# Year 7 Learning Journal – Science 2022

| I'm working towards: | Mastery | Secure | Developing | Emerging |
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| | Autumn term | | | | | Spring term | | | | | Summer term | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Particles and Properties | Cells | Forces | Elements | Autumn Assessment | Body Systems | Sound and Light | Reactions | Human Reproduction | Spring Assessment | Plant Reproduction | Earth and Space | Acids and Alkali | Summer assessment |
| **Mastery** | | | | | | | | | | | | | | |
| **Secure** | | | | | | | | | | | | | | |
| **Developing** | | | | | | | | | | | | | | |
| **Emerging** | | | | | | | | | | | | | | |

| Term | Knowledge and Working Scientifically |
|---|---|
| Autumn term | Two areas that I need to work on:<br>• <br>• |
| Spring term | Two areas that I need to work on:<br>• <br>• |
| Summer term | Two areas that I need to work on:<br>• <br>• |

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| | Year 7 Physics | | |
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| | **Forces** | **Sound and Light** | **Earth and Space** |
| **Emerging** | **Recall** names of forces<br>**Define** deform<br>**State** examples of everyday situations of friction<br>**Give** examples of different types of force field<br>**Identify** balanced and unbalanced forces from diagrams | **Identify** different parts of a wave<br>**Define** "vibration" in terms of sound<br>**Define** loudness and amplitude<br>**State** parts of the ear, with support<br>**State** what is meant by an echo<br>**Identify** luminous objects<br>**Recall** how light travels<br>**Identify** different types of medium<br>**Define** disperse | **Recall** the names of the four layers of the Earth<br>**Recall** how the three types of rocks are made, with support<br>**State** the main constituent gases of the Earth's atmosphere<br>**Recall** that burning fossil fuels produces greenhouse gases, including carbon dioxide<br>**Identify** the names of some phases of the Moon<br>**Identify** the names of objects within our solar system |
| **Developing** | **State** what forces do<br>**Describe** how forces deform objects<br>**State** examples of everyday situations involving drag forces<br>**Describe** the effects of fields<br>**State** the difference between balanced and unbalanced forces | **Describe** the different types of waves and their features<br>**Describe** how our sound is produced and travels<br>**Describe** the link between loudness and amplitude<br>**State** parts of the ear<br>**State** what is meant by an echo, giving examples<br>**State** the different between luminous and non-luminous objects<br>**Describe** how light is reflects from a mirror<br>**Describe** what happens when light enters a medium<br>**State** when happens when light passes through a prism | **Identify** the four layers of the Earth<br>**Recall** how the three types of rocks are made<br>**State** the main constituent gases of the Earth's atmosphere including approximate percentages<br>**Recall** that burning fossil fuels produces greenhouse gases, including carbon dioxide<br>**Recall** that carbon dioxide is a greenhouse gas<br>**Describe** the appearance of the Moon and the planets from diagrams<br>**Describe** the model of the solar system |
| **Secure** | **Identify** forces acting on everyday objects<br>**Explain** how solid surfaces provide a support force<br>**Describe** the effect of drag forces and friction on objects<br>**Describe** the difference between weight and mass<br>**Describe** what happens when the resultant force on an object is not zero | **Describe** what happens when water waves hits a barrier<br>**Explain** why the speed of sound is different in different materials<br>**Define** the link between frequency and pitch<br>**Describe** how the ear works<br>**Describe** what ultrasound is<br>**Describe** how we see luminous and non-luminous objects<br>**Describe** how images are formed in a plane mirror<br>Contract a ray diagram to show refraction<br>**Describe** how primary colours add to make secondary colours | **Describe** the different layers of the Earth<br>**Name** types of igneous, sedimentary, and metamorphic rock<br>**Describe** the different layers of the atmosphere<br>**Identify** activities which produce carbon dioxide<br>**Describe** the greenhouse effect<br>**Describe** the appearance of the Moon and the planets<br>**Describe** similarities and differences between the planets |
| **Mastery** | **Describe** what is meant by an interaction pair<br>**Use** Hooke's Law<br>**Explain** how friction and drag forces can be reduced<br>**Use** formula to calculate weight<br>**Explain** why speed or direction of motion of objects can change | **Describe** what happens when waves superpose<br>**Contrast** the speed of sound and the speed of light<br>**Compare** how human hearing range differs from hearing range of animals<br>**Explain** how hearing can be damaged<br>**Describe** some uses of ultrasound<br>**Compare** how light is transmitted different objects<br>**Use** ray diagrams to show how light reflects to form images<br>**Use** a ray diagram to describe how light passes through lenses and transparent materials<br>**Explain** how filters and coloured materials subtract light | **Compare** the composition and properties of the layer of the Earth<br>**Explain** the rock cycle's link to the three rock types<br>**Explain** how an atmosphere impacts a planet<br>**Discuss** historical carbon dioxide levels<br>**Explain** that an increase in the concentrations of greenhouse gases causes the climate to warm and change<br>**Explain** why you see the phases of the Moon<br>**Explain** why we see objects in the Solar System |

