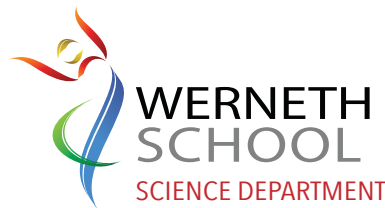


# Science 2019/20

Mr. Brighton (Subject Leader)

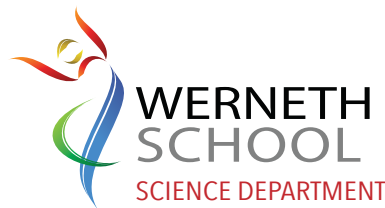
Mrs. McLaughlin (Second in Department)

Miss Wicks (KS3 Co-Ordinator)



## *Expectations*

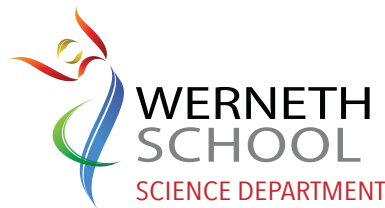
1. High Five
2. Correct Uniform
3. Sit in allocated place
4. Register conducted in silence and answered 'yes Sir' / 'yes Miss'
5. No mobile phones
6. Orderly dismissal (one row at a time)
7. After periods 2 & 4, students are to exit C floor via the nearest stairway



**Non-Negotiable**

# *When in class, students should...*

1. **Respect** the teacher and each other
2. Have a **positive attitude**
3. Work to the **best of their ability**



# Behaviour

Choice

Chance

Consequence

GN

PATROL

If students fail to attend class teacher detention, an after school detention will be issued.

} Teacher detention at break or lunch time. More than three result in a department report that will be shared with home.

} Teacher detention at break or lunch time to repeat missed work. Phone call home. More than two result in a department report that will be shared with home.

# ATL Grades

These grade descriptors will be used by teachers to produce the reports

## ATTITUDE TO LEARNING

4	ABOVE TARGET	Exemplary classwork & homework perfect behaviour
3	ABOVE TARGET	Inconsistent classwork & homework occasional behaviour issues
2	ON/WORKING TOWARD TARGETS	Exemplary classwork & homework perfect behaviour
1	ON/WORKING TOWARD TARGETS	Inconsistent classwork & homework occasional behaviour issues
0	BELOW TARGET	Concerns with classwork, homework and behaviour
-1	BELOW TARGET	Many concerns with classwork, homework and behaviour
-2	BELOW TARGET	Serious concerns with classwork, homework and behaviour



**Areas of Study**

<i>Topic</i>	<i>Areas of Study</i>	<i>The Bigger Picture</i>
<b>Biology 1</b> Cell Biology	<ul style="list-style-type: none"> <li>Cells structure</li> <li>Cell division</li> <li>Transport in cells</li> </ul>	Cells are the basic unit of all forms of life. Structural differences between types of cells, enables them to perform specific functions within the organism.
<b>Chemistry 1</b> Atomic structure & the Periodic table	<ul style="list-style-type: none"> <li>A simple model of the atom, symbols, relative atomic mass, electronic charge &amp; isotopes</li> <li>The Periodic table</li> </ul>	Periodic table provides structured organisation of known chemical elements to make sense of their physical & chemical properties. Elements are arranged in terms of atomic structure providing evidence for the model of a nuclear atom.
<b>Physics 1</b> Energy	<ul style="list-style-type: none"> <li>Energy changes in a system</li> <li>Conservation &amp; dissipation of energy</li> <li>National &amp; global energy resources</li> </ul>	Concept of 'energy' has become a key tool for understanding chemical reactions & biological systems. Energy from fossil fuels is limited and harmful to Earth, scientists are identifying ways to reduce our energy usage.
<b>Biology 2</b> Organisation	<ul style="list-style-type: none"> <li>Principles of organisation</li> <li>Plant &amp; animal tissues, organs &amp; systems</li> </ul>	Human digestive system provides the body with nutrients & the respiratory system allows gas exchange. Damage to organ systems can be debilitating & fatal. Plant transport systems are dependent on environmental conditions for photosynthesis to occur
<b>Chemistry 2</b> Bonding, structure, & the properties of matter	<ul style="list-style-type: none"> <li>Chemical bonds, ionic, covalent &amp; metallic</li> <li>How bonding &amp; structure are related to the properties of substances</li> <li>Structure &amp; bonding of carbon</li> </ul>	Theories of structure & bonding explain the physical & chemical properties of materials. Using knowledge of structure & bonding allows engineering of new materials with desirable properties for many technological applications.
<b>Physics 3</b> Particle Model of Matter	<ul style="list-style-type: none"> <li>Change of State &amp; Particle model</li> <li>Internal Energy &amp; Energy Transfers</li> <li>Particle Model &amp; Pressure</li> </ul>	Used to predict the behaviour of solids, liquids & gases with applications in everyday life. Principles used when designing vessels to withstand high pressures & temperatures e.g. submarines, spacecraft.

