

1 Skills and Processes of Chemistry	1
1.1 Staying Safe Around Matter.....	2
1.2 Laboratory and Reporting Skills.....	16
1.3 Measuring and Recording Significant Data	32
1.4 Analysis of Units and Conversions in Chemistry.....	45
2 The Nature of Matter	59
2.1 Properties of Matter	60
2.2 The Classification of Matter	73
2.3 Separating the Substances of a Mixture	86
2.4 Names and Formulae of Inorganic Compounds.....	96
3 The Mole — The Central Unit of Chemistry	107
3.1 Relative Atomic Mass.....	108
3.2 Introducing the Mole — The Central Unit of Chemistry	115
3.3 The Wheel Model of Mole Conversions	124
3.4 Molar Volume	132
3.5 Composition Analysis — Determining Formulas.....	142
3.6 Molar Concentration	151
4 Expressing and Measuring Chemical Change	161
4.1 Writing and Balancing Chemical Equations —The Magic of Chemistry.....	162
4.2 Classifying Chemical Changes and Predicting Products.....	173
4.3 Another Way to Classify — Identifying Electron Transfer (Extension).....	187
4.4 Energy Changes Associated with Chemical Change — Endothermicity and Exothermicity	198
4.5 Calculating with Chemical Change — Stoichiometry	207
4.6 Stoichiometry in the Real World — Excess/Limiting Amounts, Percentage Yield, and Impurities ...	220
5 A Closer Look at Matter	233
5.1 Early Models of the Atom — Dalton to Rutherford.....	234
5.2 Quantum Theory and the Bohr Model of the Atom	250
5.3 Beyond Bohr — The Quantum Mechanical Model of the Atom (Extension)	261
5.4 Applying Quantum Mechanics to Electrons in Atoms	271
6 Relationships and Patterns in Chemistry	285
6.1 The Development of the Periodic Table	286
6.2 Periodic Trends — Regular Changes in Elemental Properties	299
6.3 Describing Chemical Bonding	311
6.4 Lewis Structure Diagrams.....	324
6.5 The Shape and Behaviour of Molecules (Extension).....	341
7 Solution Chemistry	363
7.1 The Nature of Solutions.....	364
7.2 What Dissolves and What Doesn't — “Like Dissolves Like”.....	372
7.3 Dissociation Equations and Solution Conductivity.....	383
7.4 An Introduction to Titrations.....	393
8 Organic Chemistry	401
8.1 Simple Hydrocarbons and Isomerism	402
8.2 Functional Groups.....	417
8.3 Reactions of Organic Molecules.....	430
Answer Key	445
Glossary	488
Index	495