

Due Date:	Friday, 15 th September 2023
Student Number:	
Name:	



Y11 Triple T1 W2 B3 - Maintaining Internal Environments

Question	Answer
What does 'optimum' mean?	The best conditions.
What is the optimum human body temperature?	37°C (degrees Celsius)
How does your body respond when you become too hot?	Body hairs lie flat, sweat glands secrete sweat and vasodilation (blood vessels widen).
How does your body respond when you become too cold?	Body hairs rise, sweat glands stop secreting sweat, shivering begins and vasoconstriction (blood vessels become narrower).
What hormone is released when blood glucose is too high?	Insulin is released from the pancreas to lower blood glucose concentration back to optimum.
What hormone is released when blood glucose is too low?	Glucagon is released from the pancreas to increase blood glucose concentration back to optimum.
How does insulin work?	It travels to the liver and turns glucose into glycogen.
What is type 1 diabetes?	A condition caused by an inability to produce insulin.
What is type 2 diabetes?	A condition caused when a person's is unable to produce enough insulin or their body cells cannot respond to the insulin.
How is type 1 diabetes managed?	Insulin injections.

Look, Cover, Write, Check

Question	Answer
How does your body respond when you become too hot?	
What is type 1 diabetes?	
What does 'optimum' mean?	
How does your body respond when you become too cold?	
How is type 1 diabetes managed?	
What hormone is released when blood glucose is too low?	
How does insulin work?	
What is the optimum human body temperature?	
What hormone is released when blood glucose is too high?	
What is type 2 diabetes?	

Look, Cover, Write, Check

Question	Answer
	Body hairs rise, sweat glands stop secreting sweat, shivering begins and vasoconstriction (blood vessels become narrower).
What hormone is released when blood glucose is too high?	
	The best conditions.
What is the optimum human body temperature?	
	Glucagon is released from the pancreas to increase blood glucose concentration back to optimum.
How does insulin work?	
	Insulin injections.
	A condition caused by an inability to produce insulin.
How does your body respond when you become too hot?	
	A condition caused when a person's is unable to produce enough insulin or their body cells cannot respond to the insulin.

Homeostasis controls the internal conditions of the body.

- (a) Explain how blood glucose levels are controlled in the body of someone who does **not** have diabetes.

(4)

- (b) Compare how each type of diabetes is caused. Suggest how each type of diabetes can be treated.

(4)

Due Date:	Friday, 22nd September 2023
Student Number:	
Name:	



Y11 Triple T1 W3 C3 - Types of Chemical Reactions

Question	Answer
How can you detect the change in a pH of a solution?	Using universal indicator and a pH scale or a pH meter
What happens during oxidation?	Oxidation is the gain of oxygen or loss of electrons_(OIL RIG)
Write the formula for each acid: hydrochloric, sulphuric and nitric	Hydrochloric acid: HCl Sulfuric acid: H ₂ SO ₄ Nitric acid: HNO ₃
What is a base?	A substance (usually a metal oxide or metal hydroxide) that neutralises an acid.
What ions are present in an alkaline solution?	OH ⁻ ions (hydroxide ions)
Write the general equation for neutralisation.	Acid + base → salt + water
Write the ionic equation for neutralisation.	H ⁺ + OH ⁻ → H ₂ O
What happens to hydrogen ions in a strong acid?	They fully ionise/dissociate in solution
What happens to the pH as the concentration of H ⁺ ions increases?	As the concentration of H ⁺ ions increases by a factor of 10 the pH decreases by 1.

Look, Cover, Write, Check

Question	Answer
How can you detect the change in a pH of a solution?	
What happens during oxidation?	
Write the formula for each acid: hydrochloric, sulphuric and nitric	
What is a base?	
What ions are present in an alkaline solution?	
Write the general equation for neutralisation.	
Write the ionic equation for neutralisation.	
What happens to ions in a strong acid?	
What happens to the concentration of pH as the concentration of H ⁺ ions increases?	

Look, Cover, Write, Check

Question	Answer
How can you detect the change in a pH of a solution?	
What happens during oxidation?	
Write the formula for each acid: hydrochloric, sulphuric and nitric	
What is a base?	
What ions are present in an alkaline solution?	
	Acid + base \rightarrow salt + water
Write the ionic equation for neutralisation.	
What happens to ions in a strong acid?	
	As the concentration of H ⁺ ions increases by a factor of 10 the pH decreases by 1.

1. Sodium oxide reacts with water.

An aqueous solution of sodium hydroxide is made.

Write the **balanced symbol equation** for this reaction, including **state symbols**.