# Learning Guide

**What topics will students study this year?**

**Why are students studying the selected topics?**

**How will they be assessed?**

## A Guide to Science During Year Seven

### Areas of Study

<i>Topic</i>	<i>Areas of Study</i>	<i>The Bigger Picture</i>
Biology 1	Cells, specialised cells, microscopes and reproduction	Cells are the building blocks of life. All organisms are built up of cells and some are specialised to carry out their functions
Chemistry 1	Particles, changes of state and the properties of different states of matter. Separating mixtures	Particles make up everything around us and even you! The world is full of mixtures from a packet of smarties to crude oil.
Physics 1	Forces, non-contact and contact forces, balanced and unbalanced forces	Forces cannot be seen but the effect of forces can. Forces explain the movement of objects
Biology 2	Ecosystems, plants and photosynthesis	Without plants and photosynthesis there would be no life on Earth!
Chemistry 2	Acids, alkalis, the pH scale, neutralisation and making salts	Have you ever wondered why placing vinegar on a wasp sting eases the pain?
Physics 2	Electricity, series and parallel circuits, circuit symbols, voltage and	Electricity is pivotal to modern life. Why do we have different circuit types?

# What will students study?

Biology	Chemistry	Physics
Cells and Reproduction	Particles	Forces
Ecosystems and Plants	Acids and Alkalis	Electricity
Scientific Skills		

Biology	Chemistry	Physics
Microbes and Disease	Elements	Energy
Organ Systems	Chemical Reactions	Space and Waves
Scientific Skills		



# What will students study?

States of Matter

Changes of State

BP/MP Practical

Chemical vs. Physical Changes

**Mid Topic Assessment**

Elements, Compounds & Mixtures

Pure/Impure Practical

Separation Techniques

Filtration Practical

Evaporation Practical

Distillation Practical

Chromatography Practical

*Revision*

**End of Unit Assessment**

Types of Forces

Practical

Balanced & Unbalanced Forces

Resultant Forces

Hooke's Law

Practical

**Mid Topic Assessment**

Gravity

Magnetism

Pressure

Moments

Road Safety

*Revision*

**End of Unit Assessment**

# How will students be assessed?

Mid unit open book assessment – Feedback from teacher

End of unit test – Percentage and grade given - Feedback from teacher and intervention

Year 7 Biology 1: Cells and Reproduction	
<p>Lily wants to view onion cells using a light microscope. Describe the method Lily should use to prepare and focus her microscope. You should write your answer as easy to follow steps. <i>Challenge: Name the organelles Lily may be able to view.</i></p> <p>1.</p> <p>Describe and explain the differences between animal and plant cells. You can include diagrams in your answer. <i>Challenge: What are the differences between eukaryotic and prokaryotic cells?</i></p>	<p><b>Challenge:</b> What is the function of a sperm cell, and how are they adapted to their function?</p>
<p><u>DIRT Targets:</u></p>	<p><u>Date:</u></p> <p><u>Pride and Presentation:</u></p> <ul style="list-style-type: none"><li><input type="checkbox"/> Date and title</li><li><input type="checkbox"/> Underline date and title</li><li><input type="checkbox"/> Sheets glued in</li><li><input type="checkbox"/> Pencil and ruler used for diagrams and graphs</li><li><input type="checkbox"/> Blue or black ink only</li><li><input type="checkbox"/> No vandalism</li></ul>
<p><u>Stretch and Challenge</u> <u>My Extension Target is:</u></p>	<p><u>Literacy:</u> Spelling (SP)</p> <p>Wrong Word (WW)</p> <p><u>WWW:</u></p>
<p><u>DIRT Completed</u> <input type="checkbox"/></p>	
<p><u>DIRT Response:</u></p>	
<p>Nucleus, Chloroplast, Cell wall, Cell membrane, Cytoplasm, Vacuole</p>	

# Presentation of Work

All work must be presented in the following way...

