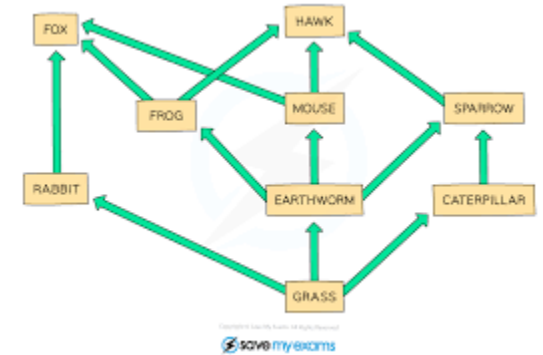


B7 – Ecology

Prior and Prerequisite learning:

In Year 10 we learnt about how the body can protect itself against disease and how respiration occurs within our cells. In this topic you will be learning about what makes an ecosystem and factors that can affect it.



Competition

Abiotic and Biotic Factors

Adaptations

Using Quadrats and Transects

Food Chains

The Water Cycle

The Carbon Cycle

Deforestation and Land Use

Global Warming

Biodiversity and Waste Management

Next steps:

Maintaining Ecosystems

You will be learning about hormones and response in the B5 Homeostasis topic.

Why are we learning this?

The Sun is a source of energy that passes through ecosystems. Materials including carbon and water are continually recycled by the living world, being released through respiration of animals, plants and decomposing microorganisms and taken up by plants in photosynthesis. We will explore how humans are threatening biodiversity as well as the natural systems that support it and also consider some actions we need to take to ensure our future health, prosperity and well-being.

B5 – Homeostasis

Foundation

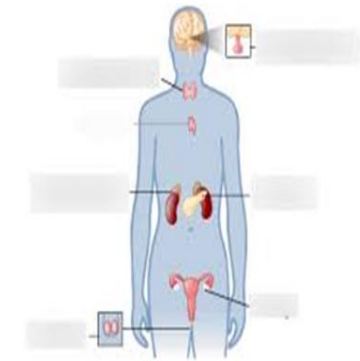
Prior and Prerequisite learning:

In the last topic we learnt about what makes an ecosystem and factors that can affect it. In this topic we will be looking at how the body protects us against stimuli.

Investigating Reaction Time

Why are we learning this?

Cells in the body can only survive within narrow physical and chemical limits. They require a constant temperature and pH as well as a constant supply of dissolved food and water. In order to do this the body requires control systems that constantly monitor and adjust the composition of the blood and tissues. An understanding of the role of hormones in reproduction has allowed scientists to develop not only contraceptive drugs but also drugs which can increase fertility.



Controlling Blood Glucose

You will be learning about variation and evolution in the B6 Inheritance topic.

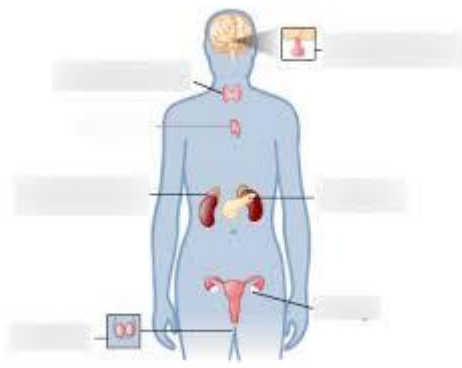
B5 – Homeostasis

Higher

Prior and Prerequisite learning:

In the last topic we learnt about what makes an ecosystem and factors that can affect it. In this topic we will be looking at how the body protects us against stimuli.

Why are we learning this?
Cells in the body can only survive within narrow physical and chemical limits. They require a constant temperature and pH as well as a constant supply of dissolved food and water. In order to do this the body requires control systems that constantly monitor and adjust the composition of the blood and tissues. An understanding of the role of hormones in reproduction has allowed scientists to develop not only contraceptive drugs but also drugs which can increase fertility.



You will be learning about variation and evolution in the B6 Inheritance topic.