_____ [3]

2. Sodium hydroxide neutralises acids. It is an alkali.

Which ion do solutions of alkalis contain?

_____ [1]

3. A salt is made when sodium hydroxide neutralises sulfuric acid.

Name this salt.

_____ [1]

4. A sample of hydrochloric acid has a pH of 1.04.

A student adds water to the hydrochloric acid until the pH is 3.04.

The concentration of hydrogen ions decreases.

Calculate the factor by which the hydrogen ion concentration has decreased.

Decrease in hydrogen ion concentration = [2]

Due Date:	Friday, 29th September 2023
Student Number:	
Name:	



Y11 Triple T1 W4 P3 – Electricity

Question	Answer
Define 'current'	The rate of flow of charge.
Define 'potential difference'	The difference of electrical potential (energy) between two points in a circuit.
How does current behave in a series circuit?	Current is the <u>same</u> at every point in a series circuit.
How does potential difference behave in a series circuit?	Potential difference <u>is shared</u> between the components in a series circuit.
How does current behave in a parallel circuit?	Current <u>splits</u> between the loops in a parallel circuit.
How does potential difference behave in a parallel circuit?	Potential difference is <u>not shared</u> between the loops in a parallel circuit.
What is the relationship between resistance and current?	An increase in resistance leads to a decrease in current.

Look, Cover, Write, Check

Question	Answer
Define 'current'	
Define 'potential difference'	
How does current behave in a series circuit?	
How does potential difference behave in a series circuit?	
How does current behave in a parallel circuit?	
How does potential difference behave in a parallel circuit?	
What is the relationship between resistance and current?	

Look, Cover, Write, Check

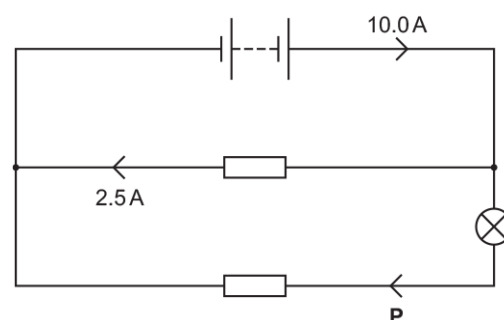
Question	Answer
Define 'current'	
Define 'potential difference'	
	Current is the <u>same</u> at every point in a series circuit.
	Potential difference <u>is shared</u> between the components in a series circuit.
How does current behave in a parallel circuit?	
	Potential difference is <u>not shared</u> between the loops in a parallel circuit.
	An increase in resistance leads to a decrease in current.

Exam questions:

Look at the circuit diagram.

What is the current at point **P** in the circuit?

- A 2.5A
- B 5.0A
- C 7.5A
- D 10.0A



Your answer

Q2. **Figure 1** shows a circuit diagram containing two identical lamps arranged in parallel.

The reading on the ammeter is **0.186 mA**

- (a) Which statement about the current through the lamps is true?
Tick **one** box.

The current through both lamp **P** and lamp **Q** is **0.093 mA**

The current through both lamp **P** and lamp **Q** is **0.186 mA**

The current through both lamp **P** and lamp **Q** is **0.93 mA**

The current through both lamp **P** and lamp **Q** is **1.86 mA**

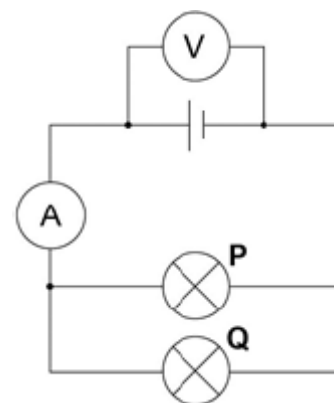


Figure 1

Due Date:	Friday, 6th October 2023
Student Number:	
Name:	



Y11 Triple T1 W5 B4 – Ecosystems

Question	Answer
Define 'ecosystem'	All the living organisms and non-living factors in an area.
What is a 'producer'?	An organism that produces its own food e.g. plants
What is a 'consumer'?	An organism that eats other organisms for energy e.g. animals
What is a 'decomposer'	An organism that feeds on dead or decaying material for energy e.g. bacteria or fungi.
What is a biotic factor? Give 2 examples.	A living factor . E.g. Number of predators, number of bacteria
What is an abiotic factor? Give 2 examples.	A non-living factor . E.g. soil pH and temperature.
What do animals compete for?	Food, water, space (territory), shelter, breeding partners
What do plants compete for?	Light, minerals, carbon dioxide, water, space.
What is predation?	When an animal (predator) hunts and eats another animal (prey).
What is a mutualistic relationship? Give an example.	A mutualistic relationship is when both organisms benefit from each other another. E.g. Oxpecker and buffalo – the oxpecker eats the fleas off the buffalo.
What is a parasitic relationship? Give an example.	A parasitic relationship is when only one organism benefits and the other organism is harmed. E.g. Fleas living on other animals.

