Long Term Plan & Curriculum Intent: Science 2021 2022

SUBJECT:	Science – North Durham Academy

Science Curriculum Intent

The North Durham Science curriculum is linked to our vision and values and reflects the community we serve. We believe that every action undertaken by every member of staff is implemented with the sole intention of improving the future life chances and wellbeing of our children. Science at North Durham Academy is planned to develop and encourage a 'can do' mindset in learners and build resilience by ensuring that the curriculum is relevant and accessible to all whilst providing appropriate stretch and challenge at every stage. Our broad and balanced Science curriculum is split into the separate areas of Biology, Chemistry and Physics so that our students can easily make the links between units and previous learning.

The Science curriculum has been designed to provide students with a deep understanding of the scientific knowledge and ideas that impact them as individuals within a local and globalised context. As they move through the curriculum, students will be increasingly made to develop their curiosity, provide insight into working scientifically and appreciate the value and achievements of science in their everyday lives. All Science lessons are logically sequenced to allow students to build upon key concepts, reflect on prior knowledge and make links between key ideas across the sciences. In Science we understand that having a wide vocabulary and good reading skills are crucial for our students to be able to access all aspects of the curriculum and for students to become scientifically literate participants in society. Pupils will leave North Durham Academy with an appropriate range of qualifications in Science that allow them to move onto the next stage of their academic development.

Aims – National Curriculum

1. develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
2. develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
3. are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

BIOLOGY	Autumn 1:	Autumn 2:	Spring 1:	Spring 2:	Summer 1:	Summer 2:
Year 7	**Knowledge:** **Organisms** – cells, tissues, organs and systems. Interaction between skeleton and muscles, including the measurement of force exerted by different muscles the function of muscles and examples of antagonistic muscles **Skills:** -using a microscope, -safely preparing a microscope slide - Observing specialised cells - Model cell competition - Investigating diffusion **Numeracy Skills**: -Measuring cells Calculating magnification	**Knowledge:** **Organisms** – cells, tissues, organs and systems. Interaction between skeleton and muscles, including the measurement of force exerted by different muscles the function of muscles and examples of antagonistic muscles **Skills:** Measuring strength and force **Numeracy Skills**: -Measuring force	**Knowledge:** **Ecosystems** – food chains, food webs, ecosystems, competition, interdependence, populations **Skills:** Interpretation of statistical data, calculating averages and identifying trends. Evaluate data, showing awareness of potential sources of random and systematic error **Numeracy Skills**: - Drawing and interpreting bar and line graphs	**Knowledge:** **Ecosystems** –plant reproduction, fertilisation, germination, pollination, seed dispersal. **Skills:** Plant dissection **Numeracy Skills**: - Drawing and interpreting bar and line graphs	**Knowledge:** **Genes –** Variation and adaptation **Skills:** data will be collected during a practical, averages calculated and graphs drawn to represent the results. Calculating energy costs **Numeracy Skills:** Graph drawing Continuous and discontinuous variation	**Knowledge:** **Genes –**Reproduction, fertilisation, menstrual cycle **Skills:** data will be collected during a practical, averages calculated and graphs drawn to represent the results. Calculating energy costs **Numeracy Skills:** Graph drawing Continuous and discontinuous variation
Year 8	**Knowledge:** **Organisms –** respiratory system, drugs, smoking, healthy diet, dietary deficiencies. **Skills:** Structure and function of the respiratory system Gas exchange Respiration practical	**Knowledge:** **Organisms –** diet, digestive system and enzymes **Skills:** Structure and function of the digestive system Digestive enzymes Food tests	**Knowledge:** **Ecosystems –** Aerobic and anaerobic respiration. Biotechnology **Skills:** Muscle contraction practical Investigating fermentation	**Knowledge:** **Ecosystems –** Photosynthesis – Investigation, factors that effect the rate and plant minerals. **Skills:** Observing stomata using microscopes Photosynthesis practical Testing leaves for starch	**Knowledge:** **Genes:** natural selection, extinction, biodiversity **Skills:** Evolution practical Darwin research task	**Knowledge:** **Genes:** variation, inheritance, genes, GM foods **Skills:** Genetic diagrams GM food evaluation