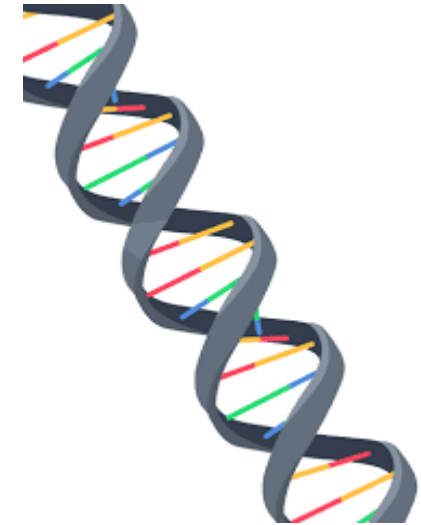
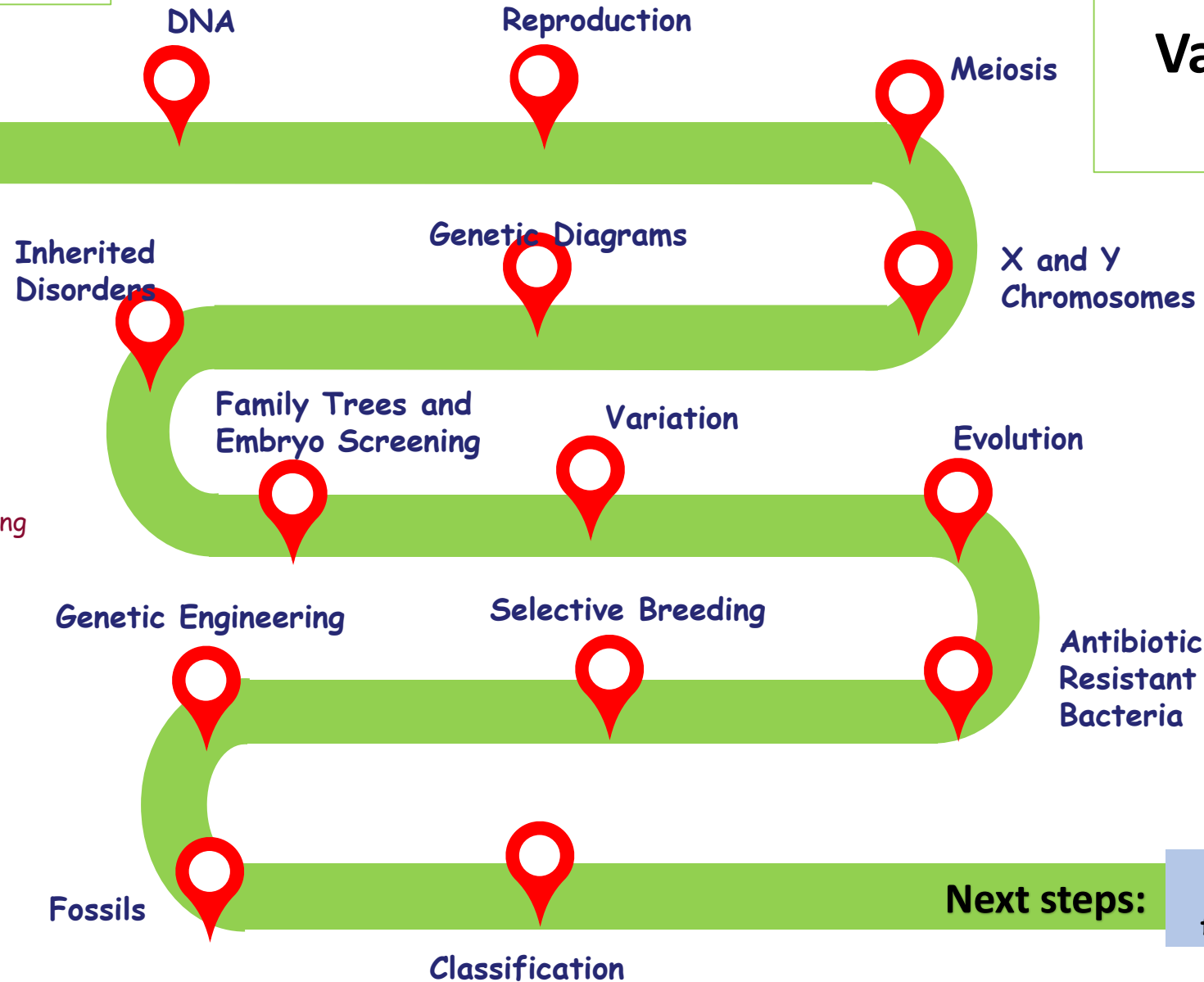
Prior and Prerequisite learning:

