

Due Date:	Friday, 19th April 2024
Student Number:	
Name:	



Y10 Combined T5 W2 B1 - Photosynthesis

Question	Answer
What is the word equation for photosynthesis?	Carbon dioxide + Water → Glucose + Oxygen
Where does photosynthesis take place?	Photosynthesis takes place in the chloroplasts.
How many stages is photosynthesis?	There are 2 stages in photosynthesis.
Why is photosynthesis an endothermic reaction?	Photosynthesis is endothermic because energy is absorbed (taken in) from the surroundings in the form of light.
How does photosynthesis affect the concentration of carbon dioxide in the atmosphere?	Photosynthesis decreases the concentration of carbon dioxide in the atmosphere.
How does deforestation affect the concentration of carbon dioxide in the atmosphere?	Deforestation (the removal of trees) increases the concentration of carbon dioxide. This is because there is now less photosynthesis taking place, so less carbon dioxide is removed from the air.
Why do plants carry out photosynthesis?	Plants carry out photosynthesis to produce food (in the form of glucose) for themselves.
What happens to the glucose made during photosynthesis?	<ul style="list-style-type: none"> • Can be respired to released energy • Can be stored as starch (for later use) • Used to make proteins e.g. cellulose
Why do root hair cells not contain chloroplasts?	Root hair cells do not photosynthesise so do not need chloroplasts. This is because they receive no/very little light underground.

Look, Cover, Write, Check

Question	Answer
How does deforestation affect the concentration of carbon dioxide in the atmosphere?	
Why do root hair cells not contain chloroplasts?	
How many stages is photosynthesis?	
Why is photosynthesis an endothermic reaction?	
How does photosynthesis affect the concentration of carbon dioxide in the atmosphere?	
What happens to the glucose made during photosynthesis?	
Why do plants carry out photosynthesis?	
What is the word equation for photosynthesis?	
Where does photosynthesis take place?	

Look, Cover, Write, Check

Question	Answer
What is the word equation for photosynthesis?	
How many stages is photosynthesis?	
	... to produce food (in the form of glucose) for themselves.
How does deforestation affect the concentration of carbon dioxide in the atmosphere?	
How does photosynthesis affect the concentration of carbon dioxide in the atmosphere?	
	... because energy is absorbed (taken in) from the surroundings in the form of light.
	<ul style="list-style-type: none"> • Can be respired to released energy • Can be stored as starch (for later use) • Used to make proteins e.g. cellulose
Where does photosynthesis take place?	
	... because root hair cells do not photosynthesise.

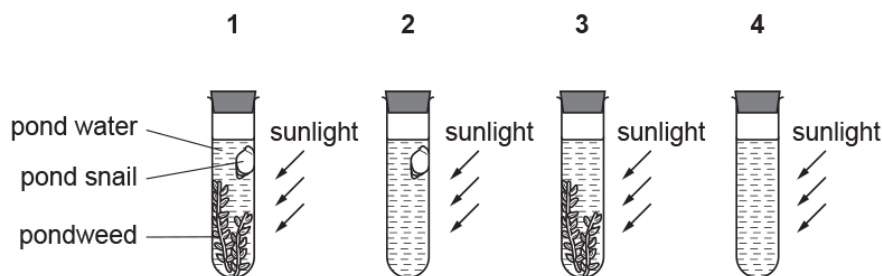
1. Describe how and where oxygen is produced in photosynthesis.

[3]

2. Explain why the amount of oxygen gas given off is **not** a true measure of the rate of photosynthesis.

[2]

3. Pond snails and pondweed are living in water in sealed test tubes.



Carbon dioxide dissolves in water and forms an acid. In which test tube would the water become most acidic?

