# Year 8 KS3 Science Year Booklet

## Includes:

- Home-learning Tasks
- Revision Questions
- Content Checklists

Name:_____

Tutor Group:_____

Science Group:_____

# Contents:

# FAQs.

**How many home-learning tasks will I need to do?**

*One a week, which should cover 3 tasks per unit.*

**How will I know which task to complete?**

*Your teacher will tell you which unit and task number to complete. But you are expected to complete the challenge task for each home-learning set.*

**What if I find the challenge task too hard?**

*We want to challenge you to increase your progress during the year, but if you do find it too hard, get your tutor or a parent to make and sign a note in your science book by your home-learning and complete the regular task. You will need to do this each time.*

**What do I do if I don't get it?**

*Go and talk to your teacher (or any science teacher) before the due date, we are here to help. There are revision resources in this book to help, otherwise try www.bbcbitesize.co.uk or buy a revision guide from the science lab technicians.*

**Can I do my home-learning on the computer?**

*Yes. But make sure you print it out and stick it in your book. If you arrive to your lesson with it on a memory stick, it will not be accepted.*

**Can I complete the tasks ahead of them being set?**

*Yes! Make sure it is easy for your science teacher to find it in your book*

**What are the revision questions and checklists for?**

*It is important to revise before each assessment. Use the checklists to find out if there are any areas you may need to work on before a test and the revision questions to get someone else or to test yourself on the topic.*

# 8B1: Health and Lifestyle

Textbook pages 4-20

# 8B1: Home-Learning Tasks:

| Task Number | Regular | Challenge | Completed? |
|---|---|---|---|
| 1 | In a table list the 7 groups of nutrients. Give an example of a food from each oneand describe why we need each nutrient. | Research what is meant by Kwashikhor. Find out why people get it and the effect it has on people | |
| 2 | Write a story about a day in the life of a chip as it passes through the digestive system. | Explain at least two ways that the small intestine is adapted to digestion | |
| 3 | Draw a table to show examples of medicinal and recreational drugs (including alcohol and tobacco) and their effects on the body | Explain how tar, nicotine and carbon monoxide damage the breathing system in humans | |
| 4 | Summary Questions: Regular | Summary Questions: Challenge | |

Summary Questions: Regular:

1) List the 7 groups of food and their use in the body
2) Describe the food tests for starch, simple sugars, fats/lipids and protein
3) Explain the difference between a balanced diet, starvation, malnutrition and obesity
4) Describe the path of food through the digestive system from mouth to anus
5) Name the 3 types of enzyme and their breakdown products
6) Describe the problems caused by alcohol and tobacco on the body

Summary Questions: Challenge:

1) Explain why a fat free diet is not good for the body
2) Is scrambled egg on toast a balanced diet? Explain your answer
3) Explain why explorers in the arctic need a massive amount of food to maintain their body weight.
4) Research the importance of bile in digestion
5) Research the importance of enzymes in digestion
6) Explain why drinking alcohol during pregnancy can cause damage to the foetus

# 8B1: Revision Questions:

| Question | Answer |
|---|---|
| 1. Name the 7 components of a healthy diet. | Carbohydrates, Lipids, Proteins, Vitamins, Minerals, Water, Fibre. |
| 2. What are lipids? | Fats and oils in food. |
| 3. What does the body use carbohydrates for? | Energy. |
| 4. What does the body use lipids for? | Energy, insulation, protection of organs. |
| 5. What does the body use protein for? | Growth and repair of body tissues. |
| 6. What does the body use vitamins and minerals for? | Keeping you healthy in small amounts |
| 7. What does the body use water for? | Prevention of dehydration. All cells in the body contain water. |
| 8. What does the body use fibre for? | It prevents constipation by keeping the food moving through the digestive system. |
| 9. What would you use to test food for starch? | Add iodine. |
| 10. What would show starch to be present? | Iodine going a blue-black colour. |
| 11. How would you test solid food for lipids? | Rub the solid food on a piece of filter paper and hold it up to the light. If it goes transparent, lipids are there. |
| 12. How could you test for lipids in a solution of food? | Add a few drops of ethanol to the solution, shake it and leave it for one minute. Tip the ethanol into water. If it goes cloudy, lipids are there. |
| 13. How do you make a solution of food? | Crush the food and mix it really well with water. |
| 14. How do you test food for sugar? | Add a few drops of Benedict's solution and then heat it in a water bath. If it goes orange-red, sugar is there. |
| 15. How do you test food for protein? | Add Buiret's solution to the food. If it turns lilac (purple) then protein is there. |
| 16. What is the energy in food measured in? | Joules. |
| 17. What is a kilojoule? | 1000 Joules. |
| 18. What do we suffer if we have no food? | Starvation. |
| 19. What do we become if we do not eat enough? | Underweight. |
| 20. Give 3 problems caused by being underweight. | Health problems like a poor immune system, lack of energy or tiredness, lack of vitamins or minerals. |
| 21. What do we become if we eat too much food or eat food too high in fat? | Overweight. |
| 22. What do we call someone who is extremely overweight? | Obese. |
| 23. Give 4 problems caused by being overweight. | Hear t disease, stroke, diabetes, certain cancers. |
| 24. What is the term for being short of a certain vitamin or mineral? | We call this a **deficiency**. |
| 25. What does a deficiency of vitamin A lead to? | Night blindness (unable to see in dim light). |
| 26. What does a vitamin D deficiency cause? | Rickets (weak bones). |
| 27. How does more exercise affect the amount of energy you need? | It increases it. |
| 28. What happens during digestion? | Large molecules are broken down into smaller ones. |
| 29. Why does digestion make large molecules into smaller ones? | They can then pass into the blood. |

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|---|---|
| 30. Give the 7 main parts of the digestive system, in order. | Mouth, Gullet, Stomach, Small intestine, Large intestine, Rectum, Anus. |
| 31. What happens in the mouth? | Food is chewed and mixed with saliva. |
| 32. What does the gullet do? | Passes food from the mouth to the anus. |
| 33. What happens in the stomach? | Food is mixed with digestive juices and acid. |
| 34. Give 2 things which happen in the small intestine. | Digestive juices added from the liver and pancreas.<br>Small molecules are absorbed into the blood. |
| 35. What happens in the large intestine? | Water is absorbed back into the body, making faeces. |
| 36. What does the rectum do? | Stores faeces. |
| 37. What does the anus do? | Allows faeces to pass out of the body. |
| 38. What are Villi? | Small finger-like projections on the inside of the small intestine which give it a bigger surface area. |
| 39. What is an enzyme? | A biological catalyst, something which speeds up chemical reactions without being used up. |
| 40. What do enzymes do in digestion? | They break large molecules down into smaller ones. |
| 41. Name 3 enzymes. | Carbohydrase/ amylase, Protease, Lipase. |
| 42. What does carbohydrase do? | Breaks down carbohydrates such as starch down into sugar molecules. |
| 43. What does protease do? | Breaks down protein into amino acids. |
| 44. What does lipase do? | Breaks down lipids into fatty acids and glycerol. |
| 45. What does bile do? | Helps lipase to work by breaking up lipids into small droplets which are easier to work on. |
| 46. What is a drug? | A chemical substance which affects the way the body works. |
| 47. What are medicinal drugs? | Drugs which benefit health in some way. |
| 48. What are recreational drugs? | Drugs which people take for enjoyment which may harm the body. |
| 49. Name 2 legal recreational drugs. | Alcohol and tobacco. |
| 50. What is addiction? | Where someone is dependent on a drug, they have to keep taking it in order to feel normal. |
| 51. What is a depressant? | A drug which slows down your body's reactions. |
| 52. What type of alcohol is in alcoholic drinks? | Ethanol. |
| 53. What damage can alcohol cause? | Stomach ulcers, brain damage, liver damage, heart disease. |
| 54. What is a stimulant? | A drug which speeds up the body's reactions. |
| 55. Give 3 health conditions caused by smoking. | Lung cancer, heart attacks, strokes. |
| 56. What is the name given to breathing in other people's smoke? | Passive smoking. |
| 57. What problems can be caused if a pregnant woman smokes? | Higher risk of miscarriage, low birth-weight, development of foetus is affected. |
| 58. What health problems are increased in babies whose parents smoke? | Bronchitis, pneumonia, cot death. |
| 59. What sticky substance in smoke causes lung cancer? | Tar. |
| 60. Name the addictive stimulant drug in tobacco smoke. | Nicotine. |
| 61. How does carbon monoxide in tobacco smoke affect people? | It stops the blood from carrying as much oxygen as it could, by binding to red blood cells instead of oxygen. |
| 62. Give 3 diseases caused by smoking. | Heart disease, emphysema and respiratory infections. |

# 8B1: Checklist:

| Topic | Page | Spec points | Understanding    | Revised | RP |
|---|---|---|---|---|---|
| 1.1 | 4-5 | • I can list the contents of a healthy human diet<br>• I can describe why parts of a healthy human diet are needed<br>• **I can give examples of foods that contain each nutrient**<br>• **I can describe what is meant by a balanced diet** | | | |
| 1.2 | 6-7 | • **I can describe the food tests for starch, lipids, sugars and proteins**<br>• **I can describe the positive results for each nutrient test** | | | |
| 1.3 | 8-9 | • I can explain the consequences of imbalances in the diet (obesity, starvation and deficiency-related diseases)<br>• I can make calculations of energy requirements in a healthy daily diet | | | |
| 1.4 | 10-11 | • I can name some tissues and organs in the human digestive system<br>• I can describe the functions of some tissues and organs in the human digestive system<br>• I can outline the process of digesting food<br>• I can link adaptations of different parts of the digestive system to their functions<br>• **I can describe how food moves through the digestive system**<br>• **I can explain how villi are adapted to their function** | | | |

