STOKE DAMEREL

Aspire Achieve Thrive

# Half Term 1

# Science

## Year 10

**Name: _____**

**Tutor: _____**

**Tassomai - 2 Daily Goals per week - Deadline is Friday**

# Example Year 10 Homework Timetable

| | | | | |
|---|---|---|---|---|
| **Monday** | English | Ebacc Option A | Option C | |
| **Tuesday** | Tassomai | Option B | Modern Britain | |
| **Wednesday** | Sparx | Science | Option C | |
| **Thursday** | Ebacc Option A | Tassomai | Option B | Modern Britain |
| **Friday** | Sparx | Science | English | |

**Tassomai - 2 Daily Goals per week**
**Sparx - 4 tasks of Sparx per week**

| Option A (EBACC) |
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| 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 - Homework Plan Science**

| Week/Date | Homework Task | Examination Question |
|---|---|---|
| Week 1<br>5th September | **Cornell Notes** on classification | Answer the exam questions on classification |
| Week 2<br>12th September | **Revision Cards** on classification | Answer the exam questions on classification |
| Week 3<br>19th September | **Cornell Notes** on Ionic bonding | Answer the exam questions on ionic bonding |
| Week 4<br>26th September | **Revision Cards** on Ionic/covalent bonding | Answer the exam questions on covalent bonding |
| Week 5<br>3rd October | **Cornell Notes** on metallic bonding | Answer the exam questions on metallic bonding |
| Week 6<br>10th October | **Revision Cards** on circuits | Answer the exam questions on circuits |
| Week 7<br>17th October | **Cornell Notes** on resistors | Answer the exam questions on resistors |

| Biology | | Chemistry | | Physics | |
|---|---|---|---|---|---|
| Keyword | Definition | Keyword | Definition | Keyword | Definition |
| Cycle | The reusing of materials in different forms. | Alloy | A mixture that contains at least one metal, such as steel. | Current | The flow of electrical charge around a circuit, measured in amperes (A). |
| Classification | To organise and present data or objects into logical groups or orders. | Ionic | The type of bonding that occurs between a positive and negative ion. | Parallel circuit | A circuit in which components are connected on a separate branch. |
| Domain | The level of classification group above kingdom, first suggested by Carl Woese. | Covalent | A shared pair of electrons between a two non-metals in a molecule | Resistance | A measure of how a component opposes the flow of electrical charge, measured in ohms (Ω). |
| Kingdom | The level of classification above phylum and below domain of living organisms. | Intermolecular | Forces of attraction that occur between molecules. | Ammeter | The electrical component used to measure the current in a circuit. It is always connected in series. |
| Species | Composed of individuals that resemble one another, can breed among themselves. | Electrostatic | The forces of attraction present between two oppositely charged species. | Voltmeter | The electrical component used to measure the potential difference in a circuit. It is always connected in parallel to the component being measured. |
| Stem cell | Unspecialised cells that can differentiate into specialised cells that the body needs. | Bonding | An attraction between atoms, ions or molecules that enables the formation of chemical compounds. | Charge | A property of a body which experiences a force in an electric field. |
| Differentiation | When cells gain certain features needed for their function; they become specialised. | Allotrope | A substance made of the same type of atoms in a different arrangement. | Series circuit | A circuit where the components are connected one after another so the current is the same at all points. |
| Reproduction | The method by which living beings can produce offspring. This can be sexually or asexually. | Conductor | A substance that has the ability to conduct electricity (electricity can pass through the substance) | Potential difference | The difference in electric potential between two points in an electric field, measured in volts (V). |
| Mitosis | Cell division that results in genetically identical diploid cells | Lattice | The regular, repeating arrangement of ions in an ionic compound. | Component | A piece of equipment used in an electrical circuit. |
| Meiosis | Cell division that results in gametes being produced. These are genetically different haploid cells. | Graphene | A form of carbon; a single layer of graphite which is only one atom thick. | Coulombs | This is the unit used to measure electrical charge. |

| Most Important Fact | | |
|---|---|---|
| A type of cell division called mitosis ensures that when a cell divides, each new cell produced has the same genetic information and therefore they are all identical. Mitosis is vital for cell growth and repair. | Different substances have different properties depending on the type of bonding that occurs within it. The key properties include melting / boiling points and the ability to conduct electricity. Ionic compounds can only conduct electricity when molten or in aqueous solution. | Electrical current transfers energy around circuits. The resistance in a circuit is calculated by dividing the potential difference by the current. There are many factors that can affect resistance including the type and length of wire in the circuit. |

# WEEK 1

Date…….