	Numeracy Skills: Calculate a mean from a set of data. Read values from a line graph. Spot a data point that does not fit the pattern. Estimate values of data between known values. Identify the variables from information about an investigation. Identify a pattern in data from a results table or bar chart.	**Numeracy Skills:** Calculate a mean from a set of data. Read values from a line graph. Spot a data point that does not fit the pattern. Estimate values of data between known values. Identify the variables from information about an investigation. Identify a pattern in data from a results table or bar chart.	**Numeracy Skills:** Respiration equations and balancing equations. Measuring volumes Calculate a mean from a set of data. Read values from a line graph. Spot a data point that does not fit the pattern.	**Numeracy Skills:** Photosynthesis equation and balancing equation Measuring volumes Calculating means and the rate of reaction Read values from a line graph. Spot a data point that does not fit the pattern. Estimate values of data between known values. Identify the variables from information about an investigation. Identify a pattern in data from a results table or bar chart.	**Numeracy Skills:** Interpreting and evaluating data	**Numeracy Skills:** Calculating probabilities and percentages Calculate a mean from a set of data.
Year 9	**Knowledge:** **Organisms -**Cells and organisms **Skills:** Observing cells Creating microscope slide Diffusion and osmosis practical Calculating magnification **Numeracy Skills:** Calculating magnification Rearranging equation Conversion of units Order of magnitude Calculating surface area and volume Surface area to volume ratio	**Knowledge:** **Organisms-** Diseases – Communicable diseases and treating diseases **Skills:** Growing bacteria Investigating antibiotics/disinfectants on bacteria growth Drug testing procedure **Numeracy Skills:** Calculating bacteria growth Interpreting data and line graphs	**Knowledge:** **Organisms-** Organising Plants and Animals **Skills:** Heart dissection Evaluation of current heart treatments Ethical discussion around transplants Investigating stomata **Numeracy Skills:** Multiplication Finding the mean and estimating	**Knowledge:** **Organisms-** Bioenergetics – Photosynthesis and Respiration **Skills:** Testing a leaf for starch Investigating Photosynthesis Investigating respiration Investigating breathing rate and heart rate **Numeracy Skills:** Photosynthesis equation and balancing equations Calculating rate and means Identifying anomalies Inverse square law Respiration equation and balancing equations	**Knowledge:** **Ecosystems-** Adaptations, Competition and Ecosystems - Sampling, Adaptations and competition **Skills:** Sampling required practical Analysing predator prey relationships **Numeracy Skills:** Calculating mean, mode, median and range. Estimating populations Calculating the area of a rectangle, square and triangle.	**Knowledge:** **Genes-** Reproduction **Skills:** Comparing Meiosis to Mitosis Genetic cross diagrams and family pedigree analysis Evaluating genetic screening **Numeracy Skills:** Calculating number of chromosomes in cell division Calculating percentages and probability

