



# Supporting My Child in Science

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KS4 Separate  
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# Jesmond Park Academy

## What will my child be studying this year?

At Jesmond Park Academy we have developed a bespoke KS3 curriculum based on the AQA KS3 syllabus and the AQA KS4 specifications.

Our aim is to deliver a knowledge rich spiral curriculum, which allows continuous learning from Y7 to Y13.

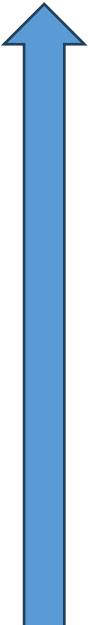
# YEAR 9 Teaching Overview

| <b>AUTUMN TERM (Sept – Dec)</b>                                                |                          | 16th November 2026                                                             | YR9 MOCK WEEK         |
|--------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------|-----------------------|
| 1. Physics – The Particle model<br>2. Chemistry – Atomic Structure             | OCTOBER<br>HALF<br>TERM  | 3. Biology – Cell Biology<br>4. Biology – Transport in Cells                   | CHRISTMAS<br>HOLIDAYS |
| <b>SPRING TERM (Jan - Apr)</b>                                                 |                          | 8th March 2027                                                                 | YR9 ASSESSMENT WEEK   |
| 5. Physics – Atomic Structure and Radiation<br>6. Chemistry – Chemical Changes | FEBRUARY<br>HALF<br>TERM | 7. Chemistry – Organic Chemistry<br>8. Chemistry – Chemistry of the Atmosphere | EASTER<br>HOLIDAYS    |
| <b>SUMMER TERM (Apr – July)</b>                                                |                          | 14th June 2027 TBC                                                             | YR9 ASSESSMENT WEEK   |
| 9. Biology – Bioenergetics and Organisation                                    | MAY<br>HALF<br>TERM      | 10. Physics – Energy<br>11. Exam Skills – Practical Focus                      | SUMMER<br>HOLIDAYS    |

**25th January Year 9 Parents Evening**  
**9th February Year 9 Options Evening**

# KS3 Assessment Grading

- Each student has been assigned a curriculum related expectation based on their EOKS4 target.
- This is the **minimum** CRE students should aim to achieve for them to meet their EOKS4 target.
- A students CRE target pathway will remain the same throughout KS3 due to the increasing demand in knowledge, understanding and skills built into our challenging curriculum.



| Curriculum Related Expectation (CRE) Definition |                                                                                 | Projected est. GCSE outcome |
|-------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------|
| Excelling                                       | You are working well above curriculum related expectation in the subject        | GCSE Grade 8 to 9           |
| Exceeding                                       | You are working beyond curriculum related expectation in the subject            | GCSE Grade 6 to 7           |
| Achieving                                       | You are working at curriculum related expectation in the subject                | GCSE Grade 4 to 5           |
| Developing                                      | You are working towards curriculum related expectation in the subject           | GCSE Grade 2 to 3           |
| Emerging                                        | You are beginning to work towards curriculum related expectation in the subject | GCSE Grade 1                |

# How will my child be assessed in science?

Assessment is a very important part of our curriculum.

## **2 types of assessment at Jesmond Park Academy**

### **1. Formative assessment**

- Designed to be low stakes for the students (not graded)
- Allow staff to easily identify and address any gaps in knowledge and/or areas of misconception.

### **2. Summative assessment**

- Graded assessments
- Used to track student progress and encourage and support all students to be successful in science.



## I know that... section

## Formative assessment

- Multi-choice test based on the knowledge goals for each topic.
- Self-assessed by student in red pen
- Staff to review answers and highlight in green 3 EBIs questions that students should focus on when revising the topic.

### Year 9 Radiation Assessment

*I know...*

1. *I know that an accurate description of the structure of the atom is:*

- ☐ A. The atom is made up of a central nucleus containing protons and electrons with neutrons orbiting it.
- ☐ B. The atom is made up of a central nucleus containing protons and neutrons with electrons orbiting it.
- ☐ C. The atom is made up of a central nucleus containing neutrons with protons and electrons orbiting it.
- ☐ D. The atom is made up of a central nucleus containing electrons with protons and neutrons orbiting it.