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|---|---|---|---|---|---|---|---|
| 1.5 | 12-13 | • I can explain how digestion happens, with reference to enzymes<br>• I can discuss the benefits of bacteria in the human digestive system<br>• **I can recall the enzymes for different nutrients** | | | | | |
| 1.6 | 14-15 | • I can list some effects of recreational drugs on behaviour, health and life processes<br>• I can describe some effects of recreational drugs on behaviour, health and life processes<br>• I can explain some effects of recreational drugs and substance misuse on behaviour, health and life processes<br>• I can evaluate some effects of recreational drugs on behaviour, health and life processes<br>• **I can describe what a drug is** | | | | | |
| 1.7 | 16-17 | • I can list some effects of recreational drugs on behaviour, health and life processes<br>• I can describe some effects of recreational drugs on behaviour, health and life processes<br>• I can explain some effects of recreational drugs and substance misuse on behaviour, health and life processes<br>• I can evaluate some effects of recreational drugs on behaviour, health and life processes<br>• **I can describe how we measure what a safe amount of alcohol is to drink** | | | | | |
| 1.8 | 18-19 | • **I can describe what alcohol is**<br>• I can describe the impact of exercise, asthma and smoking on the human gas exchange system<br>• I can list, describe and explain some effects of smoking on behaviour, health and life | | | | | |

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|---|---|---|---|---|---|---|---|
| | | processes<br>• I can evaluate some effects of recreational drugs on behaviour, health and life processes<br>• **I can describe what passive smoking is** | | | | | |

# 8C1: The Periodic Table

Textbook pages 60-70

# 8C1: Home-Learning Tasks:

| Task Number | Regular | Challenge | Completed? |
|---|---|---|---|
| 1 | Research the history of the periodic table. Explain how it is arranged using the terms groups, periods, atomic number and atomic mass. | Find out about some other suggestions for laying out the periodic table. Evaluate how they were better and worse than the version we use. | |
| 2 | Make a poster to summarise the reactions and properties of Group 1 elements lithium, sodium, potassium and rubidium | Extend your poster by including caesium and francium. Explain why they properties of the elements change in the group | |
| 3 | Evaluate the uses for Helium. Why is using it for balloons potentially a problem for scientists? | Pick an element from group 0. Explain what it is used for, where we get it from and any problems with it. | |
| 4 | Summary Questions: Regular | Summary Questions: Challenge | |

Summary Questions: Regular:

1. Where are the non-metals on the periodic table? – draw a diagram
2. What are the groups and periods in the periodic table?
3. Describe the reactions of group 1 with water?
4. What are the properties of group 7 elements?
5. What is unusual about group 0 elements?

Summary Questions: Challenge:

1. What differences are there between metals and non-metals
2. Why is the pattern of the periodic table useful?
3. What are the trends in group 1?
4. What trends are there in group 7?
5. What are group 0 elements used for and why?

# 8C1: Revision Questions:

| Question | Answer |
|---|---|
| Where are metals on the periodic table? | On the left |
| Where are metals on the periodic table? | On the right |
| List three properties of a metal? | Good conductor of electricity, good conductor of heat, shiny, high density, malleable, ductile, sonorous |
| List three properties of a non-metal? | Poor conductor of electricity, poor conductor of heat, dull, low density, brittle, not sonorous |
| What is the name of an element on the border between metals and non-metals? | Metalloids |
| What is made when a metal reacts with oxygen? | A metal oxide |
| What might be made when some non-metals dissolve in rain? | Acid rain |
| What are the columns of the periodic table called? | Group number |
| What are the rows of the periodic table called? | Periods |
| Why is it useful to understand the way the periodic table laid out? | To understand the trends |
| What is the pattern in melting point of group 1? | Decreases down the group |
| What is the pattern in reactivity point of group 1? | Increases down the group |
| Describe the general properties of group 1 | Low melting and boiling points, low densities, reactive |
| What is the equation for lithium reacting with water? | Lithium + water →lithium hydroxide + hydrogen |
| Are metal oxides acids or bases? | Bases |
| What is a physical property? | Things you can observe and measure |
| What are chemical properties? | They describe substances react |
| What the halogens? | Group 7 |
| What types of compounds do fluorine, bromine and iodine make? | Fluoride, bromide and iodide |
| What happens to the melting point and boiling point down group 7? | Increases |
| What happens to the colours of group 7 down the group? | They get darker |
| What is a displacement reaction? | A reaction where a more reactive element replaces a less reactive element |
| What elements are in group 0? | He, Ne, Ar, Kr, Xe, Rn |
| What is another name for group 0? | Noble gases |
| What is the key chemical property of group 0 elements? | Unreactive |
| Where do noble gases come from? | Underground or under the sea |
| What happens when high voltages are passed through noble gases? | They glow |

# 8C1: Checklist:

| Topic | Page | Spec points | Understanding | | | Revised | RP |
|---|---|---|---|---|---|---|---|
| | | |  |  |  | | |
| 1.1 | 60-61 | • I can state that all elements currently known may be found listed in the Periodic Table<br>• I can state that the modern Periodic Table was developed by Mendeleev<br>• I can identify where metals, non-metals, periods and groups can be found on the Periodic Table<br>• I can list the properties of metals and non-metals<br>• I can describe the changes that Mendeleev made when he developed the modern Periodic Table<br>• I can describe how the properties of metals and non-metals make them suitable for different uses<br>• I can explain some of the properties of metals and non-metals with reference to their structure<br>• I can explain why Mendeleev made the changes he did when developing the modern Periodic Table | | | | | |
| 1.2 | 62-63 | • I can state that the Periodic Table can be used to predict patterns in reactions<br>• I can describe what groups and periods are in the periodic table<br>• I can state that elements in the same group of the Periodic Table will have similar patterns in reactions<br>• I can identify where metals, non-metals, periods and groups can be | | | | | |

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|---|---|---|---|---|---|---|---|
| | | found on the Periodic Table<br>• I can describe how elements with similar physical and chemical properties are grouped together<br>• **I can predict properties of elements from their position in the periodic table** | | | | | |
| 1.3 | 64-65 | • **I can identify where Group 1 is in the periodic table**<br>• I can describe the patterns of reactivity for Group 1 in the Periodic Table<br>• I can link group number and electron structure to explain the patterns of reactivity for Group 1 and Group 7 in the Periodic Table<br>• **I can describe the properties of the Group 1 elements**<br>• **I can describe what happens when Group 1 metals react with water**<br>• **I can create word equations for Group 1 metals reacting with water** | | | | | |
| 1.4 | 66-67 | • I can describe the patterns of reactivity for Group 1 and Group 7 in the Periodic Table<br>• I can link group number and electron structure to explain the patterns of reactivity for Group 7 in the Periodic Table<br>• **I can describe the properties of Group 7 elements**<br>• **I can describe what a displacement reaction is**<br>• **I can write word equations for displacement reactions** | | | | | |
| 1.5 | 68-69 | • **I can identify and describe the properties of the elements in Group 0**<br>• **I can describe where we can obtain Group 0 elements from**<br>• **I can predict properties of Group 0 elements** | | | | | |

# 8P1: Electricity and Magnetism

Textbook pages 122-138

# 8P1: Home-Learning Tasks:

| Task Number | Regular | Challenge | Completed? |
|---|---|---|---|
| 1 | Describe 3 different problems caused by static and describe 2 different ways to prevent problems caused by static electricity | Describe what Earthing is<br><br>Describe how static electricity is built up by a moving car and explain why you can get a static shock when you touch it | |
| 2 | Using circuit diagrams, explain why when one bulb breaks in Xmas tree lights, the other lights do not turn off. | Explain how a light dimmer switch works. Use a diagram to help you | |
| 3 | Describe what a thermistor and a LDR do. Draw their circuit symbols | Describe what a solenoid is. Explain how it works and describe a use for it | |
| 4 | Summary Questions: Regular | Summary Questions: Challenge | |

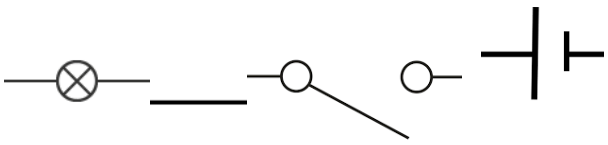
Summary Questions: Regular:

1. What are the three different types of charge?
2. Draw a series circuit with two bulbs, one cell and a switch in it
3. Describe what you use to measure the current in a circuit. Draw the circuit in question 2 with an ammeter in it
4. Describe what happens to the current in a parallel circuit
5. State which 4 materials are magnetic
6. Describe 3 ways to make an electromagnet stronger

Summary Questions: Challenge:

1. Explain how a balloon can be statically charged
2. Draw a circuit with a cell and two bulbs in parallel. Add switches to the circuit so that you can turn each light on and off independently
3. Describe what happens to the potential difference in a series and parallel circuit
4. Describe what a resistor is and explain how it works
5. Describe how to make an electromagnet

# 8P1: Revision Questions:

| Question | Answer |
|---|---|
| 1. What are the 2 types of electrical charge? | Positive and negative |
| 2. What 3 particles are atoms made from? | Protons, neutrons and electrons |
| 3. What are the charges of protons, neutrons and electrons? | Protons = positive. Neutrons = 0/ neutral. Electrons = negative |
| 4. What happens when you get 2 positive charges next to each other? | They repel each other |
| 5. What happens when you get a positive charge next to a negative charge? | They attract each other |
| 6. What is the overall charge of an atom? | Neutral |
| 7. Which particle moves when two insulating surfaces rub against each other? | Electrons |
| 8. What force causes particles to move when two insulating surfaces rub against each other? | Friction |
| 9. What is an electric field? | An area around a charge where another charge will experience a force |
| 10. What causes lightning? | Particles move causing a build-up of charge. The charges then move causing a current |
| 11. What is a current? | The amount of charge flowing per second |
| 12. What units is current measured in? | Amps |
| 13. What equipment can you use to measure current? | Ammeter |
| 14. What is the symbol for a bulb, a wire, a switch and a cell? |  |
| 15. How can a loop of string be used to model a current? | Rope represents the charges. The amount of rope moving per second is the current |
| 16.What is the job of a cell/ battery in a circuit? | They push charges around the circuit |
| 17. State some examples of circuit components | Bulb, buzzer, motor, resistor |
| 18.What is meant by potential difference? | The push that makes a charge move around a circuit |
| 19. What unit is potential difference measured in? | Volts |
| 20. What piece of equipment can be used to measure potential difference? | Voltmeter |
| 21. How do you measure the PD of a power supply? | Connect the voltmeter around the battery |
| 22. How do you measure the PD of a component? | Connect the voltmeter around the component |
| 23. What happens to the PD in a series circuit? | Total PD of components = PD of power supply |
| 24.What happens to the PD in a parallel circuit? | The potential difference is the same for each component as the battery |
| 25.What happens to the current in a series circuit? | It is the same all the way round the circuit |
| 26. What happens to the current in a parallel circuit? | It splits up at the junction |

