DROYLSDEN Academy

Science Department

Y10 Parent Handbook

Dear Parent/Carer,

This booklet is designed to help you understand how the Science Department at Droylsden Academy supports your child in the build up to their GCSE examinations.

We hope you will find it a useful guide for how best to support your child with their organisation and preparation for the weekly assessments. Last year's results show that our strategy is successful when students engage with the process and put effort into revision outside of the classroom. We had some wonderful success stories and, without fail, these individuals regularly produced outstanding preparation and consistently met their targets in the weekly assessments.

We believe strong links with home are vital, which is why we communicate every week via text and let you know how your child has done in that week's test.

Please do not hesitate to get in touch if you have any concerns or feedback for us. We really do welcome your comments.

Weekly Assessments

Each week your child will sit a weekly test. This plan tells you, week by week which topics are being assessed.

Science Weekly Assessment Plan

Assessment: Week Beginning	Topics Assessed	Specification Reference	Revision guide pages Higher	Revision guide pages Foundation
09/09 Week 2	C2: ionic bonding, ionic compounds and their properties, metallic bonding and states of matter	5.2.1.1 – 5.2.1.3 5.2.1.5, 5.2.2.7-5.2.2.8 5.2.2.1	112 – 114 119-121	113-115 120-122
16/09 Week 3	C2: covalent bonding, covalent compounds and their properties, polymers, giant covalent structures, diamond, graphite, graphene and fullerenes	5.2.1.4 5.2.2.4-5.2.2.5 5.2.2.6 5.2.3.1-5.2.3.3	115-118	116-119
23/09 Week 4	B2: the human digestive system, plant tissues and plant organ systems Required Practical: testing for carbohydrates, lipids and proteins	4.2.2.1 4.2.3.1-4.2.3.2	24-29 39-41	24--28 38-40
30/09 Week 5	B2: the heart and blood vessels, blood, coronary heart diseases, health issues, cancer	4.2.2.2-4.2.2.7	31-38	30-37
7/10 Week 6	P2: Circuit symbols, charge, current, potential difference and resistance (V=IR) Required Practical: length of a wire	6.2.1.1-6.2.1.3 (Required Practical)	179-180	180-182
14/10 Week 7	P2: I-V Characteristics, circuit devices, series and parallel circuits Required Practical: Investigating I-V Characteristics Required Practical: Series vs. Parallel Circuits	6.2.1.4 (Required Practical) 6.2.2 (Required Practical(6.2.1.3))	181-185	183-187
21/10 Week 8	P2: Electricity in the home, power and the National Grid	6.2.3.1-6.2.3.2 6.2.4.1-6.2.4.3	186-189	188-191
October half term				
4/11 Week 9	B3: Infectious Diseases (bacteria, virus, fungi, protist) and human defence systems	4.3.3.1-4.3.1.6	43-46	42-46
11/11 Week 10	B3: vaccination, antibiotics, painkillers, discovering and developing drugs	4.3.1.7-4.3.1.9	47-49	47-49
18/11 Week 11	C3: Conservation of mass, balancing equations, Relative Formula Mass, percentage by mass calculations, uncertainty calculations HIGHER C3: Moles,	5.1.1.1-5.3.1.4 Higher: 5.3.2.1	123-125	123-125
25/11 Week 12	FOUNDATION C3: Concentrations of solutions followed by consolidation and catch up	Foundation: 5.3.2.5	126-128	126

	HIGHER C3: Calculating masses in equations, balancing equations using moles, limiting reactants and concentration of solutions	Higher: 5.3.2.2-5.3.2.5		
2/12 Week 13	P3: The particle model, motion in gases, density, Required Practical: Density	6.3.1.1 6.3.3.1	191-192	193-194
9/12 Week 14	P3: Internal energy, changes of state, recap of specific heat capacity, specific latent heat	6.3.1.2 6.3.2.1-6.3.2.3	193-194	195-196
16/12 Week 15	B4: Photosynthesis, the rate of photosynthesis, limiting factors and the uses of glucose from photosynthesis Required Practical: Rate of Photosynthesis	4.4.4.1-4.4.4.3	50-53	50-52
Christmas Holiday				
6/01 Week 16	B4: Aerobic and Anaerobic respiration, metabolism and exercise	4.4.2.1-4.4.2.3	54-56	53-55
13/01 Week 17	C4: Reactions of acids and bases (neutralisation), pH, preparing salts HIGHER: Strong and weak acids Required Practical: Making Salts	5.4.2.2-5.4.2.4 Higher: 5.4.2.5	129-131	128-129
20/01 Week 18	C4: The reactivity series, extracting metals, reactions of metals (with oxygen, acid and water) HIGHER: ionic equations and oxidation/reduction in terms of electrons	5.4.1.1-5.4.1.3 5.4.2.1 Higher: 5.4.1.4	132-134	130-131
27/01 Week 19	C4: Electrolysis of molten ionic compounds, extracting metals using electrolysis, electrolysis of aqueous solutions (Required Practical) Required Practical: Electrolysis of aqueous solutions HIGHER: half equations at electrodes	5.4.3.1-5.4.3.4 Higher: 5.4.3.5	135-136	132-133
3/02 Week 20	P4: Atomic structure, isotopes, developing the atomic model, radioactive decay and types of nuclear radiation	6.4.1.1-6.4.1.3 6.4.2.1	195-196 103	197-198 104
10/02 Week 21	P4: Nuclear equations, half-life, irradiation and radioactive contamination	6.4.2.2-6.4.2.4	197-199	199-201
February half Term				
24/02 Week 22	C5: Endothermic and exothermic reactions, measuring energy changes (required practical), reaction profiles (bond energy – higher) Required Practical: Measuring Energy Changes	5.5.1.1-5.5.1.2	138-139	134-136
2/03 Week 23	Paper 1 Revision – no weekly assessment			
9/03 Week 24	Assessment Week – PPE 2 Full Set of Paper 1 Exams			

