



Aspire Achieve Thrive

Spring Term
(Half Term 3 and 4)
Triple Science
Year 10

Name: _____

Tutor: _____

Tassomai - 2 Daily Goals per week - Deadline is Friday

Year 10 Homework Timetable

Monday	English Task 1	Ebacc Option A Task 1	Option C Task 1	
Tuesday	Tassomai	Option B Task 1	Modern Britain Task 1	
Wednesday	Sparx	Science Task 1	Option C Task 2	
Thursday	Ebacc Option A Task 2	Tassomai	Option B Task 2	Modern Britain Task 2
Friday	Sparx	Science Task 2	English Task 2	

Tassomai - 2 Daily Goals per week



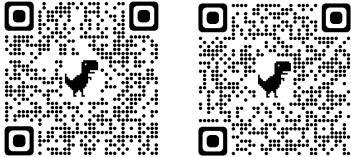

Sparx - 4 tasks of Sparx per week

Option A (EBACC)
French
Geography
History

Open B
Art
Business Studies
Catering
Computer Science
History
Health & Social Care
Music
Sport
IT

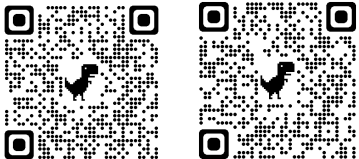


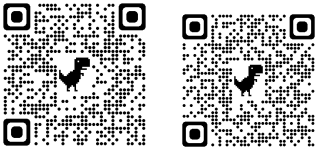


Open C
Business Studies
Childcare
Catering
Drama
Geography
Health & Social Care
Triple Science
Sport

Year 10 Triple Science HT3 - Homework Plan Science

Week/Date	Homework Task	Examination Question
Week 1 4th January	Cornell Notes on plant diseases and defences 	Answer the exam questions on plant hormones
Week 2 9th January	Revision Cards on investigating the effect of plant hormones 	Answer the exam questions on investigating plant hormones
Week 3 16th January	Cornell Notes on metal properties and alloy properties. 	Answer the exam questions on alloys
Week 4 23rd January	Revision Cards on the structure of the brain and eye	Answer the exam questions on the eye.
Week 5 30th January	Cornell notes on the formation of stars 	Answer the exam questions on space
Week 6 6th February	Revision Cards on flame tests	Answer the exam questions on flame tests.

Chemistry		Skills		HT 1 and 2 Revision	
Keyword	Definition	Keyword	Definition	Keyword	Definition
Flame test	Used to identify metal ions by the colour of the flame they produce	Anomaly	A result that is very different from the rest of the results.	Biomass	The total mass of one animal or plant species in a food chain or food web
Anion	Atoms gain electrons in their outer shell when they form negative ions	Define	State the precise meaning of an idea or concept.	Gravitropism	The response of a plant to gravity. It is controlled by auxin
Cation	Atoms lose electrons in their outer shell when they form positive ions	Dependent variable	The variable which the value is measured for each and every change in the independent variable.	Nanoparticles	Very small particles found on the nanoscale that are too small to be seen with the naked eye.
Precipitate	An insoluble product that forms when two solutions are mixed and react together	Gradient	The measure of the steepness of a straight line.	Composite	Two or more materials with different properties combined to produce a material with improved properties.
Carbonates	Compounds consisting of carbon and oxygen with the formula CO_3	Independent variable	The variable for which values are changed or selected by the investigator.	Cerebellum	Part of the brain responsible for coordinating muscular activity and balance.
Emission spectroscopy	An instrumental method used to identify the metal ions present in a sample.	Mean	When the values, excluding any anomalies, are added up and divided by the number of values.	Bulk materials	Particles that have their size above 100 nm. They have different properties to their nanoparticle counterparts.
Instrumental methods	Analysis of samples that relies on machines. They provide better accuracy and sensitivity than simple lab tests.	Random error	Errors made by the person carrying out the measuring, e.g. timing incorrectly, or reading the instrument incorrectly.	Alloy	A metal made by combining two or more metallic elements. It will have different properties to the pure metals.
Spectroscope	Equipment used to measure the spectra of light to help identify metal ions.	Range	The difference between the largest and smallest numbers in a set of data.	Biotechnology	The alteration of living organisms to develop or make products that help us.
Spectrum	Used to classify something in terms of its position on a scale between two extreme points such as visible light colours.	Proportional	When two quantities have the same ratio or relative size.	Supernova	An exploding star caused when nuclear fusion stops in a star and when the star has a large enough mass.
Chromatogram	A visible record showing the result of separating the components of a mixture by chromatography	Control variable	The variable that is to be kept constant or at least monitored.	Polymer	Large molecules of repeating monomers held together by covalent bonds.
Most Important Fact					
Flame tests and chemical tests are used to detect and identify ions in samples. Instrumental methods of analysis rely on machines making them more sensitive and accurate.. There are several different types of instrumental analysis. Some are suitable for detecting and identifying elements, while others are better suited to compounds		During a scientific investigation, there is only ever one variable changed at a time. This is the independent variable. Only changing one variable allows data to be collected on the effects of one factor specifically instead of results being open to other possible influences. Allow other variables will need to be controlled.		Gravity and nuclear fusion reactions drive the formation and development of stars. All stars begin life in the same way. A cloud of dust and gas, also known as a nebula, becomes a protostar, which goes on to become a main sequence star. Following this, stars develop in different ways depending on their size	

