		
	• Activity 6.1 Memorise the names and symbols of some elements	TG p40 LB p87		
	• Names of compounds	TG p40 LB p88		
	• Activity 6.2 Name and write symbols and draw pictures or make models of several elements and compounds	TG p41 LB p89		
1 week 3 hours	Unit 7: Chemical reactions	TG p43-46 LB p91-95		
	• Chemical equations to represent reactions	TG p43 LB p91		
	• Balanced equations	TG p43 LB p93		
	• Activity 7.1 Name and write symbols and draw pictures or make models of the chemical reactions	TG p44 LB p94		
1 ½ weeks 3 ½ hours	Unit 8: Reactions of metals with oxygen	TG p47-50 LB p96-101		
	• The general reaction of metals with oxygen	TG p48 LB p96		
	• Reaction of iron with oxygen	TG p48 LB p96		
	• Activity 8.1 Investigate the burning of a small amount of steel wool	TG p48 LB p97		
	• Reaction of magnesium with oxygen	TG p49 LB p98		
	• Activity 8.2 Investigate the burning of a small amount of magnesium ribbon	TG p49 LB p98		
	• Formation of rust	TG p50 LB p99		
	• Ways to prevent rusting	TG p50 LB p99		
1 week 3 hours	Unit 9: Reactions of non-metals with oxygen	TG p51-54 LB p102-105		
	• The general reaction of non-metals with oxygen	TG p52 LB p102		
	• Reaction of carbon with oxygen	TG p52 LB p102		
	• Reaction of sulfur with oxygen	TG p52 LB p103		
	• Activity 9.1 Name and write symbols and draw pictures or make models of the chemical reactions	TG p52 LB p103		

TERM 2				
TIME	UNIT	PAGE	RECORDING	REFLECTION
1 week 3 hours	Unit 10: Acids, bases and pH value	TG p55-58 LB p106-111		
	• The concept of the pH value	TG p55 LB p106		
	• Activity 10.1 Investigate the pH of a selection of household substances	TG p56 LB p109		
	• Activity 10.2 Investigate the pH of a selection of household substances and sequence them	TG p57 LB p110		
½ week 1 ½ hours	Unit 11: Reactions of acids with bases	TG p55-58 LB p112-114		
	• Part I: Neutralisation and pH	TG p60 LB p112		
	• Activity 11.1 Investigate neutralisation by reacting vinegar (acid) with bicarbonate of soda (base)	TG p60 LB p113		
1 week 3 hours	• Part II: The general reaction of an acid with a metal oxide (base)	TG p61 LB p114		
	• Activity 11.2 Investigate whether magnesium oxide is an acid or base	TG p61 LB p115		
	• Activity 11.3 Read about the cause and consequences of acid rain and some possible ways to reduce it	TG p61 LB p116		
	• The general reaction of an acid with a metal hydroxide (base)	TG p62 LB p120		
	• Activity 11.4 Investigate the neutralisation of metal hydroxides with dilute hydrochloric acid	TG p62 LB p120		
	• Activity 11.5 Recover the table salt (sodium chloride) from the neutralisation in Activity 11.4	TG p63 LB p121		
½ week 1 ½ hours	• Part III: The general reaction of an acid with a metal carbonate (base)	TG p63 LB p122		
	• Activity 11.6 Investigate neutralisation of metal carbonates with dilute hydrochloric acid and test for the presence of carbon dioxide	TG p64 LB p123		
½ week 1 ½ hours	Unit 12: Reactions of acids with metals	TG p66-69 LB p125-130		
	• The general reaction of an acid with a metal	TG p66 LB p125		
	• Activity 12.1 Investigate reactions of acids with metals	TG p66 LB p126		
	• Activity 12.2 Write a summary of chemical reactions	TG p67 LB p128		
	• Activity 12.3 read about careers in the chemical industry	TG p68 LB p128		