# Year 7 Learning Journal – Science 2022

| | Year 7 Biology | | |
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| | **Cells** | **Structure and Function of Body Systems** | **Reproduction** |
| **Emerging** | **Name** some types of cells<br>**Recall** some cell components<br>**Name** some examples of specialised animal cells from diagrams<br>**Recall** some substances that every cell needs<br>**Label** an amoeba or euglena with support | **Recall** names of organs<br>**Label** a diagram of the respiratory system with support<br>**Demonstrate** changes during inhaling and exhaling<br>**Name** the main parts of the skeleton<br>**State** where joints are found in the body<br>**Recall** some muscles in the body | **Define** puberty<br>**State** the main structure in reproductive systems, with support<br>**State** what is meant by gestation<br>**State** what is meant by a period<br>**Give** reasons for colourful flowers<br>**Name** organisms that produce seeds |
| **Developing** | **State** what a cell is<br>**Match** cell components to their functions<br>**Name** some examples of specialised animal and plant cells<br>**State** some substances that move into and out of cells<br>**Identify** structures in amoeba & euglena | **State** examples of tissues, organs and organ systems<br>**State** the main components of the respiratory system<br>**Describe** the processes of inhaling and exhaling<br>**List** the functions of the skeleton<br>**State** where joints are found in the body<br>**State** examples of groups of muscles in the body | **State** the difference between adolescence & puberty<br>**State** main structures in reproductive systems<br>**Give** examples of gestation periods<br>**Describe** the main stages in the menstrual cycle<br>**Identify** the main structures of a flower<br>**State** the ways seeds can be dispersed |
| **Secure** | **Describe** the features of a light microscope<br>**Identify** a similarity and difference between plant and animal cell<br>**Describe** the function of specialised animal and plant cells<br>**Describe** the process of diffusion<br>**Describe** what a unicellular organ | **Describe** the order of hierarchy of organisation in a multi-cellular organism<br>**Describe** the structure and function of the gas exchange system<br>**Describe** how a bell jar can be used to model what happens during breathing<br>**List** the functions of the skeleton<br>**Describe** the structure and function of joints<br>**Describe** the function of major muscle groups | **Describe** the main changes that take place during puberty<br>**Describe** the function of the main structure in the reproductive systems<br>**Describe** the main steps in a baby's development<br>**Explain** methods of contraception<br>**Describe** the process of pollination<br>**Describe** different methods of seed dispersal |
| **Mastery** | **Explain** how to use a microscope to observe a cell<br>**Compare** the similarities and differences between plant and animal cells<br>**Explain** how the structure of a specialised cell can help it to carry out its function<br>**Explain** how diffusion occurs in plant cells<br>**Explain** how unicellular organisms are adapted to carry out different functions | **Explain** why multi-cellular organisms need organ systems to keep their cells alive<br>**Explain** how parts of the gas exchange system are adapted to their function<br>**Explain** how to measure lung volume<br>**Explain** how the properties of bones link to their function in the body<br>**Explain** how to measure the force exerted by different muscles<br>**Explain** how antagonistic muscles cause movement | **Explain** what causes puberty<br>**Describe** the structure and function of gametes<br>**Describe** what happens during birth<br>**Evaluate** methods of contraception<br>**Describe** the differences between win and insect-pollinated plants<br>**Explain** how a seed is adapted to its method of dispersal |