Year 10 Triple Science HT4 - Homework Plan Science

Week/Date	Homework Task	Examination Question
Week 1 20th February	<p>Cornell Notes on metal hydroxides and carbonates</p> 	Answer the exam questions on detecting metal hydroxides and carbonates
Week 2 27th February	<p>Cornell notes on flame emission spectroscopy</p> 	Answer the exam questions on flame emission spectroscopy
Week 3 6th March	<p>Revision cards on pressure in gases and fluids</p> 	Answer the exam questions on pressure
Week 4 13th March	<p>Cornell notes on radiation and half lives</p> 	Answer the exam questions on radiation
Week 5 20th March	<p>Revision cards on nuclear fission</p> 	Answer the exam questions on nuclear fission
Week 6 27th March	<p>Revision cards on nuclear fusion</p> 	Answer the exam questions on nuclear fusion

Biology		Physics		Skills	
Keyword	Definition	Keyword	Definition	Keyword	Definition
Decomposition	The breakdown of dead matter	Nucleus	The tiny positively charged centre of an atom containing protons and neutrons.	Accuracy	A measure of how close to the true value something is.
Speciation	The process by which two species evolve from a single original species by natural selection.	Atom	The smallest part of an element that can exist.	Work	The transfer of energy from one store to another.
Genome	The entire genetic material of an organism.	Half life	The time it takes for half of the unstable nuclei in a sample to decay or for the activity of the sample to halve or for the count rate to halve.	Properties	Physical and Chemical characteristics of elements and compounds.
Asexual	Reproduction that does not involve sex cells and only has one parent.	Ionising	Radiation that can pass through matter and dislodge outer electrons from atoms causing them to become ions	Compare	Describe the similarities and/or differences between things
Characteristic	A distinguishing quality, trait, or feature of an individual or thing	Fission	The splitting of a large and unstable nucleus	Justify	Use evidence from the information supplied to support an answer.
Natural selection	Theory of evolution that suggests the best adapted organisms are able to survive and pass on their genes.	Fusion	The joining of 2 light nuclei to form a heavier nucleus	Directly proportional	Relationship shown when the ratio between two values always remains the same
Evolution	The process of change in the inherited traits of a population of organisms from one generation to the next.	Pressure	The effect of a force over an area.	Uncertainty	The range of possible values within which the true value of the measurement lies
Generation	A form or stage in the life cycle of an organism. All of the offspring that are at the same stage of descent from a common ancestor.	Proton	Subatomic particles with a positive charge. Found in the nucleus of atoms.	Reliability	The degree to which the result of a measurement, calculation, or specification can be depended on to be accurate
Predation	The preying of one animal on others.	Penetrate	To pass through a material	Reproducibility	The ability to obtain the same results using the same method multiple times.
Isolation	Can prevent interbreeding and the combination of genes within a species	Isotope	Atoms of the same element with different numbers of neutrons.	Meniscus	The curved upper surface of a liquid in a tube
Most Important Fact					
A species is a group of organisms able to interbreed and produce fertile offspring. New species can arise as a result of genetic variation, natural selection, speciation and isolation. .		The nuclei of atoms contain a large amount of energy. Releasing this energy would free the world from having to use fossil fuels. There are two methods of doing this: fission and fusion.		The accuracy of a measurement is dependent on the quality of the measuring apparatus and the skill of the scientist involved. For data to be considered reliable, any variation in values must be small. Repeating a scientific investigation makes it more reliable.	

