KS3 Learning journey

Partial Edxecel paper 1

Key concepts in Chemistry

Properties of metals
Molecular compounds
Ionic compounds
Ionic bonding
The modern periodic table
Relative atomic mass
Atomic theory
Bonding models
Allotropes of carbon
Covalent bonds
Ionic lattices
Electronic configuration
Mendeleev
Atomic number and isotopes

Separating Mixtures

Distillation
Filtration and crystallization
Pure substances
Drinking water
Chromatography
States of matter

Genetics

Sex inheritance
Meiosis
DNA structure
Genetic inheritance
Human genome project
Variation - mutations

Cells and Control

Reflex arc
Stem cells
Cell cycle
The nervous system
Growth
Mitosis

Key concepts in Biology

Percentage and rate change
Osmosis
Cell transport
Microscopy
Enzymes in digestion
Enzymes
Prokaryotes and Eukaryotes
Specialised cells

Energy

Gravitational energy
Kinetic energy
Energy transfers
Efficiency
Renewable and non-renewable energy

Forces and Motion

Forces and quantities
Vectors and scalars
Distance and velocity time graphs
Resultant forces
Stopping distances
Mass and weight
Momentum
Newton
Acceleration

Overarching concepts in physics

Significant figures
Standard form
Units
Multiples and sub-multiples of units

YEAR 9

Relationships in Ecosystems

Decomposition
Predator Prey
Random Sampling- Quadrats and Transects
Abiotic and Biotic factors
Food chains and webs
Distribution of organisms

Earth & Atmosphere

Climate change
The changing atmosphere
Alternative fuels
The atmosphere today
Earths early atmosphere
Photosynthesis
Plant Cells
Observing cells
Plant minerals
Leaves

Photosynthesis

Respiration & Gas Exchange

Aerobic respiration
Anaerobic respiration
Investigating respiration
Breathing
Exchange of Substances

Block 3

Evolution

Continuous and discontinuous variation
Variation
Evidence for evolution
Genetic engineering
Selective breeding
Theories of evolution- Darwin
Extinction

Metals & Reactivity

Group 7 – the halogens
Metals & oxygen
Metal displacement
Extracting metals
Metals & water
Metals & acids
Group 1 – alkali metals

Block 4

Waves

Wave calculations
Electromagnetic waves
Waves crossing boundaries
Reflection & refraction
Features of waves
Ears and hearing
Infrasound & ultrasound

Block 2

Types of Chemical Reaction

Thermal decomposition
Word equations
Conservation of mass
Combustion
Oxidation

Forces and motion

Mass and weight
Forces and quantities
Vectors and scalars
Distance and velocity time graphs
Stopping distances
Resultant forces
Momentum
Newton
Acceleration

Block 1

8

Acids & Alkali

Neutralisation
Indicators and pH
Making salts
Acids and alkalis

Block 4

Magnetism

Magnetic fields
Electromagnetism

Physical & Chemical Changes

Diffusion
Chemical reactions
States of matter

Electricity

Potential difference
Magnets and magnetic fields
Circuits & current
Series and parallel
Resistance
New technology - homes, hospitals & more

Microbes & Disease

Immune system
Barriers to the body
Pathogens

Reproduction

Adolescence
The menstrual cycle
Development of a fetus
Reproductive systems
Fertilisation and implantation

Block 3

Energy Stores & Transfers

Energy transfer - particles
Conduction & Convection
Energy & Power
Energy & Temperature
Radiation
Energy resources

Nutrition & Digestion

Food tests
Healthy diet
Digestive system
Nutrients
Bacteria and enzymes in digestion

Forces

Representing forces
Identifying forces
Stretching & squashing
Forces at a distance
Drag forces & friction

YEAR 7

Block 1

Separation techniques

Solutions
Filtration
Chromatography
Mixtures
Solubility
Evaporation and distillation

Particle model

Boiling
The particle model
Melting & Freezing
States of matter

Cells & Organisation

Movement of substances
Specialised cells
Observing cells
Cell division
Unicellular organisms
Plant and animal cells