In the last topic we learnt about how the body protects us against stimuli and the role of hormones in the body. We will now build upon this topic to look at variation and evolution

Why are we learning this?

Variation generated by mutations and sexual reproduction is the basis for natural selection; this is how species evolve. An understanding of these processes has allowed scientists to intervene through selective breeding to produce livestock with favoured characteristics.

B6 Inheritance, Variation and Evolution



You will be taking knowledge from this into the real world.

Prior and Prerequisite learning:

Rate of Reaction

In the last topic we learnt about energy changes and examples of different reactions. In this topic we will look at reversible reactions and how to measure rates of reaction

Factors Affecting Rates of Reaction

Measuring Rates of Reaction

Graphs of Rates of Reaction

Working Out Reaction Rates

Reversible Reactions

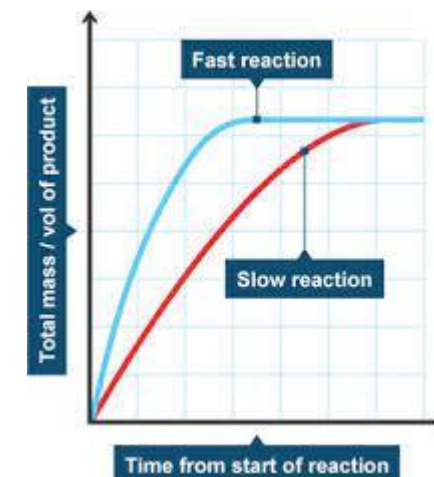
Next steps:

C6 – The Rate and Extent of Chemical Change

Foundation

Why are we learning this?

Chemical reactions occur at different rates and many variables can be manipulated in order to speed them up or slow them down. In industry, chemists and chemical engineers determine the effect of different variables on reaction rate and yield of product.



You will be taking knowledge from this topic and applying it to carbon compounds in C7 Organic Chemistry

Prior and Prerequisite learning:

Rate of Reaction

Factors
Affecting Rates
of Reaction

In the last topic we learnt about energy changes and examples of different reactions. In this topic we will look at reversible reactions and how to measure rates of reaction

C6 – The Rate and Extent of Chemical Change

Higher

Measuring Rates of Reaction

Graphs of Rates of Reaction

Working Out
Reaction Rates

Why are we learning this?

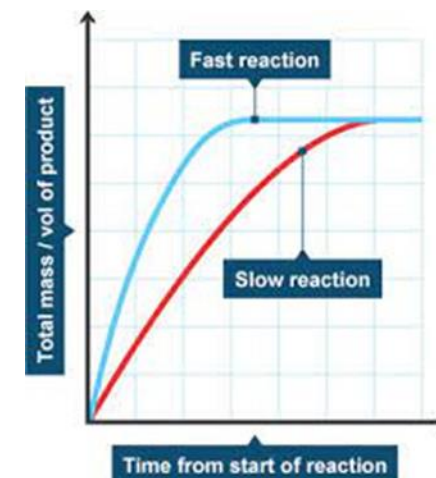
Chemical reactions occur at different rates and many variables can be manipulated in order to speed them up or slow them down. In industry, chemists and chemical engineers determine the effect of different variables on reaction rate and yield of product.