Year 10	**Knowledge:** **Organisms-** Diseases – Treating diseases and non-communicable diseases. **Skills:** Drug testing procedure **Numeracy Skills:** Interpreting data and line graphs	**Knowledge:** **Organisms-** Bioenergetics – Photosynthesis and Respiration **Skills:** Testing a leaf for starch Investigating Photosynthesis Investigating respiration Investigating breathing rate and heart rate **Numeracy Skills:** Photosynthesis equation and balancing equations Calculating rate and means Identifying anomalies Inverse square law Respiration equation and balancing equations	**Knowledge:** **Genes-** Reproduction – Meiosis, genetics and inheritance. **Skills:** Comparing Meiosis to Mitosis Genetic cross diagrams and family pedigree analysis Evaluating genetic screening **Numeracy Skills:** Calculating number of chromosomes in cell division Calculating percentages and probability	**Knowledge:** **Genes-** Variation, Genetics and Evolution **Skills:** Evaluating selective breeding and Genetic engineering Classification systems **Numeracy Skills:** Using powers	**Knowledge:** **Ecosystems-** Adaptations, Competition and Ecosystems - Sampling, Adaptations and competition **Skills:** Sampling required practical Analysing predator prey relationships **Numeracy Skills:** Calculating mean, mode, median and range. Estimating populations Calculating the area of a rectangle, square and triangle.	**Knowledge:** **Ecosystems-** Biodiversity and Pollution **Skills:** Analysing the effect of human activity on the environment **Numeracy Skills:** Analysing data in tables and graphs, averages and anomalies
Year 11	**Knowledge:** **Genes-** Reproduction and variation - Meiosis, genetics and inheritance. **Skills:** Comparing Meiosis to Mitosis Genetic cross diagrams and family pedigree analysis Evaluating genetic screening Evaluating selective breeding and Genetic engineering **Numeracy Skills:** Calculating number of chromosomes in cell division Calculating percentages and probability	**Knowledge:** **Genes-** Genetics and Evolution **Ecosystems-** Adaptations and competition – Sampling, Adaptations and competition Ecosystems and Biodiversity – Recycling in an ecosystem, food chains, biodiversity and pollution. **Skills:** Classification systems Sampling required practical Analysing predator prey relationships Analysing the effect of human activity on the environment **Numeracy Skills:** Using powers Calculating mean, mode, median and range. Estimating populations Calculating the area of a rectangle, square and triangle.	**Knowledge:** **Organisms** Cells and organisms, Digestive system, Enzymes, The Heart, Plant Transport **Skills:** Required practical's Observing cells Creating microscope slide Diffusion and osmosis practical Calculating magnification **Numeracy Skills:** Calculating magnification Rearranging equation Conversion of units Order of magnitude Calculating surface area and volume Surface area to volume ratio	**Knowledge:** **Organisms** Diseases – Treating diseases and non-communicable diseases Photosynthesis and Respiration. **Skills:** Required practical's Testing a leaf for starch Investigating Photosynthesis Investigating respiration Investigating breathing rate and heart rate **Numeracy Skills:** Interpreting data and line graphs Mean, median, mode, range, significant figures, decimal places, powers, inverse square law, balancing equations		

CHEMISTRY	Autumn 1:	Autumn 2:	Spring 1:	Spring 2:	Summer 1:	Summer 2:
Year 7	**Knowledge:** **Working Scientifically** – Safety in science, hazard symbols, lighting and using a Bunsen burner, using practical equipment to investigate a hypothesis **Skills:** Using a Bunsen burner correctly Carrying out a safe investigation **Numeracy Skills:** Calculating the mean	**Knowledge:** **Matter** – States of Matter – Solids, liquids and gases, changes of state, diffusion and pressure **Skills:** Melting, boiling, freezing Drawing particle diagrams **Numeracy Skills**: reading a thermometer Calculating the mean Plotting line graphs	**Knowledge:** **Matter** – Separating Techniques and solubility **Skills:** Evaporation Filtration chromatography **Numeracy Skills**: reading a thermometer	**Knowledge:** **Reactions –** Acids and Alkali's **Skills:** -neutralisation reactions - interpretation and use of the pH scale - using and interpreting different indicators - writing a word equation and some will be able to write a chemical symbol equation Making Salts **Numeracy Skills:** using the pH scale measuring volumes	**Knowledge:** **Reactions** - Types of reaction, and reactivity series, reactions with metals and acids **Skills:** writing a word equation and some will be able to write a chemical symbol equation Metals + Acid Metals + Oxygen Metals + Water Displacement reactions **Numeracy Skills:** using mass and atomic numbers on periodic table	**Knowledge:** **Earth –** Rock Cycle, structure of the Earth, sedimentary, metamorphic and igneous rocks. **Skills:** Observing rocks Testing hardness of rocks **Numeracy Skills:** Pie chart and percentages
Year 8	**Knowledge:** **Working Scientifically** – Planning, Predicting, Analysing, Concluding and Evaluating **Skills:** Students plan, predict, analyse, conclude and evaluate a range of investigations.	**Knowledge:** **Matter–** Atoms, elements, mixtures, compounds and polymers. **Skills:** Identifying elements, compounds and mixtures Word equations Symbol equations	**Knowledge:** **Matter–** periodic table, mixtures, compounds, oxidation/reduction reactions, conservation if mass, chemical reactions/irreversible reactions, reactivity of group 1 alkali metals, group 7 halogens **Skills:** The periodic table Reactions and properties of Group 1/7/0 elements.	**Knowledge:** **Reactions –** Thermal Reactions – Combustion and conservation of mass **Skills:** Combustion Conservation of mass experiment - Burning magnesium in air Balancing chemical equations	**Knowledge:** **Reactions –** Energy Changes – endo and exothermic reactions **Skills:** Exothermic reaction experiment Endothermic reaction experiment Drawing energy level diagrams	**Knowledge:** **Earth**: Global warming, Carbon cycle, recycling and extracting metals **Skills:** Analysis of climate change data Extracting copper from copper oxide

