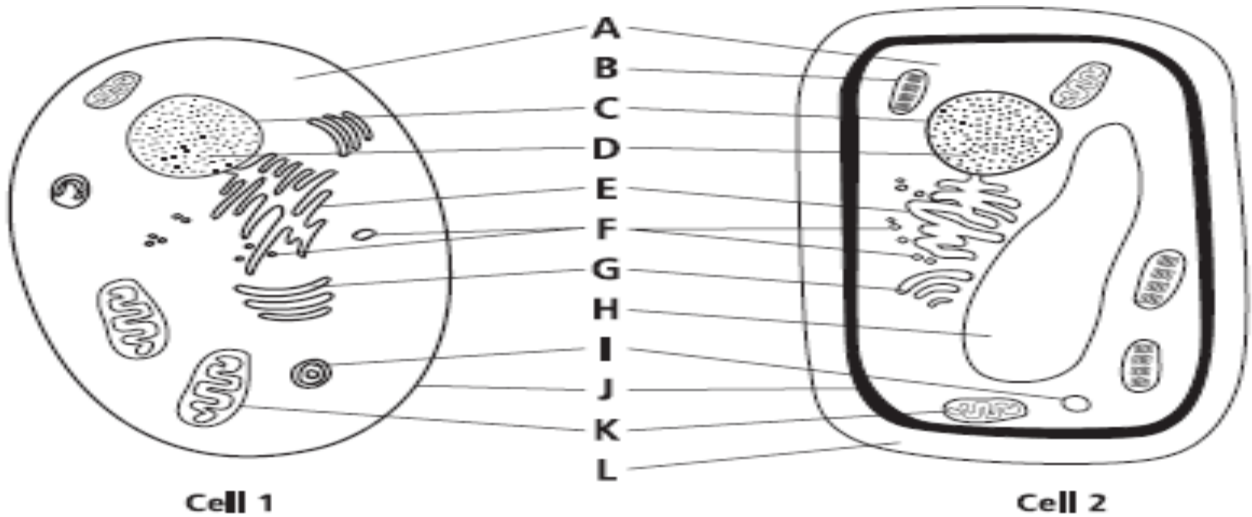


Science Subject Knowledge Homework

- You should – Produce a summary sheet for revision for each topic.
 - Each sheet should include a list of keywords and definitions and some descriptions of key ideas. The statements in the box at the bottom should guide you.
 - You can use more sheets if you need to and you may present the work in any way you like.
 - If you have not covered a topic, you do not need to complete a sheet about it unless you would like to learn about it independently.
- Hand in one of your completed sheets to your teacher at the end of each half term.
- You could – Read the AQA Combined Science Trilogy specification and make additions to each topic to cover the more advanced ideas that are not shown on the sheets.
- You might – work through past paper questions without using any revision materials.
 - Then improve the answers using revision guides and finally mark them.
- www.aqa.org.uk/subjects/science/gcse/combined-science-trilogy-8464
- www.bbc.co.uk/education
- www.s-cool.co.uk

Cells



Cell 1

Cell 2

At least:

Label the cell parts.

Describe their function.

Explain how substances move into and out of cells.

Explain the process and purpose of mitosis.

Digestion

At least:

List the parts of the digestive system and describe their functions.

Explain how enzymes aid digestion and the optimum conditions for their activity.

Explain how each part of the digestive system is adapted to its function.

Circulation and gas exchange

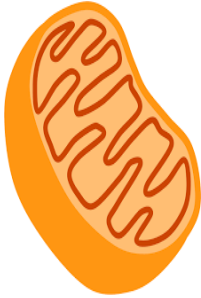
At least:

List the parts of the circulatory and gas exchange systems and describe their functions.

Describe how the heart and lungs work.

Explain how the systems are adapted to their function.

Respiration and photosynthesis



At least:

Write word equations for each reaction.

Describe how the reactants get in and the products get out.

Explain how organisms are adapted to speed up each process.

Disease

At least:

List and define the keywords relating to communicable disease.

Describe how disease can be spread and treated (including vaccination).

