

Contents

Stage 7

1	States of matter	
1.1	The particle theory of matter	8
1.2	Boiling, evaporating, and condensing	10
1.3	Enquiry: Questions, evidence, and explanations	12
1.4	Melting, freezing, and subliming	14
1.5	Extension: Energy and changes of state	16
1.6	Using particle theory to explain dissolving	18
1.7	Enquiry: Planning an investigation	20
1.8	Enquiry: Presenting evidence	22
1.9	Review	24
2	Material properties	
2.1	Introducing elements	26
2.2	Metal elements	28
2.3	Non-metal elements	30
2.4	Enquiry: Making conclusions from data	32
2.5	Extension: Metal alloys	34
2.6	Material properties	36
2.7	Extension: Polymers	38
2.8	Review	40
3	Material changes	
3.1	Acids and alkalis	42
3.2	The pH scale and indicators	44
3.3	Neutralisation	46
3.4	Enquiry: Planning investigations and collecting evidence	48
3.5	Review	50
4	The Earth	
4.1	The structure of the Earth	52
4.2	Igneous rocks	54
4.3	Sedimentary rocks	56
4.4	Sedimentary rock formation	58
4.5	Metamorphic rocks	60
4.6	Enquiry: Questions, evidence, and explanations: the rock cycle	62
4.7	Enquiry: Using science to explain predictions: volcanoes	64
4.8	Soil	66
4.9	Enquiry: More about soil	68
4.10	Fossils	70
4.11	Estimating the age of the Earth	72
4.12	Extension: Human fossils	74
4.13	Review	76
	Stage 7 Review	78

Stage 8

5	States of matter	
5.1	The states of matter revisited	80
5.2	Explaining diffusion	82
5.3	Explaining density	84
5.4	Explaining gas pressure	86
5.5	Enquiry: Ideas and evidence	88
5.6	Enquiry: Doing an investigation	90
5.7	Review	92
6	Material properties	
6.1	Atoms	94
6.2	Elements and their symbols	96
6.3	Extension: Discovering the elements	98
6.4	Enquiry: Organising the elements	100
6.5	Enquiry: Interpreting data from secondary sources	102
6.6	Explaining differences between metals and non-metals	104
6.7	What are compounds?	106
6.8	Enquiry: Making a compound	108
6.9	Naming compounds and writing formulae	110
6.10	Oxides, hydroxides, sulfates, and carbonates	112
6.11	Enquiry: Chlorides	114
6.12	Mixtures	116
6.13	Enquiry: Separating mixtures – filtering and decanting	118
6.14	Separating mixtures – evaporation and distillation	120
6.15	Extension: Separating mixtures – fractional distillation	122
6.16	Separating mixtures – chromatography	124
6.17	Extension: Separating metals from their ores	126
6.18	Extension: What are you made of?	128
6.19	Review	130
7	Material changes	
7.1	Chemical reactions	132
7.2	Writing word equations	134
7.3	Corrosion reactions	136
7.4	Enquiry: Doing an investigation	138
7.5	Extension: Using reactions to identify chemicals	140
7.6	Review	142
	Stage 8 Review	144

ÚK PdF MU BRNO	
Lokace. 1. PODLAŽÍ	
Př.č. 49769	Sign. U 534 SS ✓

Stage 9

8	Material properties	
8.1	Atomic structure	146
8.2	Enquiry: Finding electrons	148
8.3	Discovering the nucleus	150
8.4	Protons, electrons, and the periodic table	152
8.5	Extension: Proton number, nucleon number, and isotopes	154
8.6	The Group 1 elements	156
8.7	The Group 2 elements	158
8.8	The Group 7 elements	160
8.9	Enquiry: Looking at secondary data – chlorinating water	162
8.10	Periodic trends	164
8.11	Enquiry: How scientists work: inside sub-atomic particles	166
8.11	Review	168
9	Energy changes	
9.1	Energy changes in chemical reactions	170
9.2	Enquiry: Investigating fuels	172
9.3	Extension: Choosing fuels	174
9.4	Extension: Calculating food energy	176
9.5	Enquiry: Investigating endothermic changes	178
9.6	Review	180
10	The reactivity series	
10.1	The reactions of metals with oxygen	182
10.2	The reactions of metals with water	184
10.3	The reactions of metals with acids	186
10.4	The reactivity series	188
10.5	Enquiry: Nickel in the reactivity series	190
10.6	Metal displacement reactions	192
10.7	Using the reactivity series: extracting metals from their ores	194
10.8	Extension: Writing symbol equations	196
10.9	Review	198
11	Making salts	
11.1	Making salts – acids and metals	200
11.2	Making salts – acids and carbonates	202
11.3	Extension: Making salts – acids and alkalis	204
11.4	Extension: Making salts – fertilisers	206
11.5	Review	208
12	Rates of reaction	
12.1	Rates of reaction	210
12.2	Concentration and reaction rate	212
12.3	Temperature and reaction rate	214
12.4	Surface area and reaction rate	216
12.5	Catalysts and reaction rate	218
12.6	Review	220
	Stage 9 Review	222
	Reference pages	224
	Glossary	236
	Index	241