	Numeracy Skills: Recording data Analysing data Calculating the mean	**Numeracy Skills:** Chemical formulae	**Numeracy Skills:** Interpreting tables and graphs Drawing tables and graphs Calculating averages	**Numeracy Skills:** Rearranging and balancing equations Calculating conservation of mass	**Numeracy Skills:** Calculate a mean from a set of data. Read values from a line graph. Spot a data point that does not fit the pattern. Identify a pattern in data from a results table or bar chart.	**Numeracy Skills:** Read values from a line graph. Spot a data point that does not fit the pattern.
Year 9	**Knowledge:** **Working Scientifically** – Tables and Graphs **Skills:** Draw, interpret and analyse data in tables and graphs Describe and Explain what data is showing us. **Numeracy Skills:** Drawing a results table including correct units and an average column Drawing bar and line graphs Drawing histograms	**Knowledge:** **Matter**- Atomic Structure – Separating techniques, history and structure of the atom **Skills:** Structure of the atom Chemical formulae Filtration, crystallisation, evaporation, chromatography and distillation. **Numeracy Skills:** Chemical formula and balancing equations	**Knowledge:** **Matter-** The Periodic table **Skills:** Construction of the modern-day periodic table Trends in reactivity Reactions of group 1+7 elements **Numeracy Skills:** Word and symbol equations and balancing equations.	**Knowledge:** **Reactions**- Chemical Changes – Reactivity series, Displacement reactions, Salts, Neutralisation and pH scale **Skills:** Investigations into the reactivity series, displacement reactions and extracting metals. Making salts – including the required practical. **Numeracy Skills:** Measuring volumes and masses Rearranging equations Conversion of units Balancing equations Using an appropriate number of significant figures in calculations	**Knowledge:** **Earth**- Crude oil and fuels - Hydrocarbons, fractional distillation, cracking **Skills:** Drawing hydrocarbon bond diagrams Complete and incomplete combustion Fractional distillation **Numeracy Skills:** Formulae for hydrocarbons Balancing equations	**Knowledge:** **Earth**- Earth's Atmosphere – History and evolution of Earth's atmosphere, climate change and pollution. **Skills:** Evaluating data on climate change Evaluating graphs **Numeracy Skills:** Analysing and evaluating graphs Drawing graphs
Year 10	**Knowledge:** **Working Scientifically** – Variables, Analysis and Evaluation, Scientific vocabulary, quantities, units and symbols.	**Knowledge:** **Reactions**- Chemical Changes – Reactivity series, Displacement reactions, Salts, Neutralisation and pH scale	**Knowledge:** **Reactions**- Electrolysis	**Knowledge:** **Reactions**- Energy Changes – Exothermic and Endothermic reactions	**Knowledge:** **Earth**- Crude oil and fuels - Hydrocarbons, fractional distillation, cracking	**Knowledge:** **Earth**- Chemical analysis and Earth's resources – Chromatography, testing gases, Finite resources, recycling, treating water.