16/03 Week 25	Assessment Week – PPE 2 Full Set of Paper 1 Exams			
23/03 Week 26	B5: Homeostasis, the nervous system, synapses and reflexes, investigating reaction time Required Practical: Investigating Reaction Time	4.5.1 4.5.2	58-61	57-60
30/03 Week 27	B5: The endocrine system, controlling blood glucose, diabetes, hormones in reproduction	4.5.3.1-4.5.3.3	62-64	61-63
Easter Holiday				
20/04 Week 28	FOUNDATION B5: contraception, then consolidation HIGHER B5: Using hormones to treat infertility, negative feedback, then consolidation and catch up	Foundation: 4.5.3.4 Higher: 4.5.3.4-4.5.3.6	65-67	64-65
27/04 Week 29	C6: Collision theory, factors which affect rates of reaction (including required practical x 2) Required Practical: The gas syringe Required Practical: The black cross	5.6.1.2 5.6.1.3	142-145	138-141
4/05 Week 30	C6: Catalysts, calculating the rate of reactions using graphs, reversible reactions, equilibrium and effect of changing conditions on equilibrium	5.6.1.1 5.6.1.4 5.6.2.1-5.6.2.3 5.6.2.4-5.6.2.7	143 146-148	139 142-144
11/05 Week 31	PPE 3 Revision – no weekly assessment			
18/05 Week 32	PPE 3 Revision – no weekly assessment			
May half Term				
1/06 Week 33	PPE 3 Revision – no weekly assessment			
8/06 Week 34	Assessment Week PPE 3 Full Set of Paper 1 Exams			
15/06 Week 35	Assessment Week PPE 3 Full Set of Paper 1 Exams			
22/06 Week 36	B6: DNA, genetic terms, Punnett squares, inheriting genetic disorders, determining sex	4.6.1.3-4.6.1.6	71-74	69-72
29/06 Week 37	B6: Variation, evolution, evidence for evolution, fossils, extinction, explaining resistant bacteria.	4.6.2.1-4.6.2.2 4.6.3.1-4.6.3.4	75-76 79-80	73-76 79
6/07 Week 38	B6: Genetic engineering, selective breeding and classification	4.6.2.3-4.6.2.4 4.6.4	77-78 81	77-78 80-81
13/07 Week 39	Consolidation and Catch-up			

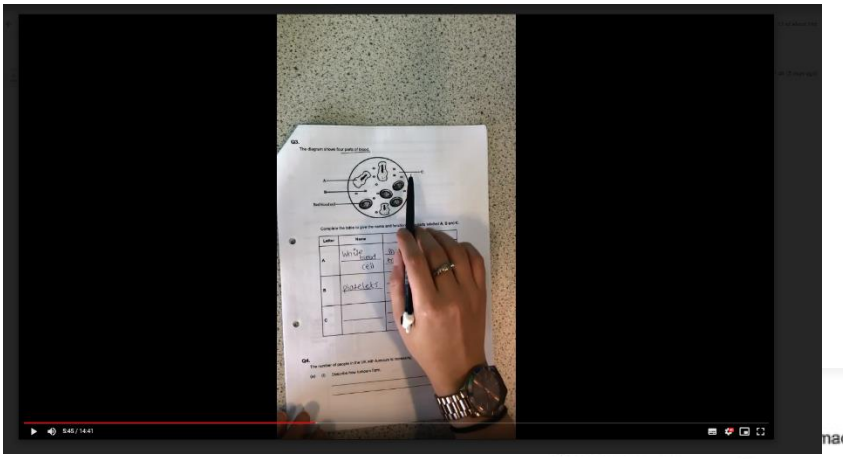
Weekly Assessment Preparation

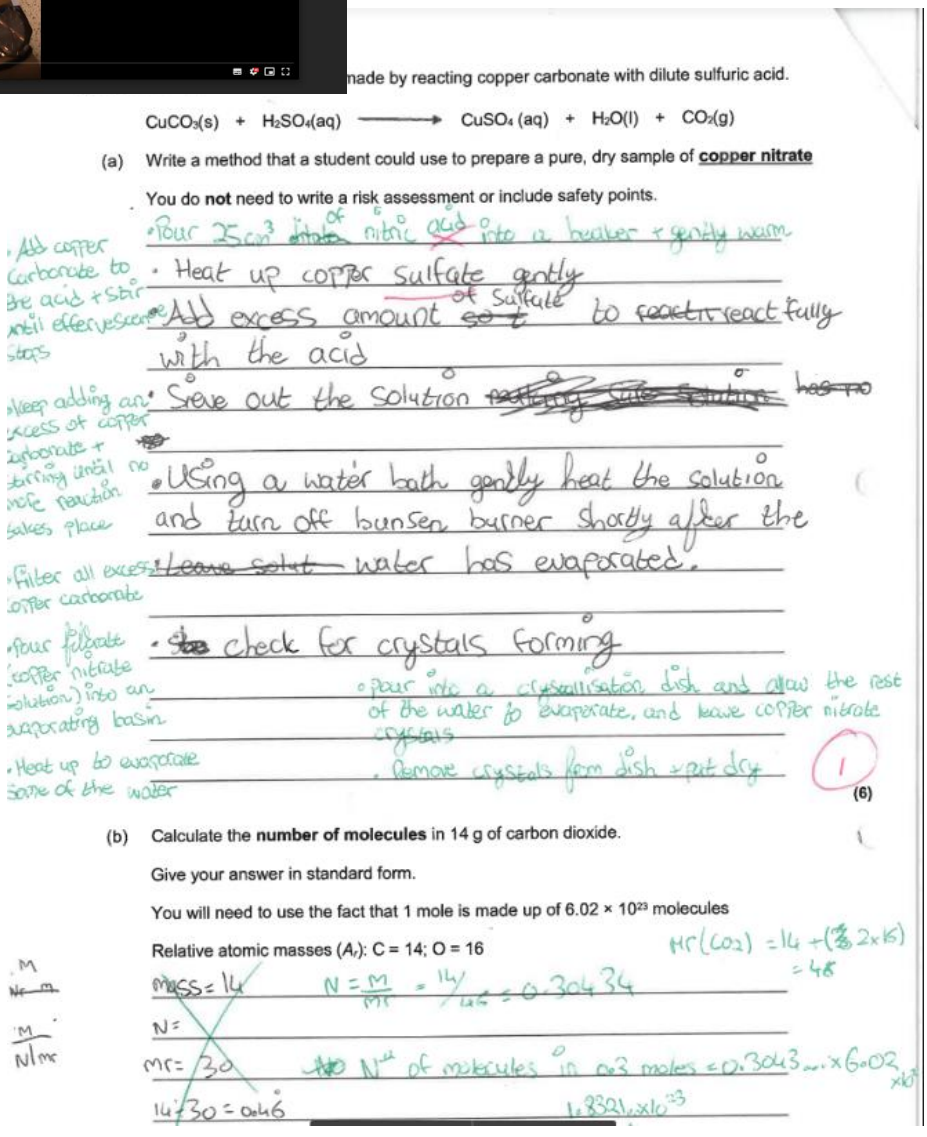
Each week your child will need to prepare for their weekly test, this forms part of their homework each week. You can help them with their organisation, and remind them what they have to do every week.

TASK 1: correct the previous week's test

To do this, they will need to watch the video that will have been emailed to them (you will also find it on Show My Homework). This video contains a commentary of how to approach each question as well as the correct answers.

This must be done to a good standard. Here is an example:





made by reacting copper carbonate with dilute sulfuric acid.

