

STUDENT INFORMATION

Acids and Bases

LEARNING INTENTIONS

1. Name common acids and bases found at home and at school
2. Use formulae for common acids and bases
3. Give examples of the uses of acids and bases
4. State that all solutions are acidic, basic, or neutral
5. Understand safety precautions required for using acids and bases
6. Understand some of the physical properties of acids and bases
7. Use litmus paper and universal indicator and understand the concept of pH and the pH scale
8. Make an indicator using plant pigments
9. Explain the difference between dilute and concentrated solutions
10. Distinguish between physical and chemical change
11. Define the terms 'reactant' and 'product'
12. Neutralise an acid with a base and use equations to explain what has happened and give observations. Discuss everyday examples.
13. React a metal with an acid and use equations to explain what has happened and give observations
14. React a metal carbonate with an acid and use equations to explain what has happened and give observations
15. Describe how fertilisers are made and evaluate their benefits and their harmful effects
16. Discuss the formation and effects of acid rain

ASSESSMENT TASKS:

1. Thinking task – investigating reactions with acids
2. End of Unit test – 40 minute written test

DATE DUE: (*insert date – approximately 4 weeks /14 lessons*)

SUCCESS CRITERIA

Achieved	Merit	Excellence
<ul style="list-style-type: none">• Understand the pH scale and classify substances as neutral, basic or acidic• Describe the basic tests for CO₂ and H₂• Show a knowledge of observations in acid reactions	As for Achieved plus <ul style="list-style-type: none">• Write word equations for reactions• Complete tests for CO₂ and H₂• Link observations of acid reactions to species	As for Merit plus <ul style="list-style-type: none">• Write symbol equations• Explain and discuss the effect of neutralisation reactions

STUDENT INFORMATION
Atoms, Molecules, and Ions

LEARNING INTENTIONS

- Explain the difference between elements and compounds in terms of their composition
- Explain the structure of a simple atom
- State the charge carried by protons, neutrons, and electrons
- Show an understanding of atomic number and mass number
- Understand the layout of the Periodic Table
- Give a definition of an ion and explain how they form
- Give an explanation of ionic bond and write ionic formulae
- Use symbols to write equations for simple reactions which form compounds
- Write word equations for reactions which produce compounds
- Explain what a molecule is and give examples
- Give examples of covalent bonding
- Give a simple explanation of the 'Law of Conservation of Mass'
- Describe how plastics are made and state some of their uses
- Describe the processes involved in the manufacture of glass and state some of its uses and discuss the advantages and disadvantages involved
- Be familiar with the concept of recycling of plastics and glass, its advantages and its limitations

KEY COMPETENCY TASKS

Thinking – Construct a 2or3D model of an atom and explain how it changes to form an ion

SUCCESS CRITERIA

Achieved	Merit	Excellence
State or define key terms and draw simple models/ diagrams of atomic structures	Draw and use more complex diagrams and carry out simple calculations using basic formulae and word equations.	Discuss and use of inorganic and organic materials in industry and everyday life. Carry out complex calculations (and if A or B band: balance equations).

STUDENT INFORMATION

Earth – The Active Planet

LEARNING INTENTIONS:

- Show some understanding of Earth's very long history
- Describe how fossils are formed
- Know some of the life forms associated with the main geological periods
- Name and briefly describe the four layers of the Earth
- Know the difference between minerals and rocks
- Use a simple key to identify some common minerals
- Name examples of each of the three main types of rock and state some of their uses
- Understand and describe how each of the three main rock types is formed
- Describe the structure of a volcano
- State the ways in which volcanic activity can change the Earth's surface
- Use a rock sequence to write a brief history of past events
- Describe some of the evidence for continental drift
- Give a simple account of the theory of plate tectonics
- Give a brief account of the geological history of the local district
- Explain how advances in technology have improved our knowledge of geology

ASSESSMENT TASKS:

Formative assessment – One on one conferencing and exercise book work (Task/worksheet/discussion answers or Group conferencing)

Summative assessment – end of unit test

DATE DUE

Approximately 4 weeks after commencement of topic.