Block 2

Atoms & Elements

Word equations
Chemical formulae
Atoms
Elements
Compounds
Chemical reactions

KS4 BIOLOGY LEARNING JOURNEY

Triple only content

Core practical

Year 7

Understanding and Applying Scientific Skills

Year 11

Stating variables

Writing repeatable methods

Assessing impact of scientific concepts

Calculate - Using formula to manipulate data

Describe patterns in data

Conclusions- Drawing conclusions

Evaluate- Evaluation of scientific concepts

Those in green used as skill assessment template objectives throughout all years

Analyse- Drawing graphs and analysing graphical data

Risk Assessment

Modelling scientific concepts

Analysis of secondary data

Extended writing- Identify, describe, explain, apply and link data and theory

Understanding relationships between science and society

Evaluate- Evaluating data and investigations

Final GCSE exams

Revision and exam practice

Exchange & transport

Factors affecting diffusion

Cellular respiration

Respiration rates

The heart

Circulatory system

Transport and exchange

Coordination and homeostasis

Thermoregulation

Blood glucose control and diabetes

Osmoregulation

Menstrual cycle

Metabolic rate

Hormones

YEAR 11

Revision

Plant structures and their functions

Light intensity and photosynthesis

Absorbing water and minerals

Plant adaptations

Uses of plant hormones

Factors affecting photosynthesis

Photosynthesis

Transpiration and translocation

Plant hormones

Ecosystems and Material cycles

Abiotic and Biotic factors

Quadrats and Transects

Nutrient cycles

Assessing pollution

Ecosystems and energy

Parasites & mutalism

Biodiversity

Decomposition

Health, disease and medicines

Monoclonal antibodies

Antibiotic practical

Antibiotics and vaccines

The immune system

Cardiovascular disease

Health and disease

Physical and chemical barriers

Pathogens

Non-Communicable disease

Natural Selection and genetic modification

Genes in agriculture

Tissue culture

Classification

Theories of evolution- Darwin