_____ [1]

Due Date:	Friday, 26 th April 2024
Student Number:	
Name:	



Y10 Combined T5 W3 P1 - Density

Question	Answer
Define 'density'	The amount of mass in a certain volume.
What is the equation for density? Include units.	Density (kg/m^3) = mass (kg) / volume (m^3)
What apparatus is used to measure mass?	Mass balance
How do you convert from g to kg?	Divide by 1000.
How do you convert from kg to g?	Multiply by 1000.
Mass and weight are not the same. How is mass different to weight?	Mass is the amount of matter in an object, measured in g or kg. Weight is the force of gravity acting on a mass, measured in N.
Define 'volume'	The amount of space an object occupies.
How do you measure the volume of a regular object?	Length x width x height
What piece of equipment do you use to measure the volume of an irregular object?	Eureka can
Which state of matter has the highest density? Explain your answer	Solid because the particles are closely-packed together so there are lots of particles in a certain volume.
Which state of matter has the lowest density? Explain your answer.	Gas because the particles are spread out so there are few particles in a certain volume.

Look, Cover, Write, Check

Question	Answer
How do you convert from kg to g?	
What is the equation for density? Include units.	
What piece of equipment do you use to measure the volume of an irregular object?	
How do you convert from g to kg?	
Define 'density'	
Mass and weight are not the same. How is mass different to weight?	
Define 'volume'	
Which state of matter has the lowest density? Explain your answer.	
What apparatus is used to measure mass?	
Which state of matter is the highest density? Explain your answer.	
How do you measure the volume of a regular object e.g. a cube.	

Look, Cover, Write, Check

Question	Answer
	Divide by 1000.
What is the equation for density? Include units.	
What piece of equipment do you use to measure the volume of an irregular object?	
Mass and weight are not the same. How is mass different to weight?	
Define 'density'	
	Multiply by 1000.
How do you measure the volume of a regular object e.g. a cube.	
	Gas because the particles are not touching (spread out) so there are few particles in a certain volume.
What apparatus is used to measure mass?	
Which state of matter has the highest density? Explain your answer.	
	The amount of space an object occupies.

1. A piece of metal has a volume of $2.0 \times 10^{-5} \text{ m}^3$ and a density of $8.0 \times 10^3 \text{ kg / m}^3$.

What is its mass?

- A. $2.5 \times 10^{-3} \text{ kg}$
- B. $4.0 \times 10^{-2} \text{ kg}$
- C. $1.6 \times 10^{-1} \text{ kg}$
- D. $1.6 \times 10^{-3} \text{ kg}$

Your answer

[1]

2. Describe an experiment to calculate the density of the paintball pellet

[4]

Due Date:	Friday, 3rd May 2024
Student Number:	
Name:	



Y10 Combined T5 W4 B2 - Diffusion and Gas Exchange

Question	Answer
Define 'diffusion'	The net movement of particles from a region of high concentration to a region of low concentration.
What 4 factors affect the rate of diffusion?	- Temperature - Surface area: volume ratio - Concentration gradient - Diffusion distance
What is meant by the term 'concentration gradient'?	The difference in concentration between two areas.
How can you increase the rate of diffusion?	Increase temperature; increase concentration gradient; increase surface area: volume ratio; decrease the diffusion distance.
How can you decrease the rate of diffusion?	Decrease temperature; decrease concentration gradient; decrease surface area: volume ratio; increase the diffusion distance.
Where does diffusion occur in living organisms?	Gas exchange between the lungs and blood; gas exchange between the blood and cells; gas exchange in and out of the stomata.
How is the alveoli adapted for gas exchange?	Thin walls, large surface area, good blood supply
How does breathing allow oxygen to diffuse into the blood?	Breathing allows large amounts of oxygen to enter the lungs. This creates a high concentration gradient between the alveoli and the blood, allowing oxygen to enter the blood by diffusion.

Look, Cover, Write, Check

Question	Answer
What is meant by the term 'concentration gradient'?	
What 4 factors affect the rate of diffusion?	
Define 'diffusion'	
How can you increase the rate of diffusion?	
How is the alveoli for adapted gas exchange?	
How does breathing allow oxygen to diffuse into the blood?	
How can you decrease the rate of diffusion?	
Where does diffusion occur in living organisms?	

Look, Cover, Write, Check

Question	Answer
What is meant by the term 'concentration gradient'?	
	Increase temperature; increase concentration gradient; increase surface area: volume ratio; decrease the diffusion distance.
Define 'diffusion'	
What 4 factors affect the rate of diffusion?	
Where does diffusion occur in living organisms?	
How does breathing allow oxygen to diffuse into the blood?	
	Decrease temperature; decrease concentration gradient; decrease surface area: volume ratio; increase the diffusion distance.
How is the alveoli adapted gas exchange?	