TERM 3				
TIME	UNIT	PAGE	RECORDING	REFLECTION
2 weeks 6 hours	Unit 13: Forces	TG p70-78 LB p132-149		
	• Types of forces	TG p71 LB p132		
	• Contact forces	TG p71 LB p133		
	• Activity 13.1 Investigate mechanical push and pull forces	TG p72 LB p133		
	• Field forces (non-contact forces)	TG p72 LB p137		
	• Gravitational force	TG p72 LB p137		
	• Activity 13.2 Demonstration of gravitational pull by using falling objects	TG p72 LB p138		
	• Activity 13.3 Measure and record the weights of different objects	TG p73 LB p139		
	• Magnetic force	TG p73 LB p140		
	• Activity 13.4 Investigate and record the attraction of substances by a magnet and investigate the materials through which a magnetic force can act	TG p73 LB p141		
	• Activity 13.5 Investigate whether a magnetic force can act on a magnetic substance when separated from the magnet by different materials	TG p74 LB p142		
	• Activity 13.6 Observe the pattern made by a magnet on iron filings	TG p74 LB p142		
	• Activity 13.7 Investigate repulsion and attraction forces of two bar magnets	TG p75 LB p143		
	• Electrostatic force	TG p75 LB p144		
	• Activity 13.8 Investigate how to charge objects by rubbing different materials and objects	TG p76 LB p146		
	• Activity 13.9 Safety precautions during thunder and lightning storms	TG p76 LB p147		
1 week 6 hours	Unit 14: Electric cells as energy systems	TG p79-80 LB p150-153		
	• Electric cells	TG p79 LB p151		
	• Activity 14.1A Making an electric cell in a solution of laboratory chemicals	TG p79 LB p151		
	• Activity 14.1B Making a cell using a lemon	TG p80 LB p152		
1 weeks 6 hours	Unit 15: Resistance	TG p81-84 LB p154-158		
	• Use of resistors	TG p81 LB p154		
	• Factors that affect resistance in a circuit	TG p82 LB p155		

TERM 3				
TIME	UNIT	PAGE	RECORDING	REFLECTION
	• Activity 15.1 Investigate the effect of the length of wire conductor and the resistance it produces	TG p82 LB p156		
	• Activity 15.2 Investigate the effect of the thickness of the wire and the resistance it produces	TG p82 LB p156		
	• Activity 15.3 Investigate the effect of different materials of a conductor and the resistance it produces	TG p83 LB p157		
2 weeks 6 hours	Unit 16: Series and parallel circuits	TG p85-90 LB p159-171		
	• Series circuits	TG p86 LB p159		
	• Activity 16.1 Investigate the effects of connecting more cells in series into the circuit	TG p86 LB p161		
	• Activity 16.2 Measure voltages across resistances in series and across the battery	TG p86 LB p162		
	• Activity 16.3 Measure the current at different parts in a series circuit	TG p87 LB p163		
	• Parallel circuits	TG p87 LB p164		
	• Activity 16.4 Investigate the effects of connecting more cells in parallel	TG p87 LB p167		
	• Activity 16.5 Measure voltages across each resistor in parallel and across the battery	TG p88 LB p168		
	• Activity 16.6 Measure the total current through each of the resistors and from the battery	TG p88 LB p169		
	• Activity 16.7 Identify and record the type of electrical wiring found in homes, cars and toys	TG p89 LB p169		
½ week 1 ½ hours	Unit 17: Safety with electricity	TG p91-93 LB p172-171		
	• Safety practices	TG p91 LB p172		
	• Activity 17.1 Identify safety devices on real circuits or circuit diagrams	TG p92 LB p176		
	• Activity 17.2 Practise connecting a three-pin plug	TG p92 LB p177		
	• Activity 17.3 Draw the plan for the wiring of a house (do not construct a model)	TG p93 LB p178		
1 week 3 hours	Unit 18: Energy and the national electricity grid	TG p94-99 LB p180-186		
	• Electricity generation	TG p95 LB p180		
	• Activity 18.1 Research alternative sources of energy that can be used to drive generators for the national grid	TG p95 LB p183		

