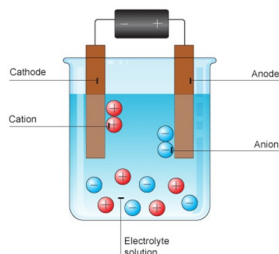


### Home learning activities

Subject
Science
Year Group
Year 10
Unit of work / Knowledge organiser
'Energy Changes' – 1
Activities
<ul style="list-style-type: none"> <li>• Complete the weekly 'Knowledge Check' through 'GCSEPod'.</li> <li>• Watch all 'GCSEPod' clips on the 'Energy Changes' Unit.</li> <li>• Complete the 'GCSEPod' Questions assigned for this Unit of work and any additional assignments which have been set by your teacher.</li> <li>• Follow the 'Revision Plans' for Biology and Physics</li> <li>• Complete the assigned activities for the given week on the Biology and Physics revision plans</li> </ul>
Where do you complete the work?
Use computer/phone for 'GCSEPod' or 'Seneca' and study materials.
What to do if you finish the work? (Extension activity)
<ul style="list-style-type: none"> <li>• Sign up for 'Seneca Learning' using the 'Sign Up Guide' sheet and the special passcode: <b>j5v9tvzq48</b>. Complete the assignments which have been set.</li> </ul>
These websites might help:
<ul style="list-style-type: none"> <li>• BBC Bitesize -&gt; Secondary -&gt; GCSE -&gt; Combined Science -&gt; AQA Trilogy -&gt; Chemistry -&gt; Energy Changes</li> <li>• <a href="http://www.freesciencelessons.co.uk">www.freesciencelessons.co.uk</a> -&gt; GCSE Videos -&gt; Chemistry Paper 1 -&gt; Energy Changes</li> </ul>
If you are struggling with your work or if you have finished.
<p><b>Please email your classroom teacher directly using the email list found in the Home Learning section of the website.</b></p>



Positive  
Anode  
Negative  
Is  
Cathode

### Section 1 Electrolysis key terms

38 Electrolysis	The process of <b>splitting an ionic compound</b> by passing <b>electricity</b> through it.
39 Electrolyte	An <b>ionic compound</b> that is <b>molten</b> (melted) or <b>dissolved in water</b> . The <b>ions are free to move</b> .
40 Electrode	An <b>electrical conductor</b> that is placed in the <b>electrolyte</b> and connected to the <b>power supply</b> .
41 Cathode	The <b>electrode</b> attached to the <b>negative</b> terminal of the <b>power supply</b> .
42 Anode	The <b>electrode</b> attached to the <b>positive</b> terminal of the <b>power supply</b> .

### Section 2 What is discharged in electrolysis?

Electrolyte	Cathode	Anode
43 Molten Compound	Metal	Non-metal
44 Dissolved compound (aqueous solution)	The <b>metal</b> if the metal is <b>less reactive than hydrogen</b> . <b>Hydrogen</b> is produced if the <b>metal is more reactive than hydrogen</b> .	<b>Oxygen</b> is produced <b>unless the solution contains halide ions</b> (chloride, bromide, iodide) when the <b>halogen</b> (chlorine, bromine, iodine) is produced.

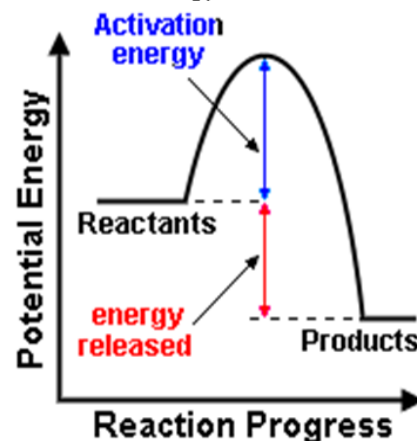
### Section 3 Aluminium Electrolysis

45 Cryolite	<b>Aluminium oxide</b> is dissolved in cryolite to <b>lower its melting point</b> . This <b>saves money on energy costs</b> .
46 Cathode	Positive <b>Al<sup>3+</sup> ions</b> move to the <b>cathode</b> . Aluminium is produced. <b>Al<sup>3+</sup> + 3e<sup>-</sup> → Al</b>
47 Anode	Negative <b>O<sup>2-</sup> ions</b> move to the <b>anode</b> . Oxygen is made. <b>2O<sup>2-</sup> → O<sub>2</sub> + 4e<sup>-</sup></b> <b>Wears away</b> as the <b>carbon anode reacts with oxygen to form carbon dioxide</b> .