Q1. Diffusion is an important process in animals and plants. The movement of many substances into and out of cells occurs by diffusion. **Describe why diffusion is important to animals and plants.**

In your answer you should refer to:

- animals
- plants
- examples of the diffusion of named substances.

Due Date:	Friday, 10th May 2024
Student Number:	
Name:	



Y10 Combined T5 W5 C2 – Giant Covalent Structures

Question	Answer
Define a 'covalent bond'.	A shared pair of electrons between 2 non-metal atoms.
Give an example of a giant covalent structure.	Diamond, graphite and silicon dioxide.
Why do giant covalent structures have a high melting and boiling point?	They have lots of strong covalent bonds, therefore lots of energy is required to break these covalent bonds.
Define 'allotrope'	Different structural forms of the same element in the same physical state.
Name 2 allotropes of carbon.	Diamond and graphite.
State some properties of graphite.	Soft and slippery; good conductor of heat and electricity; high melting and boiling point.
State some uses of graphite	Pencils; lubricant; electrodes in batteries and electrolysis.
Describe the bonding in graphite.	Each carbon atom is covalently bonded to 3 other carbon atoms, forming hexagons.
State some properties of diamond.	Very hard; shiny; does not conduct heat or electricity; high melting and boiling point.
State some uses of diamond	Jewellery; cutting tools.
Describe the bonding in diamond.	Each carbon atom is covalently bonded to 4 other carbon atoms.

Look, Cover, Write, Check

Question	Answer
Define an 'allotrope'	
Name 2 allotropes of carbon.	
Give an example of a giant covalent structure.	
Define a 'covalent bond'.	
Why do giant covalent structures have a high melting and boiling point?	
State some properties of graphite.	
State some properties of diamond.	
Describe the bonding in graphite.	
Describe the bonding in graphite.	
State some uses of graphite.	
State some uses of diamond	

Look, Cover, Write, Check

Question	Answer
	A shared pair of electrons between 2 non-metal atoms.
Give an example of a giant covalent structure.	
Why do giant covalent structures have a high melting and boiling point?	
	Different structural forms of the same element in the same physical state.
Name 2 allotropes of carbon.	
	Soft and slippery; good conductor of heat and electricity; high melting and boiling point.
State some uses of graphite.	
Describe the bonding in graphite.	
	Very hard; shiny; does not conduct heat or electricity; high melting and boiling point
State some uses of diamond	
Describe the bonding in diamond.	

1. Diamond and graphite both contain the same element.

What is the name of this element? _____

(1)

2. Explain why:

- a. graphite is very soft

_____ (2)

- (ii) diamond is very hard

_____ (2)

- (iii) graphite conducts electricity.

_____ (2)

Due Date:	Friday, 17th May 2024
Student Number:	
Name:	



Y10 Combined T5 W6 – 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.

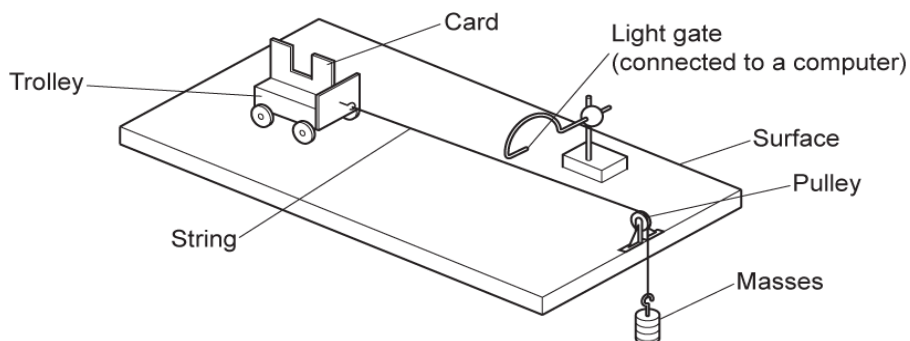
Look, Cover, Write, Check

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.

1(a). Student A does an experiment to find out if force is related to acceleration.



She hangs a 400 g mass over the pulley.

How can she work out the accelerating force on the trolley? Use an equation to help explain your answer.