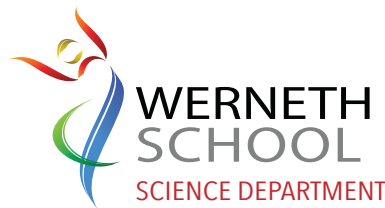
Title

Date

All underlined with a ruler

Write in blue or black ink only

In the event of a mistake: ~~mistake~~



## Written Work Should:

1. Include an underlined date and a title
2. Be written in blue or black ink
3. Use sub-headings used for new sections of work
4. Have worksheets neatly glued in
5. Have DIRT responses to teacher feedback written in purple

4/9/18 **1** Making Ammonia

# : Balance equation

Ammonia -  $\text{NH}_3$  key ingredient in fertiliser.

Nitrogen + hydrogen  $\rightleftharpoons$  Ammonia  
 $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$

**2**

$\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$   
4 moles (Higher pressure)  $\rightleftharpoons$  2 moles  
Exothermic reaction

$\uparrow$  temperature, system  $\downarrow$ , position of Equilibrium (Left)  
 $\text{NH}_3 \downarrow$  low temp = higher yield  
Bad for rate of reaction  
Pressure  $\uparrow$

**3**

Exam Question  
Explain the conditions used in the Haber process:  
The iron catalyst used to speed up the reaction does not affect % yield. A temperature of  $450^\circ\text{C}$  is used in the Haber process because if the temperature increases, the system will try to counteract the increase as the increase goes to the right P.O.E because it is an exothermic reaction. So the position of equilibrium is to the left, decreasing the amount of  $\text{NH}_3$ . If the temperature is too low, it will increase the yield however the reaction will be too slow.  
The pressure of the reaction is at 200 atm, this is because if the pressure is too high, it will be dangerous. But high pressure increases the percentage yield of ammonia so a compromise of 200 is used. S/G

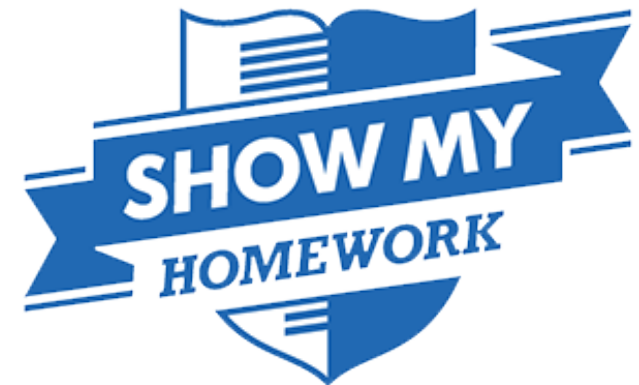
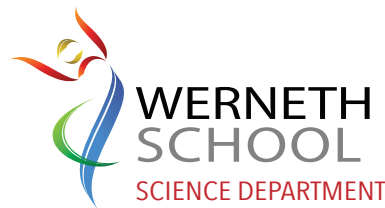
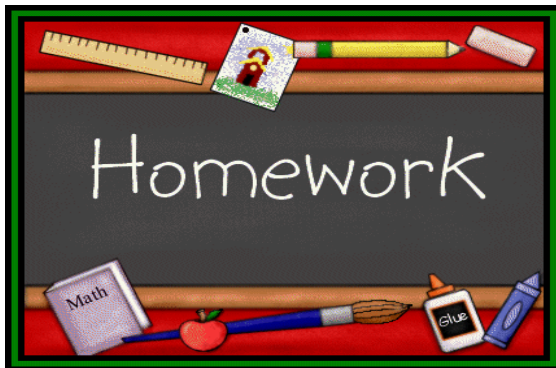
**4**