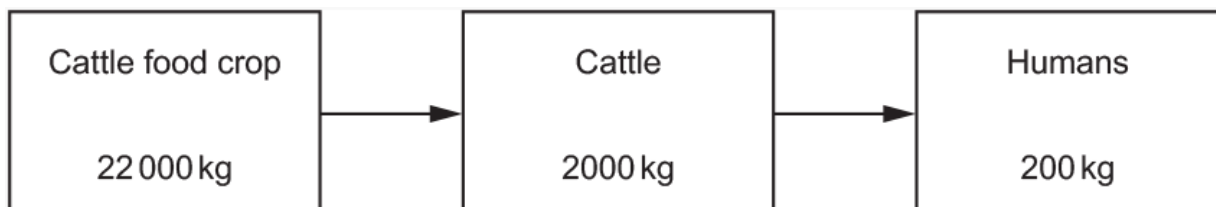
Look, Cover, Write, Check

Question	Answer
What is a 'decomposer'	
What is a 'producer'?	
What is a 'consumer'?	
Define 'ecosystem'	
What do plants compete for?	
What is an abiotic factor? Give 2 examples.	
What do animals compete for?	
What is a biotic factor? Give 2 examples.	
What is a parasitic relationship? Give an example.	
What is a mutualistic relationship? Give an example.	
What is predation?	

Look, Cover, Write, Check

Question	Answer
Define 'ecosystem'	
	An organism that produces its own food e.g. plants
	An organism that eats other organisms for energy e.g. animals
What is a 'decomposer'	
What is a biotic factor? Give 2 examples.	
	A non-living factor . E.g. soil pH and temperature.
What do animals compete for?	
What do plants compete for?	
	When an animal (predator) hunts and eats another animal (prey).
What is a mutualistic relationship? Give an example.	
What is a parasitic relationship? Give an example.	

The diagram shows the flow of biomass through an agricultural food chain.



High levels of light intensity can damage plants. To prevent damage, plants have a protection mechanism. When light intensity levels get **too high**, the protection mechanism switches on. This stops the plant absorbing too much light. When the light intensity drops to safe levels, the protection mechanism switches off **slowly**.

Explain why this mechanism would **reduce** the biomass available to humans.

Due Date:	Friday, 13th October 2023
Student Number:	
Name:	



Y11 Triple T1 W6: C2 Separating Techniques

Question	Answer
Define pure.	A substance containing only one type of element or compound.
How is melting point used to determine purity?	A pure substance will have a distinct melting point. An impure substance will melt over a range of temperatures.
What is relative formula mass?	The total mass of all of the elements in a compound.
What is an empirical formula?	The simplest whole number ratio of elements in a compound.
What is an alloy?	A mixture of two or more elements, where at least one is a metal.
What is filtration?	A separation technique used to separate an insoluble solid from a liquid.
What is crystallisation?	A separation technique used to separate a soluble solid from a solution.
What is simple distillation?	A separation technique used to separate a mixture of solutions with two different boiling points.
What changes of state are involved in simple distillation?	Evaporation and condensation
What is a condenser used for?	To cool and condense the hot vapour

Look, cover, write, check

Question	Answer
What is an alloy?	
What is crystallisation?	
What is a condenser used for?	
What is simple distillation?	
How is melting point used to determine purity?	
What is relative formula mass?	
Define pure.	
What is empirical formula?	
What changes of state are involved in simple distillation?	
What is filtration?	

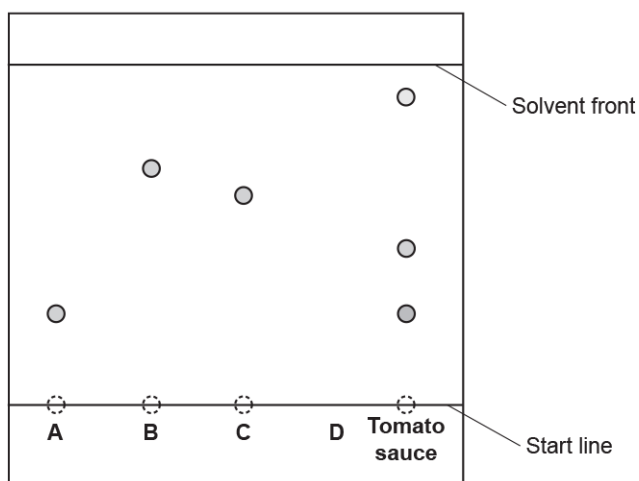
Look, cover, write, check

Question	Answer
Define pure.	
How is melting point used to determine purity?	
	The total mass of all of the elements in a compound.
What is empirical formula?	The simplest whole number ratio of elements in a compound.
	A mixture of two or more elements, where at least one is a metal.
What is filtration?	
What is crystallisation?	
	A separation technique used to separate a mixture of solutions with two different boiling points.
What changes of state are involved in simple distillation?	
	To cool and condense the hot vapour