Explain the causes, symptoms and treatments of cancer, diabetes, heart disease and lung disease.

Nervous and hormonal systems

At least:

Describe how voluntary and reflex actions happen in the human body.

Describe what homeostasis is and list the factors that are controlled.

Explain how hormones control conditions in the body, in particular in the menstrual cycle and blood sugar.

Natural selection

At least:

Describe how the adaptations of animals and plants make them better competitors.

Explain how natural selection causes evolution and speciation.

Explain how species become extinct and how we know about extinct species.

Genetics

At least:

List characteristics of humans that are inherited, environmental or both.

Explain how meiosis and sexual reproduction lead to variation.

Use punnet squares to predict the characteristics of offspring.

Ecology

At least:

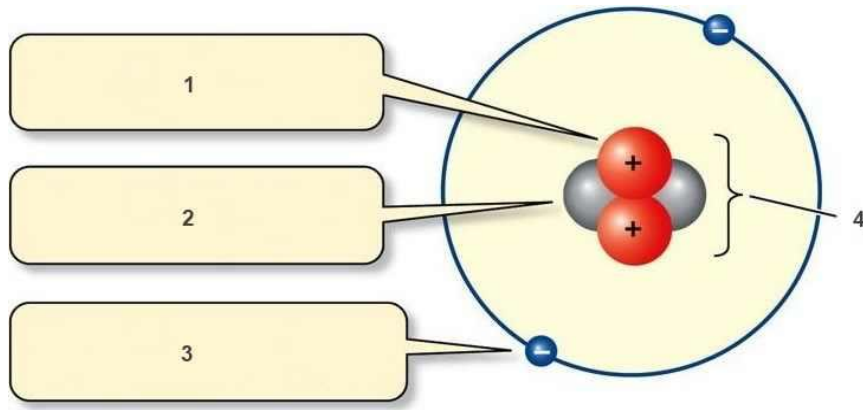
Draw out examples of food chains and webs.

Describe how energy and biomass move through food webs.

Describe the carbon cycle.

Explain how human activity has impacted on the environment.

Atoms



At least:

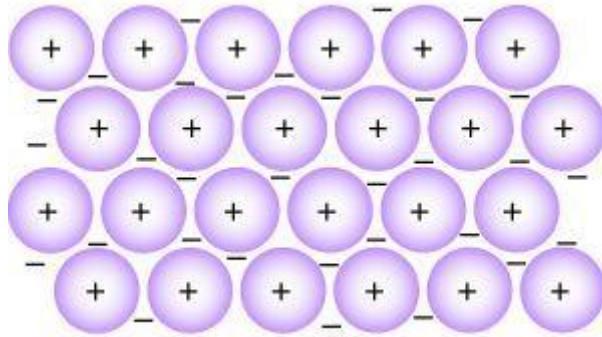
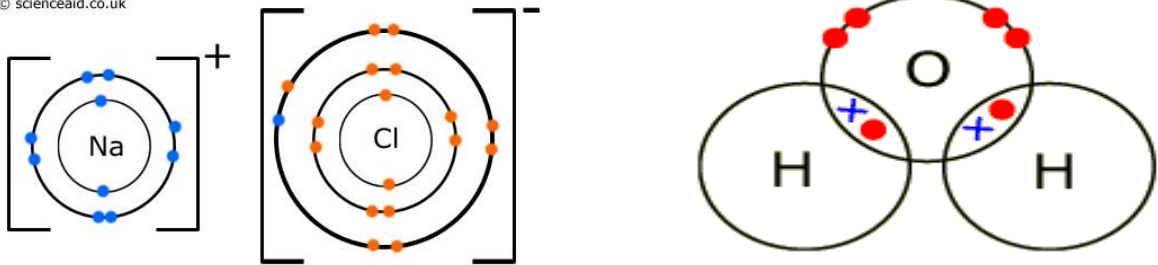
Label the atom parts.

Describe the mass and charge of sub-atomic particle.

Explain how the number and position of electrons affects the reactivity of the atom.