$CuCO_3(s) + H_2SO_4(aq) \longrightarrow CuSO_4(aq) + H_2O(l) + CO_2(g)$

(a) Write a method that a student could use to prepare a pure, dry sample of **copper nitrate**

You do **not** need to write a risk assessment or include safety points.

- Add copper carbonate to the acid + stir until effervescence stops
- Keep adding an excess of copper carbonate + stirring until no more reaction takes place
- Filter all excess copper carbonate
- Pour filtrate (copper nitrate solution) into an evaporating basin
- Heat up to evaporate some of the water

Pour 25cm³ ~~of~~ nitric ~~acid~~ into a beaker + gently warm.
Heat up copper sulfate gently
~~Add~~ excess amount ~~so t~~ of sulfate to ~~react~~ react fully with the acid
Sieve out the solution ~~remaining Solid Solution~~ has no
Using a water bath gently heat the solution and turn off bunsen burner shortly after the ~~Leave solut~~ water has evaporated.
~~the~~ check for crystals forming
pour into a crystallisation dish and allow the rest of the water to evaporate, and leave copper nitrate crystals
Remove crystals from dish + pat dry

1

(6)

(b) Calculate the **number of molecules** in 14 g of carbon dioxide.

Give your answer in standard form.

You will need to use the fact that 1 mole is made up of 6.02×10^{23} molecules

Relative atomic masses (A_r): C = 14; O = 16

$M_r(CO_2) = 14 + (2 \times 16) = 46$

$M = m$

$N = \frac{m}{M}$

mass = 14

$N = \frac{M}{M_r}$

N =

$M_r = 30$

$14 \div 30 = 0.46$

$N = \frac{14}{46} = 0.30434$

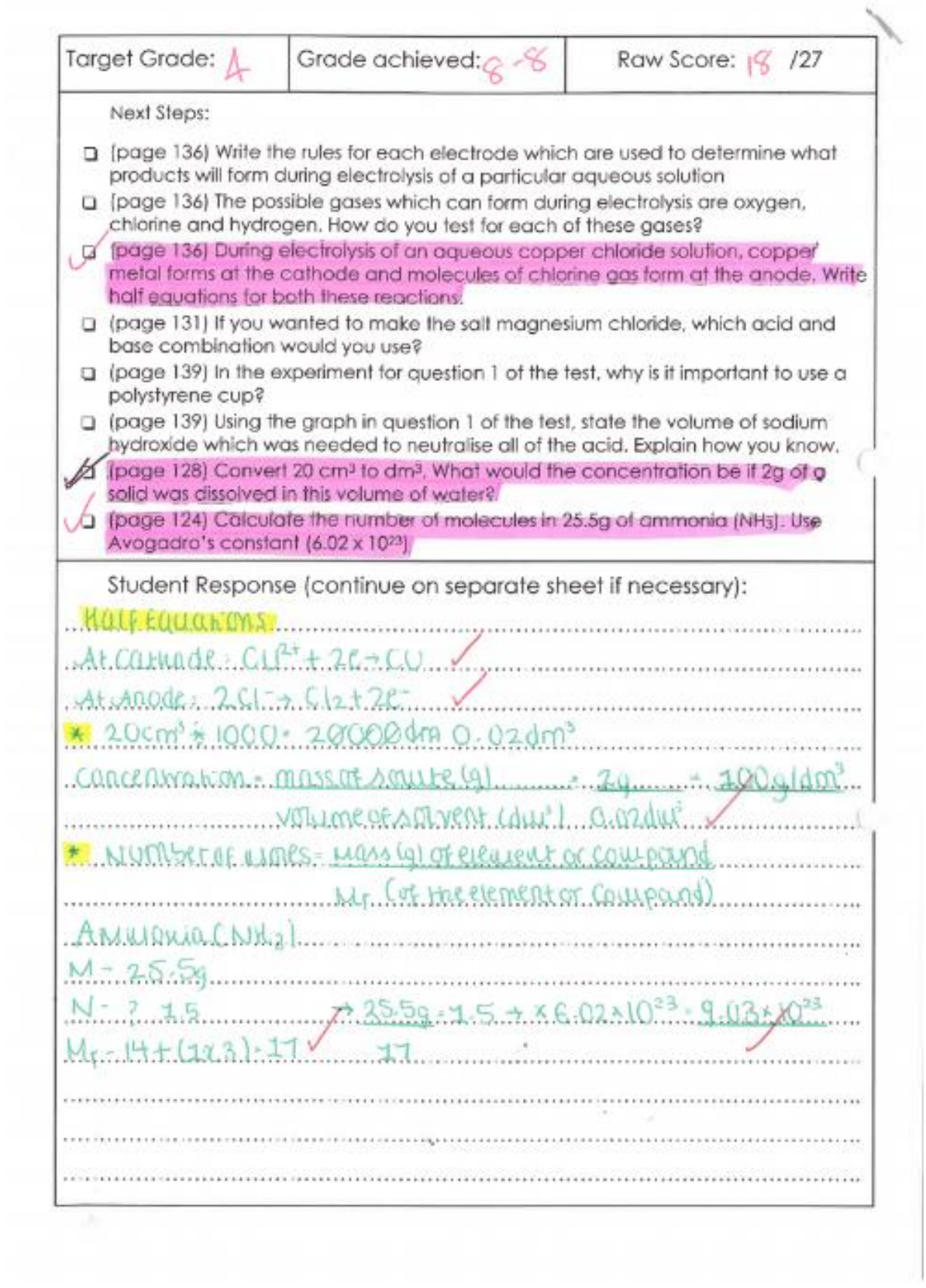
N° of molecules in 0.3 moles = $0.3043... \times 6.02$

$1.8321... \times 10^{23}$

TASK 2: complete the next steps for the previous week's test

To do this, they will need their revision guide (the page numbers are given to them on your assessment for support). The next steps are designed to allow students to stretch and challenge themselves on their weaker areas.