STEP 2: CREATE CUES

What: Reduce your notes to just the essentials.

What: Immediately after class, discussion, or reading session.

How:

- Jot down key ideas, important words and phrases
- Create questions that might appear on an exam
- Reducing your notes to the most important ideas and concepts improves recall. Creating questions that may appear on an exam gets you thinking about how the information might be applied and improves your performance on the exam.

Why: Spend at least ten minutes every week reviewing all of your previous notes. Reflect on the material and ask yourself questions based on what you've recorded in the Cue area. Cover the note-taking area with a piece of paper. Can you answer them?

STEP 1: RECORD YOUR NOTES

What: Record all keywords, ideas, important dates, people, places, diagrams and formulas from the lesson. Create a new page for each topic discussed.

When: During class lecture, discussion, or reading session.

How:

- Use bullet points, abbreviated phrases, and pictures
- Avoid full sentences and paragraphs
- Leave space between points to add more information later

Why: Important ideas must be recorded in a way that is meaningful to you.

STEP 3: SUMMARISE & REVIEW

What: Summarise the main ideas from the lesson.

What: At the end of the class lecture, discussion, or reading session.

How: In complete sentences, write down the conclusions that can be made from the information in your notes.

Why: Summarising the information after it's learned improves long-term retention.

WEEK 1 Half Term 1

Date.....

(a) When a seed starts to grow, the young root grows downwards towards gravity.

The young shoot grows upwards, away from gravity.

(i) Name this type of plant response to gravity.

(1)

(ii) Give two reasons why it is useful for a young root to grow towards gravity.

1. _____

2. _____

(2)

(iii) The root grows towards gravity due to the unequal distribution of a substance in the root.

Draw a ring around the correct answer to complete the sentence.

This substance is

auxin.

chlorophyll.

sugar.

(1)

Date / /

Topic

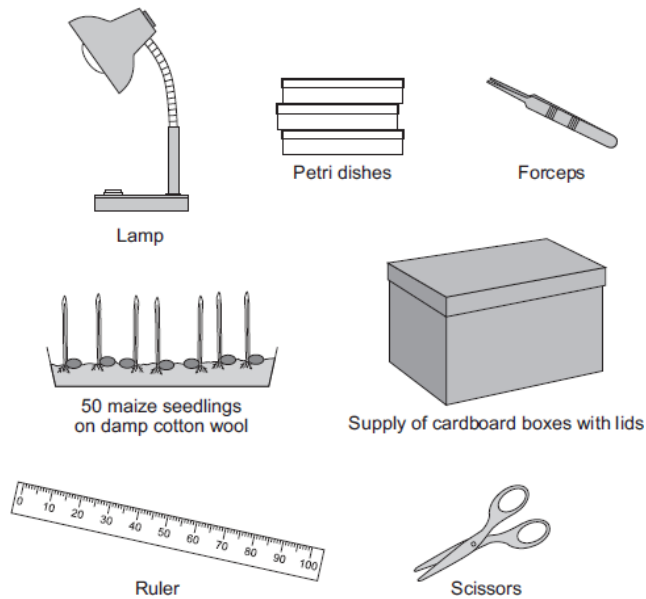
Questions	Notes

Summary

WEEK 2 Half Term 1

Date.....

The drawings show some apparatus and materials.



