

SCIENCE



Science provides the foundations for understanding the world around us and the universe within which it sits. We will, as scientists, inspire the next generation to be curious, inquisitive and analytical rather than accepting. Teachers will empower students with the skills and knowledge they need to understand, explain and investigate scientific concepts. This will allow them to contribute to and shape the evolving world around them. Whether that is working in a scientific field or by applying skills gained through scientific inquiry to flourish in their chosen path.

KS3 Learning journey

Partial Edexcel paper 1

Key concepts in Chemistry

Properties of metals, Molecular compounds, Ionic compounds, Ionic bonding, The modern periodic table, Relative atomic mass, Atomic theory

Separating Mixtures

Distillation, Filtration and crystallization, Pure substances, States of matter

Bonding models, Allotropes of carbon, Covalent bonds, Ionic lattices, Electronic configuration, Mendeleev, Atomic number and isotopes, Drinking water, Chromatography

Gravitational energy, Kinetic energy, Energy transfers, Percentage and rate change, Osmosis, Microscopy, Reflex arc, Stem cells, Cell cycle, Sex inheritance, Meiosis

Energy

Key concepts in Biology

Cells and Control

Genetics

Efficiency, Renewable and non-renewable energy, Resultant forces, Stopping distances, Significant figures, Standard form, Enzymes in digestion, Enzymes, Prokaryotes and Eukaryotes, Specialised cells, The nervous system, Growth, Mitosis, Human genome project, Variation - mutations, DNA structure

Decomposition, Predator Prey, Random Sampling-Quadrats and Transects, Abiotic and Biotic factors, Climate change, The changing atmosphere, Alternative fuels

Relationships in Ecosystems

Earth & Atmosphere

Forces and Motion

Overarching concepts in physics

YEAR 9

Waves

Wave calculations, Electromagnetic waves, Waves crossing boundaries, Features of waves, Ears and hearing

Respiration & Gas Exchange

Aerobic respiration, Anaerobic respiration, Investigating respiration, Continuous and discontinuous variation, Variation, Evidence for evolution, Group 7 - the halogens, Metals & oxygen, Metal displacement

Block 3

Evolution

Genetic engineering, Selective breeding, Theories of evolution-Darwin, Extinction

Metals & Reactivity

Extracting metals, Metals & water, Metals & acids, Group 1 - alkali metals

Block 4

Photosynthesis

Plant Cells, Observing cells, Plant minerals, Leaves

Types of Chemical Reaction

Breathing, Exchange of Substances, Thermal decomposition, Word equations, Conservation of mass, Combustion, Oxidation, Stopping distances

Block 2

Forces and motion

Mass and weight, Forces and quantities, Vectors and scalars, Distance and velocity time graphs, Acceleration

Block 1

8

Acids & Alkali

Neutralisation, Indicators and pH, Making salts, Acids and alkalis

Microbes & Disease

Immune system, Barriers to the body, Pathogens

Block 4

Magnetism

Electromagnetism, Diffusion, Magnetic fields

Physical & Chemical Changes

States of matter, Chemical reactions, Potential difference, Magnets and magnetic fields

Electricity

Circuits & current, Series and parallel, Resistance, New technology - homes, hospitals & more

Reproduction

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

Energy Stores & Transfers

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

Block 3

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

Separation techniques

Solutions, Filtration, Chromatography, Boiling, The particle model, Melting & Freezing, States of matter

Particle model

Mixtures, Solubility, Evaporation and distillation

Cells & Organisation

Movement of specialised cells, Observing cells, Cell division, Unicellular organisms, Plant and animal cells