2. *I know isotopes of the same element are different because...*

- ☐ A. They have the same number of protons but different number of neutrons.
- ☐ B. They have different numbers of protons and electrons.
- ☐ C. They have the same number of neutrons but a different number of electrons.
- ☐ D. They have different numbers of protons and neutrons.

3. *I know that the model of the atom described as a sphere of positive charge with negative electrons randomly embedded is the...*

- ☐ A. Rutherford model
- ☐ B. Bohr model
- ☐ C. Plum pudding model
- ☐ D. Quantum model

4. *I know that the plum pudding model is no longer accepted because...*

- ☐ A. It could not explain the stability of atoms.
- ☐ B. It could not explain the results of the gold foil experiment.
- ☐ C. It predicted the existence of neutrons which were not yet discovered.

6. *I know that unstable isotopes become stable by...*

- ☐ A. Gaining protons.
- ☐ B. Releasing different types of particles.
- ☐ C. Absorbing neutrons.
- ☐ D. Changing their electron configuration.

7. *I know that radiation...*

- ☐ A. Has no practical uses.
- ☐ B. Is only harmful and has no practical uses.
- ☐ C. Has many uses, including medical and industrial applications.
- ☐ D. Is only found naturally and cannot be produced artificially.

8. *I know background radiation and contamination are best described as...*

- ☐ A. Background radiation is harmful, while contamination is harmless.
- ☐ B. Background radiation is all around us; contamination occurs when radioactive atoms get onto objects.
- ☐ C. Background radiation comes from man-made sources; contamination is only from natural sources.
- ☐ D. Background radiation and contamination are the same.

9. *I know that half-life is...*

- ☐ A. The time it takes for the number of nuclei of a radioactive isotope in a sample to halve.
- ☐ B. The time it takes for half of the radioactive particles in a sample to disappear.
- ☐ C. The time it takes for half of the mass of a radioactive isotope to change into another element.
- ☐ D. The time it takes for the radiation emitted by a sample to reduce by half.

10. *I know that the random nature of radioactive decay means that...*

- ☐ A. The rate of decay is the same for all radioactive isotopes.
- ☐ B. It is impossible to predict when a particular nucleus will decay.

# Year 9 Summative Assessment

## Three 75 minutes test papers

- First paper is part of the school Year 9 Mock week. This will be sat in the hall as a full practice mock exam to increase familiarity with the exams process.
- Consists of multiple exam style questions from past GCSE papers
- Assessments will test knowledge and understanding of content while also assessing working scientifically skills.
- In the style of GCSE exam papers to build on the mock experience in November allowing students to become familiar with the papers they will ultimately sit in Year 11

|                 |  |
|-----------------|--|
| Name            |  |
| Science Class   |  |
| Science Teacher |  |

### Year 9 GCSE Science

#### Mock Exam 1 - November 2024

#### For this paper you must have:

- a black or blue ball-point pen, a pencil, a ruler, an eraser, a pencil sharpener and a calculator

#### Time allowed

- 1 hour 15 minutes

#### Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer all questions.
- If you are stuck make sure you have attempted the following questions: 1, 2, 3, 4, 7 (the graph) and 8 (a).
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

| Examiners Initials  |      |
|---------------------|------|
|                     |      |
| Moderators Initials |      |
|                     |      |
| Question            | Mark |
| 1                   |      |
| 2                   |      |
| 3                   |      |
| 4                   |      |
| 5                   |      |
| 6                   |      |
| 7                   |      |
| 8                   |      |
| <b>TOTAL</b>        |      |

# When and how will course decisions be made?

## Separate Sciences or Trilogy?

### 1. Differences in the courses

Our separate sciences are taught in the same amount of lesson time as trilogy higher science but contains a greater amount of content and as such is taught at a fast pace. We must ensure that we select students who have shown throughout their year 9 studies that they are ready for the challenge of the content, pace and demand of the separate science course.

