



AQA

Foundation: Combined Science Trilogy and Entry Level Certificate

Workbook

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1 What is the body made of?

Entry Level Certificate

Key words

cell cell membrane cytoplasm nucleus tissue organ organ systems
heart circulatory system artery vein blood cells platelets enzymes

1.1 Animal cells

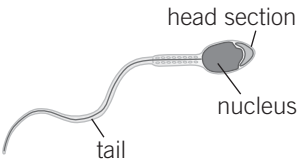
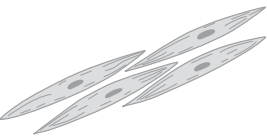
1 Cells are made of different parts that have their own jobs to do.

Draw **one** line from each part of the cell to what it does.

Part of the cell	What the part does
Nucleus	The ‘filling’ of the cell where the chemical reactions happen
Cell membrane	Where the genetic material (DNA) is kept. It controls what the cell does
Cytoplasm	It lets substances pass into and out of the cells

2 Most cells are **specialised**. This means they have a special shape or structure to carry out a particular function.

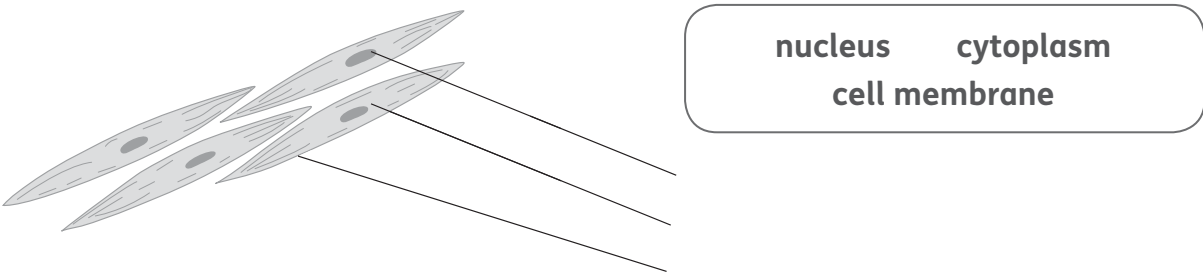
For each cell type below, describe a special feature that helps with the cell’s job.

Cell type	How is it specialised?
Sperm cell 	
Muscle cell 	

1.2 Looking at cells

1 A student used a microscope to look at a slide of some muscle cells.

a Use the correct answers from the box to label the parts of the cell that you can see.



b The magnification of the microscope eyepiece objective was ×10.

The magnification of the objective lens was ×100.

What is the total magnification of the microscope?

1.3 Levels of organisation

1 Cells have to work together in the body to make it function properly.

Put the following levels of organisation in order of increasing size.

Organs Tissues Cells Organ systems

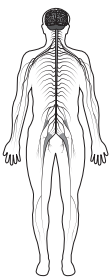
Least complicated  Most complicated

2 Sort the following into tissues, organs, and organ systems.

Liver Circulatory system Small intestine Stomach lining cells
Muscle cells Stomach Digestive system Heart

Tissues	Organs	Organ systems

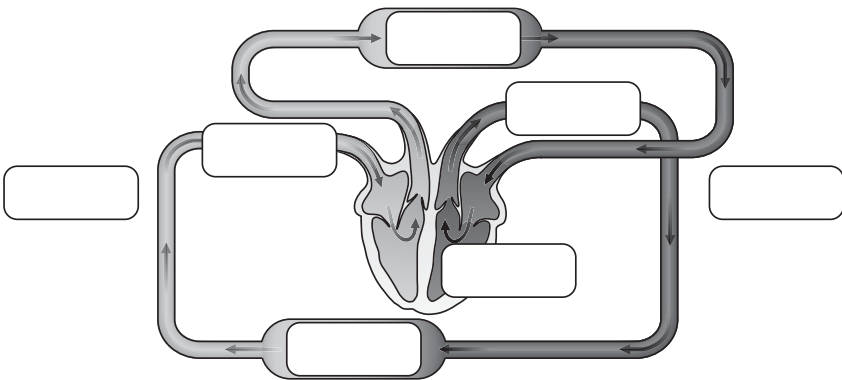
- 3 a Name each of these organ systems.
- b Write down what the function (job) of each organ system is.