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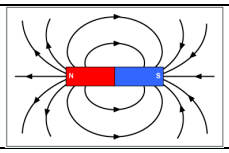
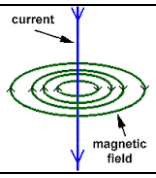
| 27. What is the difference between a series and a parallel circuit? | In series there is one loop of wire. In parallel there is more than one loop of wire. |
| 28. How could you represent a parallel circuit using a model? | Hold more than one loop of rope that the 'battery' moves around at the same time |
| 29. What does a resistor do? What is its symbol | It slows down the current |
| 30. What is resistance? What is it measured in? | How easy/ difficult to let the current through. Measured in Ohms |
| 31. What equation can be used to calculate resistance? | Resistance = Potential difference ÷Current |
| 32. What do the electrons do as they move through a wire? What does this cause? | They collide with the atoms. It causes the wires to heat up. The electrons lose energy |
| 33. What is meant by an electrical conductor? | Something that has low resistance and lets a lot of electricity through easily |
| 34. What 4 materials are magnetic? | Iron, steel, cobalt, nickel |
| 35. What are the 2 poles for a magnet? | North and South |
| 36. What happens when you get 2 different poles next to each other? | The magnets attract each other |
| 37. What happens when you get 2 similar poles next to each other? | The magnets repel each other |
| 38. What do the magnetic field lines look like around a bar magnet? |  |
| 39. What happens when a compass is near a magnet? | They align up with the magnetic field lines |
| 40. Where is the magnetic field stronger for a bar magnet? How can you tell this? | At the poles. The field lines are closer together |
| 41. What else has a magnetic field? | The Earth |
| 42. How is a magnetic field made? | By charges moving |
| 43. What shape is the magnetic field around a current carrying wire? |  |
| 44. What is an electromagnet? | A strong, electrical magnet |
| 45. What do you need to make an electromagnet? | A magnetic core with wire wrapped around it |
| 46. How can you make an electromagnet stronger? | Increase the current, PD, loops of wire wrapped around the core |
| 47. Name some uses for electromagnets | Motors, sorting out magnetic and non-magnetic metal |
| 48. Name 2 differences between bar magnets and electromagnets | Bar magnets are permanent magnets. Electromagnets are stronger |
| 49. What is a relay? | An electronic switch containing an electromagnet |
| 50. What is a motor? | An electrical component that spins when a current passes through it |
| 31. What is an electrical insulator? | Something that has high resistance and does notlet a lot of electricity through easily |

# 8P1: Checklist

| Topic | Page | Spec points | Understanding | | | Revised | RP |
|---|---|---|---|---|---|---|---|
| | | | ☹ | 😕 | 😃 | | |
| 1.1 | 122-123 | • I can link electrical conduction and insulation with the structure of atoms<br>• I can state that when two materials are rubbed together electrons will be transferred<br>• I can describe the force between two charged objects as electrostatic force<br>• I can describe the properties of an electrostatic force<br>• I can explain when objects will attract or repel each other due to electrostatic force<br>• I can describe how the movement of electrons can result in objects becoming charged with static electricity<br>• I can discuss some examples and applications of static electricity<br>• I can explain how electrostatic force may attract a non-charged object through the induction of charge<br>• **I can describe what an electric field is** | | | | | |
| 1.2 | 124-125 | • I can state that an electrical circuit must be complete and include a power source, wires and a component for electricity to flow<br>• I can state that electrical current is measured in amperes (amps)<br>• I can identify some common components of electrical circuits from the circuit symbol<br>• I can give the symbol for the unit of current (A) | | | | | |

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| | | • I can name some common components of electrical circuits<br>• I can name the component used to measure electrical current<br>• I can draw the circuit symbols of some common components of electrical circuits<br>• I can describe electrical current as the flow of charge in a circuit<br>• I can identify electrical current as flowing from positive to negative in a solution or circuit<br>• I can describe how to correctly connect an ammeter to a circuit<br>• I can model an electric current<br>• I can define the term 'direct current' | | | | | |
| 1.3 | 126-127 | • I can state that the potential difference of a battery or cell is what causes the current to flow<br>• I can state that potential difference is measured in volts<br>• I can state that a battery or cell of a higher potential difference will cause more current to flow<br>• I can give the symbol for the unit of potential difference (V)<br>• I can name the component used to measure potential difference<br>• I can describe how a bulb of an increased potential difference will be brighter<br>• I can describe how to correctly connect a voltmeter to a circuit<br>• **I can model potential difference** | | | | | |
| 1.4 | 128-129 | • I can state what happens to the electric current in a series circuit<br>• I can state what happens to the potential difference in a series circuit<br>• I can identify series and parallel circuits<br>• I can describe what happens to an electric current at a junction<br>• I can describe what happens to the potential difference in a | | | | | |

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| | | parallel circuit | | | | | |
| 1.5 | 130-131 | • I can state what resistance is<br>• I can state what resistance is measured in and identify its symbol<br>• I can describe what happens to the current if the resistance is increased<br>• I can calculate resistance when given potential difference and current<br>• I can discuss resistance in terms of electrical conductors and insulators<br>• I can suggest some applications for materials of higher or lower resistance | | | | | |
| 1.6 | 132-133 | • I can state that magnets may be temporary or permanent<br>• I can state that like poles repel and unlike poles attract<br>• I can state that magnetism is a non-contact force that will affect magnetic materials within the magnetic field<br>• I can name the three magnetic materials<br>• I can draw the field lines surrounding a bar magnet with arrows<br>• I can label the north-seeking and south-seeking poles of a magnet, when given the field lines<br>• I can describe the Earth and compasses as examples of magnets<br>• I can describe the relationship between: strength and distance between field lines<br>• I can describe how to find the shape of a magnetic field using a compass<br>• I can describe and explain attraction and repulsion in terms of the direction of field lines | | | | | |
| 1.7 | 134-135 | • I can state that a flow of electric current will produce a magnetic | | | | | |

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|---|---|---|---|---|---|---|---|
| | | field<br>• I can describe temporary and permanent magnets in terms of hard and soft magnetic materials<br>• I can describe how a bar magnet inside an electromagnet field can be made to move<br>• I can describe how to make an electromagnet<br>• I can describe how to increase the strength of an electromagnet<br>• I can describe how magnetism may be induced | | | | | |
| 1.8 | 136-137 | • I can list some uses of electromagnets<br>• I can describe how to make a simple motor using electromagnetism and a bar magnet<br>• **I can describe how a relay works and what it is used for**<br>• **I can list some uses of motors** | | | | | |

# 8B2: Ecosystem Processes

Textbook pages 22-40

# 8B2: Home-Learning Tasks:

| Task Number | Regular | Challenge | Completed? |
|---|---|---|---|
| 1 | Using the equation for photosynthesis, describe where the reactants come from and what the products are used for by the plant. | Explain the importance of chlorophyll, stomata and xylem vessels in photosynthesis. | |
| 2 | Describe what you would expect a plant to look like if it was deficient in a) nitrate, b) magnesium, c) phosphorus, d) potassium | Draw a table to compare photosynthesis and chemosynthesis | |
| 3 | Compare the equations for aerobic and anaerobic respiration and list the similarities and differences between the processes | Explain why anaerobic respiration in yeast is economically important. | |
| 4 | Summary Questions: Regular | Summary Questions: Challenge | |

Summary Questions: Regular:

1) Write the word equation for photosynthesis and explain the importance of light and chlorophyll in this process
2) Describe the role of the stomata in photosynthesis
3) Explain why farmers add minerals to their crops
4) Write the equation for aerobic respiration and describe the importance of haemoglobin in this process
5) Write down the meaning of the term interdependence. In a food web describe what could happen to the other organisms if one of the herbivores population decreased

Summary Questions: Challenge:

1) Describe and explain the optimum (best) conditions for photosynthesis
2) Explain how the palisade layer, the spongy layer and stomata in the leaf are adapted for photosynthesis
3) Explain why cropping leads to mineral deficient soils in farming but natural ecosystems rarely show mineral deficiency
4) Compare the processes of photosynthesis, chemosynthesis and aerobic respiration
5) Describe the terms predator and prey and explain how the changes in the numbers of predator or prey can affect the balance in an ecosystem