Grey wolves (Canis lupus) can be found in the USA.

(a) Give the genus name of the grey wolf.

_____

(b) Describe how biological classification systems have changed over time.

**(4)**

Answer:-

# WEEK 2

Date…….

In the 18th century a binomial system of grouping similar organisms was developed.

Before the binomial system was developed the common briar rose had the following names:

- *Rosa sylvestris inodora seu canina*
- *Rosa sylvestris alba cum rubore folio glabro*.

In the binomial system, the same rose is called *Rosa canina*.

(a) One advantage of the binomial system is that the name is shorter than the names used before this system.

Suggest **two other** advantages of the binomial system.

1. _____

_____

2. _____

_____

**(2)**

(b) Classification systems have changed in the last 50 years.

Give **one** reason why we now have more information to classify organisms.

_____

_____

**(1)**

(c) 'Archaea' is one of the groups in the three-domain system of classification.

Give **two** features of the domain Archaea.

1. _____

_____

2. _____

_____

**(2)**

Date…….

(e) Lithium reacts with chlorine to produce lithium chloride.

**Figure 2** shows what happens to the electrons in the outer shells when a lithium atom reacts with a chlorine atom.

The dots (o) and crosses (x) represent electrons.

**Figure 2**

Describe what happens to a lithium atom and to a chlorine atom when they react.

Use **Figure 2** to answer in terms of electrons.

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**(3)**

(f) Lithium and potassium are in the same group of the periodic table.

**Figure 3** represents the electronic structures of a lithium atom and of a potassium atom.

**Figure 3**

Give **two** reasons why potassium is more reactive than lithium.

1. _____

_____

2. _____

_____

**(2)**

# WEEK 4

Date…….

This question is about substances with covalent bonding.

(a) The diagram below shows a ball and stick model of a water molecule ($H_2O$).

Suggest **one** limitation of using a ball and stick model for a water molecule.

_____

_____

_____

**(1)**

(b) Ice has a low melting point.

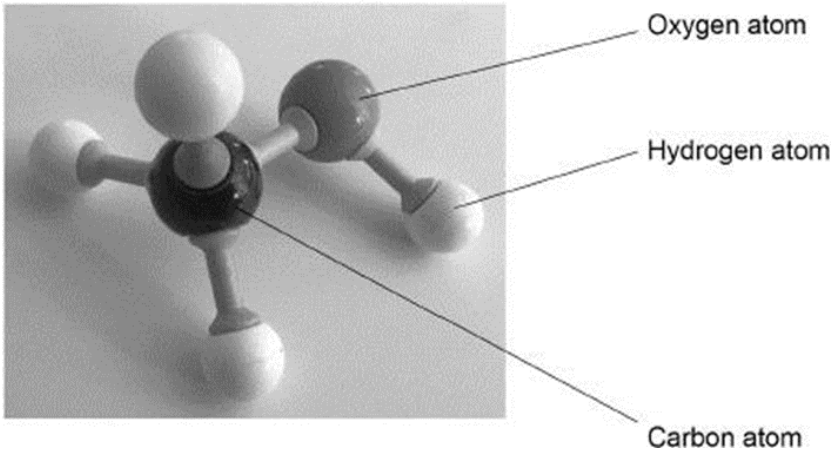
Water molecules in ice are held together by intermolecular forces.

Complete the sentence.

Ice has a low melting point because the intermolecular forces are _____.

**(1)**

(c) The image below shows the structure of a molecule.




What is the molecular formula of the molecule in the above image?

_____

_____

**(1)**

Diamond has a giant covalent structure.

(d) What is the number of bonds formed by each carbon atom in diamond?

Tick (✓) **one** box.

2 ☐ 3 ☐ 4 ☐ 8 ☐

**(1)**

(e) Give **two** physical properties of diamond.

1. _____

2. _____

**(2)**

(f) Name **two** other substances with giant covalent structures.

1. _____

2. _____

**(2)**

# WEEK 5

Date…….

By reference to their structure, explain how the particles in a piece of metal are held together and how the shape of the metal can be changed without it breaking

(You may use a diagram in your answer.)