### 2. Requirements for separates selection

**Grade 5** across the three summative assessments in year 9.

### 3. When the decision be made

After the final assessment has been completed, all data will be reviewed and course selection and set selection will be arranged. Students will find out their course when they receive their timetable in September

## **In Year 10**

### **1. Careful monitoring**

We carefully monitor our top set trilogy students. They will be given three paper 1 mock exams as they move through the first part of year 9, physics paper 1 in November, Biology Paper 1 in January and Chemistry paper 1 in February.

### **2. Rationale**

Our aim is always to secure the best possible grade for our students and allow as many as possible progression to A level. For A level sciences students need at least two grade 6's in science, it does not make a difference if those 6s come from separate sciences or from trilogy combined science. Our entry for A-Level sciences also requires a 5 or above on the higher maths paper.

# How can I support my child with their science?

## General advice

1. Check your child's planner and frog each week.
  - Discuss any planner comments with a focus on how to improve.
  - Talk to them about their homework.
2. Ask them what they have been learning in science.
  - Ask them to bring home their books to show you.
  - If they open up and say they are struggling email their teacher.
3. Encourage them to attend P7's such as Science Club  
*(Thursday in s7 with Miss Morris)*

## Revision Support

Before any summative assessment, students will be given a revision list. This is a list of all the topics that may be assessed in the test.

 **Jesmond Park  
Academy**

Revision Homework: **SUMMATIVE ASSESSMENT 1**

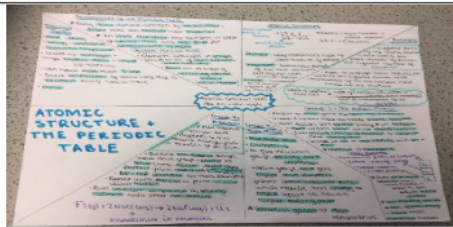
Task Objective: To revise the key concepts required for your summative assessment

To prepare for your forthcoming science test you will need to revise the following topics:

|                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MATTER: Periodic table</b> <ul style="list-style-type: none"><li>• Atomic structure</li><li>• What are elements</li><li>• Structure of the periodic table</li></ul>                                                                                                       | <b>ECOSYSTEMS: Photosynthesis</b> <ul style="list-style-type: none"><li>• Word equation</li><li>• What photosynthesis is</li><li>• Factors affecting photosynthesis</li></ul>                            |
| <b>MATTER: types of reaction</b> <ul style="list-style-type: none"><li>• What are compounds</li><li>• Writing word equations</li><li>• Balancing equations</li><li>• Chemical and physical changes</li><li>• Reactivity of metals</li><li>• Displacement reactions</li></ul> | <b>Digestive system</b> <ul style="list-style-type: none"><li>• Balanced diet</li><li>• Food labels</li><li>• Digestive system</li><li>• Enzymes and how they work</li><li>• Digestive enzymes</li></ul> |

**Revision Tips:**

- Make a revision poster to summarise all key points
- Make small flashcards to help memorise content
- Use BBC Bitesize to revise the key ideas and the end of topic quizzes to test your knowledge
- Don't forget to see you teacher if you have any questions!