Exam Question:

1. A scientist analyses a sample of tomato sauce using chromatography.

The tomato sauce is compared to four known food additives, **A**, **B**, **C** and **D**, as shown in the chromatogram.



Calculate the R_f value for additive **C**.

Use the equation: $R_f = \frac{\text{distance travelled by the substance}}{\text{distance travelled by the solvent}}$

Give your answer to **2** significant figures.

R_f value = [3]

Due Date:	Friday, 20th October 2023
Student Number:	
Name:	



Y11 Triple T1 W7 – P2 Newton’s Laws

Question	Answer
What is Newton’s first law?	An object remains in the same state of motion unless a resultant force acts on it.
What state of motions would an object have if the resultant force is zero?	Stationary or moving at a constant velocity
What is Newton’s second law?	Force = mass x acceleration
What is Newton’s third law?	When objects interact, they exert equal and opposite forces on each other.
What are contact forces?	Forces exerted between two objects when they are touching.
What are non-contact forces?	The push or pull between objects that are not physically touching when they interact.
What are the force pairs that occur when pushing a pram?	The person pushes the pram forwards, the pram pushes the person backwards.
What are the force pairs that occur between a satellite in orbit and the Earth?	The Earth pulls the satellite, and the satellite pulls the Earth.
What forces are acting on a skydiver?	Weight and air resistance
What is terminal velocity?	The maximum speed of an object, reached when the forces moving the object are balanced by frictional forces.

Look, Cover, Write, Check

Question	Answer
What are contact forces?	
What are non-contact forces?	
What is Newton’s second law?	
What are the force pairs that occur when pushing a pram?	
What is Newton’s third law?	
What forces are acting on a skydiver?	
What is terminal velocity?	
What is Newton’s first law?	
What are the force pairs that occur between a satellite in orbit and the Earth?	
What state of motions would an object have if the resultant force is zero?	

Look, Cover, Write, Check

Question	Answer
	An object remains in the same state of motion unless a resultant force acts on it.
What state of motions would an object have if the resultant force is zero?	
	Force = mass x acceleration
	When objects interact, they exert equal and opposite forces on each other.
What are contact forces?	
What are non-contact forces?	
	The person pushes the pram forwards, the pram pushes the person backwards.
What are the force pairs that occur between a satellite in orbit and the Earth?	
	Weight and air resistance
	The maximum speed of an object, reached when the forces moving the object are balanced by frictional forces.

Exam Question

Q1. An object travelling in a circle at a constant speed has a changing velocity.

State why. _____

Q2 Objects in freefall eventually reach terminal velocity.

[1]

Draw a labelled diagram to show the forces acting on an object when it is falling at terminal velocity.

[3]

Q3. How can mass be calculated?

- A Acceleration divided by force
- B Force divided by acceleration
- C Gravity divided by weight
- D Weight divided by force

Your answer

[1]

Due Date:	Friday, 10th November 2023
Student Number:	
Name:	



Y11 Triple T2 W1 P3 - Static & Charge

Question	Answer
What is the difference between an insulator and a conductor?	An insulator is something that doesn't transfer electricity or heat, while a conductor does.
Describe the charge of protons, electrons and neutrons.	Protons have a positive charge, electrons have a negative charge and neutrons have a zero charge.
Describe how static electricity is generated.	When two insulators are rubbed together, friction causes <u>electrons to transfer</u> from one insulator to the other.
How are objects discharged?	The charged insulator needs to touch a conductor, which allows the electrons to flow through causing a spark.
What is current?	The rate of flow of charge.
What are the units of current?	Amps (A)
What is the difference between conventional current and electron flow?	The electricity in conventional current travels from the positive terminal of the battery to the negative terminal. Electron flow travels from the negative terminal to the positive terminal.
What equation relates charge and current?	Charge = Current x Time
What are the units of charge?	Coulombs (C)
What are the conditions needed for current to flow?	<ul style="list-style-type: none"> • A cell/battery, • a complete circuit.