# 8B2: Revision Questions

| Question | Answer |
|---|---|
| 1. What do producers do? | Make their own food. |
| 2. Give 2 producers. | Plants and algae. |
| 3. Where do algae live? | In water. |
| 4. What do algae not have? | Leaves, roots or stems. |
| 5. Why are animals called consumers? | They eat other organisms to survive. |
| 6. What do we call the process where producers make food? | Photosynthesis. |
| 7. What are the reactants in photosynthesis? | Carbon dioxide and water. |
| 8. What are the products of photosynthesis? | Glucose and oxygen. |
| 9. Give the word equation for photosynthesis. | Carbon dioxide + Water → Glucose + Oxygen |
| 10. Where does the energy for photosynthesis come from? | Light. |
| 11. Which part of a leaf cell carries out photosynthesis? | The chloroplasts. |
| 12. What chemical makes chloroplasts green? | Chlorophyll. |
| 13. Where does water enter the plant? | Through the root hair cells. |
| 14. What transports water through a plant? | Xylem tubes. |
| 15. How does carbon dioxide enter a leaf? | Through tiny holes in the leaves. |
| 16. How does a leaf being thin help photosynthesis? | This allows gases to diffuse in and out easily. |
| 17. Why do leaves have a large surface area? | To absorb as much light as possible. |
| 18. What do phloem tubes do? | Transport glucose. |
| 19. Where does most of the sunlight hit a leaf? | The top. |
| 20. What is the function of the waxy layer on a leaf? | This reduces water loss by evaporation. |
| 21. What do we call the tiny holes in leaves? | Stomata. |
| 22. What do guard cells do? | Open and close stomata. |
| 23. What is the palisade layer? | The part of a leaf which contains the most chloroplasts and carries out the most photosynthesis. |
| 24. Where in a leaf is the palisade layer? | Near the top. |
| 25. What is the spongy layer? | The part of a leaf with air spaces. |
| 26. What do plants need nitrates for? | Healthy growth, making amino acids. |

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| 27. What are amino acids used for? | Making proteins. |
| 28. What do plants need phosphates for? | Healthy roots. |
| 29. What do plants need potassium for? | Healthy leaves and flowers. |
| 30. What do plants need magnesium for? | Making chlorophyll. |
| 31. Which part of a plant absorbs minerals? | The root hair cells. |
| 32. Which part of the plant carries the minerals? | The xylem. |
| 33. What are the signs of a plant having a nitrate deficiency? | Poor growth and yellow older leaves. |
| 34. What are the signs of a plant having a magnesium deficiency? | Leaves turn yellow. |
| 35. What are the signs of a plant having a phosphorous deficiency? | Poor root growth, purple younger leaves. |
| 36. What are the signs of a plant having a potassium deficiency? | Yellow leaves with dead patches. |
| 37. What is a mineral deficiency? | Not having enough of a particular mineral (in plants). |
| 38. What do farmers use to replace missing minerals in soil? | Fertilisers. |
| 39. What do NPK fertilisers contain? | Nitrogen, phosphorous and potassium. |
| 40. What is chemosynthesis? | Making glucose using chemicals as a source of energy. |
| 41. Where do sulfur bacteria live? | At the bottom of the sea near volcanic vents. |
| 42. What do sulfur bacteria do? | Turn hydrogen sulfide into sulfur by chemosynthesis. |
| 43. Where do nitrogen bacteria live? | In the soil and in the roots of plants. |
| 44. What do nitrogen bacteria do? | They use nitrogen compounds for chemosynthesis. |
| 45. Sulphur bacteria sometimes live in tubeworms, benefiting both. What is this type of relationship called? | A symbiotic relationship, or a mutualistic one. |
| 46. What process uses oxygen to get the energy out of glucose? | Aerobic respiration. |
| 47. Give the word equation for aerobic respiration. | Glucose + Oxygen → Carbon dioxide and water. |
| 48. What part of the cell carries out the aerobic respiration? | Mitochondria. |
| 49. What does the small intestine do? | Absorbs glucose from food into the blood. |
| 50. Which part of the blood transports the glucose? | The plasma. |
| 51. What is the plasma? | The liquid part of the blood. |
| 52. Which part of the blood carries oxygen? | The red blood cells. |
| 53. What do red blood cells contain which carries oxygen? | Haemoglobin. |
| 54. Which part of the blood carries carbon dioxide? | The plasma. |
| 55. Which part of the body gets rid of the carbon dioxide? | The lungs. |

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| 56. What process releases energy from food without oxygen? | Anaerobic respiration. |
| 57. What do humans make during anaerobic respiration? | Lactic acid. |
| 58. What does lactic acid cause? | Muscle cramps. |
| 59. What is oxygen debt? | Breathing heavily after exercise to get oxygen to break down lactic acid. |
| 60. What are the products of anaerobic respiration in yeast? | Ethanol and carbon dioxide. |
| 61. What do we call anaerobic respiration in yeast? | Fermentation. |
| 62. What is the first organism in a food chain? | The producer. |
| 63. What is the 2nd organism in a food chain? | The herbivore (primary consumer). |
| 64. What is the 3rd organism in the food chain? | The carnivore (secondary consumer). |
| 65. What do the arrows show in a food chain? | Energy flow. |
| 66. What is a prey animal? | One which is eaten by a predator. |
| 67. What is a predator? | An animal which eats other animals (prey). |
| 68. Why do most food chains only have 4 or 5 links? | There is not usually enough energy left at the end to support another organism. |
| 69. What animal is the last link in a food chain? | The top predator. |
| 70. What do we call a number of interconnected food chains? | A food web. |
| 71. What is a population? | A group of animals of the same species in the same area. |
| 72. What would happen to the population of predators if the population of prey dropped? | It would drop (unless they found something else to eat). |
| 73. What is bioaccumulation? | Toxins such as insecticides being passed along a food chain and building up in the top predator. |
| 74. What do we call the animals and plants in the same area, along with the area itself? | An ecosystem. |
| 75. What do we call all the organisms in an area? | A community. |
| 76. What do we call the area where an organism lives? | Its habitat. |
| 77. What is an organism's niche? | Its role in an ecosystem, in other words where it lives and what it eats. |

# 8B2: Checklist

| Topic | Page | Spec points | Understanding | | | Revised | RP |
|---|---|---|---|---|---|---|---|
| | | | ☹ | 😕 | 😃 | | |
| 2.1 | 22-23 | • I can explain how plants make carbohydrates in their leaves and gain mineral nutrients and water from the soil<br>• I can state that almost all life on Earth depends on photosynthetic organisms<br>• I can state how and where plants make carbohydrates<br>• I can list the reactants and products of photosynthesis<br>• I can summarise the reactants and products of photosynthesis using a word equation<br>• **I can describe what producers and consumers are**<br>• **I can explain how gases get in and out of a plant** | | | | | |
| 2.2 | 24-25 | • I can state that plants exchange gases via the stomata in their leaves<br>• I can describe some adaptations of plants leaves<br>• I can explain how some structural adaptations of plants' leaves aid photosynthesis<br>• I can link the importance of photosynthetic organisms to maintaining levels of oxygen and carbon dioxide in the atmosphere | | | | | |
| 2.3 | 26-27 | • I can state that plants gain mineral nutrients and water from the soil via their roots<br>• **I can describe the minerals required for plants and what they are used for**<br>• **I can identify the different mineral deficiencies of plants**<br>• **I can explain why farmers use fertilisers** | | | | | |
| 2.4 | 28- | • **I can describe what chemosynthesis is** | | | | | |

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|---|---|---|---|---|---|---|---|
| | 29 | • **I can describe the different habitats of bacteria**<br>• **I can compare chemosynthesis with photosynthesis** | | | | | |
| 2.5 | 30-31 | • I can describe what aerobic respiration is<br>• I can list the reactants and products of aerobic<br>• I can describe some applications of aerobic respiration<br>• I can summarise the reactants and products of aerobic respiration using word equations<br>• I can evaluate the implications of aerobic respiration for organisms based on the reactants and products<br>• **I can describe how carbon dioxide leaves the body and how oxygen enters the body** | | | | | |
| 2.6 | 32-33 | • I can list the reactants and products of anaerobic respiration<br>• I can describe some applications of anaerobic respiration<br>• I can summarise the reactants and products of anaerobic respiration using word equations<br>• I can compare and contrast aerobic and anaerobic respiration<br>• I can evaluate the implications of aerobic and anaerobic respiration for organisms based on the reactants and products<br>• **I can describe what fermentation is**<br>• **I can describe what is meant by an oxygen debt**<br>• **I can describe what foods and drinks are made from fermentation** | | | | | |
| 2.7 | 34-35 | • I can state that all organisms in an ecosystem may affect each other and are affected by their environment<br>• I can construct and interpret simple food chains | | | | | |

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| | | • I can construct and interpret food webs<br>• **I can describe what a prey and predator organism are** | | | | | |
| 2.8 | 36-37 | • I can describe how a change in the numbers of one organism may affect another<br>• I can explain how a change in the numbers of one organism may affect another, with reference to competition and predation<br>• **I can describe what bioaccumulation is and explain how it affects other animals**<br>• **I can describe what is meant by the population of an organism** | | | | | |
| 2.9 | 38-39 | • I can describe how organisms may be affected by their environment<br>• **I can describe what is meant by an ecosystem**<br>• **I can describe what is meant by a habitat and a community**<br>• **I can identify the roles of different organisms in an ecosystem**<br>• **I can describe and identify different niches of an ecosystem** | | | | | |

# 8C2: Separation Techniques

Textbook pages 72-84

# 8C2: Home-Learning Tasks:

| Task Number | Regular | Challenge | Completed? |
|---|---|---|---|
| 1 | Find 3 mixtures at home. Explain what components there are in each mixture | Create a diagram to show a mixture and suggest what materials you could use to make a model. | |
| 2 | Explain how evaporation is used to make table salt. Include pictures or diagrams | Explain how distillation can be used to desalinate (remove salt from) water. Why might this become more important in future. | |
| 3 | Describe how you could use chromatography to identify the different inks in a pen | Suggest how forensic scientists might be able to use chromatography | |
| 4 | Summary Questions: Regular | Summary Questions: Challenge | |

Summary Questions: Regular:

1. What are the definitions of mixture and compound?
2. Draw a diagram of a solution
3. What is solubility?
4. How does filtering work?
5. What is evaporation?
6. What does chromatography do?

