

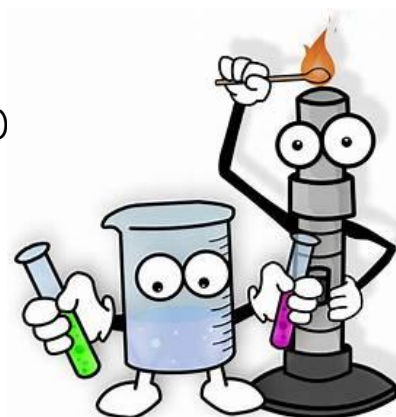
# SCIENCE DEPARTMENT KEY STAGE 3 SCIENCE REVISION GUIDE

*"Fail to prepare.... Prepare to fail"*

Use this guide to check that you cover all the topics you have studied over this year. It has all the topic headings and some things you should do to help you revise. You can use your classwork books, revision guides and the internet to help you revise.

## Revision top tips

- **Start early**
- Do a small amount at a time (Half hour every day minimum)
- Make revision cards or notes.
- Define key terms.
- Use colour and diagrams
- Try some practise quizzing questions
- EDUCAKE
- GCSE POD
- <https://www.bbc.co.uk/bitesize/subjects/zng4d2p>



## Scientific Investigations

Planning the experiment	<p><i>Identify factors that could affect the outcome of an experiment.</i></p> <p><i>Recognise and make predictions</i></p> <p><i>Decide what equipment should be used.</i></p> <p><i>Write how to do a practical in simple clear steps.</i></p>
Doing the experiment	<p><i>Decide what should be done to make the experiment a fair test.</i></p> <p><i>Explain how to get reliable results</i></p> <p><i>Describe how to make results accurate.</i></p>
Looking at the results	<p><i>Draw a line graph and a bar chart.</i></p> <p><i>Read values off a line graph</i></p> <p><i>Draw a table to record results.</i></p> <p><i>State simply why the results in a table or a graph show.</i></p> <p><i>List the units for time, mass, speed and temperature, try to name 3 more.</i></p>
Evaluating the findings	<p><i>Decide whether enough evidence has been collected.</i></p> <p><i>Explain whether the results collected match the conclusion.</i></p> <p><i>Explain whether the experiment done was a fair text and if not why not.</i></p> <p><i>Identify errors that have been made when doing a practical.</i></p>

**Biology: Life Processes and Living things**

<b>Life processes and cells</b>	
Life Processes	What does "MRS GREN" stand for? e.g. M=Movement
Plant and animal cells	Draw and label diagrams of the two types of cell. Which parts do they have in common? What does each part do in the cell?
Specialised cells	Name 3 specialised animal and 3 specialised plant cells. Explain how their structure helps with their job.
Organisation	Cell, tissue, organs, system, organism Name 5 Organs and describe what they do? Identify what systems they belong to?
<b>Humans as organisms</b>	
Healthy Diet	Name the 7 main nutrients and why we need them. Name 4 vitamins and minerals and what they are for. What food should you eat to give you the different nutrients? Why do people need different diets?
Body systems: Digestive Respiratory Circulatory Reproductive	Draw and label a diagram of each system Explain the special features of each system e.g. alveoli Describe the route of blood around your body. Create a flow diagram to summarise digestion Describe how the foetus survives in the uterus.
Healthy body	What three factors can affect you health? What are micro-organisms? How are diseases spread? Describe the effects of smoking, alcohol and lack of exercise on the body?
<b>Plants</b>	
Parts and processes	Draw and label a diagram of the leaf, explain what processes happen in the leaf. Write the word equation for photosynthesis Name and state the function of the other parts of the plant.
<b>Variation, Classification and Inheritance</b>	
Variation and inheritance	Explain why members of the same species can be different. Describe what cause variation Explain natural and artificial selection
Classification	Name the five vertebrates groups. Describe the features of different vertebrates Use a key to identify organisms
<b>Living things and their environment</b>	
Habitats and inheritance	Name some different habitats and identify the plants and animals found there. Explain how the organisms are adapted to their environment.
Feeding relationships and competition	Draw a food chain or a food web. Explain what happens to the energy available at each stage in the food chain. Draw pyramids of numbers. Use key terms correctly. (Predator, prey, producer, consumer, carnivore, herbivore etc) Describe how organisms are in competition for resources such as light, food & shelter. Explain why the population of a species may change.