**(5)**

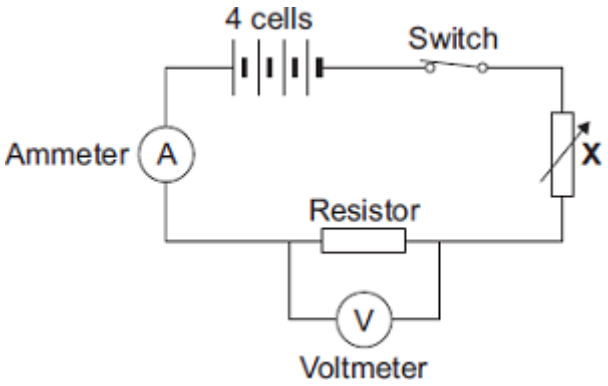
(b) Explain why metals are good conductors of electricity and suggest why this conductivity increases across the periodic table from sodium to magnesium to aluminium.

**(4)**

# WEEK 6

Date…….

The diagram shows the circuit that a student used to investigate how the current through a resistor depends on the potential difference across the resistor.




(i) Each cell provides a potential difference of 1.5 volts.

What is the total potential difference provided by the four cells in the circuit?

_____

Total potential difference = _____ volts

**(1)**

(ii) The student uses the component labelled **X** to change the potential difference across the resistor.

What is component **X**?

Draw a ring around your answer.

**light-dependent resistor** **thermistor** **variable resistor**

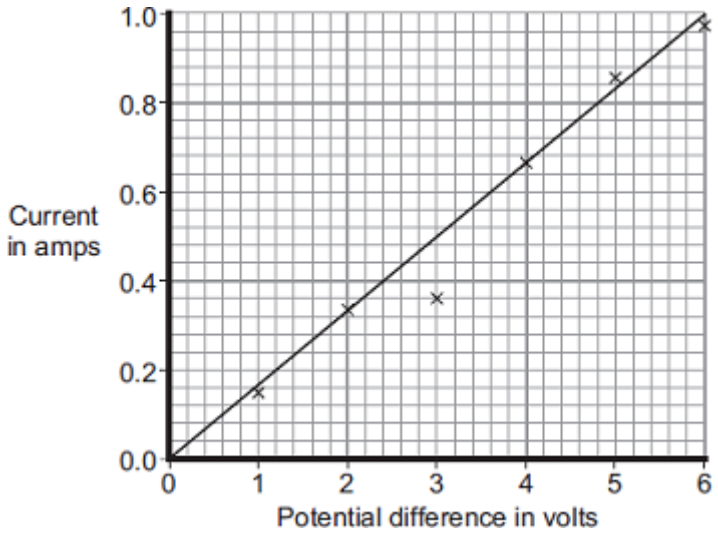
**(1)**

(iii) Name a component connected in parallel with the resistor.

_____

**(1)**

(b) The results obtained by the student have been plotted on a graph.




(i) One of the results is anomalous.

Draw a ring around the anomalous result.

**(1)**

(ii) Which **one** of the following is the most likely cause of the anomalous result?

Put a tick (✓) in the box next to your answer.

The student misread the ammeter. ☐

The resistance of the resistor changed. ☐

The voltmeter had a zero error. ☐

**(1)**

(iii) What was the interval between the potential difference values obtained by the student?

_____

_____

**(1)**

(c) Describe the relationship between the potential difference across the resistor and the current through the resistor.

_____

_____

**(1)**

## 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.**

**Date** / / **Topic**

# WEEK 1

| Questions | Notes |
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**Summary**

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**Summary**

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# WEEK 3

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| Revision Card on Classification | Answers |
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| 1. Name the three domains<br>2. Name the five kingdoms<br>3. What does binomial mean?<br>4. Name the order of classification in the Linnaean system.<br>5. State one scientific change that meant we could reclassify some organisms into new groups. | |

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| Revision Card on Ionic/Covalent bonding | Answers |
| --- | --- |
| 1. What happens to metals when they form an ionic bond?<br>2. State two properties of ionic substances.<br>3. What is meant by a covalent bond?<br>4. Why do atoms form bonds?<br>5. Name the type of forces between ions in ionic bonding.<br>6. Why don't simple covalent substances conduct electricity? | |

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| Revision Card on Circuits | Answers |
| --- | --- |
| 1. Sketch a series and a parallel circuit.<br>2. State what happens to current at a junction in a circuit.<br>3. What is current?<br>4. What is potential difference?<br>5. What is resistance? | |