Summary Questions: Challenge:

1. How can you tell whether a substance is pure by melting and boiling point?
2. Explain why fizzy drinks are fizzy
3. How does temperature affect solubility?
4. Describe the process of filtration using the terms: residue, filtrate, insoluble, solid and liquid.
5. What is distillation?
6. How does chromatography work?

# 8C2: Revision Questions

| Question | Answer |
|---|---|
| What is a mixture? | It is made up of two or more substances mixed together but not chemically bonded |
| What happens to melting point if a substance is impure? | It happens over a range of temperatures |
| What is a solvent? | A substance into which a solute dissolves |
| What is a solute? | A substance which dissolves into a solvent |
| What is a solution? | A mixture formed when a solute dissolves in a solvent |
| Can gases dissolve? | Yes |
| What is a saturated solution? | A solution you cannot dissolve any more solute into |
| What does solubility measure? | How much solute you can dissolve into a solvent |
| How does increasing temperature affect solubility? | The higher the temperature the greater the solubility |
| What does it mean if something is insoluble? | The substance does not dissolve in a particular solvent |
| What does filtering do? | Separates an insoluble substance from a solution or liquid |
| What is a filtrate? | The solution that passes through the filter |
| What is the residue? | The insoluble substance that is left in the filter |
| What do we use evaporation used for? | To separate a solute from a solvent |
| What is distillation? | Evaporation followed by condensation |
| What is distillation used for? | To separate mixtures of liquids |
| What does chromatography do? | Separates mixtures, usually dyes |
| What is a chromatogram? | The pattern of spots from a chromatography experiment |

# 8C2: Checklist

| Topic | Page | Spec points | Understanding | | | Revised | RP |
|---|---|---|---|---|---|---|---|
| | | | ☹ | 😕 | 😃 | | |
| 2.1 | 72-73 | • I can list some mixtures<br>• I can describe what a pure substance is<br>• I can describe how impurities may affect boiling and melting points of impure substances<br>• I can explain how mixtures are different from elements and compounds<br>• I can identify pure and impure substances from data<br>• I can suggest some applications for making substances impure | | | | | |
| 2.2 | 74-75 | • I can describe a mixture, including dissolved substances<br>• I can describe dissolving, with reference to particles<br>• **I can define and identify solvents and solutes**<br>• **I can explain how substances dissolve in a solvent** | | | | | |
| 2.3 | 76-77 | • **I can describe what a saturated solution is**<br>• **I can describe what the solubility of a solute is**<br>• **I can describe how solubility is affected by temperature** | | | | | |
| 2.4 | 78-79 | • I can identify simple techniques for separating mixtures<br>• I can select appropriate simple techniques for separating given mixtures (filtration, distillation and evaporation)<br>• I can describe how to carry out filtration of mixtures<br>• I can explain how filtering works<br>• **I can describe what is meant by filtrate and residue** | | | | | |

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| | | • **I can describe how filtration is useful** | | | | | |
| 2.5 | 80-81 | • **I can describe what evaporation and distillation are**<br>• I can describe how to carry out distillation and evaporation<br>• I can explain how distillation and evaporation work | | | | | |
| 2.6 | 82-83 | • I can describe what chromatography is<br>• I can select when to use chromatography<br>• I can describe how to carry out chromatography<br>• I can explain how chromatography works | | | | | |

# 8P2: Energy

Textbook pages 140-156

# 8P2: Home-Learning Tasks:

| Task Number | Regular | Challenge | Completed? |
|---|---|---|---|
| 1 | Give 4 examples of energy transformation. E.g<br><br>A light bulb<br><br>**Electricity → Light + Heat** | Explain using energy transformations why when a ball rolls down a hill and up another, the ball will not reach its original height | |
| 2 | Find out 4 different ways to insulate a house. Explain how one of these methods actually works | Describe what a 'thermogram' is. Explain what it shows and describe who might use one | |
| 3 | Describe how energy is generated using geothermal power stations | Describe how energy is generated at 'Dinorwig' (electric mountain. Explain how this method is useful | |
| 4 | Summary Questions: Regular | Summary Questions: Challenge | |

Summary Questions: Regular:

1. State 5 different types of energy
2. Give 3 different examples of how energy can be stored
3. Describe what heat is and what it is measured in
4. Describe what temperature is and what it is measured in
5. Describe how heat is transferred through conduction, convection and radiation
6. Describe how energy is generated using a thermal power station

Summary Questions: Challenge:

1. Describe what is meant by the conservation of energy
2. Describe what happens to particles when the gain heat energy
3. Explain what happens to the temperature of a pan of water when it is left on the stove of a cooker
4. Explain why solids are good conductors and gases are good insulators
5. Describe which colours are good at reflecting radiation and which colours are good at absorbing and emitting it
6. Explain how a thermos flask keeps the temperature of a substance constant

# 8P2: Revision Questions

| Question | Answer |
|---|---|
| 1.What do you measure energy in? | Joules/ kilojoules |
| 2. What is a kilo-Joule? | A thousand Joules |
| 3. State some examples of energy stores | Coal, oil, gas, food |
| 4. What do humans need energy for? | Keep them warm, let the move around, breathe, talk |
| 5. Describe which people need more energy | Athletes |
| 6. Why should do people need to be careful with how much energy they take in? | If they take in more than they use, the body stores it as fat to be used in the future |
| 7. What is the law of conservation of energy? | Energy cannot be created or destroyed. Only transferred from one form to another |
| 8. What is an energy store? | Something that can store energy (food or fuel) |
| 9. How does burning conserve energy? | Energy stored in fuel = Energy released from burning |
| 10. How is energy transferred in a light bulb? | Electricity → Light and Heat |
| 11. How is energy transferred in a motor? | Electricity→ Kinetic and Heat |
| 12. What is most energy wasted as? | Heat |
| 13. What does it mean when energy is dissipated? | Energy that has been lost as heat to the surroundings |
| 14. How can kinetic energy be stored? | Using a flywheel |
| 15. What is temperature? What is it measured in? | How hot an object is. Measured in ℃ |
| 16. What is heat? What is it measured in? | A type of energy. Measured in Joules |
| 17. What can you use to measure temperature? | A thermometer |
| 18. What happens when particles heat up? | They vibrate/ move around faster (they gain kinetic energy) |
| 19.What does the energy you need to increase the temperature of a material depend on? | The mass of material, type of material, temperature rise that you want |
| 20. Which way does heat flow from and to? | From hot objects to cold objects. |
| 21. What happens when objects are the same temperature? | They are in thermal equilibrium |
| 22.What 3 ways can energy get from one place to another | Conduction, convection, infrared radiation |
| 23. Explain how conduction works | Particles vibrate when heated. These collide with other particles and transfer the heat energy |
| 24. What materials are good conductors? | Solids/ metals |
| 25. Explain how convection works | Particles get heated and spread out. They become less dense and rise. When they rise they lose heat to the surroundings and cool. They then become dense and sink. This process is a convection current |
| 26. What materials are good at convection? | Fluids (gases and liquids) |

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| 27. Explain how radiation works | Objects that have a temperature (that are hot) emit infrared radiation) |
| 28. What objects are good at reflecting radiation? | Shiny, silver, white objects |
| 29. What objects are good at emitting and absorbing radiation? | Rough, matt, black objects |
| 30. What objects give of infrared radiation? | Hotter objects (objects at a higher temperature) |
| 31.Why can solids not carry out convection? | The particles cannot move around |
| 32. Which method of heat transfer does not need particles to work? | Infrared radiation |
| 33. What happens when something cools down? | It emits more infrared radiation than it absorbs |
| 34. What happens when sometime heats up | It absorbs more infrared radiation than it emits |
| 35. What can you use to see infrared? | An thermal imaging camera |
| 36.Explain why gases are good insulators | They are spaced out, so the particles cannot collide with each other |
| 37. What is a fossil fuel? | A fuel made from the remains of dead plants/ animals |
| 38. What are the 3 different fossil fuels? | Coal, oil and natural gas |
| 39. What does non-renewable mean? | It is used up faster than it can be made |
| 40. What does finite mean? | That there is a limited amount of a resource |
| 41. How does a thermal power station work? | Burn fuel, heat made boils water, steam turns turbine which turns a generator generating electricity |
| 42. Give some disadvantages of fossil fuels | Create carbon dioxide when burnt, non-renewable |
| 43. Name some non-renewable energy resources. | Fossil fuels, nuclear fuels |
| 44. Give some examples of renewable energy resources | Hydro-electricity, wind, solar, geothermal, tidal, biomass |
| 45. What is power? | The rate of energy transfer |
| 46. What are the units of power? | Watts/ kilowatts |
| 47. What is the equation for power? | Power = Energy transferred ÷ Time taken |
| 48. How does a house maintain its temperature? | Energy is transferred to heat it at the same rate that it loses heat |
| 49. What does the cost of electricity depend on? | Cost of electricity, power of appliance, time an appliance is used for (energy used) |
| 50. What is energy measured in? | Kilowatt hours or Joules |
| 51. How can we reduce our energy bills? | Use low power appliances, use the appliances for less time |
| 52. How does insulating reduce heating bills? | It reduces the amount of heat transferred to the surroundings |
| 53. What is meant by work done? | Transferring energy by using a force over a distance |
| 54. What is a lever? | A simple machine that multiplies the force |
| 55. Give an example of a lever | Screwdriver opening a tin of paint, pedal on a bike |
| 56. How can you increase the work done by a lever? | Increase the force or distance the force acts from the pivot |

7.