SUCCESS CRITERIA

Achieved	Merit	Excellence
Can describe knowledge of: Earth's history, fossils, main geological periods, four layers of the Earth, minerals and their identification, three main types of rocks, their formation and uses, volcanoes, continental drift, plate tectonics, geological history of NZ and how technology has improved knowledge of geology	Can explain knowledge of: Earth's history, fossils, main geological periods, four layers of the Earth, minerals and their identification, three main types of rocks, their formation and uses, volcanoes, continental drift, plate tectonics, geological history of NZ and how technology has improved knowledge of geology	Can discuss and apply knowledge of: Earth's history, fossils, main geological periods, four layers of the Earth, minerals and their identification, three main types of rocks, their formation and uses, volcanoes, continental drift, plate tectonics, geological history of NZ and how technology has improved knowledge of geology

STUDENT INFORMATION

Electricity

LEARNING INTENTIONS

1. Describe some of the ways in which electrical technology affects our lives
2. Describe safety procedures that should be taken when using electrical appliances and first aid procedures for an electric shock victim
3. Define voltage and current
4. Name some electrical conductors and insulators
5. Draw circuit diagrams using the correct symbols
6. Know the difference between a cell and a battery
7. Explain why fuses are included in circuits
8. Wire up series and parallel circuits
9. Explain the advantages and disadvantages of series and parallel circuits
10. Recognise the reasons for dim and bright lights in the two types of circuits
11. Correctly wire up a voltmeter and an ammeter in a circuit
12. Show an understanding of the uses of resistors and rheostats
13. Explain how resistors are used to regulate current flow and to convert electrical energy into other forms
14. State and use Ohm's Law Voltage = Current x Resistance
15. State that Power = Voltage x Current and that the Watt is the unit of power
16. Explain the relationship between the power rating of an appliance and the amount of energy it uses
17. Give examples of the application of electromagnetism

ASSESSMENT TASKS

1. Research assignment – Research and produce a poster describing one method of electricity generation in NZ (discuss in groups and one person presents the work to the class)
2. End of unit test – 40 minute written test

DATE DUE (*insert date*)

SUCCESS CRITERIA

Achieved	Merit	Excellence
State or define key terms and draw simple circuit diagrams	Draw and use more complex circuits and carry out simple calculations	Discuss and use Ohm's law, Power law and carry out calculations

STUDENT INFORMATION

Forces and Motion

LEARNING INTENTIONS

The ways in which objects move

- Understand there are only two types of motion.

- Describe the differences between constant velocity and acceleration.

How to measure motion

- Calculate average velocity of objects using $v=d/t$.

- Describe the units of both velocity and acceleration.

- Convert velocity units from kilometers per hour to meters per second and vice versa.

- Know that acceleration is the rate an object changes velocity and it is measured in metres per second per second: ms^{-2}

How to make graphs of an object's motion

- Construct a distance-time graph and recognise where it shows constant velocity or acceleration or no velocity at all.

- Construct a velocity-time graph and recognise acceleration as the steepness of the graph line drawn.

The effect of forces on motion

- Recognise that unbalanced forces will cause acceleration and that steady velocity is the result of balanced forces on an object.

- Describe how the size of an unbalanced force will affect the acceleration of a mass.

- Make labelled diagrams showing all the forces acting on an object in motion or an object at rest.

That there are different types of forces

- State that a force is measured in units called Newtons (N) and that 1N is the force needed to lift up 100g.

- Describe weight as a gravity force on any mass.

- Measure friction forces and their effects on an object's motion.

- Use force meters to measure forces on objects.

- Describe magnetic force fields, their effects, and draw diagrams of the force fields around magnets.