Describe how the students could use some or all of the apparatus and materials shown in the drawings to investigate the growth response of maize seedlings to light shining from one side.

You should include a description of the results you would expect.

You now need to complete your revision cards

WEEK 3 Half Term 1

Date.....

This question is about metals and alloys.

(a) Explain how electricity is conducted in a metal.

To gain full marks you must include a description of the structure and bonding of a metal.

(4)

(b) Describe how the structure of an alloy is different from the structure of a pure metal.

(2)

(c) Alloys are used to make dental braces and coins.

(i) Nitinol is an alloy used in dental braces.

Why is Nitinol used in dental braces?

(1)

Date / /

Topic

Questions	Notes

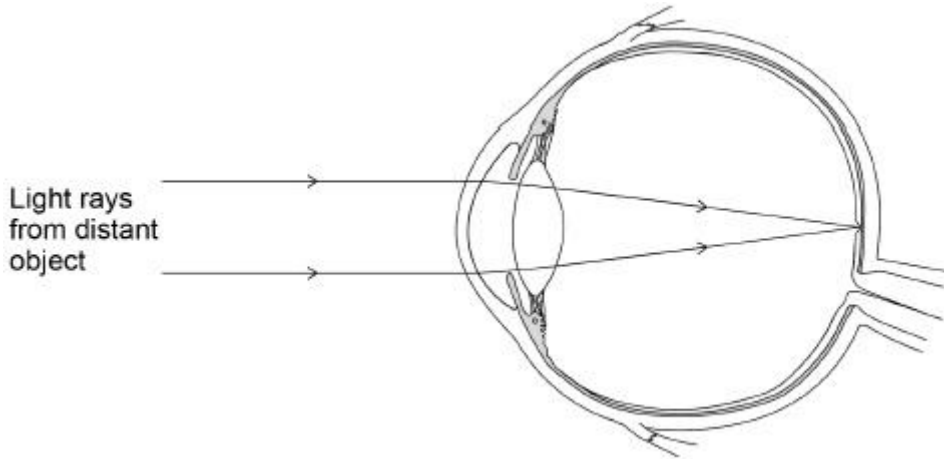
Summary

Date.....

The human eye can focus on objects at different distances.

Figure 1 shows how a clear image of a distant object is formed in a person's eye.

Figure 1



(a) Explain how the person's eye could adjust to form a clear image of a nearer object.

(b) Explain why a long-sighted person has difficulty seeing near objects clearly.

(2)

(c) Long-sightedness can be corrected by wearing spectacles.

Describe how spectacle lenses can correct long-sightedness.

(3)

You now need to complete your revision cards

Date.....

In 1929, the astronomer Edwin Hubble observed that the light from galaxies moving away from the Earth had longer wavelengths than expected.

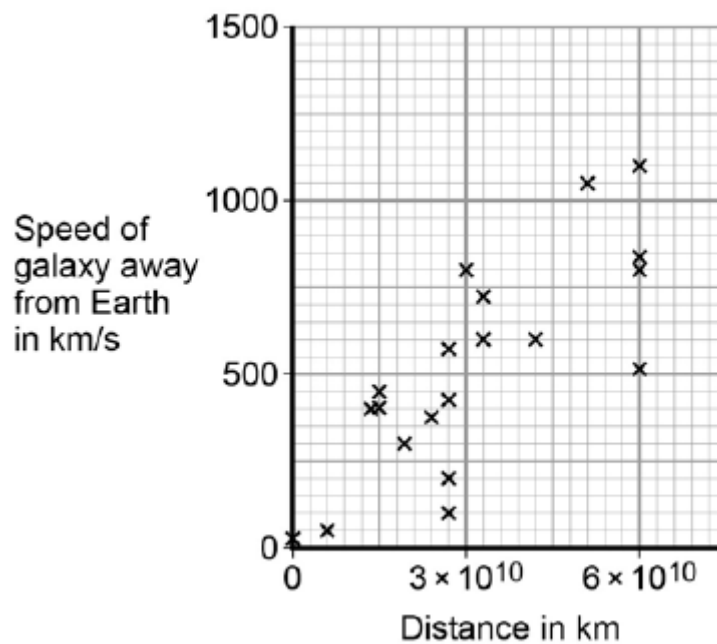
(a) What name is given to this effect?