Reversible Reactions

Next steps:

You will be taking knowledge from this topic and applying it to carbon compounds in C7 Organic Chemistry

Le Chatelier's
Principle



Prior and Prerequisite learning:

C7 – Organic Chemistry

In the last topic we learnt about measuring rates of reaction and factors that can affect it. In this topic we will look at organic compounds and their uses within Chemistry.

Hydrocarbons

Crude Oil

Fractional Distillation

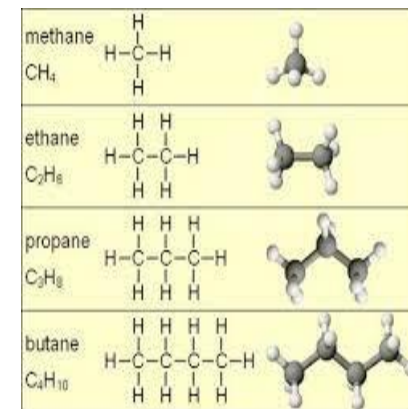
Cracking

Next steps:

You will be taking knowledge from this topic and applying it to carbon compounds in C8 Chemical Analysis

Why are we learning this?

This branch of chemistry gets its name from the fact that the main sources of organic compounds are living, or once-living materials from plants and animals. These sources include fossil fuels which are a major source of feedstock for the petrochemical industry. Chemists are able to take organic molecules and modify them in many ways to make new and useful materials such as polymers, pharmaceuticals, perfumes and flavourings, dyes and detergents.



Prior and Prerequisite learning:

C8 – Chemical Analysis

In the last topic we learnt about organic compounds and their uses within Chemistry. In this topic we will look at analysing chemicals through various techniques.

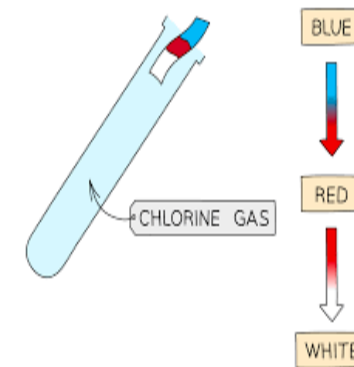
Purity and Formulations

Paper Chromatography

Using Chromatograms

Tests for Gases

Next steps:



Why are we learning this?

Analysts have developed a range of qualitative tests to detect specific chemicals. Instrumental methods provide fast, sensitive and accurate means of analysing chemicals, and are particularly useful when the amount of chemical being analysed is small. Forensic scientists and drug control scientists rely on such instrumental methods in their work.

You will be taking knowledge from this topic and applying it to carbon compounds in C9 Chemistry of the Atmosphere

Prior and Prerequisite learning:

C9 – Chemistry of the Atmosphere

The Evolution of the Atmosphere

In the last topic we learnt about analysing chemicals through various techniques. In this topic we will look at theories of how the atmosphere has evolved along with gases involved.

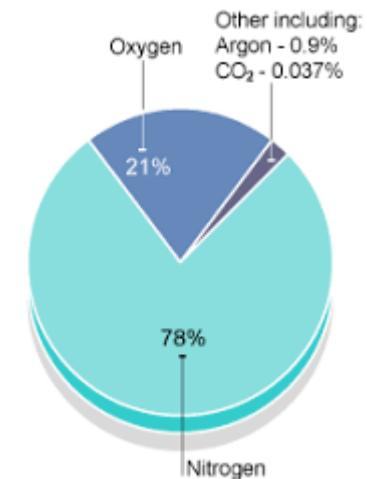
Greenhouses Gases and Climate Change

Carbon Footprints

Air Pollution

Next steps:

You will be taking knowledge from this topic and applying it to carbon compounds in C10 Using Resources



Why are we learning this?