ASSESSMENT TASKS

Practical investigations

– Select from any of the suggested experiments to write up as a formal scientific report e.g. separation techniques, metals vs. non-metals

OR – research uses of some metals and non-metals in society.

Summative assessment – 40 minute end of unit test

DATE DUE Approximately 4 weeks after commencement of topic (*teacher to add date or week of assessment*)

SUCCESS CRITERIA

Achieved	Merit	Excellence

STUDENT INFORMATION FOR LIVING THINGS

LEARNING INTENTIONS

Students will be able to:

- Define: producer, consumer, decomposer, habitat, environment, population, community, and ecosystem
- Name and describe different examples of ecosystems
- Understand and explain why plants and animals live together in an ecosystem
- Construct flow diagrams of food chains and interpret them
- Distinguish between energy flow and nutrient cycles in an ecosystem
- List environmental factors that can affect organisms
- Record and display appropriate environmental measurements of a local ecosystem
- Be able to observe the distribution of plants and animals in a natural area.
- Use quadrats and transects to take random samples of a population in order to estimate population size or population density
- Be able to explain the patterns in your observations
- Describe what an adaptation is and differentiate adaptations on a organism as structural, physiological or behavioural
- Describe the growth in human population, and give reasons for this and effects of this on the global ecosystem
- List some of New Zealand's endangered species, explain why they are threatened with extinction, and give steps that can be taken to conserve them.
Show some understanding of the need for resource management

ASSESSMENT TASKS

Research assignment – Looking at the effects the growing human population has on the rest of the global ecosystem

OR research an extinct/ endangered species to discover which environmental changes have lead to the reduction in numbers

Summative assessment – End of topic test

DATE DUE Approximately 4 weeks after commencement of topic

SUCCESS CRITERIA

Achieved	Merit	Excellence
Can describe: The characteristics and classification of living things. The meanings of key ecological terms The feeding types in a community How energy flows and nutrients cycle through and ecosystem The types and benefits of adaptations	Can explain: The characteristics and classification of living things with examples The feeding types and relationships in a community How energy flows and nutrients cycle through and ecosystem The types and benefits of adaptations How to carry out a community study	Can apply knowledge of: The characteristics and classification of living things with examples The feeding types and relationships in a community How energy flows and nutrients cycle through and ecosystem The types and benefits of adaptations How to carry out a community study

STUDENT INFORMATION

Variation

LEARNING INTENTIONS

- Define the term 'Variation' and give reasons why genetic variation is important
- Explain why living things reproduce
- Define 'sexual' and 'asexual' reproduction and outline the advantages and disadvantages of each
- Draw and label a typical flower and describe the functions of the parts
- Explain the difference between pollination and fertilization
- Describe the process of reproduction in flowering plants
- Give reasons why seed dispersal is necessary and name the main methods
- Label diagrams of the human male and female reproductive organs
- Describe the process of fertilization, embryo development, and birth in humans
- Give an account of the main stages in human development, both physical and mental
- Know the life cycles of fish, amphibians, and insects and describe adaptations of the stages in plant and animal life cycles
- Understand the need for courtship and mating behaviours in animals
- Explain the relationship between the numbers of young produced and the degree of parental care
- Understand the role of chromosomes in inheritance and know how to carry out a simple monohybrid cross
- Interpret pedigree diagrams

ASSESSMENT TASKS

Research assignment – Looking at the adaptations of different organisms to suit their habitats
OR research a contemporary application of genetics.

Summative assessment – End of topic test

DATE DUE Approximately 4 weeks after commencement of topic

SUCCESS CRITERIA

Achieved	Merit	Excellence
Can describe structural, physiological, and behavioural adaptations which ensure the survival of animals and flowering plants in their environment. Can recognize patterns in the inheritance of genetically controlled characteristics. Can describe cell division.	Can explain the importance of variation within a changing environment. Can explain how genetic information is passed from one generation to the next.	Can discuss using examples, the contemporary application of genetics.