**YOU MUST PROVIDE EVIDENCE OF YOUR REVISION**

# Revision

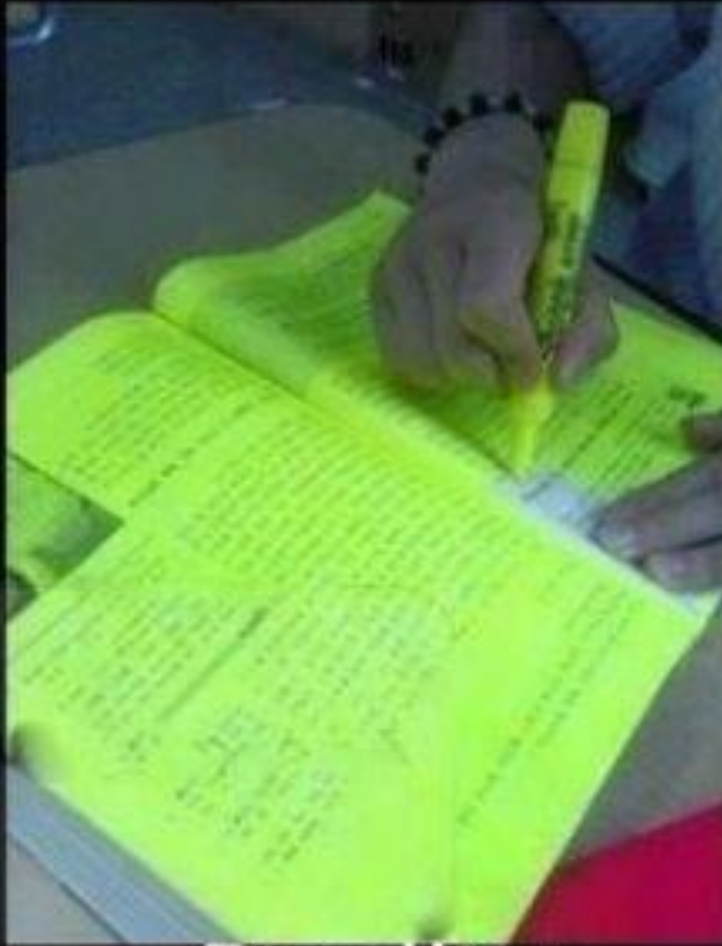
What students think happens with revision...



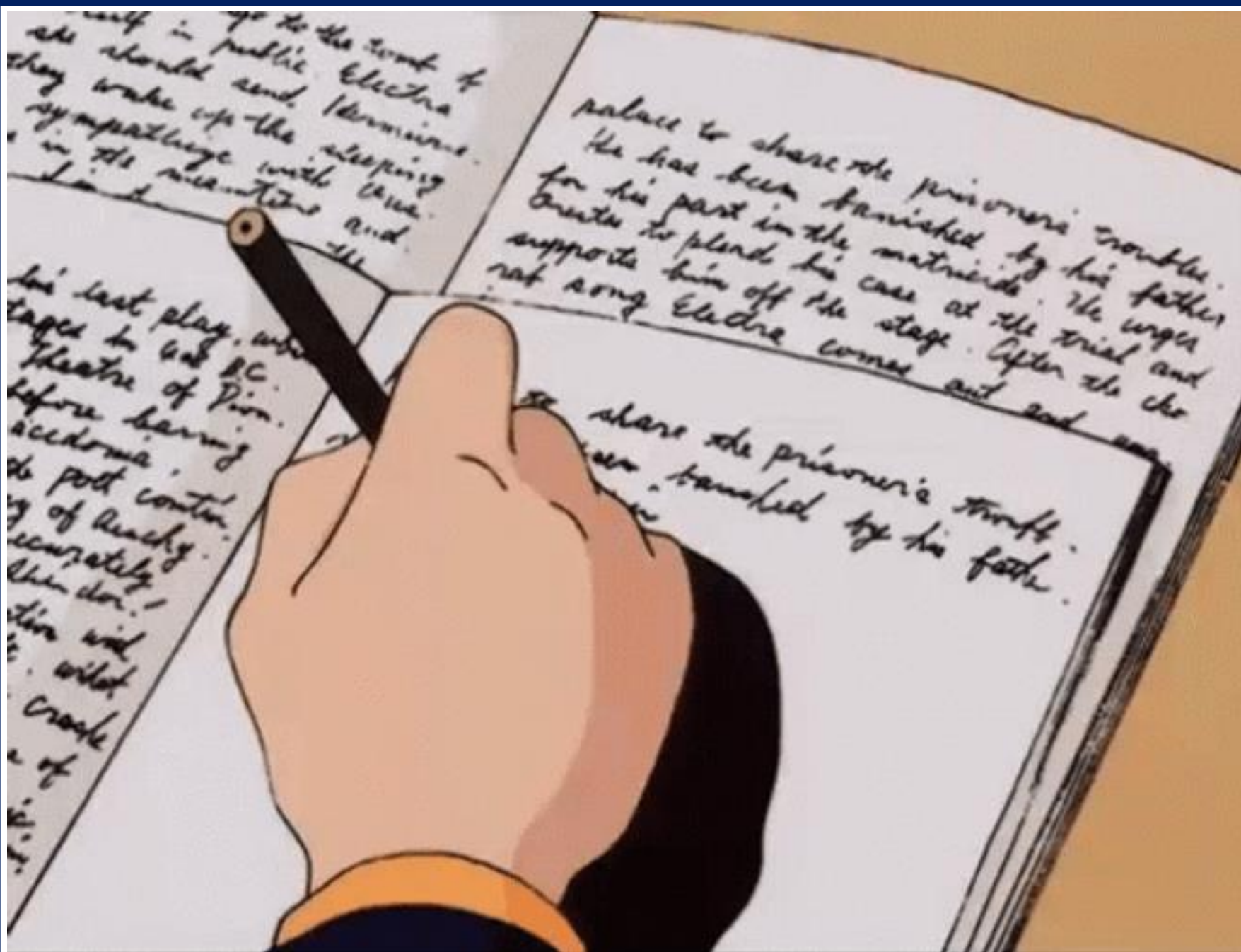
# Summarizing before exam.



