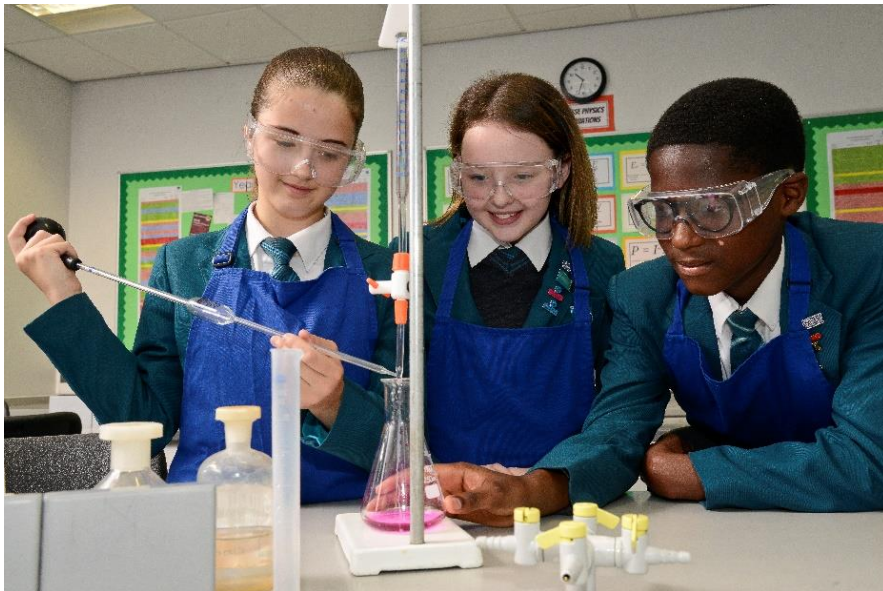


# Science Department



## Y11 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.

### **Final Examination Dates**

<b>Exam</b>	<b>Date</b>
Biology Paper 1	Tuesday 12 <sup>th</sup> May - PM
Chemistry Paper 1	Thursday 14 <sup>th</sup> May - AM
Physics Paper 1	Wednesday 20 <sup>th</sup> May - PM
Biology Paper 2	Monday 1 <sup>st</sup> June - PM
Chemistry Paper 2	Wednesday 10 <sup>th</sup> June - AM
Physics Paper 2	Friday 12 <sup>th</sup> June - AM

## 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	Biology Paper 1 – Required Practicals Microscopy Osmosis Food Tests Enzymes and pH Photosynthesis	4.1.1.2 4.1.3.2 4.2.2.1 4.2.2.1 4.4.1.2	12-13 18 29 26 51	12-13 18 28 26 52
16/09 Week 3	Chemistry Paper 1 – Required Practicals Preparing Soluble Salts Electrolysis of Aqueous Solutions Temperature Changes in Reactions	5.4.2.3 5.4.3.4 5.5.1.1	131 136 139	129 133 135
23/09 Week 4	Physics Paper 1 – Required Practicals Specific Heat Capacity Resistance in Circuits IV Characteristics Determining Density	6.1.1.3 6.2.1.3 6.2.1.4 6.3.1.1	169 180 + 185 181 192	171 182 + 197 183 194
30/09 Week 5	B6: Meiosis, sexual and asexual reproduction, DNA, genetic terms, determining sex and Punnett squares,	4.6.1.1-4.6.1.3 4.6.1.6	68-73	66-70
7/10 Week 6	B6: Inheriting genetic disorders, variation, evolution, fossils, extinction, explaining resistant bacteria.	4.6.1.4-4.6.1.5 4.6.2.1-4.6.2.2 4.6.3.1-4.6.3.4	74-76 79-80	71-76 79
14/10 Week 7	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
21/10 Week 8	B7: Communities, competition, abiotic and biotic factors, adaptations and levels of organisation	4.7.1.1-4.7.1.4 4.7.2.1	83-86	83-86
October half term				
4/11 Week 9	B7: Determining population size, the carbon cycle, the water cycle. Required Practical: Measuring population size	4.7.2.1-4.7.2.2	87-90	87-90
11/11 Week 10	B7: Biodiversity, waste management, land use, deforestation, global warming, maintaining biodiversity	4.7.3.1-4.7.3.6	91-94	91-94
18/11 Week 11	Assessment Week: PPE1 Full Biology Paper 2 (2019)	Topics B5 – B7	58-94	57-94
25/11 Week 12	Assessment Week: PPE1 Full Biology Paper 2 (2019)	Topics B5 – B7	58-94	57-94
2/12 Week 13	C7: Crude oil, structure and properties of hydrocarbons, alkanes, fractional distillation, cracking and alkenes	5.7.1.1-5.7.1.4	150-152	146-149
9/12 Week 14	C8: Pure substances, formulations, chromatography, gas tests Required Practical: Chromatography and Rf values	5.8.1.1-5.8.1.3 5.8.2.1-5.8.2.4	153-156	150-154