# 8P2: Checklists

| Topic | Page | Spec points | Understanding | | | Revised | RP |
|---|---|---|---|---|---|---|---|
| | | | ☹ | 😐 | 😃 | | |
| 2.1 | 120-141 | • I can state that energy is stored in food and fuel<br>• I can name the energy type that is stored in food and fuel<br>• I can calculate energy values of different foods in kJ (using food labels)<br>• I can state that energy gives the ability to *do* things<br>• **I can recall what energy is measured in**<br>• **I can recall the factors that affect the amount of energy we require each day** | | | | | |
| 2.2 | 142-143 | • I can describe how the energy in different energy resources can be used<br>• I can name different energy stores<br>• I can describe several situations where energy is transferred<br>• I can state that energy is always conserved<br>• I can describe how energy may be wasted and/or dissipated<br>• I can fully explain situations that may change the amounts of energy that is wasted<br>• **I can recall what is meant by the conservation of energy** | | | | | |
| 2.3 | 144-145 | • I can state that thermal energy is transferred between objects until thermal equilibrium is reached<br>• I can state that thermal energy is transferred from hotter objects to colder objects<br>• I can state that the effect of a thermal transfer is that one object increases in temperature whilst the other decreases in temperature<br>• **I can recall what temperature is** | | | | | |

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| | | **and what it is measured in**<br>• **I can describe the difference between heat and energy**<br>• **I can describe what happens to particles when they gain heat energy**<br>• **I can describe the factors that affect how much energy you need to heat up an object** | | | | | |
| 2.4 | 146-147 | • I can state that thermal energy is transferred by conduction in solids, and thermal insulators reduce thermal energy transfer<br>• I can state that thermal energy is transferred by convection in fluids<br>• I can describe some uses and applications of thermal insulators<br>• I can describe how thermal energy is transferred by conduction<br>• I can describe how materials which are heated will expand<br>• I can explain how thermal energy is transferred by conduction, in terms of particles<br>• I can describe how thermal energy is transferred by convection<br>• I can name some thermal insulators<br>• I can explain how thermal energy is transferred by convection, in terms of particles<br>• I can explain the expansion of heated materials, with reference to energy levels of particles<br>• I can suggest how thermal energy transfer by convection, conduction and radiation may be changed<br>• **I can describe what a fluid is** | | | | | |
| 2.5 | 148-149 | • I can state that thermal energy is transferred by radiation in transparent objects and vacuums<br>• I can describe how thermal energy is transferred by radiation<br>• I can explain how thermal energy is transferred by radiation in terms of particles | | | | | |

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| | | • **I can describe which surfaces are good emitters, absorbers and reflectors of thermal energy**<br>• **I can recall which objects emit heat radiation** | | | | | |
| 2.6 | 150-151 | • I can list some energy resources<br>• I can discuss how all materials have a store of energy inside them<br>• I can explain how almost all energy on Earth comes from the Sun<br>• I can compare and contrast energy resources<br>• I can justify suggestions about which energy resources may be most suitable<br>• **I can define renewable and non-renewable energy resources**<br>• **I can describe how power stations are used to generate electricity** | | | | | |
| 2.7 | 152-153 | • I can state that electrical appliances have power ratings (W, kW)<br>• I can describe what a higher power rating means in terms of energy transferred (J, kJ, kW/hour)<br>• I can calculate electrical power when given current and potential difference or power and time<br>• I can explain the effect of a higher power rating on the cost of running an appliance<br>• **I can define electrical power** | | | | | |
| 2.8 | 154-155 | • I can explain how simple machines give bigger force but at the expense of smaller movement<br>• **I can define work done**<br>• **I can give examples of levers**<br>• **I can calculate work done if given force and distance**<br>• **I can recall the units for work done** | | | | | |

# 8B3: Adaptation and Inheritance

Textbook pages 42-56

# 8B3: Home-Learning Tasks:

| Task Number | Regular | Challenge | Completed? |
|---|---|---|---|
| 1 | Describe the adaptations of a named animal or plant that allow it to successfully compete in its habitat | If the environment changes suddenly animals may no longer be adapted and become endangered or extinct. Explain why tigers or giant pandas are endangered | |
| 2 | In a predator prey relationship describe how a change in the numbers of prey effect the numbers of predators and explain why there are always more prey than predators | Explain why a predator prey relationship is called a cyclic fluctuation and predator numbers only increase after a prey increase. | |
| 3 | Describe how the story of the peppered moth is an example of natural selection | Natural selection was only one theory to explain evolution, research the theory of acquired characteristics and evaluate the 2 theories. | |
| 4 | Summary Questions: Regular | Summary Questions: Challenge | |

Summary Questions: Regular:

1) List the resources that are competed for by plants and animals
2) Describe the adaptations of a bear to cope with the changing seasons
3) Define the term species. Describe how one inherited and one environmental variation could change individuals in a species.
4) Explain why gender is a discontinuous variation but height is a continuous variation
5) Describe the genetic material in humans
6) What does 'survival of the fittest' mean in terms of natural selection

Summary Questions: Challenge:

1) If an animal or plant is unsuccessful in competition describe what could happen to them
2) Explain the changes in an oak tree to cope with winter
3) Explain why identical twins look similar but may have some differences
4) Explain what type of graph you would draw for a continuous variation such as mass and what type of graph you would draw for a discontinuous variation such as eye colour
5) Describe how the structure of DNA was discovered
6) Research the work of Charles Darwin

# 8B3: Revision Questions

| Question | Answer |
|---|---|
| 1. What is the term for different organisms trying to get the same resource? | Competition. |
| 2. What do animals compete for? | Food, water, space, mates. |
| 3. What do plants compete for? | Light, water, space, minerals. |
| 4. What do we call the features which allow organisms to survive the best? | Adaptations. |
| 5. Give an adaptation of small desert animals. | Hiding in burrows to avoid the heat of the day. |
| 6. Give an adaptation of large desert animals. | Being able to survive long periods without drinking. |
| 7. Give 4 adaptations of desert plants. | • A waxy layer preventing water from escaping.<br>• Stems that store water.<br>• Widespread roots to collect water from a large area.<br>• Spines instead of leaves to reduce water loss and prevent them from being eaten. |
| 8. Give an adaptation of deciduous trees. | They lose their leaves in winter. |
| 9. Give 3 adaptations of animals for coping with winter. | • Hibernation.<br>• Migration.<br>• Growing thicker fur. |
| 10. What benefit does the snowshoe hare get from its fur turning white in winter? | Camouflage (blending in with the snow). |
| 11. What do the best competitors get to do? | Survive and reproduce. |
| 12. What is the term for the interaction between predators and prey? | Interdependence. |
| 13. What will happen to the population of predators if the population of prey falls? | It will fall. |
| 14. What will happen to the population of prey if the population of predators falls? | It will rise. |
| 15. What do we call differences between organisms? | Variation. |
| 16. What is a species? (2 things) | A group of living things which can <u>reproduce</u> to produce <u>fertile</u> offspring. |
| 17. What do we call variation due to things which happen to an organism? | Environmental variation. |
| 18. What do we call variation which comes | Inherited variation. |

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| solely from our parents? | |
| 19. What is discontinuous variation? | Variation with specific values. |
| 20. Give an example of discontinuous variation. | Blood group, eye colour |
| 21. What is continuous variation? | Variation over a range. |
| 22. Give examples of continuous variation. | Height, body mass, hair length, arm span. |
| 23. How would you plot discontinuous data? | On a bar chart. |
| 24. How would you plot continuous data? | On a histogram. |
| 25. What is genetic material made of? | DNA. |
| 26. Where is DNA found in cells? | The nucleus |
| 27. What do we call the sections of DNA in the nucleus? | Chromosomes |
| 28. What do we call a section of a chromosome which codes for a specific characteristic? | A gene. |
| 29. How many chromosomes do humans have in each body cell? | 46. |
| 30. What are chromosomes always found in in body cells? | Pairs. |
| 31. How many chromosomes are found in a human sperm or egg? | 23. |
| 32. Name the 4 scientists who worked together to discover the structure of DNA. | Rosalind Franklin, Maurice Wilkins, James Watson and Francis Crick. |
| 33. What did Rosalind Franklin and Maurice Wilkins use to investigate the structure of DNA? | X-rays. |
| 34. What is the shape of DNA? | A double helix. |
| 35. What do we call the process where species change over millions of years? | Evolution. |
| 36. What evidence for evolution do we find in rocks? | Fossils. |
| 37. What process leads to evolution? | Natural selection. |
| 38. Give the 4 steps in natural selection. | • Organisms of a species show variation.<br>• The best adapted organisms survive and reproduce ('survival of the fittest').<br>• Genes from successful organisms are passed on to their offspring.<br>• Adaptations of successful organisms become more common. |
| 39. Summarise natural selection in peppered moths. | • Before the industrial revolution, most peppered moths were pale and hid on pale trees. The odd black moth was seen and eaten by birds.<br>• Pale moths survived and reproduced, so most |

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| | moths continued to be pale.<br>• During the industrial revolution, the trees around cities got sooty and darker.<br>• The pale moths stood out and were eaten by birds.<br>• The darker moths survived to reproduce, and so the dark form became more common around cities. |
| 40. What is extinction? | The situation where a species can no longer be found anywhere in the world. |
| 41. Give 4 causes of extinction. | • Changes to the environment.<br>• Habitat destruction.<br>• Disease.<br>• New predators or competitors. |
| 42. What is the name for the range of living organisms in an area? | Biodiversity. |
| 43. What does <u>endangered</u> mean? | There are only a small number of a particular species left in the world. (risk of extinction). |
| 44. What is a gene bank? | A store of genetic samples from different species. |
| 45. Give 4 different types of gene bank. | • Seed bank (seeds stored at low temperature).<br>• Tissue bank (buds and other cells stored).<br>• Cryobanks (seeds, embryos, sperm, eggs, very cold indeed, usually in liquid nitrogen).<br>• Pollen banks (pollen grains stored). |