TERM 3				
TIME	UNIT	PAGE	RECORDING	REFLECTION
	• Nuclear power in South Africa	TG p98 LB p183		
	• National electricity grid	TG p99 LB p184		
2 weeks 6 hours	Unit 19: Cost of electrical power	TG p100-103 LB p187-195		
	• The cost of power consumption	TG p100 LB p187		
	• Activity 19.1 Find the power rating of some household electrical equipment	TG p101 LB p190		
	• Activity 19.2 Calculate the cost of running an appliance	TG p102 LB p191		
	• Activity 19.3 Calculate how long you could run an appliance on a prepaid card	TG p102 LB p191		
	• Activity 19.4 Careers in power generation	TG p102 LB p193		

TERM 4				
TIME	UNIT	PAGE	RECORDING	REFLECTION
1 week 3 hours	Unit 20: The Earth as a system	TG p104-106 LB p197-200		
	• Spheres of the Earth	TG p105 LB p197		
	• Activity 20.1 Draw and label the layers of the Earth	TG p105 LB p199		
	• Activity 20.2 Write to explain the interactions of Earth's spheres	TG p106 LB p200		
2 weeks 6 hours	Unit 21: Lithosphere	TG p107-111 LB p201-210		
	• Lithosphere	TG p107 LB p201		
	• Activity 21.1 Research and read about the elements and compounds we get from Earth's crust	TG p108 LB p203		
	• The rock cycle	TG p109 LB p204		
	• Activity 21.2 Model the formation of rock layers	TG p109 LB p207		
	• Activity 21.3 Explain the rock cycle	TG p110 LB p208		
	• Activity 21.4 Collect and identify some rock samples	TG p111 LB p209		
2 weeks 6 hours	Unit 22: Mining of mineral resources	TG p112-118 LB p211-222		
	• Extracting ores	TG p113 LB p211		
	• Refining minerals	TG p113 LB p212		
	• Activity 22.1 Read about how the metal is extracted from its ore	TG p114 LB p213		
	• Activity 22.2 Investigate/demonstrate how lead is extracted from its ore lead oxide	TG p115 LB p216		
	• Activity 22.3 Illustrate physical separation processes used in mining	TG p115 LB p217		
	• Mining in South Africa	TG p116 LB p220		
	• Activity 22.4 Research and write about a mining activity in South Africa	TG p117 LB p221		
2 weeks 6 hours	Unit 23: Atmosphere	TG p119-124 LB p223-235		
	• Atmosphere	TG p120 LB p223		
	• Activity 23.1 Draw and write about the layers of the atmosphere	TG p120 LB p229		
	• Activity 23.2 Calculate the temperature at different altitudes	TG p121 LB p229		
	• The greenhouse effect	TG p122 LB p230		
	• Activity 23.3 Model the greenhouse effect	TG p122 LB p233		

TERM 4				
TIME	UNIT	PAGE	RECORDING	REFLECTION
	<ul style="list-style-type: none"> Activity 23.4 Investigate and report on the impact of global warming 	TG p123 LB p234		
1 week 3 hours	Unit 24: Birth, life and death of stars	TG p125-129 LB p236-241		
	<ul style="list-style-type: none"> The birth of a star 	TG p126 LB p237		
	<ul style="list-style-type: none"> Life of a star 	TG p126 LB p238		
	<ul style="list-style-type: none"> Death of a star 	TG p127 LB p239		
	<ul style="list-style-type: none"> Activity 24.1 Observe different coloured stars in the night sky 	TG p127 LB p240		
	<ul style="list-style-type: none"> Activity 24.2 Sequence, explain and present information on the birth, life and death of stars 	TG p127 LB p240		



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