16/12 Week 15	C9: Gases in the early atmosphere and today, explaining atmospheric changes, the greenhouse effect, human effects on the atmosphere, climate change, carbon footprint, fuels as pollutants and their effects	5.9.1.1-5.9.1.4 5.9.2.1-5.9.2.4 5.9.3.1-5.9.3.2	157-160	155-158
Christmas Holidays				
6/01 Week 16	C10: Using Earth's resources, potable water, treating waste water, life cycle assessments and reducing use of resources HIGHER: Alternative methods of metal extraction	5.10.1.1-5.10.1.3 5.10.2.1-5.10.2.2 Higher: 5.10.1.4	161-166	159-165
13/01 Week 17	P5: Scalar and vector quantities, contact and non-contact forces, gravity ( $W=mg$ ) and resultant forces	6.5.1.1-6.5.1.4	201-203	203-205
20/01 Week 18	P5: Work Done ( $W=Fs$ ) and Hooke's Law Required Practical: Investigating elastic forces	6.5.2 6.5.3	203-206	205-207
27/01 Week 19	P5: Distance, displacement, speed ( $s=vt$ ), velocity, distance-time graphs, acceleration, velocity-time graphs and terminal velocity	6.5.4.1.1- 6.5.4.1.5	207-210	208-211
3/02 Week 20	Assessment Week: PPE2 Full Chemistry Paper 2 (2019)	Topics C6-C10	142-165	138-165
10/02 Week 21	Assessment Week: PPE2 Full Chemistry Paper 2 (2019)	Topics C6-C10	142-165	138-165
February half Term				
24/02 Week 22	P5: Newton's Laws, stopping distances, reaction times and momentum	6.5.4.2 6.5.4.3 Higher: 6.5.5	211-216	212-217
2/03 Week 23	P6: Transverse and longitudinal waves, properties of waves, wave experiments and refraction, uses and properties of EM waves Required Practical: Ripple tank and waves on a string, Investigating infra-red radiation	6.6.1 6.6.2	218-226	219-228
9/03 Week 24	<b>In Class Assessment: Physics Paper 2 (2019)</b>	Topics P5-P7	201-230	203-230
16/03 Week 25	Assessment – Biology Paper 1	Topics B1-B4	11-56	11-55
23/03 Week 26	Assessment – Chemistry Paper 1	Topics C1-C5	96-140	96-136
30/03 Week 27	Assessment – Physics Paper 1	Topics P1-P4	167-199	167-201
Easter Holidays				
20/04 Week 28	Final GCSE Examination Revision			
27/04 Week 29	Final GCSE Examination Revision			
04/05 Week 30	Final GCSE Examination Revision			
11/05 Week 31	Exams start			

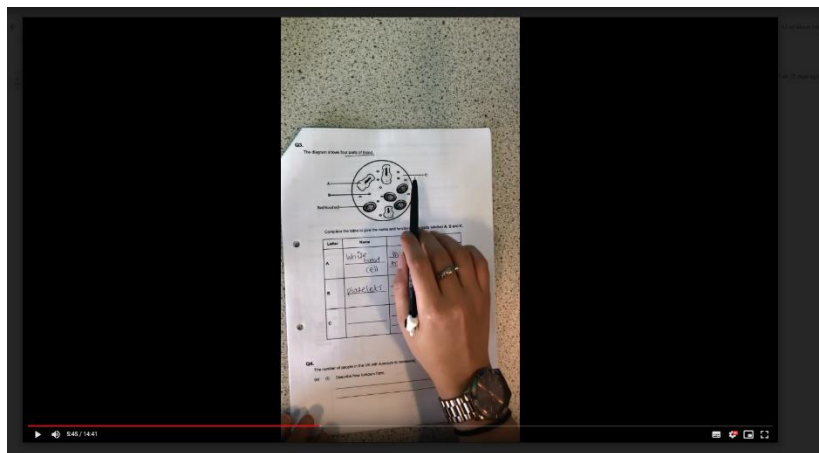
## Weekly Assessment Preparation

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.

$$\text{CuCO}_3(\text{s}) + \text{H}_2\text{SO}_4(\text{aq}) \longrightarrow \text{CuSO}_4(\text{aq}) + \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$$

(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.