	Skills: Through investigations students can identify variables, anomalies and represent mathematical and statistical analysis **Numeracy Skills:** Significant figures, Decimals, Means, ranges, Order of magnitude, algebraic equations, rate of exchange, area under a curve.	**Skills:** Investigations into the reactivity series, displacement reactions and extracting metals. Making salts – including the required practical. **Numeracy Skills:** Measuring volumes and masses Rearranging equations Conversion of units Balancing equations Using an appropriate number of significant figures in calculations	**Skills:** Extracting by Electrolysis including the required practical **Numeracy Skills:** Half equations	**Skills:** Investigating temperature change Reaction profiles **Numeracy Skills:** Drawing tables and graphs Measuring temperature and calculating temperature change	**Skills:** Drawing hydrocarbon bond diagrams Complete and incomplete combustion Fractional distillation **Numeracy Skills:** Formulae for hydrocarbons Balancing equations	**Skills:** Extracting copper Life cycle assessment Chromatography practical Testing for Oxygen, Hydrogen, Chlorine and Carbon Dioxide **Numeracy Skills:** Calculating Rf
Year 11	**Knowledge:** **Working Scientifically** – Required Practical's **Skills:** Students complete 7 required practical's including a full experiment write up of their investigations. **Numeracy Skills:** Calculating the mean and rate Graph drawing	**Knowledge:** **Earth**- Atmosphere and Earth's resources - History and evolution of Earth's atmosphere, climate change and pollution. Finite resources, recycling, treating water. **Skills:** Evaluating data on climate change Evaluating graphs Extracting copper Life cycle assessment **Numeracy Skills:** Analysing and evaluating graphs Drawing graphs	**Knowledge:** **Matter-** Atomic structure and bonding **Skills:** Electronic structure diagrams Ionic and covalent bonding diagrams **Numeracy Skills:** Balancing and solving equations	**Knowledge:** **Reactions** Chemical Changes – Reactivity series, Displacement reactions, Salts, Neutralisation and pH scale, Collision theory and rate of reaction **Skills:** Investigations into the reactivity series, displacement reactions and extracting metals. Making salts – including the required practical. Rate of reaction **Numeracy Skills:** Measuring volumes and masses Rearranging equations Conversion of units Balancing equations Using an appropriate number of significant figures in calculations Calculating rate Drawing line graphs		

PHYSICS	Autumn 1:	Autumn 2:	Spring 1:	Spring 2:	Summer 1:	Summer 2:
Year 7	**Knowledge:** **Forces** – Balanced and Unbalanced forces, contact and non-contact and speed **Skills:** Using a Newton meter Calculating resultant forces and speed Plotting and interpreting graphs **Numeracy Skills**: calculating resultant forces calculating speed Distance -time graphs	**Knowledge:** **Electricity** – electrical circuits, potential difference, current and static electricity **Skills:** - setting up electrical circuits -drawing electrical circuits (series and parallel) using the correct circuit symbols - understand and use SI units **Numeracy Skills:** - reading ammeters and voltmeters in electrical circuits - calculating resistance.	**Knowledge:** **Energy –** Resources – Fuels, energy, power **Skills:** data will be collected during a practical, averages calculated and graphs drawn to represent the results. Calculating energy costs, power and efficiency **Numeracy Skills:** Energy and power equations Rearranging equations Calculating efficiency	**Knowledge:** **Waves –** Sound – amplitude, frequency, pitch, the ear **Skills:** Wave diagrams – draw and label **Numeracy Skills:** Calculating speed and frequency	**Knowledge:** **Waves –** light – Luminous and non-luminous, Reflection, Refraction, the eye colour **Skills:** Ray diagrams Investigating reflection Investigating refraction Investigating colour **Numeracy Skills:** Measuring angles	**Knowledge:** **Universe** – Solar system, day/night, seasons, the moon **Skills:** Models of the solar system **Numeracy Skills:** Graph drawing
Year 8	**Knowledge:** **Forces –** Friction and drag, squashing and stretching, turning forces, Pressure in fluids, atmospheric pressure, **Skills:** Investigating friction Hooke's Law **Numeracy Skills:** Calculating moments Drawing line graphs Calculating pressure	**Knowledge:** **Electricity –** Magnets and electromagnets **Skills:** Bar magnets Magnetic field diagrams Making an electromagnet Investigating electromagnets **Numeracy Skills:** Drawing tables and graphs	**Knowledge:** **Energy:** Energy costs, energy transfers, calculating work done, heating and cooling **Skills:** Conduction, convection and radiation experiments Which are the best insulators **Numeracy Skills:** Calculating Work done Measuring temperature and calculating temperature increase/averages.	**Knowledge:** **Waves**: Sound waves, Radiation, EM spectrum, Modelling waves **Skills:** Wave diagrams Wave calculation Uses of EM spectrum **Numeracy Skills:** Order of magnitude Calculating speed of a wave	**Knowledge:** **Universe**: Space – Earths structure, Earth's atmosphere, life cycle of a star, expanding universe, big bang. **Skills:** Evaluate universe theories Meteor practical **Numeracy Skills:** Order of magnitude	**Knowledge:** **Forces:** Forces in action **Skills:** STEAM Activities **Numeracy Skills:** Measuring length, mass and volumes