[2]

(b). Describe **one** way this experiment could be improved.

[1]

Due Date:	Friday, 24th May 2024
Student Number:	
Name:	



Y10 Combined T5 W7 – Working Scientifically

Question	Answer
What is the definition of accurate?	Close to the true value.
What is the definition of reliable (sometimes called precise)?	Consistent with one another: this means they have a small range.
What is the definition of valid?	The investigation is appropriate to answer the question: only one variable is changed.
What is the definition of repeatable?	One person can use the same method and equipment to obtain similar results.
What is the definition of reproducible?	Someone else can repeat the experiment and obtain similar results.
What is the cause of a systematic error?	A problem with the method. All results are affected in the same way.
What is the cause of a random error?	Each result is effected differently: it can be an error reading the scale or human reaction time.
What is the cause of a zero error?	A lack of calibration (setting the equipment to zero before use). All results are affected in the same way.
What is an independent variable?	What you change/investigate in the investigation.
What is a control variable?	The control variables are what you keep the same.

Look, Cover, Write, Check

Question	Answer
What is an independent variable?	
What is the definition of repeatable?	
What is the cause of a systematic error?	
What is the definition of reliable (sometimes called precise)?	
What is a control variable?	
What is the definition of accurate?	
What is the cause of a zero error?	
What is the definition of reproducible?	
What is the definition of valid?	
What is the cause of a random error?	

Look, Cover, Write, Check

Question	Answer
	The control variables are what you keep the same.
What is the definition of repeatable?	
What is the cause of a random error?	
	Reproducible means that someone else can repeat the experiment and obtain similar results.
	Valid means the investigation is appropriate to answer the question: only one variable is changed.
What is an independent variable?	
	Results which are reliable are consistent with one another: this means they have a small range.
	A zero error is caused by a lack of calibration (setting the equipment to zero before use). All results are affected in the same way.
What is the cause of a systematic error?	
What is the definition of accurate?	

Q1. A student investigated the rate of the reaction between magnesium and hydrochloric acid.

The student measured the volume of hydrogen gas produced.

(a) How could the student collect and measure the volume of gas produced?

(1)

(b) At the start of the investigation the volume of gas was 0 cm³

The student took readings at 20-second intervals

Readings for the volume of gas were 24 cm³, 44 cm³, 59 cm³, 70 cm³, 76 cm³ and 79 cm³

Draw a results table for the investigation.

Include the student's results in the table.

(3)

Due Date:	Friday, 7 th June 2024
Student Number:	
Name:	



Y10 Combined T6 W1 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?	

Look, Cover, Write, Check

Question	Answer
	A tube responsible for transporting substances.
	Absorbed into root hair cell by osmosis.
	Absorbed into root hair cell by active transport.
What 2 vessels transport substances around the plant?	
What does the xylem transport?	
What does the phloem transport?	
	The movement of sugars up and down the plant (in the phloem).
Describe the structure of the xylem.	
Describe the structure of the phloem.	
Where are the xylem and phloem found?	
How are sugars made in the plant?	

Q1. (a) Describe how water is transported from the soil to the atmosphere through a plant.

(4)

(b) Dissolved sugars are moved through a plant in phloem tissue.

What is the name of the process that moves dissolved sugars through phloem tissue?

(1)

Due Date:	Friday, 14 th June 2024
Student Number:	
Name:	



Y10 Combined T6 W2 C1 - Atomic Structure and Isotopes

Question	Answer
What is the mass of a proton?	1
What is the mass of a neutron?	1
Define 'atomic number'	The number of protons in the nucleus of an atom.
Define 'relative atomic mass'	The number of protons and neutrons in the nucleus of an atom.
How do you calculate the number of protons in an atom?	Number of protons = atomic number
How do you calculate the number of neutrons in an atom?	Number of neutrons = (relative atomic mass – atomic number)
Define an isotope.	Atoms of the same element with the same number of protons but a different number of neutrons.
Why do isotopes of an element have the same atomic number?	Isotopes have the same atomic number because they have the same number of protons.
Why do isotopes of an element have different relative atomic mass numbers?	Isotopes have a different relative atomic mass because they have a different number of neutrons.
Why is ${}^6\text{C}_{13}$ an isotope of ${}^6\text{C}_{12}$?	They have the same number of protons (6) but different number of neutrons (7 and 6).
Why is ${}^6\text{C}_{12}$ <u>not</u> an isotope of ${}^7\text{C}_{12}$?	They have a different number of protons which means that they are different elements. An atom with an atomic number of 7 is in fact nitrogen, not carbon.