*Handwritten notes:*

- Add copper carbonate to the acid + stir until effervescence stops
- Pour 25cm<sup>3</sup> of nitric acid into a beaker + gently warm
- Heat up copper sulfate gently
- Add excess amount of sulfate to react fully with the acid
- Sieve out the solution ~~leaving the solution~~ has no
- Using a water bath gently heat the solution and turn off bunsen burner shortly after the
- Filter all excess copper carbonate
- Leave solvent water has evaporated.
- Pour filtrate (copper nitrate solution) into an evaporating basin.
- Heat up to evaporate some of the water
- 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 + put dry

(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  $6.02 \times 10^{23}$  molecules

Relative atomic masses (A<sub>r</sub>): C = 14; O = 16

*Handwritten calculations:*

Mr(CO<sub>2</sub>) = 14 + (2 × 16) = 46

Mass = 14

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

N =

Mr = 30

$14 \div 30 = 0.466$

*Additional notes:*

• N<sup>th</sup> of molecules in 0.30434 moles =  $0.30434 \times 6.02 \times 10^{23}$

$1.8321 \times 10^{23}$

(6)



## 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: <b>A</b>	Grade achieved: <b>8-8</b>	Raw Score: <b>18</b> /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<sup>3</sup> to dm<sup>3</sup>. 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<sub>3</sub>). Use Avogadro's constant (6.02 x 10<sup>23</sup>).

Student Response (continue on separate sheet if necessary):

**Half Equations**

At Cathode:  $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$  ✓

At Anode:  $2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$  ✓

\*  $20\text{cm}^3 \times 1000 = 20000\text{dm}^3$  0.02dm<sup>3</sup>

Concentration =  $\frac{\text{mass of solute (g)}}{\text{volume of solvent (dm}^3\text{)}}$  =  $\frac{2\text{g}}{0.02\text{dm}^3} = 100\text{g/dm}^3$  ✓

\* **NUMBER OF MOLES** =  $\frac{\text{mass (g) of element or compound}}{M_r \text{ (of the element or compound)}}$

**Ammonia (NH<sub>3</sub>)**

M = 25.5g

N = ? 1.5

$\rightarrow 25.5\text{g} \div 1.5 = 17$  ✓

$\rightarrow 17 \times 6.02 \times 10^{23} = 1.023 \times 10^{25}$  ✓

$M_r = 14 + (1 \times 3) = 17$  ✓

## 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 ion.

**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<sub>3</sub>-).

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

## examp

### 10.04 Weekly Assessment Preparation Questions: Higher

The human digestive system, plant tissues and organs.

Name: Musaban Khalil

Class: 10 x E

Date: Wednesday 25<sup>th</sup>

Time: **30 minutes**

Marks: **34 marks**

#### Key Facts

- 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.
- Temperature, light intensity, airflow and humidity all affect the rate of transpiration (check details of this on pg 41)
- 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.
- 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.
- Carbon dioxide diffuses into the leaf of a plant through stomata which are small holes on the underside of a leaf.
- 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.
- When the plant has less water, the guard cells become flaccid and the stomata close, which helps stop water vapour escaping.
- Enzymes are molecules which break down large insoluble molecules into small, soluble ones which can be absorbed into the bloodstream.
- Amylase breaks down starch into sugar, protease breaks down protein into amino acids and lipase breaks down fats into fatty acids and glycerol
- If digestive enzymes are placed into the wrong pH or temperature, their active site changes shape and they denature (don't work)
- 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

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

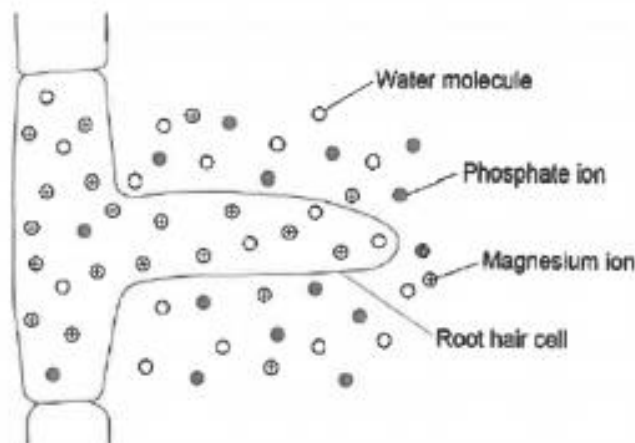
In the preparation booklet, there are exam questions designed to help student's develop their exam technique. Attached is also the mark scheme, so that students can self-assess each answer.