## Chemistry: Materials and their properties

States of matter	<p>Name three states of matter and describe how their particles are arranged. List the different properties of the three states of matter. Use key terms correctly, evaporation, sublimation, condensation, freezing etc Explain gas pressure and diffusion in terms of particles.</p>
Atoms and elements	<p>Describe what is meant by an atom and element. Give the chemical symbols of common elements (copper, lead, oxygen, hydrogen etc) Describe some of the properties of common elements e.g. it's a conductor List the properties of metals and non-metals.</p>
Mixtures and compounds	<p>Explain the difference between a compound and a mixture. Explain how a mixture can be separated by filtration, distillation etc</p>
<b>Changing materials</b>	
Physical and chemical change	<p>Identify physical and chemical changes. Explain observations made of a chemical change, e.g. if bubbles are seen Explain dissolving in terms of particles Define solvent, solute, solution, solubility correctly Explain factors which affect solubility e.g. temperature</p>
Expansion	<p>Describe some uses and problems of expansion. Explain expansion in terms of particles.</p>
Word equations	<p>What are reactants and products? Write the word equations for simple reactions e.g. metal &amp; oxygen, metal &amp; acid, acid &amp; alkali</p>
<b>Environmental chemistry</b>	
Acid rain and the environment	<p>Give the word equation for combustion of fuels. Describe how fossil fuels can be useful, but also can cause problems. Explain how acid rain is formed and what damage it can do. Explain what is meant by the greenhouse effect and what causes it.</p>
<b>Patterns of behaviour</b>	
Metals	<p>Describe how metals react with air, water and acids. Which metals react violently with water? Which don't react with water at all? Put metals in order of reactivity. Use the reactivity series to predict the outcomes of displacement reactions.</p>
Acid and alkali	<p>Name some acids and alkalis Use the pH scale and locate acid, alkali and neutral on it. Describe how acids can be neutralised. Write word equations for acid reactions</p>

## Physics: Physical processes

<b>Forces and motion</b>	
Balanced and unbalanced forces	<i>Explain the affect of forces on an object. Name 3 forces Work out the size of a force from how an object is moving.</i>
Speed	<i>Recall the formula that links speed, distance and time Calculate speed e.g. if an object takes 30 seconds to travel 90 metres what is the average speed?</i>
Friction	<i>Describe two ways of reducing friction Explain how a parachute works.</i>
Pressure	<i>Recall the formula that links pressure, force and area. How do snowshoes help you walk on snow?</i>
Moments	<i>Recall the formula that links turning force with distance and force. State the law of moments. Why do we use a spanner not our fingers to unscrew a nut?</i>
<b>The earth and beyond</b>	
The planets	<i>Name the planets in order Link the planets temperature and orbital time to its distance from the sun.</i>
Day, Night and Seasons	<i>Explain why we have day and night Explain why we get seasons</i>
Satellites	<i>Describe what satellites are used for. Why don't satellites fly of into space?</i>
<b>Sound and light</b>	
Sound	<i>What causes sound? Draw sound waves showing loud or high-pitched sounds. What do amplitude, frequency and wavelength mean?</i>
Light	<i>Draw ray diagrams showing reflection and refraction. Name the primary and secondary colours of light. What happens when white light shines onto a red filter? Explain why a green cap looks black in blue light.</i>
<b>Electricity and magnetism</b>	
Electricity	<i>Draw circuit symbols and simple series and parallel circuits correctly. Identify materials as conductors and insulators. State some reasons why a circuit wouldn't work.</i>
Magnetism	<i>Explain what happens when you put two north poles together. Draw a magnetic field. Describe how to increase the strength of an electromagnet. Write down three uses of electromagnets.</i>
<b>Energy resources and transfers</b>	
Energy resources	<i>Where does most of the earth's energy come from? What are fossil fuels? Name three renewable energy resources. Draw a diagram to show how energy is generated from coal.</i>
Energy transfers	<i>List 5 different forms of energy. State the energy transformation for a television. Describe how energy is lost from a house. Explain why energy conservation is important</i>