### Section 4 Energy Changes Key Terms

1 Conservation of energy	Energy is <b>not created or destroyed</b> , only <b>transferred from one store to another</b>
2 Exothermic	A reaction that <b>transfers energy to the surroundings</b> so the <b>temperature of the surroundings increases</b> , e.g. <b>combustion</b> and <b>neutralisation</b> reactions. Used in <b>self-heating cans</b> and <b>hand warmers</b> .
3 Endothermic	A reaction that <b>takes in energy from the surroundings</b> so the <b>temperature of the surroundings decreases</b> , e.g. <b>thermal decomposition</b> . Used in <b>sports injury packs</b> .
4 Activation energy	The <b>energy needed for particles to successfully react</b> .
5 Breaking bonds	<b>Energy is needed</b> to break bonds.
6 Forming bonds	<b>Energy is released</b> when bonds are formed.

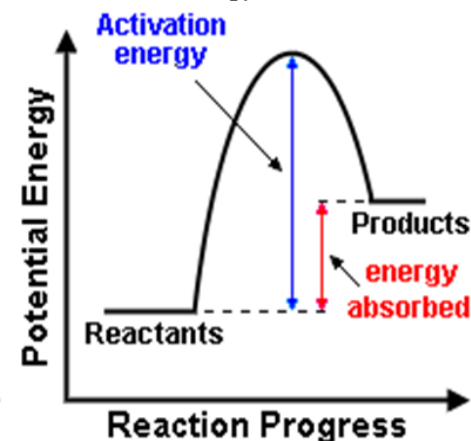
### 7 Exothermic Energy Profile



**Exothermic reaction**

9 Energy released from forming bonds is **greater than** the energy needed to break bonds. (HT)

### 8 Endothermic Energy Profile



**Endothermic reaction**

10 Energy released from forming bonds is **less than** the energy needed to break bonds. (HT)

Weekly Biology Revision Plan 2020

Year 10

As a minimum you should be spending 30-45 minutes on Biology revision per week. The tasks listed below could take more than this if you do all of them so you will need to plan your time effectively. Regular revision is the key to success at GCSE, don't do too much in one go! We recommend approaching this revision as follows:

Primrose Kitten: Combined Science Biology Paper 1 <https://www.youtube.com/watch?v=mKYQ-K23Mr4>

GCSE AQA Combined Science TRILOGY <https://www.bbc.co.uk/bitesize/examspecs/z8r997h>

1. 10-15mins Read, cover and try to remember the information from You Tube and BBC Bitesize
2. 10-15mins creating your own revision resource to add to your folder (DO NOT COPY...TRANSFORM the information you have just read into something visual that you can remember)
3. 10-15mins Practicing application of what you have just revised, try exam questions and mark them using the mark schemes so you can correct your mistakes immediately!

Week beginning	Paper	Topic	Review (Read, cover, remember)	Revise and add to your revision folder	Teacher signed
Week 1	P A P E R  1	Cell Biology	Cell structure	Create a set of flash cards for each cell and microscope type	
			Investigating cells		
Week 2			Cell Division	Create a mind map linking chromosomes, mitosis, stem cells and their uses	
Week 3			Transport in and out of cells	Create a comparison table for diffusion, osmosis and active transport	
Week 4		Organisation	Levels of organisation	Create a pneumonic to remember the order of the levels of organisation	
Week 5			Digestion	Draw an outline of the digestive system and label on what happens at each part (including which enzymes work at each part AND what they break down)	
Week 6			Blood and circulation	Make 3 posters to put up in your room - The make up of blood and the differences between the 3 different blood vessels - The heart and the direction of blood flow through it - Gas exchange in the lungs	
Week 7			Non-communicable diseases	Create flash cards for the different types of disease and their risk factors	
Week 8			Transport in plants	Draw a plant and a cross section of a leaf and label on the different types of transport. Include information of factors which may affect the speed of the transport.	
Week 9			Infection and response	Pathogens and disease	Create a table of diseases including information on pathogen, causes, symptoms and treatment.
Week 10	Human defences against disease			Create a mind map of all the ways your body defends against	

			Treating diseases	pathogens and then link this to boosting immunity with vaccines and the different ways we can treat diseases.	
<b>Week 11</b>		Bioenergetics	Photosynthesis	Draw out the 3 rate of photosynthesis graphs and write a sentence to explain what is happening in each one.	
<b>Week 12</b>			Respiration and exercise	Make flashcards for each of the key subtitles on this page, be sure to include the 3 equations you need to learn.	