Block 2

Atoms & Elements

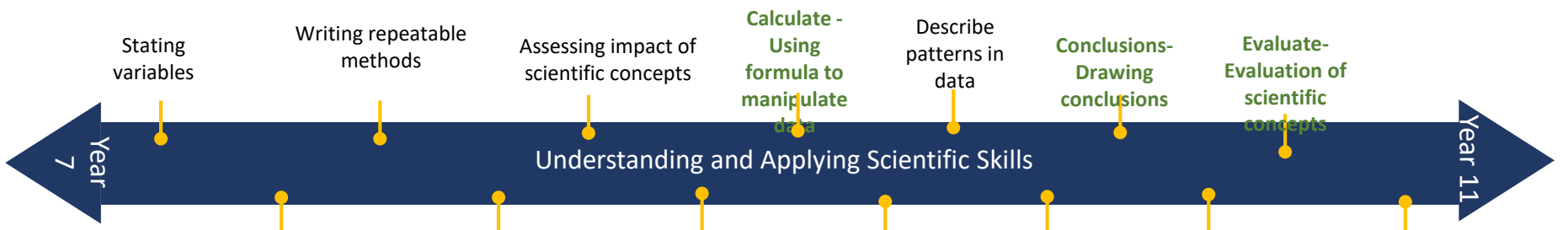
Chemical formulae, Atoms, Elements, Compounds, Chemical reactions

H₂O

2 4.0026 He Helium

KS4 BIOLOGY LEARNING JOURNEY

- Triple only content
- Core practical



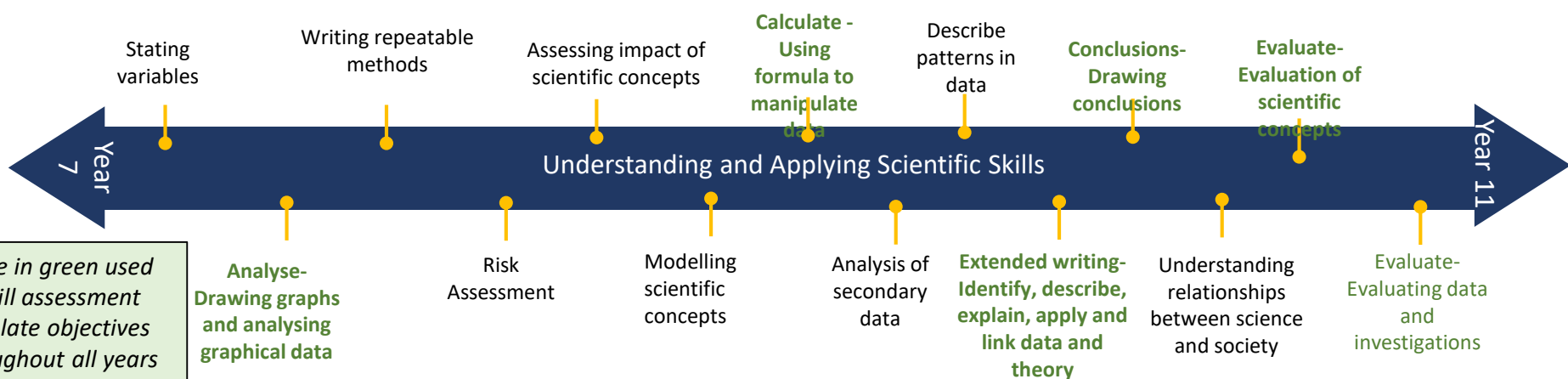
Those in green used as skill assessment template objectives throughout all years