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



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

(Total 13 marks)

<b>Level 3:</b> Relevant points (correct processes / explanations) are identified, given in detail and linked logically to form a clear account.	5-6
<b>Level 2:</b> Relevant points (correct processes / explanations) are identified and there are attempts at logical thinking. The resulting account is not fully clear.	3-4
<b>Level 1:</b> 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
<b>Indicative content</b> <ul style="list-style-type: none"> <li>• water is absorbed by osmosis</li> <li>• osmosis is a passive process, or described</li> <li>• water in soil is at a higher concentration than inside cell</li> <li>• water moves down concentration gradient</li> <li>• through a partially permeable membrane</li> <li>• phosphate ions absorbed by diffusion</li> <li>• diffusion is a passive process, or described</li> <li>• phosphate ions are in a higher concentration in soil than inside cells</li> <li>• magnesium ions are absorbed by active transport</li> <li>• magnesium ions are in lower concentration in soil than inside cells</li> <li>• magnesium ions move from an area of lower concentration to an area of higher concentration inside the cells</li> <li>• magnesium ions move up the concentration gradient</li> <li>• process requires energy</li> <li>• energy from respiration</li> </ul>	

**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  
→

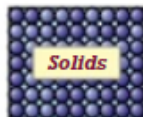
This can be  
shortened to a  
flowchart/list of  
steps rather  
than a  
paragraph  
→

### The Particle Model and Motion in Gases

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

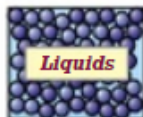
#### There are Three States of Matter

- 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.



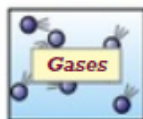
**Solids**

- 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**.



**Liquids**

- 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**.



**Gases**

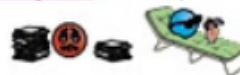
- 1) The particles **aren't** held close together. There are **no forces** between them.
- 2) The particles have **more energy** than in liquids and solids.
- 3) The particles **constantly move** around in **random directions** at a **range of speeds**.