This must be done to a good standard. Here is an example:



Target Grade: A	Grade achieved: 6-8	Raw Score: 18 /27

Next Steps:

- ❑ (page 136) Write the rules for each electrode which are used to determine what products will form during electrolysis of a particular aqueous solution
- ❑ (page 136) The possible gases which can form during electrolysis are oxygen, chlorine and hydrogen. How do you test for each of these gases?
- ❑ (page 136) During electrolysis of an aqueous copper chloride solution, copper metal forms at the cathode and molecules of chlorine gas form at the anode. Write half equations for both these reactions.
- ❑ (page 131) If you wanted to make the salt magnesium chloride, which acid and base combination would you use?
- ❑ (page 139) In the experiment for question 1 of the test, why is it important to use a polystyrene cup?
- ❑ (page 139) Using the graph in question 1 of the test, state the volume of sodium hydroxide which was needed to neutralise all of the acid. Explain how you know.
- ❑ (page 128) Convert 20 cm^3 to dm^3. What would the concentration be if 2g of a solid was dissolved in this volume of water?
- ❑ (page 124) Calculate the number of molecules in 25.5g of ammonia (NH_3). Use Avogadro's constant (6.02×10^{23})

Student Response (continue on separate sheet if necessary):

Half equations:

At cathode: $Cu^{2+} + 2e \rightarrow Cu$

At anode: $2Cl^- \rightarrow Cl_2 + 2e^-$

* $20cm^3 \div 1000 = 0.02dm^3$

Concentration = mass of solute (g) $= 2g = 100g/dm^3$

volume of solvent (dm^3) $0.02dm^3$

* Number of moles = mass (g) of element or compound

M_r (of the element or compound)

Ammonia (NH_3)

M - 25.5g

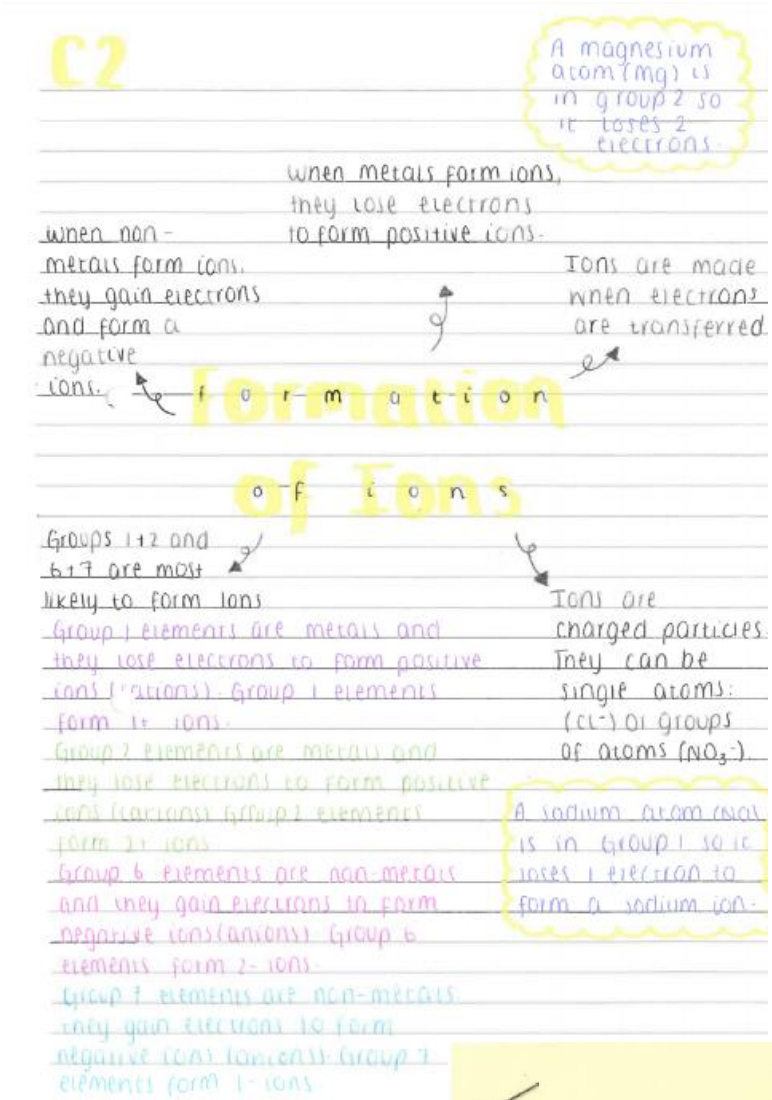
N - ? 1.5 $\rightarrow 25.5g \div 1.5 \rightarrow \times 6.02 \times 10^{23} = 9.03 \times 10^{23}$

$M_r = 14 + (1 \times 3) = 17$ 17

TASK 3a: preparation for the next week's test – key facts

Each student must copy out the key facts fully. Each class teacher will guide students as to how many times they must be copied.

For further preparation, students should use additional revision strategies to help them remember the key facts.


C2

A magnesium atom (Mg) is in group 2 so it loses 2 electrons.

When metals form ions, they lose electrons to form positive ions.

When non-metals form ions, they gain electrons and form a negative ions.

Ions are made when electrons are transferred.

formation of ions

Groups 1+2 and 6+7 are most likely to form ions

Group 1 elements are metals and they lose electrons to form positive ions (cations). Group 1 elements form 1+ ions.

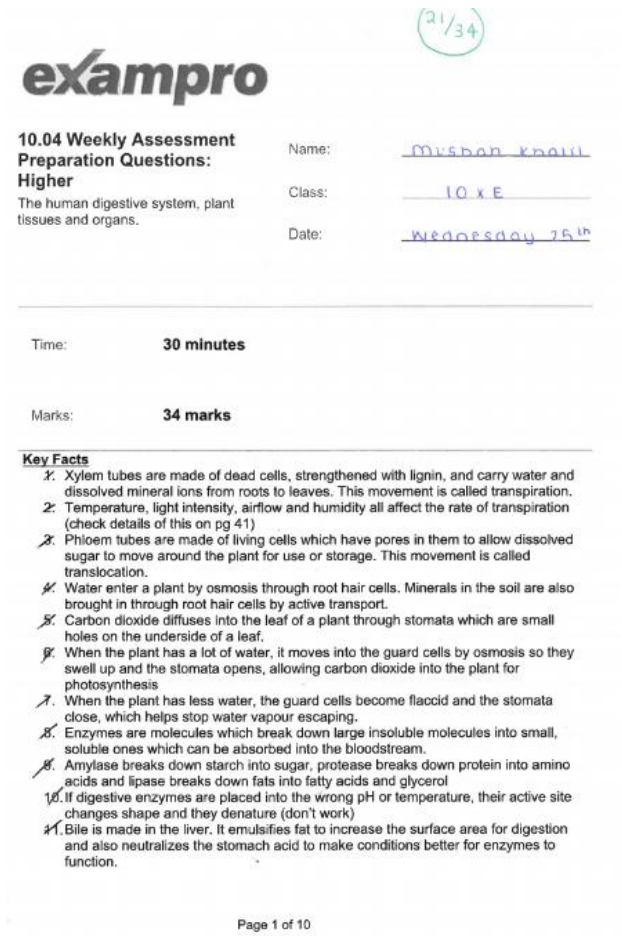
Group 2 elements are metals and they lose electrons to form positive ions (cations) Group 2 elements form 2+ ions.

Group 6 elements are non-metals and they gain electrons to form negative ions (anions) Group 6 elements form 2- ions.

Group 7 elements are non-metals they gain electrons to form negative ions (anions) Group 7 elements form 1- ions.