Look, Cover, Write, Check

Question	Answer
What is the difference between an insulator and a conductor?	
Describe the charge of protons, electrons and neutrons.	
Describe how static electricity is generated.	
How are objects discharged?	
What is current?	
What are the units of current?	
What is the difference between conventional current and electron flow?	
What equation relates charge and current?	
What are the units of charge?	
What are the conditions needed for current to flow?	

Look, Cover, Write, Check

Question	Answer
What are the conditions needed for current to flow?	
	Amps (A)
	Protons have a positive charge, electrons have a negative charge and neutrons have a zero charge.
What is the difference between conventional current and electron flow?	
	The rate of flow of charge.
	The charged insulator needs to touch a conductor, which allows the electrons to flow through causing a spark.
What are the units of charge?	
	An insulator is something that doesn't transfer electricity or heat, while a conductor does.
Describe how static electricity is generated.	
What equation relates charge and current?	

Exam Questions

A Van de Graaff generator, as shown in **Fig. 14.3**, is often used to produce charges.

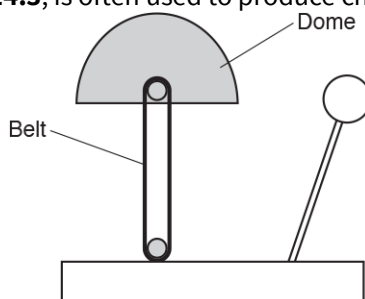


Fig. 14.3

A Van de Graaff generator has a charge of $1.2 \times 10^{-5} \text{ C}$ on its dome.

- i. The p.d. when the dome sparks is 30 kV.

How much energy is transferred when the dome sparks?

Energy transferred = J [4]

- ii. The dome takes 0.0005 s to discharge through a person.

Calculate the current in the person.

Current = A [3]

Due Date:	Friday, 17th November 2023
Student Number:	
Name:	



Y10 Triple T2 W2 B2 – Plant Transport Vessels

Question	Answer
Define 'vessel'	A tube responsible for transporting substances.
What 2 vessels transport substances around the plant?	Xylem and phloem
Where are the xylem and phloem found?	They run from the root, up the stem to the leaves of the plant.
What does the xylem transport?	Water and mineral ions.
What does the phloem transport?	Sugars e.g. sucrose.
Define 'translocation'	The movement of sugars up and down the plant (in the phloem).
Describe the structure of the xylem.	Hollow tube made of dead cells . Lignin in the walls for strength.
Describe the structure of the phloem.	Tube made of live cells with sieve plates . Has companion cells which provide energy for the phloem to transport the sugars.
How does water enter the plant?	Absorbed into root hair cell by osmosis.
How do mineral ions enter the plant?	Absorbed into root hair cell by active transport.
How are sugars made in the plant?	By photosynthesis which happens in the chloroplasts.

Look, Cover, Write, Check

Question	Answer
Define 'translocation'	
What 2 vessels transport substances around the plant?	
How do mineral ions enter the plant?	
How does water enter the plant?	
What does the phloem transport?	
Describe the structure of the phloem.	
Describe the structure of the xylem.	
What does the xylem transport?	
Define 'vessel'	
Where are the xylem and phloem found?	
How are sugars made in the plant?	

Due Date:	Friday, 24th November 2023
Student Number:	
Name:	



Y11 Triple T2 W3 C4 – Reactivity of Group 1, 7 and 0

Question	Answer
What is the name of group 1?	Alkali metals.
What is the name of group 7?	Halogens.
What makes group 1 metals reactive?	They want to lose 1 electron and form a full outer shell.
What makes group 7 reactive?	They want to gain 1 electron and form a full outer shell.
Describe the trend in reactivity of group 1.	As you go down group 1, reactivity increases.
Why do group 1 elements become more reactive down the group?	Atomic radii increases and more shells create more shielding so the electrostatic attraction becomes weaker; it is easier to lose an electron.
Describe the trend in reactivity of group 7.	As you go down group 7, reactivity decreases.
Why do group 7 elements become less reactive down the group?	Atomic radii increases and more shells create more shielding so the electrostatic attraction becomes weaker; it is harder to gain an electron.
What does 'inert' mean?	Unreactive
Why are group 0 inert?	They already have a full outer shell therefore they do not want to lose or gain electrons.

Look, Cover, Write, Check

Question	Answer
What is the name of group 1?	
What is the name of group 7?	
What makes group 1 metals reactive?	
What makes group 7 reactive?	
Describe the trend in reactivity of group 1.	
Why do group 1 become more reactive down the group?	
Describe the trend in reactivity of group 7.	
Why do group 7 become less reactive down the group?	
What does 'inert' mean?	
Why are group 0 inert?	