# Year 7 Learning Journal – Science 2022

| | Year 7 Chemistry | | | |
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| | **Particles and Behaviour** | **Elements** | **Reactions** | **Acids and Alkalis** |
| **Emerging** | **Identify** some different types of materials<br>**Recall** the three states of matter<br>Def**ine** mass<br>**Give** examples of when melting happens<br>**Describe** boiling with support | **Give** examples of common elements<br><br>**Recall** some common compounds and their formulae | **Identify** from diagram if a chemical reaction has taken place<br>**State** the meaning of an arrow in a word equation<br>**State** examples of fuel<br>**Define** thermal<br>**Define** mass | **Recall** the hazards of acids and alkalis<br>**State** the purpose of the pH scale<br>**Identify** neutral on the pH scale<br>Identify common items as acids or alkalis<br>**Identify** an example of a base |
| **Developing** | **State** what materials are made of<br>**State** the properties of a substance in its three states<br>**State** the meaning of mass, volume and density<br>**Recognise** the state of a substance in relation to its melting & boiling point<br>**Describe** simply how changes of temperature or state can be described in terms of particles transferring energy<br>**Describe** one difference between boiling and evaporation | **State** what an element is and recall the symbols of 16 elements<br><br>**Describe** the difference between an element and compound | **Describe** the characteristics of chemical reactions<br>**Identify** reactants and products in word equations<br>**Define** fuel<br>**State** what thermal decomposition is<br>**State** what is meant by conservation of mass<br>**State** what all chemical reactions involve | **Recall** the hazards of acids and alkalis and how to handle them safety<br>**Identify** acids, alkalis and neutral solutions on pH scale<br>**State** what products are formed in the reaction between an acid and alkali<br>**State** what products are formed in the reaction between an acid and base |
| **Secure** | **Describe** simple what the particle model of matter is<br>**Draw** and **describe** the arrangement of particles in the three states of matter<br>**Explain** why the same substance has different densities in each of its three states<br>**Explain** changes of state in terms of change to the energy of the particles<br>**Recognise** the state of a substance in relation to its melting and boiling point<br>**Explain** changes of state in terms of changes to the energy of the particles | **Describe** what atoms are<br><br>**Write** the chemical names for some simple compounds | **Explain** why chemical reaction are useful<br>**Write** word equations to represent chemical reactions<br>**Write** word equations for combustion reactions<br>**Write** word equations for decomposition reactions<br>**Calculate** masses of reactants and products<br>**Describe** exothermic and endothermic changes | **Describe** differences between concentrated and dilute solutions of an acid<br>**Identify** the best indicator to distinguish between solutions of different pH<br>**Explain** how neutralisation reaction are used in different situations<br>**Name** the slats that form when acids react with metals or bases |
| **Mastery** | **Explain** why different materials have different properties<br>**Use** ideas about particles to **explain** the properties of a substance in its three states<br>Expla**in** why different solids have different densities<br>**Draw** before and after diagrams to **explain** observations about changes state<br>**Explain** changes of state in terms of changes to the energy of the particles | **Compare** the properties of one atom of an element to the properties of many atoms<br><br>**Write** and **interpret** chemical formulae | **Compare** chemical reactions to physical changes<br>**Use** particle diagrams to show what happens in a chemical reaction<br>**Evaluate** the use of renewable fuel<br>**Use** particle diagrams to describe decomposition reaction<br>**Balance** symbol equations<br>**Use** experimental observations to distinguish exothermic and endothermic reactions | **Compare** the properties of acids and alkalis<br>**Use** data and observations to determine the pH of a solution<br>**Describe** a method for neutral solution from an acid and an alkali<br>**Explain** how you can make crystals of salts |

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