**5**

Explain the pressure in terms of equilibrium using the equation above. P.O.E moves right  $\rightarrow$

# Homework

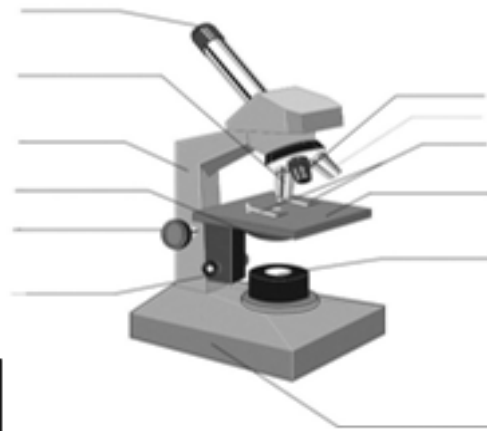
- Students will receive one piece of homework per week
- The homework will be set in class and placed on show my homework
- Each topic has a standard departmental homework to ensure consistency



**Task 1 – Learn the spellings below you will be tested in lesson**

Tissue	Cytoplasm	Organism
Eukaryotic	Chloroplast	Plant
Prokaryotic	Vacuole	Magnification
Division	Microscope	Animal
Epithelial	Nucleus	Sperm
Menstrual	Fertilisation	Cell Membrane
	Ovulation	

**Task 2 – Label the microscope and explain how to make an onion slide**



**Year 7  
B1 Homework  
Tasks**

**Task 3 – Complete the definitions below**

Keyword	Definition
Prokaryote	
Tissue	
Cytoplasm	
	Controls movement in and out of the cell
Ovulation	
Chloroplast	
Organ	
Ovary	

**Task 4 – Answer the questions below on IVF and fertilisation**

1. Explain how identical twins are created?
2. Describe the process of IVF in as much detail as you can
3. What is a surrogate used for?
4. What is menstruation?
5. Name a barrier method of contraception and explain how it works
6. Describe the changes that happen during puberty in males and females

# Get Signed In



Tassomai is an intelligent learning program that helps students achieve outstanding results. Tassomai uses multiple choice style micro-quizzes to build knowledge, boost confidence and reduce exam stress.

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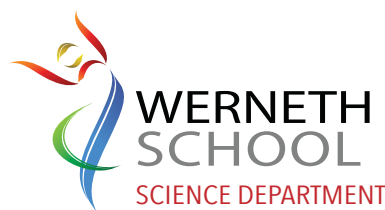
Tassomai uses multiple choice style micro-quizzes to build knowledge, boost confidence and reduce exam stress.



<https://www.tassomai.com/>

# Rewards

- KS3 unit certificates
- Scientist of the week
- Praise postcards
- Positive phone calls
- Rewards events
  - Cake @ break
  - School trips

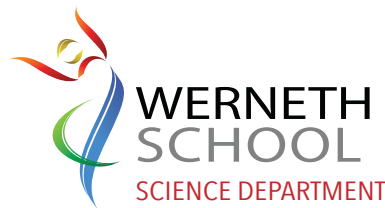




# *How do students get rewarded?*

***All nominations will be made by the class teacher... they will be looking for;***

- An excellent attitude to learning
- Well presented class and homework
- Good effort and progress
- A willingness to go the 'extra mile'
- Regularly achieve Tassomai goals and complete all homework



# Pathways

Students will begin studying for their GCSE's in year 9 with option choices made during year 8

## Science is a core subject

Triple Science is offered as an option and is recommended for students who;

- Wish to pursue a career in Science and or Technology
- Wish to study Science at A-Level

Students who study core Science receive two GCSE's (but still study Biology, Chemistry and Physics - usually with two teachers)

Triple Science students receive three GCSE's (Biol, Chem , Phys) and are taught by individual subject specialists in year 10 and 11

# Revision Guides

CGP Key Stage 3 combined  
revision and work book

Revision of all key topic areas  
Practice exam questions

£5.60 order through parent  
pay or main office



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Key Stage Three  
**Science**  
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# Questions?