Ions are charged particles. They can be single atoms: (Cl^-) or groups of atoms (NO_3^-).

A sodium atom (Na) is in Group 1 so it loses 1 electron to form a sodium ion.


21/34

exampro

10.04 Weekly Assessment Preparation Questions: Higher

The human digestive system, plant tissues and organs.

Name: Mushan Khalil

Class: 10 x E

Date: Wednesday 25th

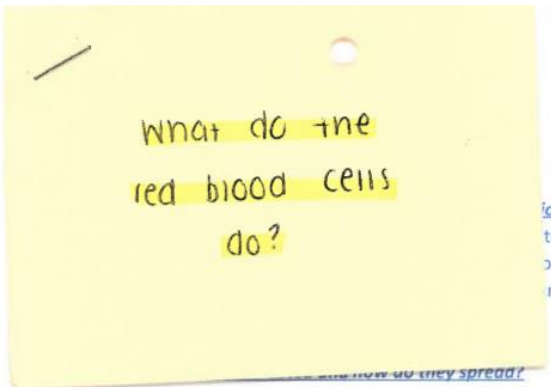
Time: **30 minutes**

Marks: **34 marks**

Key Facts

1. Xylem tubes are made of dead cells, strengthened with lignin, and carry water and dissolved mineral ions from roots to leaves. This movement is called transpiration.
2. Temperature, light intensity, airflow and humidity all affect the rate of transpiration (check details of this on pg 41)
3. Phloem tubes are made of living cells which have pores in them to allow dissolved sugar to move around the plant for use or storage. This movement is called translocation.
4. Water enter a plant by osmosis through root hair cells. Minerals in the soil are also brought in through root hair cells by active transport.
5. Carbon dioxide diffuses into the leaf of a plant through stomata which are small holes on the underside of a leaf.
6. When the plant has a lot of water, it moves into the guard cells by osmosis so they swell up and the stomata opens, allowing carbon dioxide into the plant for photosynthesis
7. When the plant has less water, the guard cells become flaccid and the stomata close, which helps stop water vapour escaping.
8. Enzymes are molecules which break down large insoluble molecules into small, soluble ones which can be absorbed into the bloodstream.
9. Amylase breaks down starch into sugar, protease breaks down protein into amino acids and lipase breaks down fats into fatty acids and glycerol
10. If digestive enzymes are placed into the wrong pH or temperature, their active site changes shape and they denature (don't work)
11. Bile is made in the liver. It emulsifies fat to increase the surface area for digestion and also neutralizes the stomach acid to make conditions better for enzymes to function.

Page 1 of 10


What do the red blood cells do?

01.10.19

...ions?

...te blood cells and red blood cells. Plasma ...on dioxide. ✔ Platelets help the blood to ...roys bacteria. ✔ Red blood cells carry oxygen

...and how do they spread?

Tumors are created when cells divide out of control. Benign tumors do not spread, however, malignant tumors spread when the cancerous cells break off and are carried into the blood. ✔

How does oxygen move from the air to your body cells?

Oxygen is breathed in and travels to your lungs, from that point it goes to the alveoli to the blood. When there is a high enough concentration, it then mixes with haemoglobin to create oxyhaemoglobin. When the red blood cell then reaches a body cell with low concentration of oxygen, the oxygen molecule is released to the cell. ✔

What is Cholesterol? What reduces Cholesterol? What can it lead to?

Cholesterol causes fatty plaques to build up in the coronary arteries which makes them narrower, so less blood can flow, therefore the heart gets less oxygen. Statins reduce cholesterol so less fatty acids build up in the coronary arteries. ✔

TASK 3b: preparation for the next week's test – preparation questions

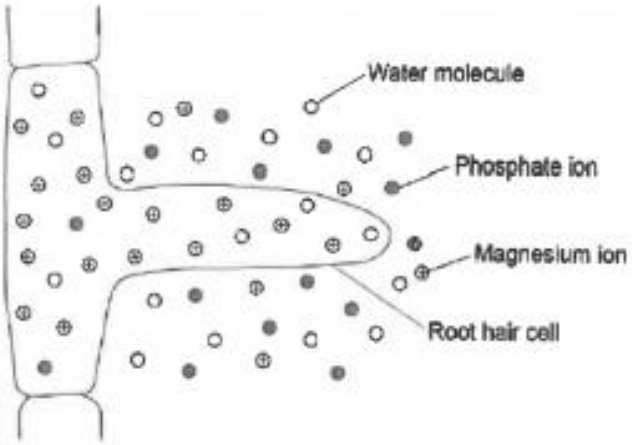
In the preparation booklet, there are exam questions designed to help student's develop their exam technique. Attached is also the mark scheme, so that students can self-assess each answer.

This should be done to a good quality with no gaps. Here is an example.

(e) Particles can move into and out of cells by different processes.

Figure 2 shows different particles inside and outside a root hair cell.

Figure 2



Level 3: Relevant points (correct processes / explanations) are identified, given in detail and linked logically to form a clear account.	5-6
Level 2: Relevant points (correct processes / explanations) are identified and there are attempts at logical thinking. The resulting account is not fully clear.	3-4
Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical thinking.	1-2
No relevant content	0
Indicative content • water is absorbed by osmosis • osmosis is a passive process, or described • water in soil is at a higher concentration than inside cell • water moves down concentration gradient • through a partially permeable membrane • phosphate ions absorbed by diffusion • diffusion is a passive process, or described • phosphate ions are in a higher concentration in soil than inside cells • magnesium ions are absorbed by active transport • magnesium ions are in lower concentration in soil than inside cells • magnesium ions move from an area of lower concentration to an area of higher concentration inside the cells • magnesium ions move up the concentration gradient • process requires energy • energy from respiration	

Explain the processes by which the different particles would enter the root hair cell.

• water is absorbed by osmosis through a partially permeable membrane

• water must have a higher concentration because of the process of osmosis

• phosphate ions are absorbed by diffusion

• phosphate has a higher concentration than soil

• Magnesium ions are in lower conc. in soil

• Moves up conc. gradient by energy from respiration. (2) (2)

(6)

(Total 13 marks)

In summary, every Tuesday your child should bring with them:

1. Feedback from previous week's assessment (green-pen and next steps completed)
2. Key facts copied out into their purple book
3. Preparation questions completed and self-assessed

Revision Strategies

You can also help your child with their revision. Below is a step-by-step guide to help student's understand how to make good revision notes. You should spend some time and go through this with your child.

Step 1 – decide which areas are the weakest/strongest (ALWAYS start with the weakest!!)