(1)

(b) From his observations, Hubble was able to calculate the speed of a galaxy and the distance of the galaxy from the Earth.

Figure 1 shows the results of Hubble's calculations.

Figure 1



What relationship between the speed of a galaxy and the distance is suggested by Hubble's results?

(1)

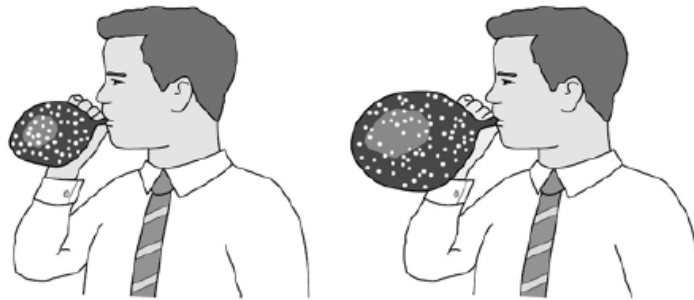
The observations made by Hubble support the idea that the Universe is expanding. This means that galaxies are continually moving away from each other and from the Earth.

Figure 2 shows a student using a balloon to model the idea of an expanding Universe.

Some dots, which represent galaxies, were marked on the balloon.

The balloon was then inflated.

Figure 2



(c) Give one strength and one weakness of this model in representing the idea of an expanding Universe.

Strength _____

Weakness _____

(2)

In the 1950s there were two main theories to explain how the Universe began.

Theory 1

The Universe has always existed, it is continually expanding. New galaxies are formed as older galaxies die out.

Theory 2

The Universe began from a very small region that was extremely hot and dense. The Universe has been expanding ever since.

(d) In what way do the observations made by Hubble support both Theory 1 and Theory 2?

(1)

Date / /

Topic

Questions	Notes

Summary

WEEK 6 Half Term 1

Date.....

A student tested copper sulfate solution and calcium iodide solution using flame tests.

This is the method used.

1. Dip a metal wire in copper sulfate solution.
2. Put the metal wire in a blue Bunsen burner flame.
3. Record the flame colour produced.
4. Repeat steps 1 to 3 using the same metal wire but using calcium iodide solution.

(a) What flame colour is produced by copper sulfate solution?

(1)

(b) Calcium compounds produce an orange-red flame colour.

The student left out an important step before reusing the metal wire.

The student's method did not produce a distinct orange-red flame colour using calcium iodide solution.

Explain why.

(2)

(c) The student added sodium hydroxide solution to:

- copper sulfate solution
- calcium iodide solution.

Give the results of the tests.

Copper sulfate solution _____

Calcium iodide solution _____

(2)

You now need to complete your revision cards

HALF

TERM

4

Date.....

WEEK 1 Half Term 4

This question is about chemicals in fireworks.

Coloured flames are produced because of the metal ions in the fireworks.

(a) What colour flame would sodium ions produce?

(1)

(b) Name a metal ion that would produce a green flame.

(1)

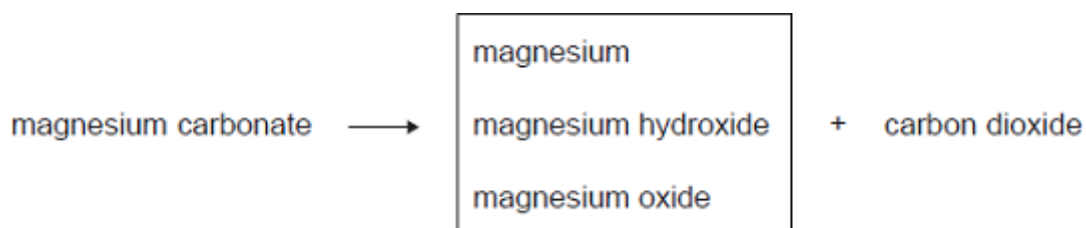
(c) Some fireworks contain a mixture of metal ions.