Theories about what was in the Earth's early atmosphere and how the atmosphere was formed have changed and developed over time. Evidence for the early atmosphere is limited because of the time scale of 4.6 billion years. You need to be able to, give appropriate information, interpret evidence and evaluate different theories about the Earth's early atmosphere

Prior and Prerequisite learning:

In the last topic we learnt about the various theories of how the atmosphere has evolved along with gases involved. In this topic we will look at the Earth's natural resources and how they can be sustained.

Why are we learning this?

Industries use the Earth's natural resources to manufacture useful products. In order to operate sustainably, chemists seek to minimise the use of limited resources, use of energy, waste and environmental impact in the manufacture of these products. Chemists also aim to develop ways of disposing of products at the end of their useful life in ways that ensure that materials and stored energy are utilised. Pollution, disposal of waste products and changing land use has a significant effect on the environment, and environmental chemists study how human activity has affected the Earth's natural cycles, and how damaging effects can be minimised.

Finite and Renewable Resources

Reuse and Recycling

C10 – Using Resources

Life Cycle Assessments

Potable Water

Desalination

Waste Water Treatment

Next steps:

You will be taking knowledge from this topic and applying it to the real world in every day life.



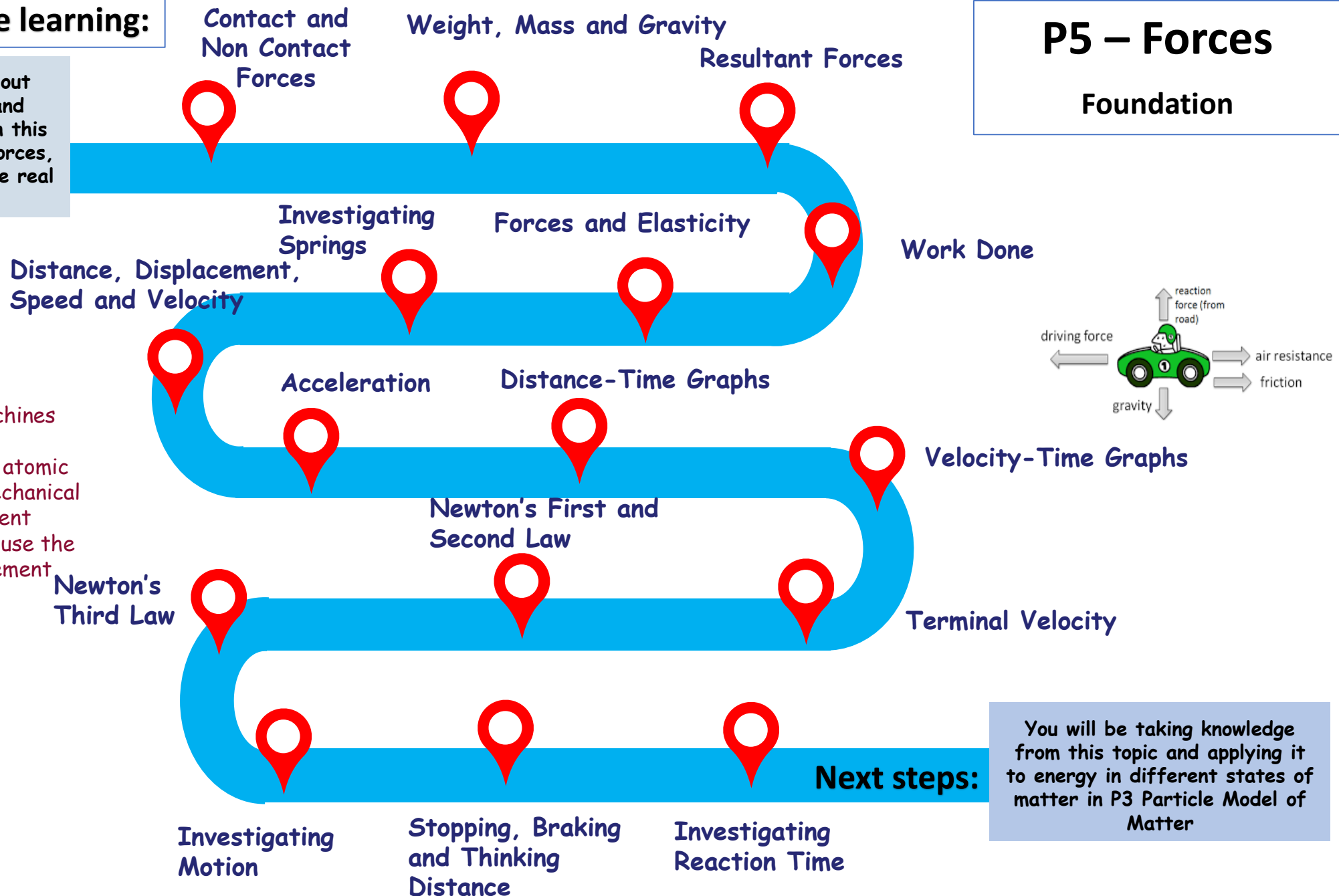
Prior and Prerequisite learning:

In the last topic we learnt about subatomic parts of an atom and different types of radiation. In this topic we will look at different forces, graphs and the application to the real world.

Why are we learning this?

Engineers analyse forces when designing a great variety of machines and instruments, from road bridges and fairground rides to atomic force microscopes. Anything mechanical can be analysed in this way. Recent developments in artificial limbs use the analysis of forces to make movement possible.

P5 – Forces Foundation



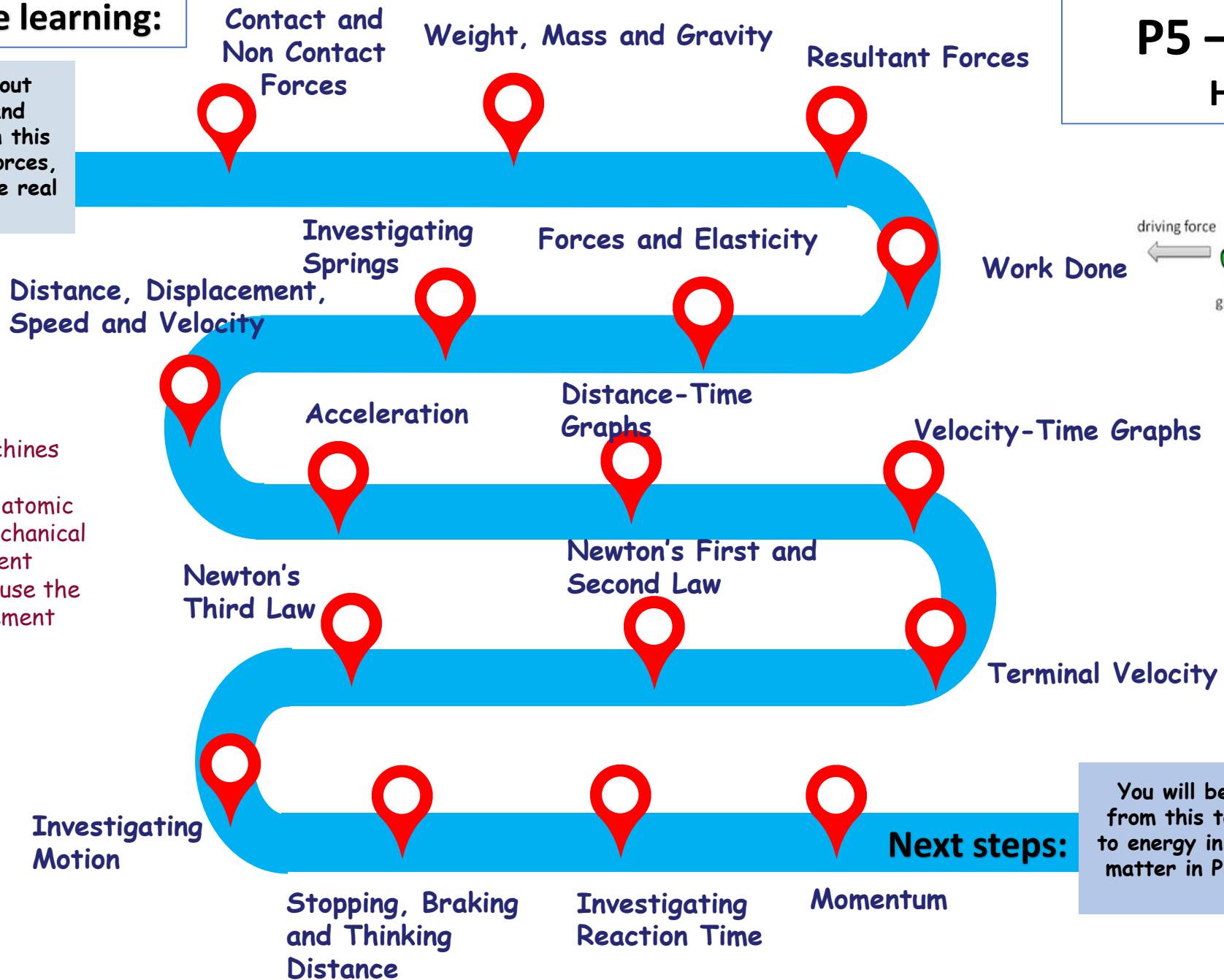
You will be taking knowledge from this topic and applying it to energy in different states of matter in P3 Particle Model of Matter