- 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

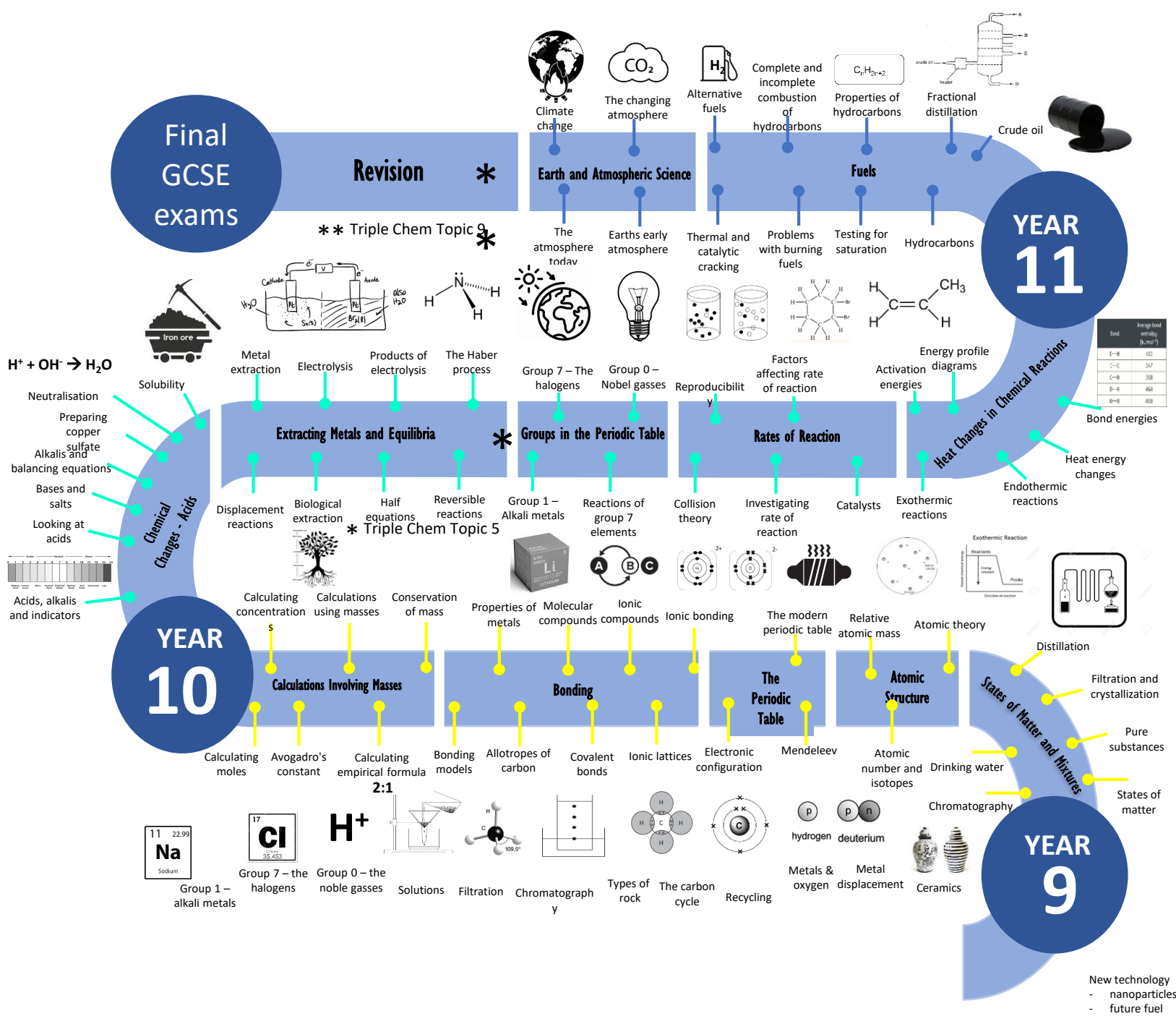


	Year 7	Year 8
Biology linked KS3 units	Cells and organisation Nutrition and digestion Reproduction Microbes and disease Physical and chemical changes	Respiration and gas exchange Evolution Photosynthesis Relationships in ecosystems