# 8B3: Checklists

| Topic | Page | Spec points | Understanding | Revised | RP |
|---|---|---|---|---|---|

| | | |  |  |  | | |
|---|---|---|---|---|---|---|---|
| 3.1 | 42-43 | • I can explain how organisms may be affected by their environment, with reference to adaptations<br>• **I can describe what animals compete for**<br>• **I can describe what plants compete for**<br>• **I can explain how adaptation enable organisms to live in different environments** | | | | | |
| 3.2 | 44-45 | • **I can describe how animals adapt to seasonal changes**<br>• **I can describe how plants adapt to seasonal changes**<br>• **I can describe what interdependence is**<br>• **I can identify how the populations of predator and prey change over time and explain how they are related** | | | | | |
| 3.3 | 46-47 | • I can state that all organisms show variation, both within a species and between species<br>• I can state that due to variation, some individuals within a species will compete more successfully<br>• I can describe how variation is caused by inherited and environmental factors<br>• I can describe how variation is caused by inherited and environmental factors | | | | | |
| 3.4 | 48-49 | • I can explain that variation can be continuous or discontinuous, including the use of data<br>• **I can recall and identify continuous and discontinuous radiation**<br>• **I can describe what a normal distribution relationship is** | | | | | |
| 3.5 | 50-51 | • I can state that genetic information is inherited | | | | | |

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|---|---|---|---|---|---|---|---|
| | | • I can describe, in detail, the role of DNA, genes and chromosomes in heredity<br>• I can discuss the roles of Watson, Crick, Wilkins and Franklin in the discovery and development of the DNA model | | | | | |
| 3.6 | 52-53 | • I can explain how variation and environmental pressures can drive natural selection and lead to evolution<br>• **I can describe the evidence we have for evolution**<br>• **I can describe the process of natural selection**<br>• **I can explain how peppered moths evolved over time** | | | | | |
| 3.7 | 54-55 | • I can state that gene banks are important in maintaining biodiversity<br>• I can state that gene banks are important in maintaining biodiversity<br>• I can define biodiversity and heredity<br>• I can describe how gene banks may be used to maintain biodiversity<br>• I can describe how more successful competition can result in extinction<br>• I can apply my knowledge of genetics to explaining the use of gene banks to maintain biodiversity and preserve heredity material | | | | | |

# 8C3: Metals and Acids

Textbook pages 86-102

# 8C3: Home-Learning Tasks:

| Task Number | Regular | Challenge | Completed? |
|---|---|---|---|
| 1 | Describe the test for hydrogen. Include a diagram | What would happen if you swallowed magnesium ribbon? Include a word equation and how you could check | |
| 2 | What is the reactivity series? List at least 10 metals in the right order. | Suggest some reactions that would let you determine the reactivity series of a set of metals | |
| 3 | Compare the properties of ceramics, polymers and metals. How do their properties make them suitable for their uses? | Suggest why composite materials are used | |
| 4 | Summary Questions: Regular | Summary Questions: Challenge | |

Summary Questions: Regular:

1. What gas is made when a metal reacts with acid?
2. What is formed when a metal reacts with oxygen?
3. What is the word equation for the reaction of metals with water?
4. What causes a displacement reaction to occur?
5. How are metals extracted from ores?
6. What properties do ceramics have?
7. What is a polymer?
8. What is a composite material?

Summary Questions: Challenge:

1. Describe the test for hydrogen, what is happening chemically?
2. Why is gold used for jewellery?
3. What is the reactivity series?
4. What happens in the thermite reaction?
5. Why can't you use carbon to extract magnesium?
6. Why are ceramics useful?
7. What are polymers used for and why?
8. Why are composites used?

# 8C3: Revision Questions

| Question | Answer |
|---|---|
| 1. Name the products in the reaction of a metal and an acid | Salt and Hydrogen |
| 2. Describe how you could test for hydrogen gas | Lit splint. It pops. |
| 3. Write the state symbols for a substance in the gas state and solid state | (g) and (s) |
| 4. Name two metal s that react vigorously with oxygen from the air | Magnesium, Zinc |
| 5. Name the products of the reaction of calcium with water. | Calcium hydroxide and hydrogen gas. |
| 6. Write the state symbols for a substance in the liquid state and the dissolved state. | (l) and (aq) |
| 7. Name two metals that react with steam but not cold water | Magnesium, Zinc |
| 8. State what a displacement reaction is. | When a more reactive element displaces, or pushes out a less reactive metal from a compound. |
| 9. State why copper cannot displace magnesium in magnesium sulphate | Copper is less reactive than magnesium |
| 10. State the meaning of the word ore | A rock that contains an extractable amount of a certain metal. |
| 11. State what a ceramic material is | Compound that contain metal silicates, metal oxides, metal carbides and metal nitrides |
| 12. List 3 uses of ceramics | Building, Insulators, Pottery |
| 13. State what a polymer is | A substance with a very long molecule. It has identical groups of atoms repeated many times |
| 14. State why low-density poly(ethene) makes good carrier bags | Strong, flexible, light weight. |
| 15. State what a composite material is | A mixture of materials where each material has different properties. |
| 16. Name two materials in carbon-fibre reinforced plastic | Carbon fibres and a glue-like polymer |

# 8C3: Checklist

| Topic | Page | Spec points | Understanding | | | Revised | RP |
|---|---|---|---|---|---|---|---|
| | | | ☹ | 😕 | 😃 | | |
| 3.1 | 86-87 | • I can describe what happens when metals react with acids<br>• **I can create word equations for metals reacting with acids**<br>• **I can describe a test for Hydrogen gas**<br>• **I can recall which metals are not very reactive** | | | | | |
| 3.2 | 88-89 | • **I can describe what happens when metals react with oxygen**<br>• **I can create word equations for metals reacting with oxygen**<br>• **I can create symbol equations for metals reacting with oxygen**<br>• **I can recall and use the different state symbols**<br>• **I can compare reactions of metals and acids to metals and oxygen** | | | | | |
| 3.3 | 90-91 | • **I can write word equations showing what happens when metals react with water**<br>• **I can write symbol equations showing what happens when metals react with water**<br>• **I can balance symbol equations showing what happens when metals react with water**<br>• **I can describe how metals react with steam**<br>• **I can describe what is meant by the reactivity series** | | | | | |
| 3.4 | 92-93 | • I can describe simple displacement reactions when given the order of the reactivity series<br>• **I can describe what a** | | | | | |

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| | | **displacement reaction is**<br>• **I can give examples of displacement reactions**<br>• **I can explain why some chemicals displace others in chemical reactions** | | | | | |
| 3.5 | 94-95 | • I can state that some materials (particularly metals) are more reactive than others<br>• I can explain how metals can be obtained from metal oxides using carbon, using the reactivity series<br>• I can discuss and suggest methods that may be used to extract metals more reactive than carbon<br>• **I can choose which method to extract materials based on their reactivity** | | | | | |
| 3.6 | 96-97 | • I can describe some properties of different materials e.g. ceramics, polymers and composites<br>• I can explain the differences in properties of different materials with reference to their structure<br>• I can suggest uses for different materials based on their properties | | | | | |
| 3.7 | 98-99 | • **I can state what a polymer is**<br>• **I can state some natural polymers and describe why they are useful**<br>• **I can describe what synthetic polymers are and describe why they are useful**<br>• **I can describe the properties of different polymers (polyethene, polyvinyl chloride)**<br>• **I can relate the properties of a material to their uses** | | | | | |
| 3.8 | 100-101 | • **I can describe what a composite material is**<br>• **I can describe what carbon fibre is and its properties**<br>• **I can describe the advantages of using composites** | | | | | |

# 8P3: Motion and Pressure

Textbook pages 158-170

# 8P3: Home-Learning Tasks:

| Task Number | Regular | Challenge | Completed? |
|---|---|---|---|
| 1 | Draw your own distance time graph and describe the journey for the graph | Describe using diagrams how a speed camera works | |
| 2 | Describe why climbers need to take oxygen tanks with them when they climb mountains | Explain why your ears can pop when you go too deep in water or when you get higher up | |
| 3 | Explain how caterpillar tracks on a digger help it to move on mud without sinking | Explain why when a scuba diver breaths out deep underwater, the air bubbles get bigger and bigger as they rise to the surface | |
| 4 | Summary Questions: Regular | Summary Questions: Challenge | |

Summary Questions: Regular:

1. Describe what speed is and state the equation to calculate it
2. Describe what a distance time graph shows when the line is horizontal
3. Describe ways to increase the pressure of a gas
4. Explain why dams are thicker at the bottom
5. Describe what pressure is. Give an example of high and low pressure
6. Explain why it is easier to open a door by pushing further away from the hinge

Summary Questions: Challenge:

1. Describe what is meant by average speed
2. Explain why distance time graphs are not completely realistic
3. Explain how a gas causes pressure in a container
4. Explain what happens to liquid pressure as you increase your depth in water
5. Explain why when a sealed crisp packet is taken up to the top of a mountain, it pops
6. Explain why footballers wear boot with studs in and people walk on snow with snow shoes

# 8C3: Revision Questions

| Question | Answer |
|---|---|
| 1. What is speed? | How far something has travelled in a particular time |
| 2. What is speed measured in? | Metres per second. cm per second |
| 3. How do you calculate the speed of an object? | Speed = Distance ÷ Time |
| 4. What is meant by average speed? | Total distance ÷ Total time |
| 5. What is meant by instantaneous speed? | Speed at a certain time |
| 6. What is relative motion? | The difference between the speeds of two moving objects, or of a moving and stationary object |
| 7. What is a distance- time graph look like? | Time on x-axis, distance on y-axis |
| 8. What does a flat/ horizontal line show on a distance-time graph? | Stationary/ speed is 0 |
| 9. What does a straight sloped line show on a distance-time graph? | Moving at a constant speed |
| 10. How do you calculate the speed on a distance-time graph? | Distance ÷ Time. (Gradient of the graph) |
| 11. What does a curved line show on a distance-time graph? | Speed is changing. Accelerating |
| 12. How can you show something is moving faster than another object on a distance-time graph? | The line is steeper (gradient is more) |
| 13. What is gas pressure? What is it caused by? | The force exerted by gas particles when they collide with a surface |
| 14. State 2 ways you can increase gas pressure | Increase the temperature. Decrease the volume |
| 15. What does it mean for a gas to be compressed? | Squashing the particles into a smaller space |
| 16. What is atmospheric pressure? | Pressure caused by the collision of air molecules that produce a force on an area |
| 17. What happens to the atmospheric pressure if you go higher up? Why? | It decreases. Gravity pulls the particles down. |
| 18. What happens to the atmospheric pressure if you go to sea level? Why? | It increases. There are more particles as gravity pulls them down |
| 19. Explain why a lower atmospheric pressure higher up can be bad for people | Less oxygen, so climbers can't breath |
| 20. What is liquid pressure? | The pressure produced by collisions of particles in a liquid |
| 21. Can you compress a liquid? | No, they are incompressible |
| 22. Why are dams thicker at the bottom than at the top? | Liquid pressure is lower down as there is more water above it pushing down. |
| 23. What happens to the amount of liquid | It increases |