Fertilisers and biological control

GM

DNA extraction

Breeds and varieties

Human evolution

Gene mutation

Human genome project

YEAR 10

Revision/ triple content

Multiple and missing alleles

Protein synthesis

Food tests

The Eye

The Brain

Cells and control

Stem cells

Growth

Mitosis

The nervous system

Genetics

Meiosis

DNA

Alleles

Variation

Transport

Active transport

Osmosis in potatoes practical

Diffusion

Osmosis

Enzymes

Enzymes and nutrition

Enzyme action

Enzyme and pH practical

Enzyme activity

Cells

Specialised cells

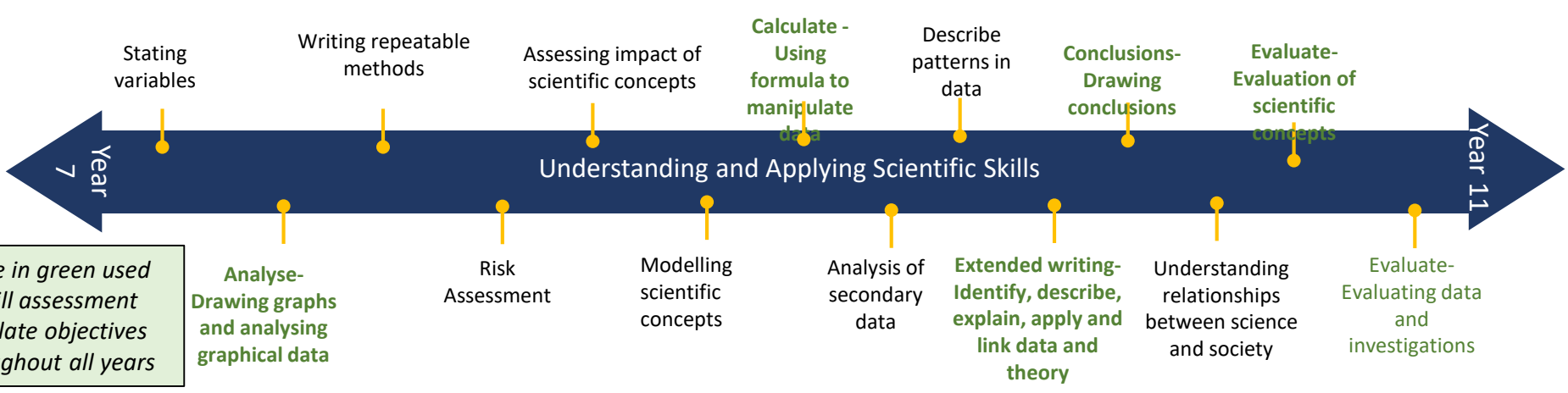
Microscopy

Prokaryotes and Eukaryotes

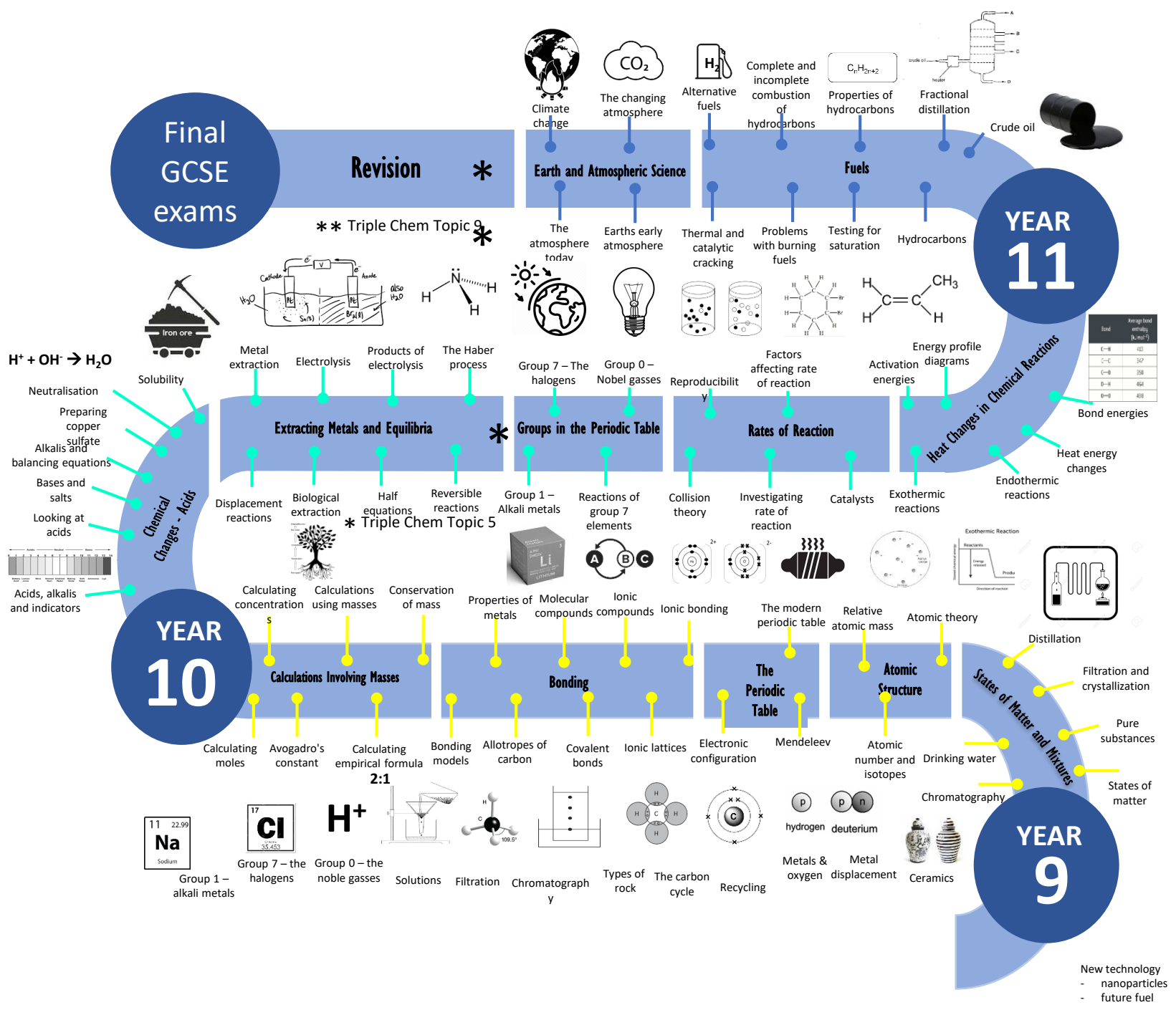
YEAR 9

	Year 7	Year 8
Biology linked KS3 units	Cells and organisation Nutrition and digestion Reproduction Microbes and disease Physical and chemical changes	Respiration and gas exchange Evolution Photosynthesis Relationships in ecosystems

KS4 CHEMISTRY LEARNING JOURNEY



Those in green used as skill assessment template objectives throughout all years



	Year 7	Year 8
Biology linked KS3 units	Separation techniques Particle model Atoms, elements and the periodic table Physical and chemical changes Acids and alkalis	Chemical reactions Energy in reactions Metals and reactivity Global warming Earth and atmosphere

KS4 PHYSICS LEARNING JOURNEY

Triple only content

Core practical

Year 7

Understanding and Applying Scientific Skills

Year 11

Stating variables

Writing repeatable methods

Assessing impact of scientific concepts

Calculate - Using formula to manipulate data

Describe patterns in data

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Evaluate- Evaluation of scientific concepts

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Risk Assessment

Modelling scientific concepts

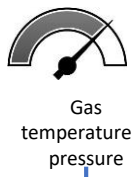
Analysis of secondary data

Extended writing- Identify, describe, explain, apply and link data and theory

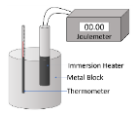
Understanding relationships between science and society

