Table of contents

tage	7				4.8	Soil	33
1	State	es of matter			4.9	More about soil	34
	1.1	The particle theory of matter	7		4.10	Fossils	35
	1.2	Boiling, evaporating, and	,		4.11		36
	1.2	condensing	8		4.12	Human fossils	37
	1.3	Questions, evidence, and		5	State	es of matter	
		explanations	9		5.1	The states of matter revisited	38
	1.4	Melting, freezing, and			5.2	Explaining diffusion	39
		subliming	10		5.3	Explaining density	40
	1.5	Energy and changes of state	11		5.4	Explaining gas pressure	41
	1.6	Using particle theory to explain			5.5	Ideas and evidence	42
		dissolving	12		5.6	Doing an investigation	43
	1.7	Planning an investigation	13	,	14-4-	out all assessment to a	
	1.8	Presenting evidence	14	6	Mate	erial properties	
2	Mate	erial properties			6.1	Atoms	44
-	Material properties		15		6.2	Elements and their symbols	45
	2.1	Introducing elements	15		6.3	Discovering the elements	46
	2.2	Metal elements	16		6.4	Organising the elements	47
	2.3	Non-metal elements	17		6.5	Interpreting data from	
	2.4	Making conclusions	10			secondary sources	48
	2.5	from data	18		6.6	Explaining differences between	
	2.5	Metal alloys	19			metals and non-metals	49
	2.6	Material properties	20		6.7	What are compounds?	50
	2.7	Polymers	21		6.8	Making a compound	51
3	Material changes				6.9	Naming compounds and	
	3.1	Acids and alkalis	22			writing formulae	52
	3.2	The pH scale and indicators	23		6.10		F 2
	3.3	Neutralisation	24			and carbonates	53
			24		6.11		54
	3.4	Planning investigations and collecting evidence	25			Mixtures	55
		conecting evidence	23		6.13	Separating mixtures – filtering	
4	The Earth					and decanting	56
	4.1	The structure of the Earth	26		6.14	Separating mixtures – evaporation and distillation	57
	4.2	Igneous rocks	27		6 15	Separating mixtures –	5,
	4.3	Sedimentary rocks	28		0.13	fractional distillation	58
	4.4	Sedimentary rock formation	29		6 16	Separating mixtures –	
	4.5	Metamorphic rocks	30		0.10	chromatography	59
	4.6	Questions, evidence, and			6.17		h
		explanations	31			their ores	60
	4.7	Explaining predictions	32		6.18	What are you made of?	61

7	Material changes				The reactivity series			
	7.1	Chemical reactions	62		10.1	The reactions of metals		
	7.2	Writing word equations	63			with oxygen	83	
	7.3	Corrosion reactions	64		10.2	The reactions of metals		
	7.4	Doing an investigation	65			with water	84	
	7.5	Using reactions to identify			10.3	The reactions of metals		
		chemicals	66			with acids	85	
_					10.4	The reactivity series	86	
8	Mate	Material properties			10.5	Tin in the reactivity series	87	
	8.1	Atomic structure	67		10.6	Metal displacement reactions	88	
	8.2	Finding electrons	68		10.7	Extracting metals from their ores	89	
	8.3	Discovering the nucleus	69		10.8	Writing symbol equations	90	
	8.4	Protons, electrons, and the periodic table	70	11	Maki	ng salts		
	8.5	Proton number, nucleon number, and isotopes	71		11.1	Making salts – acids and metals	91	
	8.6	The Group 1 elements	72		11.2	Making salts – acids		
	8.7	The Group 2 elements	73			and carbonates	92	
	8.8	The Group 7 elements	74		11.3	Making salts – acids and alkalis	93	
	8.9	Looking at secondary data	75		11.4	Making salts – fertilisers	94	
		Periodic trends	76	42	D-4-			
	8.11		70	12		s of reaction	224	
	0.11	inside sub-atomic particles	77			Rates of reaction	95	
		morac sab atomic particles			12.2	Concentration and reaction rate	96	
9	Energy changes				12.3	Temperature and reaction rate	97	
	9.1	Energy changes in chemical			12.4	Surface area and reaction rate	98	
		reactions	78		12.5	Catalysts and reaction rate	99	
	9.2	Investigating fuels	79	Dra	Practice questions		100	
	9.3	Choosing fuels	80	Fla			100	
	9.4	Calculating food energy	81	Exa	m que	stions	112	
	9.5	Investigating endothermic changes	82	Glo	ssary		116	