Look, Cover, Write, Check

Question	Answer
What is the mass of a proton?	
What is the mass of a neutron?	
Define 'atomic number'	
Define 'relative atomic mass'	
How do you calculate the number of protons in an atom?	
How do you calculate the number of neutrons in an atom?	
Define an isotope.	
Why do isotopes of an element have the same atomic number?	
Why do isotopes of an element have different relative atomic mass numbers?	
Why is ${}^6\text{C}_{13}$ an isotope of ${}^6\text{C}_{12}$?	
Why is ${}^6\text{C}_{12}$ <u>not</u> an isotope of ${}^7\text{C}_{12}$?	

Look, Cover, Write, Check

Question	Answer
	1
Define an isotope.	
	The number of protons in the nucleus of an atom.
Why do isotopes of an element have different relative atomic mass numbers?	
How do you calculate the number of protons in an atom?	
	Relative atomic mass – atomic number
	1
Why do isotopes of an element have the same atomic number?	
	The number of protons and neutrons in the nucleus of an atom.
Why is ${}^6\text{C}_{13}$ an isotope of ${}^6\text{C}_{12}$?	
Why is ${}^6\text{C}_{12}$ <u>not</u> an isotope of ${}^7\text{C}_{12}$?	

1. What is meant by the word isotopes?

[2]

2. The mass number of an element is 23.

The atomic number of the same element is 11.

i. How many protons and how many neutrons are there in an atom of this element?

Number of protons:

Number of neutrons:

[2]

ii. This element forms an **ion** with a charge of +1.

Work out the number of electrons in an **ion** of this element.

Number of electrons:

[1]

Due Date:	Friday, 21st June 2024
Student Number:	
Name:	

Y10 Combined T6 W3 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

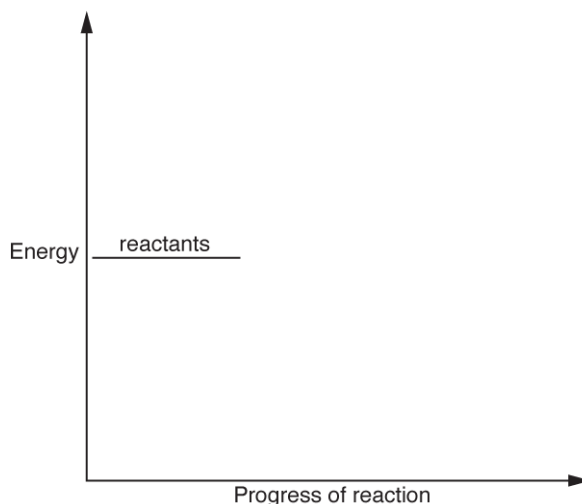
Question	Answer
What are the rules for writing the formulae of elements?	
What is a mole?	
	The numbers of atoms of each element in a molecule or the ratio of atoms in an ionic compound.
What are the 4 different states and the corresponding state symbols?	
	6.02×10^{23}
What is an exothermic reaction?	
	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'	

Exam Question:

1. Draw a labelled reaction profile for an **endothermic** reaction.

Use the following labels on your reaction profile:

- products
- energy change
- activation energy.



Due Date:	Friday, 28th June 2024
Student Number:	
Name:	



Y10 Combined T6 W4 - B3 Hormones

Question	Answer
What are hormones?	Chemical messengers
How are hormones transported around the body?	Through the bloodstream.
What is homeostasis?	Keeping the internal conditions of the body constant.
What is the menstrual cycle?	A monthly cycle during which a woman's body gets ready for pregnancy.
What are the four menstrual hormones?	FSH, LH, Oestrogen and Progesterone.
Where are the menstrual hormone made?	FSH and LH are made in the pituitary gland. Oestrogen and progesterone are made in the ovaries.
What does FSH do?	FSH causes an egg to mature.
What does oestrogen do?	Oestrogen causes the lining of the uterus to build up.
What does LH do?	When LH levels reach a peak in the middle of the cycle, ovulation is triggered.
What does progesterone do?	Progesterone maintains the uterus lining.