Look, Cover, Write, Check

Question	Answer
	Alkali metals.
	Halogens.
What makes group 1 metals reactive?	
Why are group 0 inert?	
	As you go down the group, reactivity increases.
Why do group 1 elements become more reactive down the group?	
	As you go down the group, reactivity decreases.
	Atomic radii increases and more shells cause more shielding so the electrostatic attraction becomes weaker; it is harder to gain an electron .
	Unreactive
What makes group 7 reactive?	

1(a). Look at the table. It shows information about the Group 7 elements. Complete the table.

Element	Formula	Colour	State at room temperature
Fluorine	F ₂	pale yellow	gas
Chlorine	Cl ₂
Bromine	Br ₂	brown	liquid
Iodine	I ₂	grey

[3]

(b). The Group 7 elements exist as simple molecules. Fluorine boils at -188 °C. Explain why fluorine has a low boiling point.

[2]

(c). The elements in Group 0 (the noble gases) are unreactive. Explain why, in terms of their electronic configurations.

[2]

Due Date:	Friday, 1st December 2023
Student Number:	
Name:	



Y11 Triple T2 W4 P4 – Radioactivity

Question	Answer
What is an isotope?	Atoms of the same element with the same number of protons but different numbers of neutrons.
Why are some isotopes radioactive?	Some atoms are radioactive because they are unstable, usually due to too many neutrons.
What is radioactive decay?	The breakdown of a radioactive isotope by the release of alpha, beta, gamma or a neutron.
Where does radiation come from?	Radiation is released from the nucleus of the atom.
What is the structure of alpha radiation?	Alpha radiation is the same as a helium nucleus: 2 protons and 2 neutrons.
What is the structure of beta radiation?	Beta radiation is a high-speed electron.
What is the structure of gamma radiation?	Gamma is an electromagnetic wave with a very short wavelength and high frequency.
Why is radioactive decay described as random?	You cannot predict when, or which, nucleus will decay next.
What is activity?	The number of isotopes which decay per second. Measure in Becquerels (Bq).
What is the definition of half-life?	The time taken for the activity of a source to decay by half.

Look, Cover, Write, Check

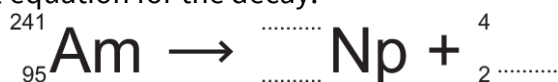
Question	Answer
Where does radiation come from?	
What is activity?	
What is the structure of alpha radiation?	
Why are some isotopes radioactive?	
What is the definition of half-life?	
What is the structure of gamma radiation?	
What is the structure of beta radiation?	
What is an isotope?	
What is radioactive decay?	
Why is radioactive decay described as random?	

Look, Cover, Write, Check

Question	Answer
	The time taken for the activity of a source to decay by half.
Why are some isotopes radioactive?	
	Radiation is released from the nucleus of the atom.
What is activity?	
	Atoms of the same element with the same number of protons but different numbers of neutrons.
	Alpha radiation is the same as a helium nucleus: 2 protons and 2 neutrons.
What is the structure of gamma radiation?	
What is radioactive decay?	
	Beta radiation is a high-speed electron.
Why is radioactive decay described as random?	

Q1 Americium-241 is a radioactive source that is used in smoke detectors. Americium-241 decays by emitting alpha radiation to form neptunium (Np).

Complete the balanced symbol equation for the decay.



Q2 Some isotopes of cobalt are radioactive.

- i. Explain what is meant by the half-life of a radioactive isotope.

[1]

- ii. The half-life of Co-60 is 5 years.

The count-rate of a sample of Co-60 is 160 counts per minute.

Calculate the count-rate of the Co-60 after 10 years.

Count-rate = counts per minute **[3]**

Due Date:	Friday, 8th December 2023
Student Number:	
Name:	



Y11 Triple T2 W5 B5 – Variation

Question	Answer
Define 'variation'.	Differences between individuals in the same species.
What are the two causes of variation?	Genetic (inherited) and environmental factors.
What is discontinuous variation?	Differences according to characteristics that fall into distinct categories e.g. blood type, eye colour.
What is continuous variation?	Differences according to characteristics that show a whole range of values e.g. height and weight.
What is asexual reproduction?	Reproduction which only requires one parent and results in clones (genetically-identical offspring)
What is sexual reproduction?	Reproduction requiring two parents which results in variation.
What are gametes?	Sex cells e.g. sperm and egg cells.
How do gametes differ from normal body cells?	Gametes are haploid cells. This means they contain half the genetic material compared to normal body cells, which are diploid (contain a full set of genetic material).
How are gametes made?	Gametes are made by meiosis.
How many times does a cell divide during meiosis?	Twice.