Diagram			
Name of system			
Function			

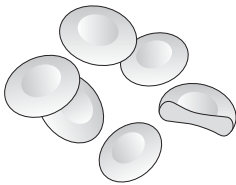
1.4 The circulatory system

- 1 The circulatory system carries blood around the body.
- Complete the diagram below by adding the letter of the correct label in each box.

- a heart
- b lungs
- c body organs
- d main vein
- e oxygenated blood (with lots of oxygen in)
- f deoxygenated blood (not much oxygen in)
- g main artery



- 2 What is blood made of? Complete the table.

	Name of component	Diagram	What it does in the blood (its function)
a	Red blood cell		
b			
c			
d	The liquid part of the blood		Liquid (mostly water) that carries blood cells and dissolved substances around the body

1.5 The digestive system

- 1 The diagram shows the human digestive system.
- Use the correct words from the box to label the main parts.

anus

gall bladder

gullet

large intestine

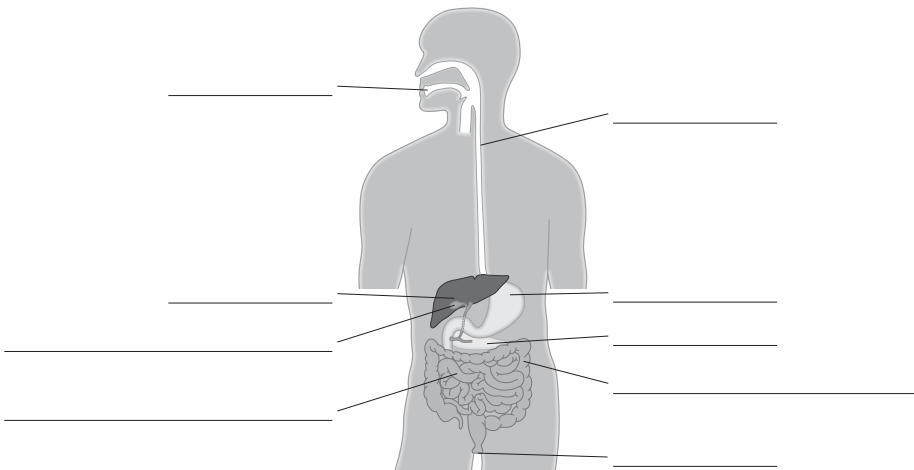
liver

mouth

pancreas

small intestine

stomach



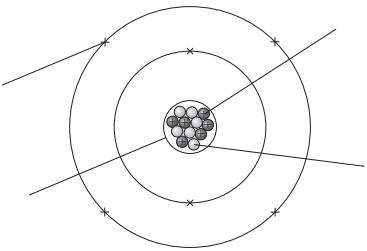
Key words

relative mass isotope electrons protons neutrons ions displacement

8.4 The model of the atom

1 Use the words in the box to label the diagram of an atom.

electron neutron nucleus proton



2 Draw **one** line to match each subatomic particle to its charge and its mass.

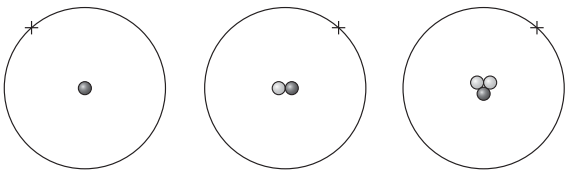
Type of sub-atomic particle	Relative charge	Relative mass
electron	+1	1
neutron	-1	very small
proton	0	1

3 For each of the atoms below, write how many protons and neutrons there are.

Element	Number of protons	Number of neutrons
24 Mg 12		
19 F 9		
14 Ne 7		

4 Isotopes of an element have the same number of protons.

The diagrams below show the isotopes of hydrogen.