## Weekly Physics Revision Plan 2020

Year 10

As a minimum you should be spending 30-45 minutes on Physics revision per week. The tasks listed below could take more than this if you do all of them so you will need to plan your time effectively. Regular revision is the key to success at GCSE, don't do too much in one go! We recommend approaching this revision as follows:

Primrose Kitten: Combined Science Physics Paper 1 <https://www.youtube.com/watch?v=xtw-Z0nIIA4>

GCSE AQA Combined Science TRILOGY <https://www.bbc.co.uk/bitesize/topics/zqw77p3>

1. 10-15mins Read, cover and try to remember the information in the revision guide
2. 10-15mins creating your own revision resource to add to your folder (DO NOT COPY...TRANSFORM the information you have just read into something visual that can help you to remember)
3. 10-15mins Practicing application of what you have just revised, try exam questions and mark them using the mark schemes so you can correct your mistakes immediately!

Week beginning	Paper	Topic	Review (Read, cover, remember)	Revise and add to your revision folder	Teacher signed
Week 1	P A P E R  1	Energy	Energy Stores and Transfers	Create a glossary of the key words in RED on this double page spread. Create flash cards containing the rearrangement triangles for the two energy equations you need to learn here.	
Week 2			Energy transfers and resources	Create sample flow diagrams for 3 or 4 different energy changes e.g. a car accelerating, a skateboarder at the top of a ramp, boiling water in a kettle. Make flashcards for all the different types of energy resources, include whether they are renewable or not and their advantages and disadvantages.	
Week 3		Electricity	Introduction to electricity	Create a poster of all the different components, their symbols and what they are used for. Include the charge equation, power equation, efficiency equation and energy transferred equation. Try and put the equations into the rearrangement triangles.	
Week 4			Circuits and resistance	Draw the 3 current/voltage graphs for resistors, filament lamps and diodes and annotate around them to describe what is happening.	
Week 5			Circuits and power	Draw a comparison table for series and parallel circuits. Include diagrams, information on current, resistance and potential difference.	
Week 6			Domestic uses of electricity	Draw and label/annotate diagrams for D.C, A.C (give examples of appliances that use both current types) and Wiring a three pin plug (explain what each part does).	
Week 7			Electrical energy in devices	Draw a flow chart to show how electricity gets from the power stations into our homes. Create a flash card with the advantages and disadvantages of overhead and underground cables.	
Week 8		Particle Model of Matter	Particle model of matter	Draw the particle model for solids, liquids and gasses and annotate the diagrams to include information on their properties. Draw a labelled diagram of the density practical and annotate with summarised method type bullet points.	
Week 9		Atomic Structure	Atoms and isotopes	Create a timeline for the development of the model of the atom. Include diagrams of previous models as well as the current accepted model and include the diagrams of the experiments that helped prove this new model.	
Week 10			Nuclear radiation	Create flash cards for each type of radiation to include their components (diagrams), hazards and what they may be absorbed by.	

				Create a glossary of key terms for the key words in RED and summarise radioactive contamination into a short paragraph.	
<b>Week 11</b>			Half life	Draw the count rate graph for iodine-128 and explain what is half-life is and how you calculate it using the graph. Create a flash card for nuclear equations and then...PRACTICE, PRACTICE, PRACTICE!!	

# 'Seneca Learning' Sign-Up Guide

Passcode: j5v9tvzq48

**Step 1:** Open an internet browser - *Any browser except Internet Explorer will work.*

**Step 2:** Go to [SenecaLearning.com](https://SenecaLearning.com)

**Step 3:** Click on "Get Started" or "Sign Up"

**Step 4:** Create your account - *If you don't know your parent email, then type: N/A.*

**Step 5:** Click on "Classes & Assignments" - *You'll find this in the top menu.*

**Step 6:** Click on "Join Class" - *It's the green button in the top right corner.*

**Step 7:** Type the code from your teacher - *If you received a link instead, then open the link.*