Look, Cover, Write, Check

Question	Answer
What are gametes?	
How many times does a cell divide during meiosis?	
What is discontinuous variation?	
What is asexual reproduction?	
What is continuous variation?	
What is sexual reproduction?	
Define 'variation'.	
How do gametes differ from normal body cells?	
How are gametes made?	
What are the two causes of variation?	

Look, Cover, Write, Check

Question	Answer
What is continuous variation?	
	Differences between individuals in the same species.
	Discontinuous variation is differences according to characteristics that fall into distinct categories e.g. blood type, eye colour.
What is sexual reproduction?	
What are the two causes of variation?	
	Reproduction which only requires one parent and results in clones (genetically-identical offspring)
How do gametes differ from normal body cells?	
	Sex cells e.g. sperm and egg cells.
How many times does a cell divide during meiosis?	
How are gametes made?	

Q1.

There are two types of cell division: mitosis and meiosis.

(a) Describe **three** differences between the processes of mitosis and meiosis.

1 _____

2 _____

3 _____

(3)

(b) Describe **one** similarity between the processes of mitosis and meiosis.

(1)

Due Date:	Friday, 15th December 2023
Student Number:	
Name:	



Y11 Triple T2 W6 C3 - Introducing Chemical Reactions

Question	Answer
What are the rules for writing the formulae of elements?	Each element starts with a capital letter, with any other letters being lower case. E.g. Na or Br
What is a diatomic molecule?	A molecule containing 2 atoms e.g. Cl ₂ .
What does the 'molecular formula' show you?	The numbers of atoms of each element in a molecule or the ratio of atoms in an ionic compound.
What are the 4 different states and the corresponding state symbols?	Solid (s), liquid (l), gas (g) and aqueous (aq)
What is a mole?	The amount of a substance that contains the same number of particles (6.02×10^{23}) as there are atoms in 12g of carbon-12 (¹² C).
How many particles in 1 mole?	6.02×10^{23}
What is an exothermic reaction?	A reaction in which thermal energy is released into the surroundings, increasing the temperature of the surroundings.
What is an endothermic reaction?	A reaction in which thermal energy is absorbed (taken in) from the surroundings, decreasing the temperature of the surroundings.
What is the general word equation for combustion?	Fuel + oxygen → carbon dioxide + water
Define 'activation energy'	The minimum amount of energy required to start a reaction by breaking the bonds in the reactants.

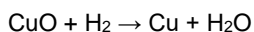
Look, Cover, Write, Check

Question	Answer
Define 'activation energy'	
What are the rules for writing the formulae of elements?	
What is an exothermic reaction?	
What are the 4 different states and the corresponding state symbols?	
What is a mole?	
What is an endothermic reaction?	
What does the 'molecular formula' show you?	
How many particles in 1 mole?	
What is the general word equation for combustion?	
What is a diatomic molecule?	

Look, Cover, Write, Check

Question	Answer
What are the rules for writing the formulae of elements?	
What is a mole?	
	The numbers of atoms of each element in a molecule or the ratio of atoms in an ionic compound.
What are the 4 different states and the corresponding state symbols?	
	6.02×10^{23}
What is an exothermic reaction?	
	A reaction in which thermal energy is absorbed (taken in) from the surroundings, into the reaction, decreasing the temperature of the surroundings.
What is the general word equation for combustion?	
	A molecule containing 2 atoms e.g. Cl ₂ .
Define 'activation energy'	

1. Copper oxide can be reduced to copper by reaction with hydrogen.



A reaction mixture contains 1.59 g of copper oxide and 0.20 g of hydrogen.

1.27 g of copper and 0.36 g of water are made.

Calculate the number of moles of each substance to determine the **limiting reactant** in this reaction.

Explain your choice.

The relative atomic mass of Cu is 63.5, of O is 16 and of H is 1.

Number of moles of CuO =

Number of moles of H₂ =

Number of moles of Cu =

Number of moles of H₂O =

The limiting reactant is _____ because _____

Due Date:	Friday, 22nd December 2023
Student Number:	
Name:	



Y11 Triple T2 W7 – C2 Bonding

Question	Answer
What are the properties of metals?	Metals are malleable, ductile and good conductors of electricity and heat. Metals usually have high boiling points.
What are properties of non-metals?	Non-metals are brittle and poor conductors of heat and electricity.
What does the group and period number of an element tell you?	group number: number of electrons in the outer shell of an atom period number: number of electron shells in each atom
What is the maximum number of electrons that can be held in each electron shell?	Two electrons in the first shell. Eight electrons in the second and third shells.
What is an ion?	An atom which has lost or gained electrons to become charged.
What atoms will bond ionically?	Metals and non-metals.
How does ionic bonding occur?	Electrons are transferred from the metal to the non-metal. The metal forms a positive ion and the non-metal forms a negative ion which attract together due to strong electrostatic forces.
What atoms will bond covalently?	Non-metals
How does covalent bonding occur?	Electrons are shared between the atoms to form a full outer shell of electrons.
What is metallic bonding?	The strong electrostatic attraction between positive metal ions and a sea of delocalised electrons.