Why is it difficult to identify the metal ions from the colour of the flame?

(1)

Carbon dioxide is produced when metal carbonates are heated.

(a) (i) Draw a ring around the correct answer to complete the word equation.



(1)

(ii) Draw a ring around the correct answer to complete the sentence.

The reaction to produce carbon dioxide from magnesium

carbonate is

combustion.

decomposition.

fermentation.

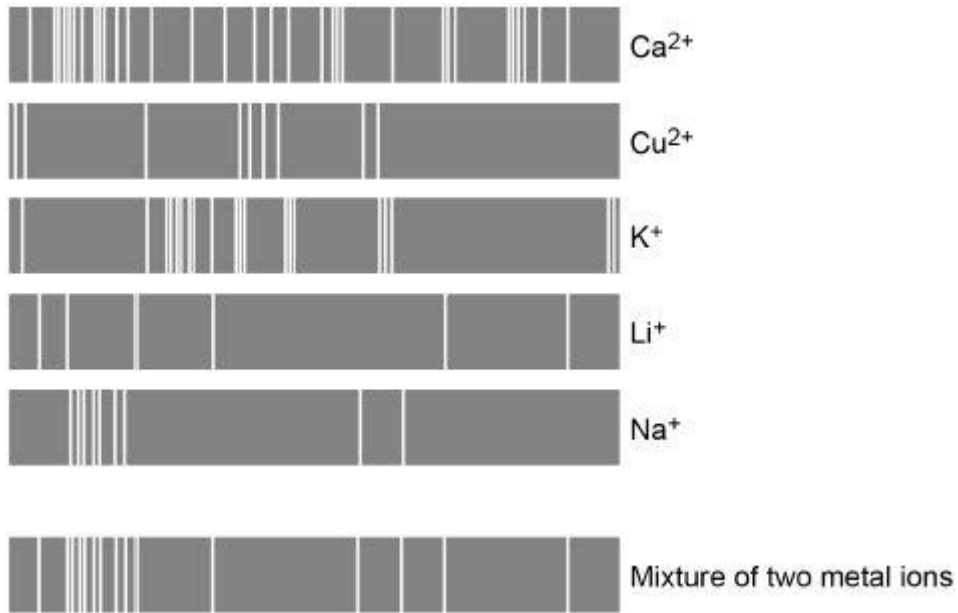
(1)

Date.....

Flame emission spectroscopy is used to identify metal ions in a firework.

The diagram below shows:

- the flame emission spectra of five individual metal ions
- a flame emission spectrum for a mixture of two metal ions.



Which two metal ions are in the mixture?

Tick two boxes.

Ca^{2+}	<input type="checkbox"/>
Cu^{2+}	<input type="checkbox"/>
K^{+}	<input type="checkbox"/>
Li^{+}	<input type="checkbox"/>
Na^{+}	<input type="checkbox"/>

The compounds in fireworks also contain non-metal ions.

A scientist tests a solution of the chemicals used in a firework.

(e) Silver nitrate solution and dilute nitric acid are added to the solution.

A cream precipitate forms

Which ion is shown to be present by the cream precipitate?

(1)

(f) Describe a test to show the presence of sulfate ions in the solution.

Give the result of the test if there are sulfate ions in the solution.

Test _____

Result _____

(3)

Date / /

Topic

Questions	Notes

Summary

Date.....

The photograph below shows a balloon filled with helium gas.



(a) Which statements describe the movement of the gas particles in the balloon?

Tick (✓) two boxes.

The particles all move in a predictable way.

The particles move at the same speed.

The particles move in circular paths.

The particles move in random directions.

The particles move with a range of speeds.

The particles vibrate about fixed positions.

(2)

(b) The pressure of the helium in the balloon is 100 000 Pa.

The volume of the balloon is 0.030 m^3 .

The balloon is compressed at a constant temperature causing the volume to decrease to 0.025 m^3 .

No helium leaves the balloon.