Year 9	**Knowledge:** **Forces –** Balanced Forces – Vectors, centre of mass, Resultant forces, Newtons 1st and 3rd law **Skills:** Investigating friction Investigating centre of mass **Numeracy Skills:** Calculating resultant forces	**Knowledge:** **Electricity –** Electricity in the home – National Grid, Mains circuit, Plugs, Power, potential difference, energy transfer, efficiency. **Skills:** Wiring a plug Circuit diagrams **Numeracy Skills:** Calculating Power and electrical power Calculating Charge flow and energy transfer Calculating efficiency Rearranging equations Conversion of units	**Knowledge:** **Energy** -Conservation of energy - Energy stores **Skills:** Changes in energy store Investigating pendulums and kinetic energy stores **Numeracy Skills:** Calculating work done Calculating change in GE Calculating Kinetic and elastic energy Rearranging equations Conversion of units	**Knowledge:** **Energy** -Dissipation of energy **Skills:** Investigating energy transfers and efficiency **Numeracy Skills:** Calculating power and efficiency Rearranging equations Conversion of units	**Knowledge:** **Energy –** Energy Resources – Renewable and Non-renewable energy resources, energy issues and the environmental effect **Skills:** Evaluating the use of renewable and non-renewable energy resources **Numeracy Skills:** Interpreting tables and graphs	**Knowledge:** **Waves –** Radioactivity – discovery of the nucleus, structure of the atom, types and uses of radiation, half-life **Skills:** Investigating radioactivity demo Half-life investigation **Numeracy Skills:** Drawing line graphs Interpreting line graphs Solving emission equations
Year 10	**Knowledge:** **Forces –** Balanced Forces – Vectors, centre of mass, Resultant forces, Newtons 1st and 3rd law **Skills:** Investigating friction Investigating centre of mass **Numeracy Skills:** Calculating resultant forces	**Knowledge:** **Forces –** Motion – Motion graphs **Skills:** Investigating speed and acceleration **Numeracy Skills:** Calculating speed, acceleration, gradients Drawing motion graphs	**Knowledge:** **Electricity – Circuits** Current, Charge, Potential difference, Resistance, Electrical components and symbols, Series and Parallel circuits **Skills:** Building series and parallel circuits Measuring potential difference and current Resistance in a wire, different components and resistors in series and parallel circuits required practical's **Numeracy Skills:** Calculating potential difference, current, resistance and charge in a circuit	**Knowledge:** **Waves –** Radioactivity – discovery of the nucleus, structure of the atom, types and uses of radiation, half-life **Skills:** Investigating radioactivity demo Half-life investigation **Numeracy Skills:** Drawing line graphs Interpreting line graphs Solving emission equations	**Knowledge:** **Waves** – Waves – Transverse and longitudinal waves, properties of waves, EM spectrum and its uses **Skills:** Labelling a wave Investigating waves Absorption and emission of infrared radiation required practical Researching the uses of EM waves **Numeracy Skills:** Calculating wave speed, speed, period,	**Knowledge:** **Waves -** Space Formation of the solar system, life cycle of a star, red shift, big bang **Skills:** Evaluating theories on the universe **Numeracy Skills:** Order of magnitude

Year 11	**Knowledge:** **Waves –** EM Spectrum - EM spectrum and its uses **Skills:** Absorption and emission of infrared radiation required practical Researching the uses of EM waves **Numeracy Skills:** Order of magnitude Calculating wave speed Rearranging equations	**Knowledge:** **Electricity –** Electromagnets **Skills:** Investigating bar magnets Investigating fields around a current Electromagnets **Numeracy Skills:** Measuring current	**Knowledge:** **Electricity -** Circuits Current, Charge, Potential difference, Resistance, Electrical components and symbols, Series and Parallel circuits **Skills:** Building series and parallel circuits Measuring potential difference and current Resistance in a wire, different components and resistors in series and parallel circuits required practical's **Numeracy Skills:** Calculating potential difference, current, resistance and charge in a circuit	**Knowledge:** **Energy -** Conservation and dissipation of energy and energy stores. **Skills:** Changes in energy store Investigating pendulums and kinetic energy stores Investigating energy transfers and efficiency **Numeracy Skills:** Calculating work done Calculating change in GE Calculating Kinetic and elastic energy Calculating power and efficiency Rearranging equations Conversion of units		