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| pressure if you go deeper in the liquid? | |
| 24. Why do some objects float? | The upthrust is greater than the weight |
| 25. Why do some objects sink? | The weight is greater than the upthrust |
| 26. What is pressure? | Force per unit area |
| 27. How do you calculate pressure? | Pressure = Force ÷ Area |
| 28. What units is pressure measured in? | Pascals/ Newtons per metre$^2$ |
| 29. Give an example of high pressure | High heels |
| 30. Give an example of low pressure | Snow shoes |
| 31. What is a pivot? | The point about which a lever or see-saw balances |
| 32. What is a moment? | A measure of the ability of a force to rotate an object around a pivot |
| 33. How do you calculate a moment? | Force x distance from pivot |
| 34. What units are moments measured in? | Nm |
| 35. What is the law of moments? | An object is in equilibrium if the clockwise moments equal the anticlockwise moments |
| 36. What is the centre of mass? | The point in an object where all the mass seems to act |
| 37. Give 2 examples of using moments | Opening a can of paint. Pedalling a bike |
| 38. What two things can you change to increase the size of the moment? | Increase the force, increase the distance the force acts from the pivot |

# 8C3: Checklist

| Topic | Page | Spec points | Understanding | | | Revised | RP |
|---|---|---|---|---|---|---|---|
| | | | ☹ | 😕 | 😃 | | |
| 3.1 | 158-159 | • I can recall what speed is and what it can be measured in<br>• I can calculate speed using distance and time<br>• I can define instantaneous and average speed<br>• I can describe what is meant by the relative motion of an object | | | | | |
| 3.2 | 160-161 | • I can state what a distance-time graph shows<br>• I can describe what a straight, sloped line represents for a distance time graph<br>• I can describe what a straight, horizontal line represents for a distance time graph<br>• I can calculate speed from a distance time graph<br>• I can calculate the average speed from a distance time graph<br>• I can describe how distance-time graphs can be unrealistic<br>• I can describe what acceleration is | | | | | |
| 3.3 | 162-163 | • I can describe what causes gas pressure<br>• I can describe the different factors that change the pressure of a gas<br>• I can explain how changing different factors can affect the pressure of a gas<br>• I can describe what is meant by a compressed gas | | | | | |

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| | | • I can describe what is meant by atmospheric pressure and explain what causes it<br>• I can explain why the atmospheric pressure can change | | | | | |
| 3.4 | 164-165 | • I can describe what is meant by liquid pressure<br>• I can explain why liquids are incompressible<br>• I can explain why pressure changes with depth in a body of water<br>• I can explain why objects float/ sink in terms of forces and pressure | | | | | |
| 3.5 | 166-167 | • I can describe what is meant by pressure<br>• I can calculate pressure given force and surface area<br>• I can recall the units for pressure<br>• I can describe uses and disadvantages of high and low pressure | | | | | |
| 3.6 | 168-169 | • I can describe what a moment is<br>• I can give examples of moments<br>• I can describe what is meant by the law of moments<br>• I can calculate moments given force and distance from the pivot<br>• I can describe what a pivot is<br>• I can describe what is meant by the centre of mass<br>• I can recall what moments are measured in | | | | | |

# 8C4: The Earth

Textbook pages 104-118

# 8C4: Home-Learning Tasks:

| Task Number | Regular | Challenge | Completed? |
|---|---|---|---|
| 1 | Make a detailed poster to show the structure of the Earth with clear labels | As well as the layers inside the Earth include the layers of the atmosphere and their composition | |
| 2 | What are the three main types of rock? Give an example for each and describe their structure. | Explain how the types of rock are linked together by the rock cycle. Include a diagram. | |
| 3 | Draw a diagram of the carbon cycle and label the key stores | How are humans affecting the carbon cycle, why is this a problem and what can we do to reduce the changes? | |
| 4 | Summary Questions: Regular | Summary Questions: Challenge | |

Summary Questions: Regular:

1. What are the four layers of the Earth?
2. What are sedimentary rocks?
3. What are igneous and metamorphic rocks?
4. What is the rock cycle?
5. What is the carbon cycle?
6. Why is the level of carbon dioxide in the atmosphere increasing?
7. What is recycling?

Summary Questions: Challenge:

1. What gases make up the atmosphere?
2. How do sedimentary rocks form?
3. What controls the size of rock crystals?
4. What evidence is there for the rock cycle?
5. What processes move carbon around the carbon cycle?
6. Why are scientists worried about climate change?
7. What advantages and disadvantages are there to recycling?

# 8C4: Revision Questions

| Question | Answer |
|---|---|
| 1. List the 6 most common elements in the Earth's crust | Oxygen, Silicon, Aluminium, Calcium, Sodium, Magnesium |
| 2. State what the atmosphere is | A mixture of gases that surround the Earth |
| 3. Name the 3 groups of rock | Sedimentary, igneous, metamorphic |
| 4. Describe the properties of sedimentary rocks | Porous |
| 5. List 4 stages in making sedimentary rock | Transport, deposition, compaction, cementation |
| 6. State the properties of igneous rock | Hard, durable |
| 7. Describe the properties of slate that make it suitable for roofing tiles | Not porous can be split into thin sheets |
| 8. Describe one way that rocks change over time | Weathering can break down rock. Sediments can make new rock. Volcanoes can erupt and the lava freeze. |
| 9. State what is meant by uplift? | When continents collide, huge forces from inside the Earth push rock upwards and mountains can form. |
| 10. Give two reasons to explain why carbon dioxide is a vital part of the atmosphere | Allow plants to make food by photosynthesis. Heat up the planet to a habitable temperature. |
| 11. Name two processes that add carbon dioxide to the atmosphere | Combustion, respiration |
| 12. Name two processes that remove carbon dioxide from the atmosphere | Photosynthesis, Dissolving in oceans. |
| 13. Describe two ways that humans add more carbon dioxide to the atmosphere than is removed | Burning fuels, deforestation |
| 14. Describe the meaning of global warming | Extra carbon dioxide in the atmosphere has caused an increase in the average air temperature. |
| 15. State where all materials we use originally come from | Earth's crust, atmosphere or oceans. |
| 16. Describe what recycling is | Collecting and processing materials that have been used so that the materials can be used again. |
| 17. List advantages of recycling | Resources can last longer. Less energy is used. Reduces waste. |
| 18. List disadvantages of recycling | People think it can be a nuisance. Lorries that collect recycling use fuel and create pollution. |

# 8C4: Revision Questions

| Topic | Page | Spec points | Understanding ☹ | Understanding 😐 | Understanding 😃 | Revised | RP |
|---|---|---|---|---|---|---|---|
| 4.1 | 104-105 | • I can list the parts which make up the structure of the Earth<br>• I can name the three different types of rocks<br>• I can identify the parts which make up the structure of the Earth by labelling a diagram<br>• I can describe the composition of the Earth, with reference to difference parts of its structure | | | | | |
| 4.2 | 106-107 | • I can state the three different types of rock<br>• **I can describe the properties of sedimentary rocks**<br>• **I can describe the process of physical weathering**<br>• **I can describe the process of chemical weathering**<br>• **I can describe the process of biological weathering**<br>• **I can describe how sedimentary rocks are formed using the words deposition, compaction and cementation**<br>• **I can describe how sedimentary rocks are useful** | | | | | |
| 4.3 | 108-109 | • **I can describe what igneous rocks are and how they are formed**<br>• **I can describe the difference between magma and lava**<br>• **I can describe what metamorphic rocks are and how they are formed**<br>• **I can describe why igneous and metamorphic rocks are useful** | | | | | |
| 4.4 | 110-11 | • I can describe how the three different types of rocks are formed<br>• I can explain in detail how the three | | | | | |

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| | | different types of rocks are formed, with reference to factors that may alter the appearance and properties of these rocks<br>• I can link the formation of rocks together to describe and explain the rock cycle in detail | | | | | |
| 4.5 | 112-113 | • I can state that carbon is present in different forms on the Earth and its atmosphere<br>• I can list human activities that impact on the climate by producing carbon dioxide<br>• I can name some of the molecules that contain carbon on the Earth and in its atmosphere<br>• I can name the main elements that make up the composition of the atmosphere and Earth<br>• I can describe ways that carbon can move between organisms and parts of the Earth<br>• I can explain the impact of human activities on the climate by producing carbon dioxide<br>• I can suggest ways that the level of carbon dioxide in the atmosphere can be reduced | | | | | |
| 4.6 | 114-115 | • I can describe ways that human activities impact on the climate by producing carbon dioxide<br>• I can describe the composition of the atmosphere, with reference different parts of its structure<br>• **I can describe what the greenhouse effect is**<br>• **I can describe what global warming is** | | | | | |
| 4.7 | 116-117 | • I can describe what it means that the Earth's resources are finite<br>• **I can describe what recycling is**<br>• I can describe the advantages and disadvantages of recycling<br>• I can discuss the efficacy of recycling | | | | | |