Biology Paper 1 – Biology Topics 1-4

Topic	Higher Revision Guide Pages	Foundation Revision Guide Pages			
B1 – Cell Biology	11-23	11-23			
B2 – Organisation	24-42	24-41			
B3 – Infection and Response	43-49	42-49			
B4 – Bioenergetics	50-57	50-56			

Chemistry Paper 1 – Chemistry Topics 1-5

Topic	Higher Revision Guide Pages	Foundation Revision Guide Pages			
C1 – Atomic Structure and the Periodic Table	96-111	96-112			
C2 – Bonding, Structure and Properties of Matter	112-122	113-122			
C3 – Quantitative Chemistry	123-128	123-127			
C4 – Chemical Changes	129-137	128-133			
C5 – Energy Changes	138-141	134-137			

Physics Paper 1 – Physics Topics 1-4

Topic	Higher Revision Guide Pages	Foundation Revision Guide Pages			
P1 – Energy	167-178	167-179			
P2 – Electricity	179-190	180-192			
P3 – Particle Model of Matter	191-194	193-196			
P4 – Atomic Structure	195-200	197-202			

Biology Paper 2 – Biology Topics 5-7

Topic	Higher Revision Guide Pages	Foundation Revision Guide Pages			
B5 – Homeostasis and Response	58-67	57-65			
B6 – Inheritance, Variation and Evolution	68-82	66-82			
B7 - Ecology	83-95	83-95			

Chemistry Paper 2 – Chemistry Topics 6-10

Topic	Higher Revision Guide Pages	Foundation Revision Guide Pages			
C6 – The Rate and Extent of Chemical Change	142-149	138-145			
C7 – Organic Chemistry	150-152	146-149			
C8 – Chemical Analysis	153-156	150-154			
C9 – Chemistry of the Atmosphere	157-160	155-158			
C10 – Using Resources	161-166	159-166			

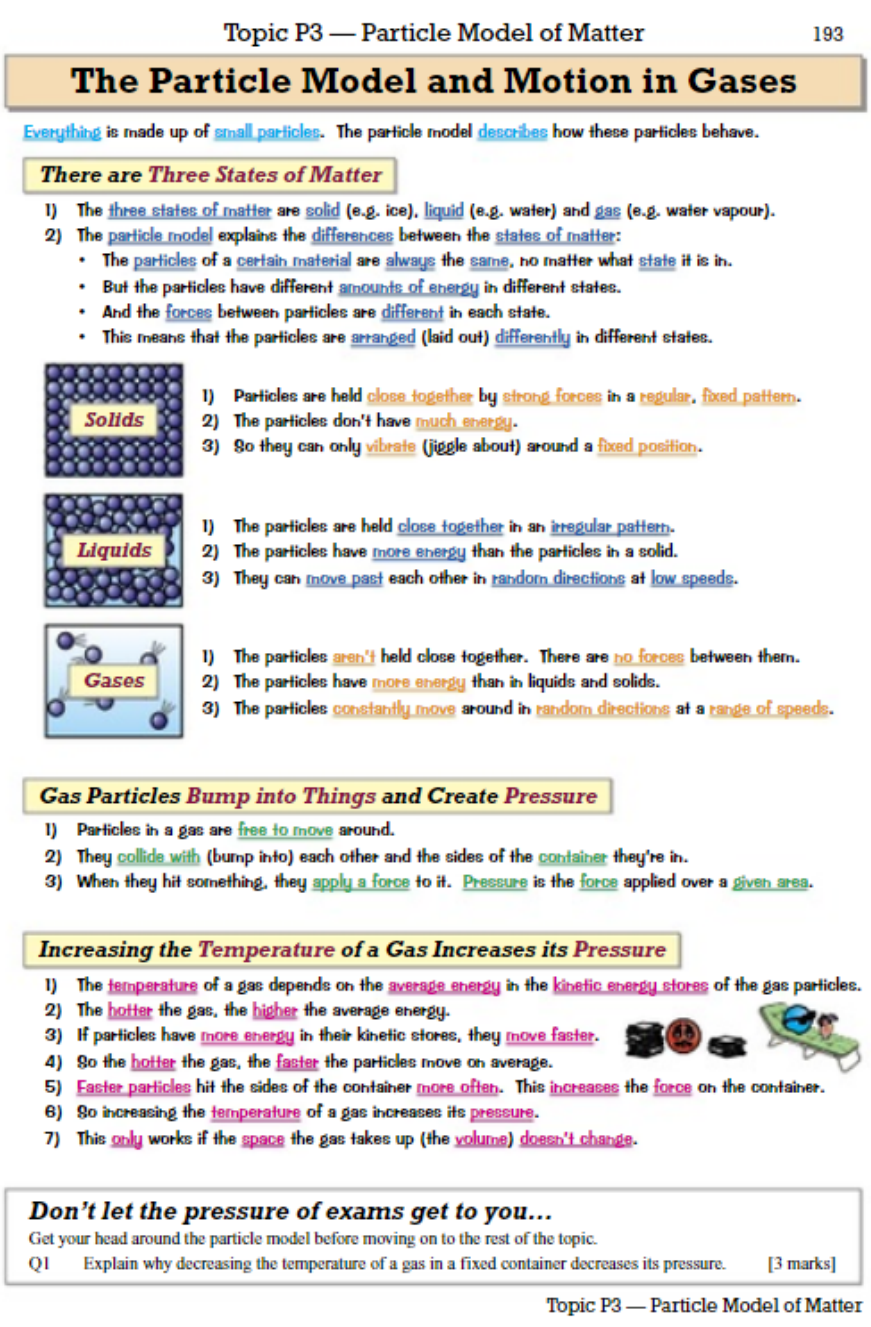
Physics Paper 2 – Physics Topics 5-7

Topic	Higher Revision Guide Pages	Foundation Revision Guide Pages			
P5 - Forces	201-217	203-218			
P6 - Waves	218-226	219-228			
P7 – Magnetism and Electromagnetism	227-231	229-231			

Step 2 – making revision notes

1. Read the information on the page
2. Decide which are the key parts
3. Make your notes SIMPLE and EASY TO FOLLOW
4. ONLY use a highlighter/different pens when you have **finished**!

I read the page and then grouped all the info about solids together, then liquids, then gases →



Topic P3 — Particle Model of Matter 193

The Particle Model and Motion in Gases

Everything is made up of small particles. The particle model describes how these particles behave.

There are Three States of Matter

1) The three states of matter are solid (e.g. ice), liquid (e.g. water) and gas (e.g. water vapour).
2) The particle model explains the differences between the states of matter:
   - The particles of a certain material are always the same, no matter what state it is in.
   - But the particles have different amounts of energy in different states.
   - And the forces between particles are different in each state.
   - This means that the particles are arranged (laid out) differently in different states.

1) Particles are held close together by strong forces in a regular, fixed pattern.
2) The particles don't have much energy.
3) So they can only vibrate (jiggle about) around a fixed position.