Bonding

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At least:
Label the diagrams.
Describe each type of bonding.
Explain the structure of giant ionic, simple covalent, giant covalent and metallic substances are

Chemical Reactions

At least:

Use word equations to describe chemical reactions such as combustion and displacement.

Describe how the rate of chemical reactions can be measured and changed.

Describe what exothermic, endothermic and reversible reactions are.

Quantitative Chemistry

At least:

Calculate the relative molecular mass of compounds.

Describe the law of conservation of mass.

Calculate the number of moles in any mass of substance.

Acids and Alkalis

At least:

Describe how to test for acids and alkalis.

Write word equations for the reactions of acids with: alkalis, insoluble bases, metals and metal carbonates.

Electrolysis

At least:

Describe how electrolysis works.

Describe the electrolysis of salt water, aluminium and copper sulphate.

Crude Oil

At least:

Describe how crude oil is separated into fractions.

Explain the process of cracking and why it is carried out.

Evaluate the environmental impact of the use of crude oil and its by-products.

Chemistry of the Earth

At least:

List the components of the atmosphere and their percentages.

Describe the structure of the Earth.

Explain how the atmosphere has changed over time.

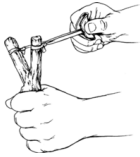
Industrial chemistry

At least:

Describe how metals are extracted.

List the advantages and disadvantages of quarrying,
using fossil fuels

Energy



At least:

Label the types of energy.

Draw energy transfer diagrams.

Explain the law of conservation of energy and how it relates to efficiency.

Particle Model of Matter

At least:

Describe what the particle model of matter is.

Describe and explain the properties of solids, liquids and gases.

Explain how increasing temperature causes changes of state.

Heat Transfer

At least:

State the three main ways in which heat energy moves from place to place.

Describe the processes of conduction, convection and radiation.

Explain how evaporation causes cooling.

Energy Resources

At least:

Describe the difference between renewable and non-renewable energy resources.

List the advantages and disadvantages of common energy resources.

Explain how common energy resources are used to generate electricity.

Electrical Circuits

At least:

Identify circuit components from their diagrams.

Define the terms potential difference, current and resistance.

Describe how series and parallel circuits work and explain their differences.

Forces



At least:
Label the forces acting on the diagram.
Describe the relationship between resultant force and the movement of objects.
Explain the difference between vectors and scalars and give some examples.

Motion

At least:

Describe how to calculate speed and acceleration.
Use distance/time and speed/time graphs to describe the motion of objects.

Explain how motion is related to forces, momentum and kinetic energy.

Waves and the Electromagnetic Spectrum

At least:

Draw out the electromagnetic spectrum.

Describe the uses and dangers of electromagnetic radiation.

Draw longitudinal and transverse waves and identify their wavelength, frequency and direction of vibration.

Light and Sound

At least:

Describe how the reflection of light allows us to see objects.

Describe the refraction of light.

Explain how sound waves travel through the air and how pitch and loudness are related to the shape of the wave.

Radioactivity

At least:

Describe how Marie Curie and Henri Bequerel first discovered radioactivity.

Describe alpha, beta and gamma radiation.

Explain the penetrative power of each type of radiation.

Maths

Mean

92, 88, 87,
91, 91, 3

Mode

92, 88, 87,
91, 91, 3

Median

92, 88, 87,
91, 91, 3

Range

92, 88, 87,
91, 91, 3

Percentage
change
from 88 to
92

Percentage
change from
91 to 87

At least:

Learn as many physics equations as you can.

Practice calculating the above.

Find some practice examples on **SAM Learning**
or **BBC Bitesize**.

Graphs

Hypothesis – Blue is the most common eye colour

Eye colour	Number of students
Brown	134
Blue	65
Green	34

Hypothesis – The rate of photosynthesis depends on light intensity.

Light intensity (Lux)	Volume of oxygen produced in one minute (cm ³)
100	20
80	20
60	15
40	0
20	5
0	0

At least:
Plot graphs for the data above.
Write a conclusion for the investigation.
Explain what you would do with anomalous results.