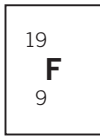
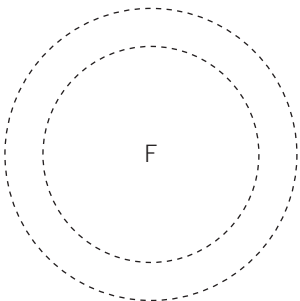
How are isotopes of an element different?

The isotopes of an element have a different number of _____ but _____

8.5 Atoms and elements

1 The first (inner) shell of an atom can hold up to 2 electrons and the second shell can hold up to 8 electrons.

Complete the diagram below to show the electron structure for fluorine. Use the information in the fluorine box from the periodic table to help you.



2 You should know the electronic structures of the first twenty elements of the periodic table.

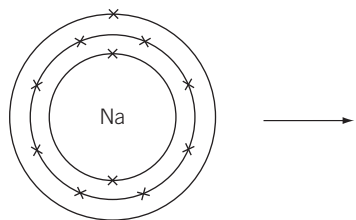
Complete the table below.

Element	Number of protons/electrons	1 st electron shell	2 nd electron shell	3 rd electron shell
sodium	11			
oxygen	8			
chlorine	17			
lithium	3			
potassium	19			

3 What is the link between the electronic structure of an element and its position in the periodic table?

8.6 Metals and the periodic table

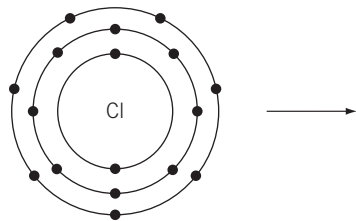
- 1 Which side of the periodic table are the metals on? _____
- 2 Name **two** properties that metals have in common.
1 _____ 2 _____
- 3 Metals react by losing electrons from their outer shell, becoming a charged particle.
- a What is the name of these charged particles? _____
- b When magnesium reacts, it loses two electrons from its outer shell.
What is the charge of the magnesium ion after it has lost these two negative particles?
Circle the correct option.
-2 -1 0 +1 +2
- c This is a sodium atom before it reacts.
Draw the charged particle that is produced when sodium reacts. (Sodium loses one electron.)



- 4 Why do the metals in group 1 become more reactive as you go down the group?
Because the atoms get _____

8.7 Non-metals and the periodic table

- 1 Which side of the periodic table are the non-metals on? _____
- 2 Name **two** properties that non-metals often have in common.
1 _____ 2 _____
- 3 This is an atom of chlorine.
Draw the ion that is produced when chlorine reacts with a metal. (Chlorine gains one electron.)



- 4 The reactivity of group 7 elements changes as you go down the group, because it is more difficult for the atoms to gain an electron.

Which elements are most reactive? Tick the correct option.

top of group 7 ☐ bottom of group 7 ☐

- 5 More reactive halogens can displace (take the place of) less reactive halogens. We call these displacement reactions.
Name the chemicals present after the substances below have been allowed time to react.
Use the reactivity order of the halogen boxes from the periodic table to help you.

19	F	fluorine
9		
35	Cl	chlorine
17		
80	Br	bromine
35		
127	I	iodine
53		
210	At	astatine
85		

Reactivity decreases down the group

Present at the start of the reaction	Present at the end of the reaction
Potassium bromide and chlorine	Potassium chloride and
Sodium iodide and bromine	
Magnesium bromide and fluorine	

Now I know:			
The subatomic particles that make up an ion			
Where to find the atomic number and mass number on the periodic table			
What an isotope is			
How electrons are arranged in shells (for the first twenty elements)			
General properties of metals and non-metals			
The ions formed by group 1 metals			
The ions formed by group 7 non-metals			
How to predict if a displacement reaction will occur between a halogen and a compound containing a different halogen			