Look, Cover, Write, Check

Question	Answer
What does the group and period number of an element tell you?	
What is an ion?	
What atoms will bond ionically?	
What are properties of non-metals?	
How does ionic bonding occur?	
What are the properties of metals?	
How does covalent bonding occur?	
What is the maximum number of electrons that can be held in each electron shell?	
What atoms will bond ionically?	
What is metallic bonding?	

Look, Cover, Write, Check

Question	Answer
	Electrons are shared between the atoms to form a full outer shell of electrons.
What are properties of non-metals?	
What atoms will bond ionically?	
	The strong electrostatic attraction between positive metal ions and a sea of delocalised electrons.
What does the group and period number of an element tell you?	
How does ionic bonding occur?	
	Two electrons in the first shell. Eight electrons in the second and third shells.
What atoms will bond covalently?	
	An atom which has lost or gained electrons to become charged.
What are the properties of metals?	

1. Sodium oxide, Na_2O , is a white solid.

Draw a dot and cross diagram to show the ions in sodium oxide.

[2]

2. Fluorine reacts with chlorine to make a compound called chlorine fluoride, ClF .

ClF is a **covalent** compound.

The electronic structure of chlorine is 2.8.7.

The electronic structure of fluorine is 2.7.

Draw a 'dot and cross' diagram to show the covalent bonding in chlorine fluoride.

[2]

Due Date:	Friday, 12th January 2024
Student Number:	
Name:	



Y11 Triple T3 W1 – P2 Forces in Action

Question	Answer
What is momentum?	The product of mass and velocity
How is momentum calculated?	momentum = mass x velocity
What is work done?	A measure of how much energy is transferred when an object is moved.
How is work done calculated?	work done = force x distance
What is power?	The rate at which energy is transferred or work is done.
What is weight (also known as gravity force)?	The force acting on an object due to the pull of gravity from a massive object like a planet.
How is moment (turning effect force) calculated?	Moment = Force x perpendicular distance from the pivot
What is gravitational field strength on Earth?	10 N/kg
How is gravitational potential energy (GPE) calculated?	GPE = mass x height x gravitational field strength
What is a moment?	The turning effect of a force

Look, Cover, Write, Check

Question	Answer
What is power?	
What is weight (also known as gravity force)?	
How is gravitational potential energy (GPE) calculated?	
What is a moment?	
How is work done calculated?	
How is moment (turning effect force) calculated?	
What is work done?	
What is gravitational field strength on Earth?	
What is momentum?	
How is momentum calculated?	

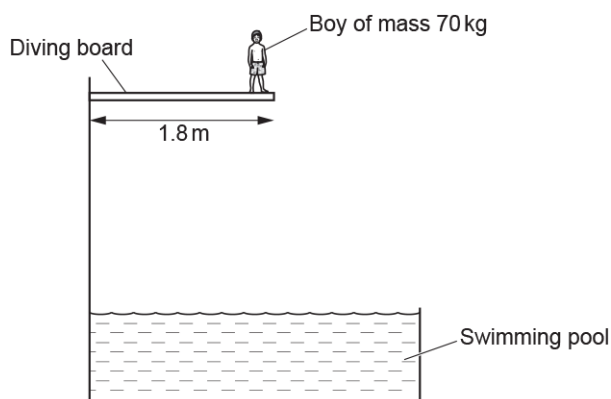
Look, Cover, Write, Check

Question	Answer
	The product of mass and velocity
How is momentum calculated?	
What is work done?	
How is work done calculated?	
	The rate at which energy is transferred or work is done.
	The force acting on an object due to the pull of gravity from a massive object like a planet.
How is moment (turning effect force) calculated?	
What is gravitational field strength on Earth?	
	$GPE = \text{mass} \times \text{height} \times \text{gravitational field strength}$
	The turning effect of a force

Exam Questions:

Q1

A boy of mass 70 kg stands on the end of a diving board at a distance of 1.8 m from the wall.



Calculate the moment of the boy standing on the diving board.
Gravitational field strength on Earth = 10 N / kg.

Moment = N m **[4]**