KS4 CHEMISTRY LEARNING JOURNEY



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

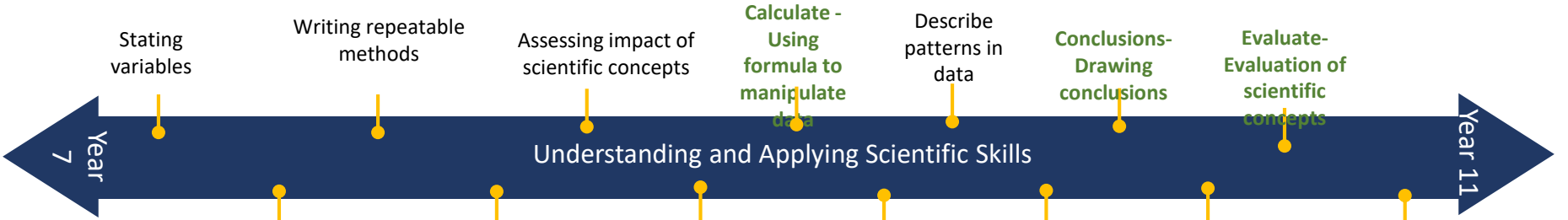


New technology
- nanoparticles
- future fuel

	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

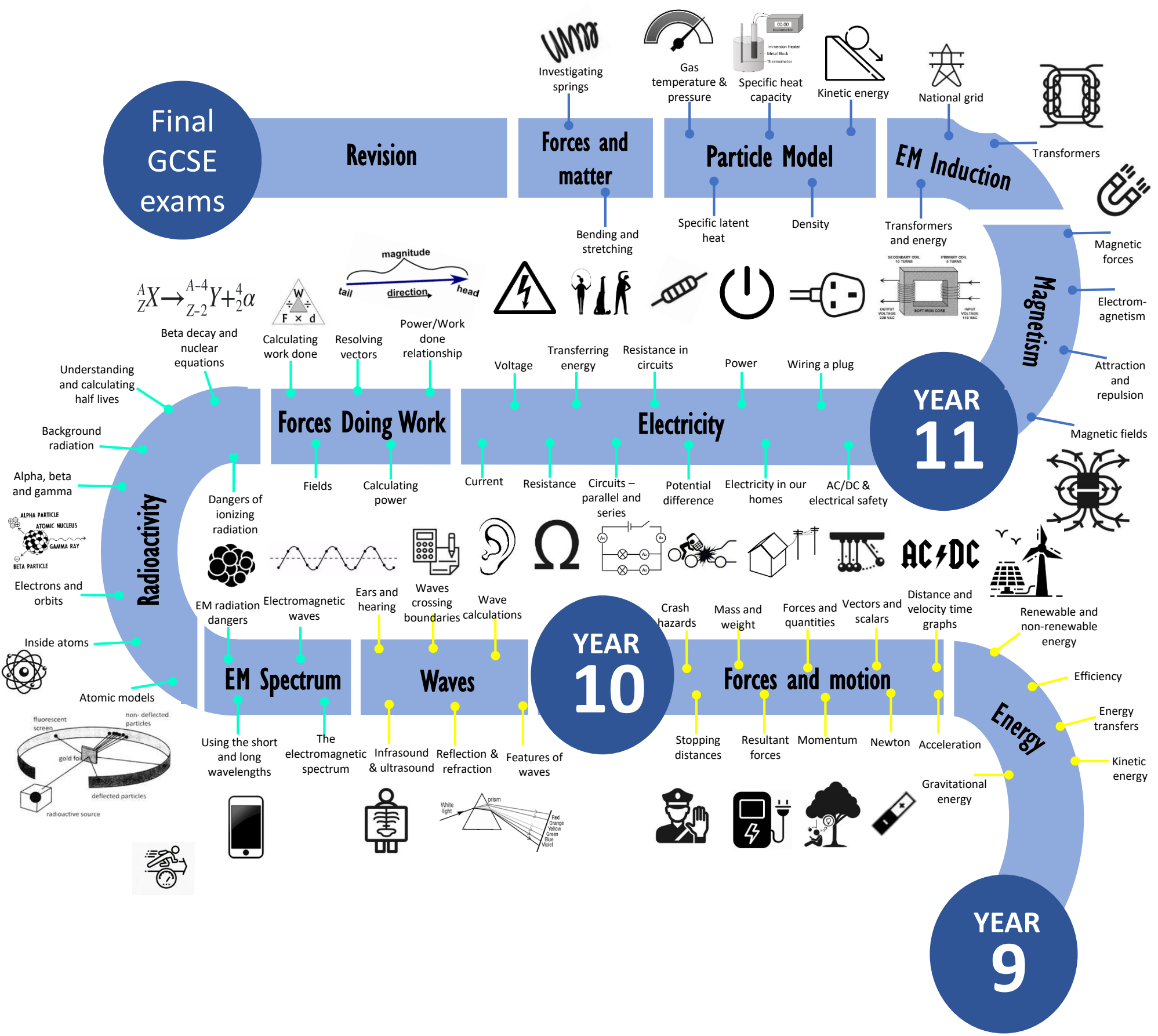
KS4 PHYSICS LEARNING JOURNEY

- Triple only content
- Core practical



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



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