Prior and Prerequisite learning:

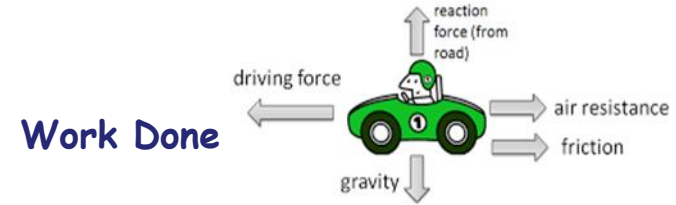
In the last topic we learnt about subatomic parts of an atom and different types of radiation. In this topic we will look at different forces, graphs and the application to the real world.

Why are we learning this?

Engineers analyse forces when designing a great variety of machines and instruments, from road bridges and fairground rides to atomic force microscopes. Anything mechanical can be analysed in this way. Recent developments in artificial limbs use the analysis of forces to make movement possible.



P5 – Forces Higher



You will be taking knowledge from this topic and applying it to energy in different states of matter in P3 Particle Model of Matter

Prior and Prerequisite learning:

In the last topic we learnt about different forces, graphs and the application to the real world. In this topic we will look different waves and their uses.

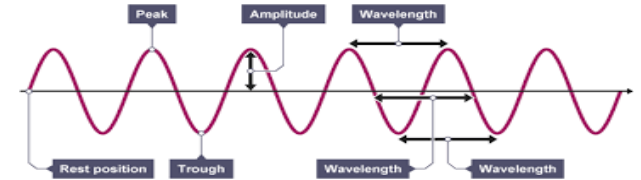
Why are we learning this?

Wave behaviour is common in both natural and man-made systems. Waves carry energy from one place to another and can also carry information. Designing comfortable and safe structures such as bridges, houses and music performance halls requires an understanding of mechanical waves. Modern technologies such as imaging and communication systems show how we can make the most of electromagnetic waves.

Transverse and Longitudinal Waves

Frequency, Period and Wave Speed

P6 – Waves



Properties of Waves

Investigating Waves

Electromagnetic Waves

Use of EM Waves

Investigating IR Radiation

Investigating IR Absorption

Next steps:

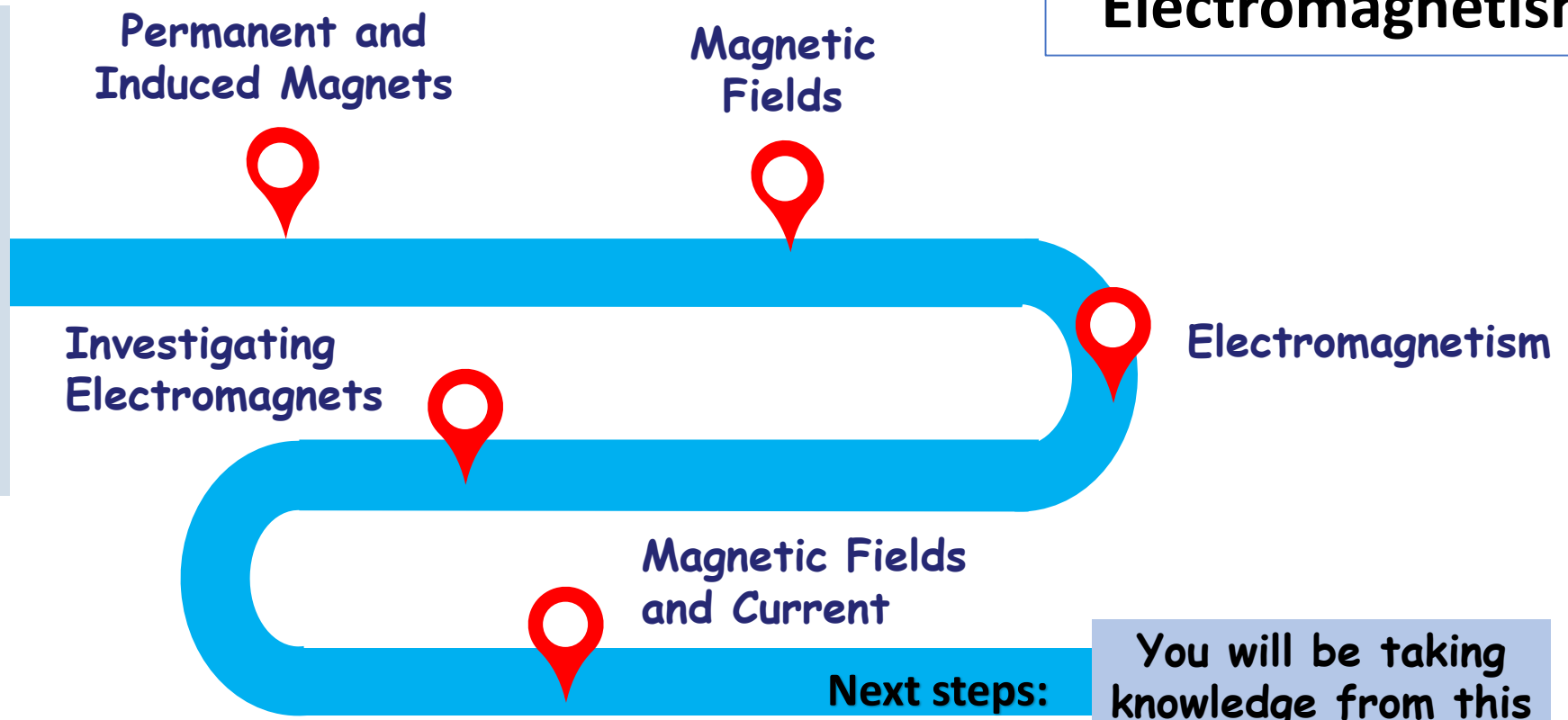
Dangers of EM Waves

You will be taking knowledge from this topic and applying it to the P7 Magnetism and Electromagnetism topic

Prior and Prerequisite learning:

P7 – Magnetism and Electromagnetism

In the last topic we learnt about different waves and their uses. In this topic we will look at magnets and their uses in the real world.



Why are we learning this?
Electromagnetic effects are used in a wide variety of devices. Engineers make use of the fact that a magnet moving in a coil can produce electric current and also that when current flows around a magnet it can produce movement. It means that systems that involve control or communications can take full advantage of this.

You will be taking knowledge from this topic and applying it to the real world in every day life.

