



Southam  
College

# Year 8 Science Booklet

# 8B1: Health and Lifestyle

## Textbook pages 4-20

### 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 Biuret'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.	Heart disease, stroke, diabetes, certain cancers.
24. What is the term for being short of a certain vitamin or mineral?	We call this a <b>deficiency</b> .
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.

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. 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.

# 8C1: The Periodic Table

Textbook pages 60-70

## 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

# 8P1: Electricity and Magnetism

Textbook pages 122-138

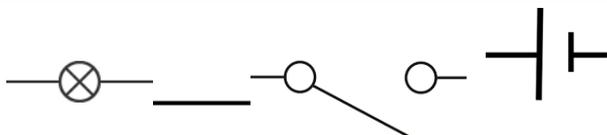
Summary Questions: Regular:

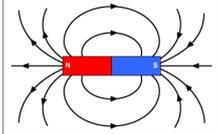
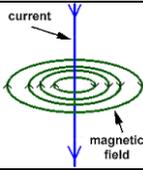
1. What are the three different types of charge?
2. Draw a series circuit with two bulbs, one cell and a switch in it
3. Describe what you use to measure the current in a circuit. Draw the circuit in question 2 with an ammeter in it
4. Describe what happens to the current in a parallel circuit
5. State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

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 $\div$ 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 not let a lot of electricity through easily

# 8B2: Ecosystem

## Processes

Textbook pages 22-40

### 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.

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.

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 2 <sup>nd</sup> organism in a food chain?	The herbivore (primary consumer).
64. What is the 3 <sup>rd</sup> 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.

# 8C2: Separation

## Techniques

Textbook pages 72-84

### 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

# 8P2: Energy

## Textbook pages 140-156

### 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 they 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 them move around, breathe, talk
5. Describe which people need more energy	Athletes
6. Why should 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 °C
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)

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 off 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 something 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.

# 8B3: Adaptation and Inheritance

## Textbook pages 42-56

### 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.	<ul style="list-style-type: none"> <li>• A waxy layer preventing water from escaping.</li> <li>• Stems that store water.</li> <li>• Widespread roots to collect water from a large area.</li> <li>• Spines instead of leaves to reduce water loss and prevent them from being eaten.</li> </ul>
8. Give an adaptation of deciduous trees.	They lose their leaves in winter.
9. Give 3 adaptations of animals for coping with winter.	<ul style="list-style-type: none"> <li>• Hibernation.</li> <li>• Migration.</li> <li>• Growing thicker fur.</li> </ul>
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.	

19. What do we call variation which comes solely from our parents?	Inherited variation.
20. What is discontinuous variation?	Variation with specific values.
21. Give an example of discontinuous variation.	Blood group, eye colour
22. What is continuous variation?	Variation over a range.
23. Give examples of continuous variation.	Height, body mass, hair length, arm span.
24. How would you plot discontinuous data?	On a bar chart.
25. How would you plot continuous data?	On a histogram.
26. What is genetic material made of?	DNA.
27. Where is DNA found in cells?	The nucleus
28. What do we call the sections of DNA in the nucleus?	Chromosomes
29. What do we call a section of a chromosome which codes for a specific characteristic?	A gene.
30. How many chromosomes do humans have in each body cell?	46.
31. What are chromosomes always found in in body cells?	Pairs.
32. How many chromosomes are found in a human sperm or egg?	23.
33. Name the 4 scientists who worked together to discover the structure of DNA.	Rosalind Franklin, Maurice Wilkins, James Watson and Francis Crick.
34. What did Rosalind Franklin and Maurice Wilkins use to investigate the structure of DNA?	X-rays.
35. What is the shape of DNA?	A double helix.
36. What do we call the process where species change over millions of years?	Evolution.
37. What evidence for evolution do we find in rocks?	Fossils.
38. What process leads to evolution?	Natural selection.
39. Give the 4 steps in natural selection.	<ul style="list-style-type: none"> <li>• Organisms of a species show variation.</li> <li>• The best adapted organisms survive and reproduce ('survival of the fittest').</li> <li>• Genes from successful organisms are passed on to their offspring.</li> <li>• Adaptations of successful organisms become more common.</li> </ul>

<p>40. Summarise natural selection in peppered moths.</p>	<ul style="list-style-type: none"> <li>• Before the industrial revolution, most peppered moths were pale and hid on pale trees. The odd black moth was seen and eaten by birds.</li> <li>• Pale moths survived and reproduced, so most moths continued to be pale.</li> <li>• During the industrial revolution, the trees around cities got sooty and darker.</li> <li>• The pale moths stood out and were eaten by birds.</li> <li>• The darker moths survived to reproduce, and so the dark form became more common around cities.</li> </ul>
<p>41. What is extinction?</p>	<p>The situation where a species can no longer be found anywhere in the world.</p>
<p>42. Give 4 causes of extinction.</p>	<ul style="list-style-type: none"> <li>• Changes to the environment.</li> <li>• Habitat destruction.</li> <li>• Disease.</li> <li>• New predators or competitors.</li> </ul>
<p>43. What is the name for the range of living organisms in an area?</p>	<p>Biodiversity.</p>
<p>44. What does <u>endangered</u> mean?</p>	<p>There are only a small number of a particular species left in the world. (risk of extinction).</p>
<p>45. What is a gene bank?</p>	<p>A store of genetic samples from different species.</p>
<p>46. Give 4 different types of gene bank.</p>	<ul style="list-style-type: none"> <li>• Seed bank (seeds stored at low temperature).</li> <li>• Tissue bank (buds and other cells stored).</li> <li>• Cryobanks (seeds, embryos, sperm, eggs, very cold indeed, usually in liquid nitrogen).</li> <li>• Pollen banks (pollen grains stored).</li> </ul>

# 8C3: Metals and

# Acids

Textbook pages 86-102

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 metals 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

# 8P3: Motion and

# Pressure

Textbook pages 158-170

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 $\div$ Time
4. What is meant by average speed?	Total distance $\div$ 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 $\div$ 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 pressure if you go deeper in the liquid?	It increases
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 $\div$ Area
28. What units is pressure measured in?	Pascals/ Newtons per metre <sup>2</sup>
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 $\times$ 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

# 8C4: The Earth

## Textbook pages 104-118

### 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.