Evaluate- Evaluating data and investigations

Investigating springs



Gas temperature & pressure



Specific heat capacity

Kinetic energy

National grid

Transformers

Final GCSE exams

Revision

Forces and matter

Bending and stretching

Particle Model

Specific latent heat

Density

EM Induction

Transformers and energy

Magnetism

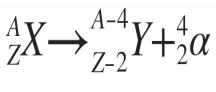
Magnetic forces

Electrom-agnetism

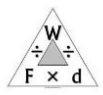
Attraction and repulsion

Magnetic fields

YEAR 11



Beta decay and nuclear equations



Calculating work done

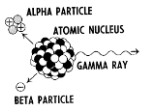
Resolving vectors

Power/Work done relationship

Understanding and calculating half lives

Background radiation

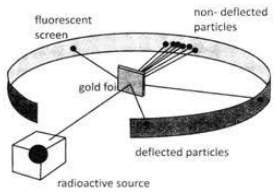
Alpha, beta and gamma



Electrons and orbits

Inside atoms

Atomic models



Radioactivity

Forces Doing Work

Fields

Calculating power

Voltage

Transferring energy

Resistance in circuits

Power

Wiring a plug

Electricity

Current

Resistance

Circuits – parallel and series

Potential difference

Electricity in our homes

AC/DC & electrical safety

Dangers of ionizing radiation

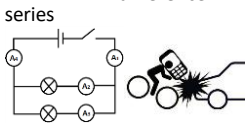
EM radiation dangers

Electromagnetic waves

Ears and hearing

Waves crossing boundaries

Wave calculations



Renewable and non-renewable energy

Efficiency

Energy transfers

Kinetic energy

Gravitational energy

YEAR 10

EM Spectrum

Using the short and long wavelengths

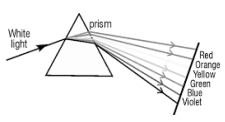
The electromagnetic spectrum

Waves

Infrasound & ultrasound

Reflection & refraction

Features of waves



Crash hazards

Mass and weight

Forces and quantities

Vectors and scalars

Distance and velocity time graphs

Forces and motion

Stopping distances

Resultant forces

Momentum

Newton

Acceleration

Energy

YEAR 9

Physics linked KS3 units	Year 7	Year 8
	Particle model Atoms, Elements and the Periodic Table Forces Energy Stores and Transfers Magnetism Electrical Circuits	Forces and Motion Waves Earth and Atmosphere