1) The particles are held close together in an irregular pattern.
2) The particles have more energy than the particles in a solid.
3) They can move past each other in random directions at low speeds.

1) The particles aren't held close together. There are no forces between them.
2) The particles have more energy than in liquids and solids.
3) The particles constantly move around in random directions at a range of speeds.

Gas Particles Bump into Things and Create Pressure

1) Particles in a gas are free to move around.
2) They collide with (bump into) each other and the sides of the container they're in.
3) When they hit something, they apply a force to it. Pressure is the force applied over a given area.

Increasing the Temperature of a Gas Increases its Pressure

1) The temperature of a gas depends on the average energy in the kinetic energy stores of the gas particles.
2) The hotter the gas, the higher the average energy.
3) If particles have more energy in their kinetic stores, they move faster.
4) So the hotter the gas, the faster the particles move on average.
5) Faster particles hit the sides of the container more often. This increases the force on the container.
6) So increasing the temperature of a gas increases its pressure.
7) This only works if the space the gas takes up (the volume) doesn't change.

This can be shortened to a flowchart/list of steps rather than a paragraph →

Don't let the pressure of exams get to you...

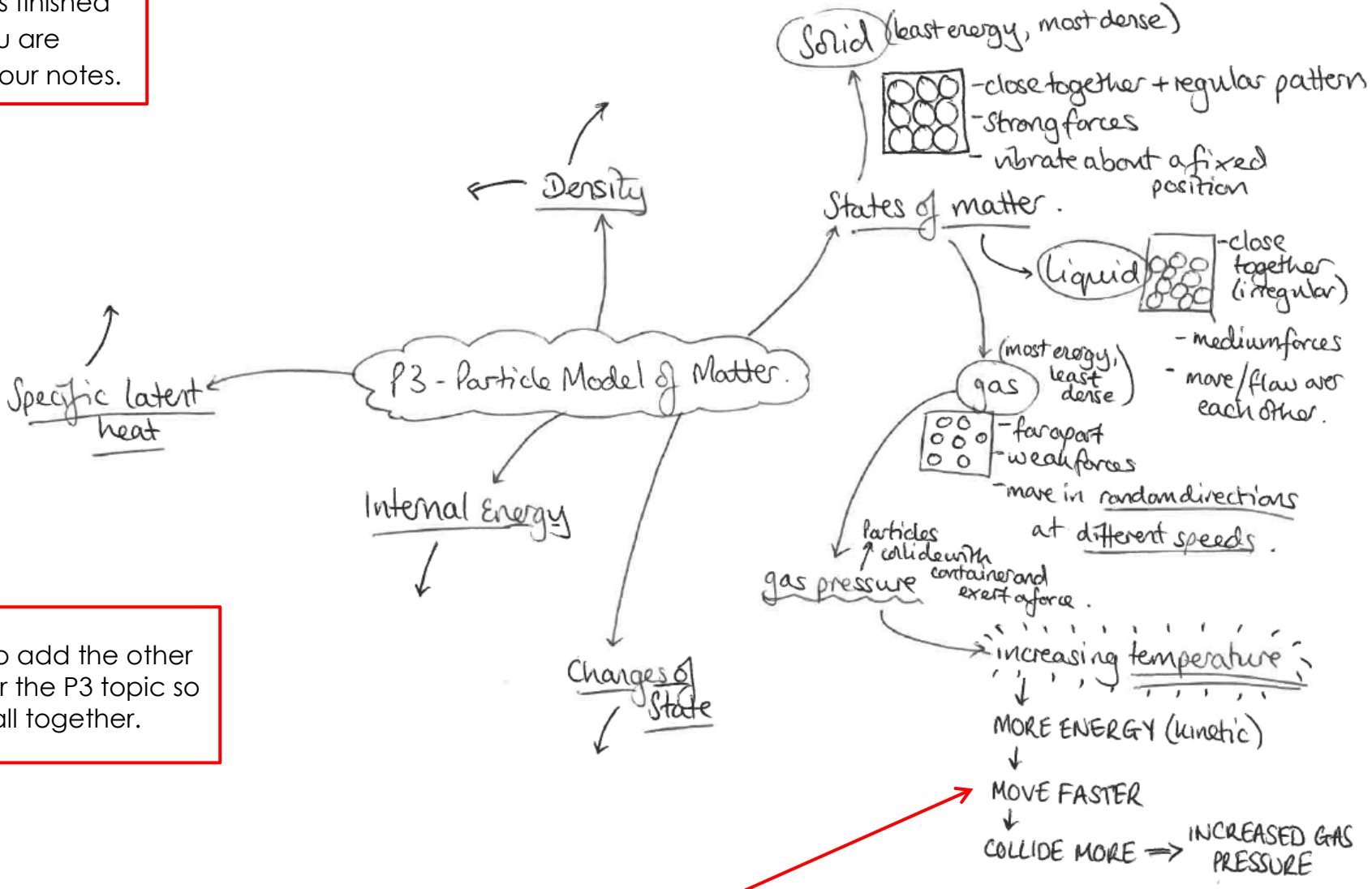
Get your head around the particle model before moving on to the rest of the topic.

Q1 Explain why decreasing the temperature of a gas in a fixed container decreases its pressure. [3 marks]

Topic P3 — Particle Model of Matter

ALL IN ONE PEN!!
If you want to highlight then do so when the mind map is finished and you are recapping your notes.

Added the bits about most/least dense when I got to the density



Space to add the other pages for the P3 topic so it is all together.

Flowchart easier to remember than a big paragraph

Step 3 – test yourself

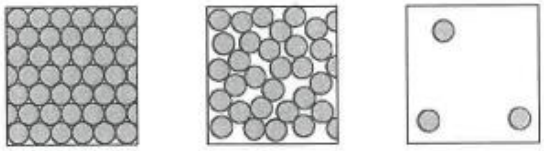
- Each page of the revision guide has some questions to ask yourself at the end of each page (do these on the back of the mind map)

> ***Don't let the pressure of exams get to you...***
> Get your head around the particle model before moving on to the rest of the topic.
> Q1 Explain why decreasing the temperature of a gas in a fixed container decreases its pressure. [3 marks]

> ***Who can measure volume — the eureka can can, oh the eureka can can...***
> Remember — density is all about how close together the particles in a substance are. Nice and simple really.
> Q1 A cube has a volume of 0.05 m^3. It has a density of 40 kg/m^3. Calculate its mass. [3 marks]

- Use past paper questions (there are LOADS in T5 for you to use – use the Level 2 questions)
  1. attempt using just your own knowledge with a **black pen** and use a timer (1 mark = 1 min)
  2. now look at your notes, add anything with a **red pen**
  3. finally, using the mark scheme mark your answers and add any missing marks onto your question, using a **green pen**

The diagram shows the arrangement of particles in a solid, a liquid and a gas.