#### 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**.



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

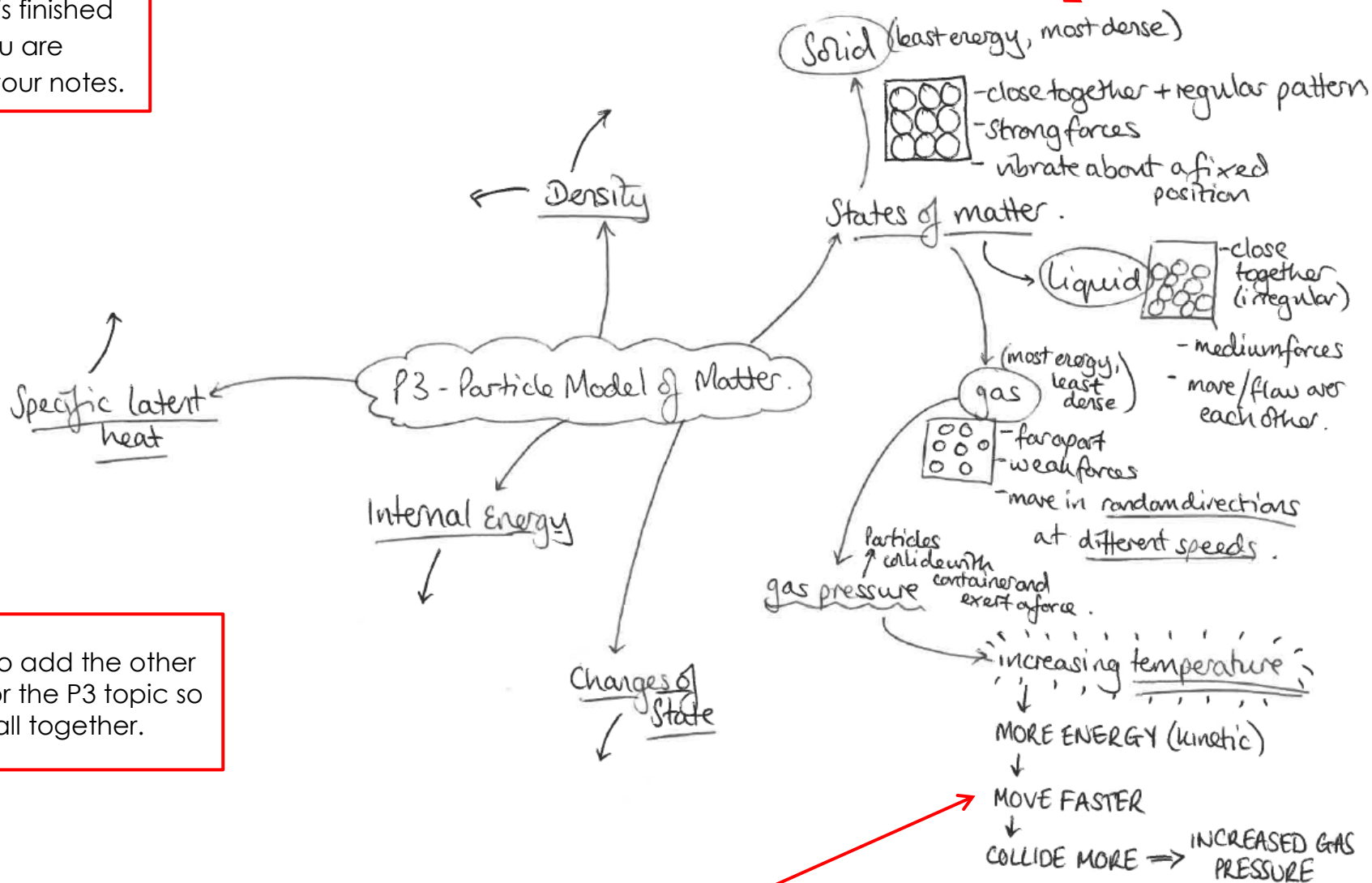
Get your head around the particle model before moving on to the rest of the topic.

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

### 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]

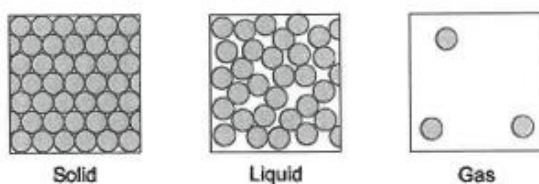
#### **Who can measure volume — the eureka can can, oh the eureka can can...**

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  $0.05 \text{ m}^3$ . It has a density of  $40 \text{ kg/m}^3$ . Calculate its mass. [3 marks]

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

\* mention the word particles!  
⇒ max 4 marks.

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

## 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?

.....

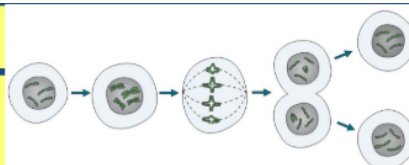
**Food Tests – Summary Table**

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.

### Mitosis (page 11)

Check your answers....



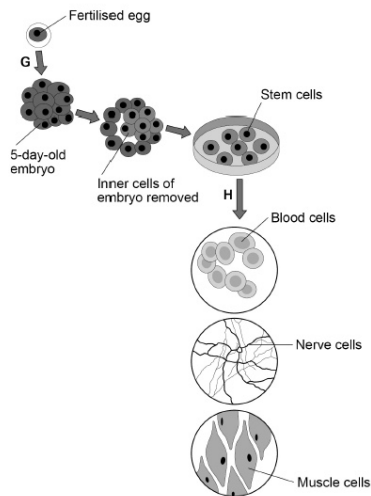
DNA replicates to make 2 copies of each chromosome	<b>2</b>
One set of DNA is pulled to each side of the cell	<b>4</b>
The nucleus divides	<b>5</b>
The cytoplasm and cell membranes divide and two identical cells are formed	<b>6</b>
The cell grows and increase the number of mitochondria and ribosomes	<b>1</b>
The DNA lines up down the centre of the cell	<b>3</b>

### 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.

allow light microscope does not have electron magnification  
resolution  
allow ribosomes are smaller than mitochondria  
ignore not sensitive enough  
ignore ribosomes are transparent

1  
[8]

#### Q5.

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

$= 29 \div 0.03$

$= 967$

allow 967 with no working shown for 2 marks

1  
1

#### 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

#### 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.**