Calculate the new pressure in the balloon.

New pressure = _____ Pa

(4)

(c) The temperature of the helium in the balloon was increased.

The mass and volume of helium in the balloon remained constant.

Explain why the pressure exerted by the helium inside the balloon would increase.

(4)

You now need to complete your revision cards

WEEK 4 Half Term 4

Date.....

A teacher used a Geiger-Muller tube and counter to measure the number of counts in 60 seconds for a radioactive rock.

- (a) The counter recorded 819 counts in 60 seconds. The background radiation count rate was 0.30 counts per second.

Calculate the count rate for the rock.

Count rate = _____ per second

(3)

- (b) A householder is worried about the radiation emitted by the granite worktop in his kitchen.

1 kg of granite has an activity of 1250 Bq. The kitchen worktop has a mass of 180 kg.

Calculate the activity of the kitchen worktop in Bq.

Activity = _____ Bq

(2)

(c) The average total radiation dose per year in the UK is 2.0 millisieverts.

The table below shows the effects of radiation dose on the human body.

Radiation dose in millisieverts	Effects
10 000	Immediate illness; death within a few weeks
1000	Radiation sickness; unlikely to cause death
100	Lowest dose with evidence of causing cancer

The average radiation dose from the granite worktop is 0.003 millisieverts per day.

Explain why the householder should not be concerned about his yearly radiation dose from the granite worktop.

One year is 365 days.

Date / /

Topic

Questions	Notes

Summary

Date.....

Radioactive waste from nuclear power stations is a man-made source of background radiation.

- (a) Give one other man-made source of background radiation.

(1)

Nuclear power stations use the energy released by nuclear fission to generate electricity.

- (b) Give the name of one nuclear fuel.

(1)

- (c) Nuclear fission releases energy.

Describe the process of nuclear fission inside a nuclear reactor.

(4)

You now need to complete your revision cards

Date.....

The process of nuclear fusion results in the release of energy.

(a) (i) Describe the process of nuclear fusion.

(2)

(ii) Where does nuclear fusion happen naturally?

(1)

(b) For many years, scientists have tried to produce a controlled nuclear fusion reaction that lasts long enough to be useful. However, the experimental fusion reactors use more energy than they produce.

(i) From the information given, suggest one reason why nuclear fusion reactors are not used to produce energy in a nuclear power station.

(1)

(ii) Suggest one reason why scientists continue to try to develop a practical nuclear fusion reactor.

(1)

(Total 5 marks)

HT3 Revision Cards



Revision Card on plant hormones and responses. <ol style="list-style-type: none">1. Name the response of plant roots to gravity.2. Name the response of plant roots to light.3. State the role of auxin.4. State the role of gibberellins.	Answers
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Revision Card on the brain and eye <ol style="list-style-type: none">1. State the function of the medulla.2. State the function of the cerebellum3. Describe what happens in the eye of someone with myopia4. Describe how to correct myopia.5. Explain why brain injuries are hard to treat.	Answers
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Revision Card on flame tests <ol style="list-style-type: none">1. State what flame tests are used to identify2. Describe how to carry out a flame test3. What colour flame will sodium ions produce?4. What might you observe if there was a mixture of ions?	Answers
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HT4 Revision Cards



Revision Card on pressure in gases and fluids <ol style="list-style-type: none">1. Describe the relationship between depth and pressure in fluids.2. Recall the equation used to calculate pressure in a liquid.3. Recall the unit used to measure pressure.	Answers
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Revision Card on nuclear fission <ol style="list-style-type: none">1. Define the term nuclear fission2. Describe what happens during a nuclear fission reaction3. Explain the potential uses of nuclear fission4. What is meant by a chain reaction?	Answers
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Revision Card on nuclear fusion <ol style="list-style-type: none">1. Define the term nuclear fusion2. Describe what happens during nuclear fusion3. Give an example of where nuclear fusion happens in nature to release energy.4. Explain why fusion has to be a rapid process.	Answers
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Aspire
ACHIEVE
Thrive

Develop your character



Aspire Achieve Thrive