expectation



Reality



...to the front of  
she should send. I know  
they wake up the sleeping  
sympathizers with case.  
in the meantime and  
last

his last play, who  
taged in last BC.  
Theatre of Dion.  
before having  
accidoma.  
do post contin.  
of reachy.  
accurately  
then don!  
tion and  
it. with  
crack  
of

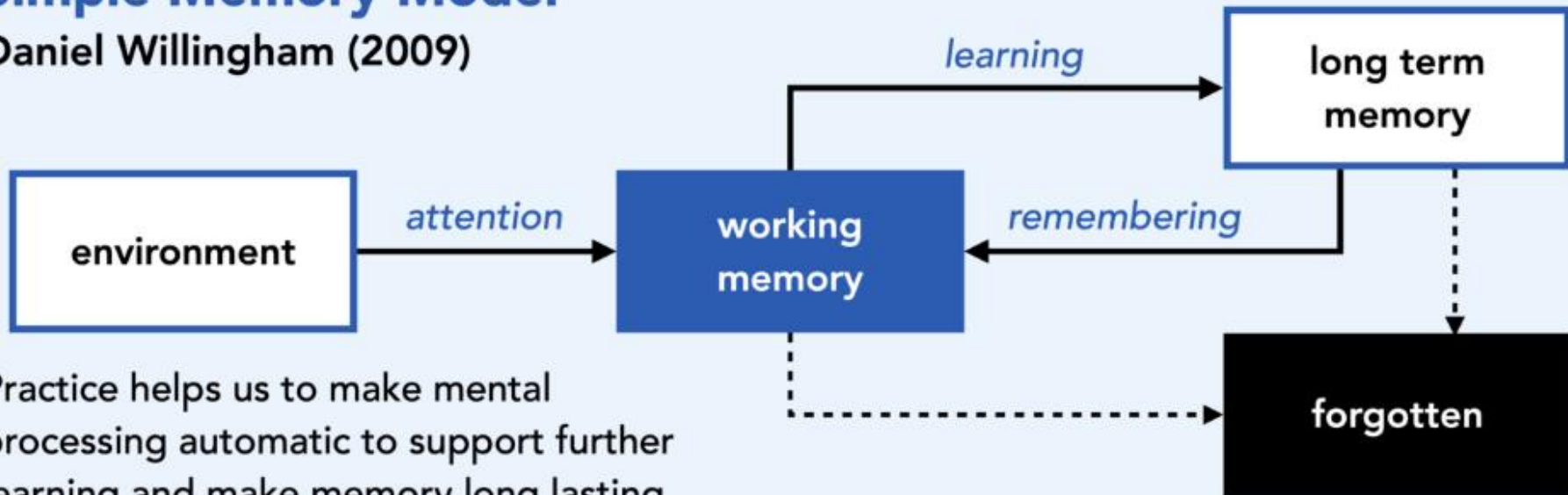
palace to share the prisoner's troubles.  
He has been banished by his father  
for his part in the matricide. He urges  
Creon to plead his case at the trial and  
support him off the stage. After the cho-  
rus song Electra comes out and

share the prisoner's trouble.  
banished by his father.

