



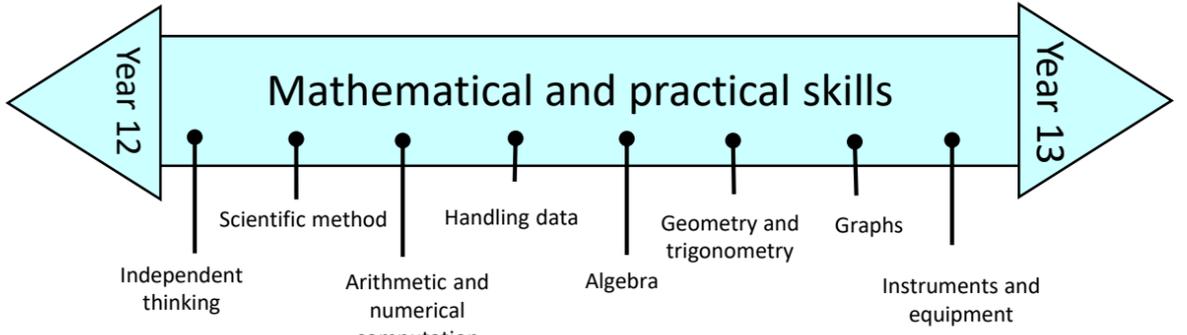
# Chemistry Learning Journey



TRUE LEARNING PARTNERSHIP

- Physical Chemistry
- Inorganic Chemistry
- Organic Chemistry

Exam & Post – 18 Destination



- Long and short answer question practice
- Multiple choice practice
- Practical revision
- Placemats
- Revision lessons

## Preparation for exams

*Use thin layer chromatography*

**Required Practical: Thin layer chromatography**

**Required Practical: Rate of reaction – continuous monitoring**

**Required Practical: Rate of reaction – initial rate method**

## Structure determination

- Carbon NMR
- Proton NMR
- High resolution mass spectrometry
- Chromatography

## Kinetics

- Orders of reaction
- Rate equations
- Arrhenius constant

## Synthesis

- Reagents
- Synthetic routes

## Thermodynamics

- Enthalpy changes
- Born-Haber cycles

## Biochemistry

- Anticancer drugs
- Enzymes and DNA
- Amino acids and proteins

## Polymers

- Biodegradability
- Condensation polymers
- Base properties

## Amines

- Formation

- Lipids
- Biodiesel
- Esters
- Carboxylic acids
- Nucleophilic addition
- Reduction
- Oxidation
- Polarimetry

## Carboxylic acids and derivatives

## Electrochemistry

- Acylation
- Electrode potentials
- Electrochemical series
- Electrochemical cells
- Complex formation
- Variable oxidation states
- Coloured ions
- Catalysis
- Reactions of aqueous ions
- Bonding
- Electrophilic substitution

## Transition metals

**Required Practical: Identifying transition metal ions**

Research and reference

## Aromatics

**Required Practical: Tests for functional groups**

Research to design own method

Makes and records observations

YEAR 2 CONTENT

- Aldehydes and ketones
- Optical isomerism
- Acids and bases

## Aldehydes and ketones

## Optical isomerism

## Acids and bases

- Reduced pressure filtration
- Use melting point apparatus
- Recrystallisation
- Use pH meter
- Set up cells and measure voltages
- Required Practical: pH curves
- Buffers
- Titration
- Weak acids and bases
- pH

## Equilibria

- Equilibrium constant
- Le Chatelier's principle

## Organic analysis

- Identifying functional groups
- Infrared spectroscopy
- Catalysts
- Maxwell-Boltzman distribution
- Collision theory

## Kinetics

**Required Practical: Rate of reaction – temperature change**

Select and use appropriate equipment

- Calorimetry
- Enthalpy change
- Redox equations
- Oxidation states
- Oxidation and reduction

## Energetics

## Alkanes

## Halogenoalkanes

## Alkenes

## Alcohols

- Hess's law
- Bond enthalpies
- Fractional distillation
- Combustion
- Cracking
- Chlorination
- Nucleophilic substitution
- Elimination
- Ozone depletion
- Structure and reactivity
- Addition polymers
- Production
- Elimination
- Oxidation
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- Structure and reactivity
- Addition polymers
- Production
- Elimination
- Oxidation

**Required Practical: Enthalpy change**

Control significant variables

Use software to process data

**Required Practical: Acid/base titration**

Obtain accurate and precise data

Use acid-base indicators

Use of burette and pipette

**Required Practical: Make up a volumetric solution**

Follows written procedures

Use volumetric flask

**Required Practical: Dehydration of an alcohol**

Distillation

**Required Practical: Oxidation of an alcohol**

Risk assessment

Use a water bath

**Required Practical: Tests for anions and cations**

Make accurate observations

- Group 2
- Group 7
- Periodicity
- Bonding
- Amount of substance
- Atomic Structure

## Periodicity

## Bonding

## Amount of substance

## Atomic Structure

YEAR 1 CONTENT

- Reactions and uses of halogens
- Trends
- Periodic table
- Intermolecular forces
- Bond polarity
- Bonding types
- Shapes of molecules
- Balanced equation calculations
- Empirical and molecular formula
- Moles
- Ideal gas equation
- Ionisation energies
- Mass spectrometry
- Fundamental particles