Use the diagram above and your own knowledge to compare solids, liquids and gases in terms of their particles.

You should include information about the arrangement, movement and energy of the particles.

Solids → particles are arranged in a regular pattern and close together
→ ~~not~~ vibrate about a fixed position
→ energy is lower than liquid and gas.

Liquid → arranged close together (irregular pattern)
→ move randomly → low energy.

Gas → all far apart
→ move randomly
→ high energy.

(Total 6 marks)

= my attempt
= used my notes.
= mark scheme.

* mention the word particles!
⇒ max 4 marks.

Final GCSE Examination Preparation

Finally, as your child approaches their final GCSE exams we will provide them with revision booklets. These will help your child to revise the key content, and give them an opportunity to test themselves using past paper questions.

1. **Test the content** – have a go at the questions in the booklets using student's own knowledge and using the revision guide to help.

B2 – Food Tests – Revision Guide Page 28

Food Tests Required Practical

1. Why do we mix the crushed food with water and then filter the mixture?

.....

.....

2. What is the chemical test for sugars?

.....

3. What is the chemical used to test for starch?

.....

4. How do we test for fats?

.....

5. What is the chemical used to test for proteins?

.....

6. What would you see if sugar was present?

.....

7. What would you see if starch is present?

.....

8. What would you see if fat is present?

.....

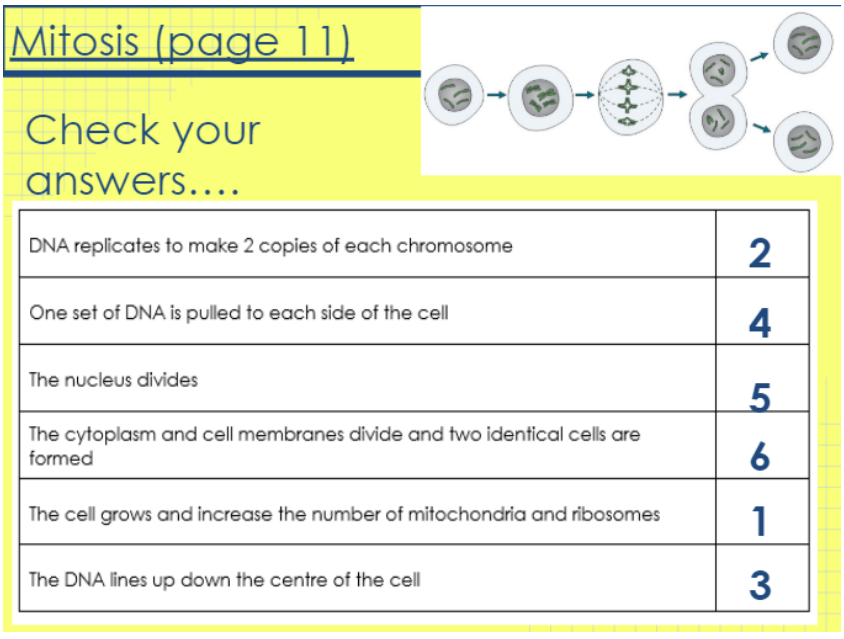
9. What would you see if protein is present?

.....

Food Tests – Summary Table

Food Molecule	Chemical Test	If it is present	If it is absent
Sugar			
Starch			
Protein			

2. **Mark your answers** – students will be sent slides that go through each section and allow them to self-assess their answers.

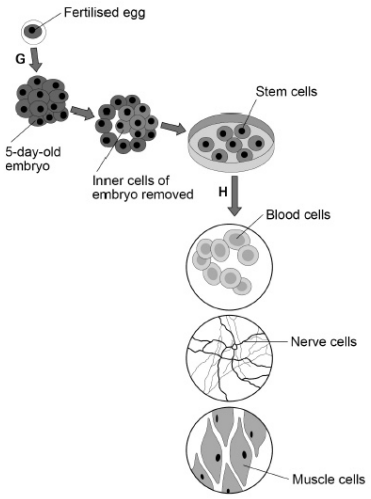


3. **Practise exam questions** – having a go at practise exam questions will allow students to test their understanding and developing their exam technique.

B1 – Chromosomes, Stem Cells and Cell Division

Exam Question 1.

The diagram shows how cells from human embryos can be used to grow 'replacement body parts' for humans.



(a) How many chromosomes are in a **fertilised** human egg?

Tick **one** box.

12 ☐ 23 ☐ 46 ☐ 92 ☐

(1)

(b) What is the process labelled **G**?

Tick **one** box.

Fertilisation ☐
Inheritance ☐
Meiosis ☐
Mitosis ☐

(1)

(c) When the embryo is three days old, it contains eight cells.

How many times has the fertilised egg cell divided by day three?

Tick **one** box.

2 ☐ 3 ☐ 4 ☐ 8 ☐

(1)

(d) Stem cells become specialised in the process labelled **H** in the diagram.

What is the process labelled **H**?

Tick **one** box.

Differentiation ☐
Evolution ☐
Genetic modification ☐
Selective breeding ☐

(1)

4. **Mark schemes** – each exam question booklet has an accompanying booklet with the mark schemes so all students can then self-assess as they go through.

resolution
allow ribosomes are smaller than mitochondria
ignore not sensitive enough
ignore ribosomes are transparent

1

[8]

Q5.

(a) $\text{magnification} = \frac{\text{image size}}{\text{real size}}$

= 29 ÷ 0.03 1

= 967 1

*allow 967 with no working shown for **2** marks*

B1 – Chromosomes, Stem Cells and Cell Division - Mark Schemes

Q1.

(a) 46 1

(b) mitosis 1

(c) 3 1

(d) differentiation 1

(e) cell membrane 1

cytoplasm 1

(f) (stem cells from embryos) can become more types of cell
allow converse
allow (stem cells from embryos) are pluripotent

1

[10]

Q2.

(a) (i) mitosis
correct spelling only
1

(ii) replicates / doubles / is copied / duplicates
accept cloned
ignore multiplied / reproduced
1

(b) fertilisation occurs / fusion (of gametes)
accept converse for asexual, eg none in asexual / just division in asexual
1

so leading to mixing of genetic information / genes / DNA / chromosomes
genes / DNA / chromosomes / genetic information comes from 1 parent in asexual
ignore characteristics
1

one copy (of each allele / gene / chromosome) from each parent
or
gametes produced by meiosis
or
meiosis causes variation
meiosis must be spelt correctly
1

[5]

Q3.

(a) *comparisons are **not** required but should be credited*
accept a clear indication of the statement even if incomplete

can develop into most other types of cell 1

each cell divides every 30 minutes 1

Note: all booklets have a contents page that tells the students the corresponding pages for the booklet, revision guide, exam questions and mark schemes.