## Best form of revision is retrieval practice ...

### Simple Memory Model

Daniel Willingham (2009)



Practice helps us to make mental processing automatic to support further learning and make memory long lasting.

## 3 'R's: Remember It, Recall It, Retain It.

Promote revision strategies that get your child to actively retrieve their learning.

## Example: Flashcards.

Cards with question and the front and answers on the back.

**ORGANISM: Digestion**

**Food**

You need to eat a wide variety of foods to get all the food substances that we need. When we do this, we are said to have a **balanced diet**. Carbohydrates, proteins, fats and oils (lipids), vitamins and minerals are **nutrients**, which means that they provide the raw materials for making other substances that the body needs.

| Substance needed | Examples       | Why it is needed                                           | Good source                                                           |
|------------------|----------------|------------------------------------------------------------|-----------------------------------------------------------------------|
| Carbohydrates    | Starch, sugars | For energy (in respiration)                                | Grains, bread, rice, potatoes                                         |
| Protein          |                | For growth and repair (building new substances)            | Meat, fish, beans                                                     |
| Vitamins         | Vitamin C      | For health                                                 | Fruits and vegetables (e.g. oranges contain lots of vitamin C)        |
| Minerals         | Calcium        | For health                                                 | Fruits, vegetables and dairy products (e.g. milk contains calcium)    |
| Fibre            |                | For health (helps to stop constipation)                    | Wholemeal bread, wholegrain rice, celery and other fibrous vegetables |
| Water            |                | For health (water dissolves substances and fills up cells) |                                                                       |

We can do tests to find out which substances are in foods. For example, starch makes iodine solution go a blue-black colour.

**Nutrition information** labels on foodstuffs tell us what the food contains. The labels also tell us how much energy is stored in the substances that make up the food. The amount of energy is measured in kJ.

- levels of a
- age (broad)
- whether it's

Food labels tell us how many calories (energy) are in a food. People often use the word 'calories' to mean 'kilocalories'.

**Digestion**

Digestion is the process by which food is broken down into small molecules that can be used by the body.

**Y8 Periodic table Assessment**

- I know that an element is made from...
  - ☐ A. several different types of atoms.
  - ☐ B. only one type of atom.
  - ☐ C. made of two different types of atoms joined together.
  - ☐ D. made of different types of compounds.
- I know that an atom is made from...
  - ☐ A. Protons, neutrons, and molecules
  - ☐ B. Protons, electrons, and neutrons
  - ☐ C. Neutrons, electrons, and compounds
  - ☐ D. Electrons, neutrons, and cells
- I know that the atomic number of an element tells us...
  - ☐ A. the number of neutrons in an atom
  - ☐ B. the number of protons in an atom
  - ☐ C. the number of electrons in an atom
  - ☐ D. the mass of the atom
- I know how to calculate the number of neutrons in an atom.
  - ☐ A. Subtract the atomic number from the mass number.
  - ☐ B. Add the atomic number to the mass number.
  - ☐ C. Subtract the mass number from the atomic number.
  - ☐ D. Divide the mass number by the atomic number.
- I know that the electrons are...
  - ☐ A. located in the nucleus and have a positive charge.
  - ☐ B. located on the shells/orbitals and have a positive charge.
  - ☐ C. located in the nucleus and have a negative charge.
  - ☐ D. located on the shells/orbitals and have a negative charge.
- I know that the periodic table is a...
  - ☐ A. list of all known molecules
  - ☐ B. a list of all known elements
  - ☐ C. a chart of all known compounds
  - ☐ D. a table of all known atoms

**ORGANISM: Digestion**

**Summary Sheets**

**The gut**

Food is digested in the gut.



Putting food in the mouth is called **chewing** or **mastication**. The teeth grind up the food and mix it with a **digestive juice** called **saliva**. Digestive juices contain enzymes.

Saliva is produced by the **salivary glands**. Saliva makes food easier to swallow.

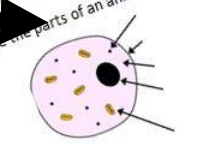
In the stomach, strong acids are added to the food and more digestive juices are added to break down proteins.

Food is swallowed down the **gullet** (oesophagus) or **food pipe**. The muscles along the wall of the gullet get smaller (they contract).

**Cell Biology**

**Biology Paper 1**

**Name the parts of an animal cell**



**Cell Biology**

**Biology Paper 1**

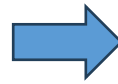
**What is the definition of diffusion?**

The movement of particles from an area of high concentration to an area of low concentration.

Promote revision strategies that get your child to actively retrieve their learning.

## Example: Brain dump

On an A4 piece of paper, write down what you can remember from the topic.



Use the summary sheet (*one drive*) to add any info in red that they couldn't recall.



**BRAIN DUMP**

**RETRIEVAL PRACTICE – NO NOTES ALLOWED!**

Without looking in your books, write down everything you remember about \_\_\_\_\_



# REPEAT!

Hopefully, each time they will remember more.

**ORGANISM: Digestion**

**Food**

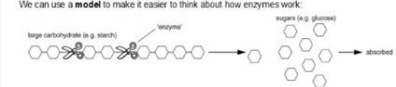
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| Substance needed | Examples              | Why it is needed         | Good sources                        |
|------------------|-----------------------|--------------------------|-------------------------------------|
| Carbohydrates    | starch, sugars        | For energy (respiration) | pasta, bread, rice, potatoes        |
| Proteins         | amino acids           | For repair (tissues)     | meat, fish, beans                   |
| Fats and oils    | lipids                | For energy (respiration) | oils, butter, margarine             |
| Minerals         | calcium, iron, iodine | For various functions    | dairy products, meat, fish, seaweed |
| Vitamins         | vitamin C, vitamin D  | For various functions    | fruits and vegetables, sunlight     |

**Digestion**

Digestion turns large **insoluble** substances into small **soluble** ones. The organs of the **digestive system** help us digest food. Many of them produce **enzymes** (substances that are **catalysts** and help speed up food digestion).

We can use a **model** to make it easier to think about how enzymes work:

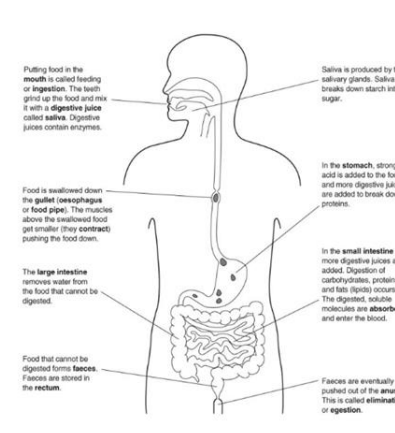


**Summary Sheets**

**ORGANISM: Digestion**

**The gut**

Food is digested in the gut.



Putting food in the mouth is called **feeding** or **ingestion**. The teeth grind up the food and mix it with a **digestive juice** called **saliva**. Digestive juices contain enzymes.

Food is swallowed down the gullet (oesophagus or food pipe). The muscles above the swallowed food get smaller (they contract) pushing the food down.

The large intestine removes water from the food that cannot be digested.

Food that cannot be digested forms **faeces**. Faeces are stored in the **rectum**.

To help absorb the digested food, the wall of the small intestine is folded and covered with **villi**. The cells have **microvilli**. These features all increase the **surface area**. The wall of the small intestine is also only one-cell thick, meaning that it is easy for small molecules to **diffuse** out of the small intestine and into the blood. The digested food molecules are carried in the **blood plasma**.

The surface area is the total area of the faces of a three-dimensional object.