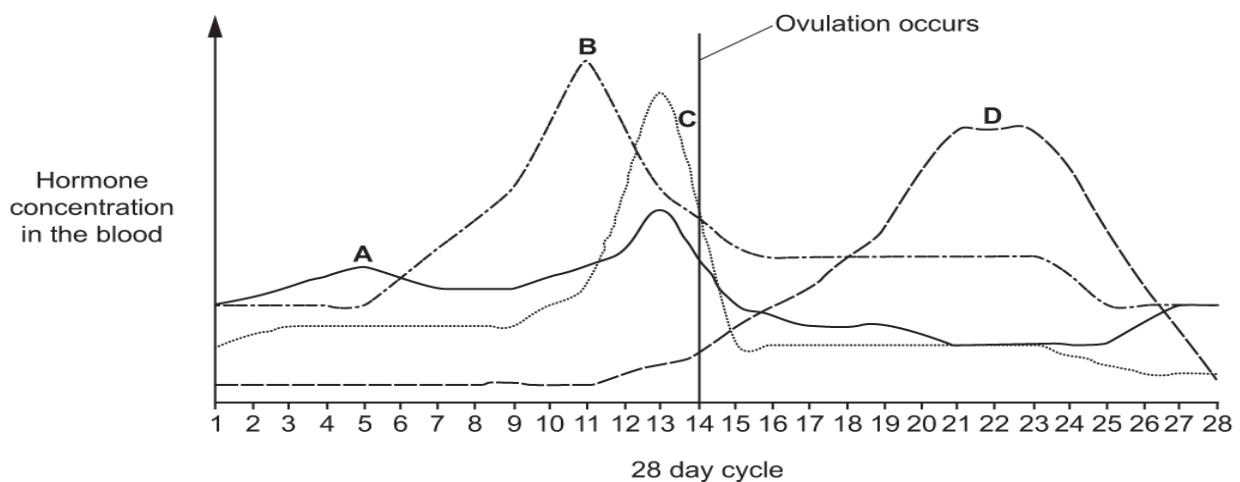
Look, Cover, Write, Check

Question	Answer
How are hormones transported around the body?	
What is homeostasis?	
What does FSH do?	
What are hormones?	
What are the four menstrual hormones?	
What does oestrogen do?	
Where are the menstrual hormone made?	
What does progesterone do?	
What is the menstrual cycle?	
What does LH do?	

Look, Cover, Write, Check

Question	Answer
	Chemical messengers
	Through the bloodstream.
What is homeostasis?	
	A monthly cycle during which a woman's body gets ready for pregnancy.
What are the four menstrual hormones?	
Where are the menstrual hormone made?	
	It travels to the ovaries and causes an egg to mature.
	It causes the lining of the uterus to build up.
What does LH do?	
What does progesterone do?	

1(a). The diagram shows the changes that occur to female hormone concentrations in the blood during the menstrual cycle.



i. Name hormones A, B, C and D

A is _____

B is _____

C is _____

D is _____

[4]

ii. Explain how the hormones **FSH and LH** work to help control the menstrual cycle.

[2]

Due Date:	Friday, 5th July 2024
Student Number:	
Name:	



Y10 Combined T6 W5 – Working Scientifically

Question	Answer
What is the definition of accurate?	Close to the true value.
What is the definition of reliable (sometimes called precise)?	Consistent with one another: this means they have a small range.
What is the definition of valid?	The investigation is appropriate to answer the question: only one variable is changed.
What is the definition of repeatable?	One person can use the same method and equipment to obtain similar results.
What is the definition of reproducible?	Someone else can repeat the experiment and obtain similar results.
What is the cause of a systematic error?	A problem with the method. All results are affected in the same way.
What is the cause of a random error?	Each result is effected differently: it can be an error reading the scale or human reaction time.
What is the cause of a zero error?	A lack of calibration (setting the equipment to zero before use). All results are affected in the same way.
What is an independent variable?	What you change/investigate in the investigation.
What is a control variable?	The control variables are what you keep the same.

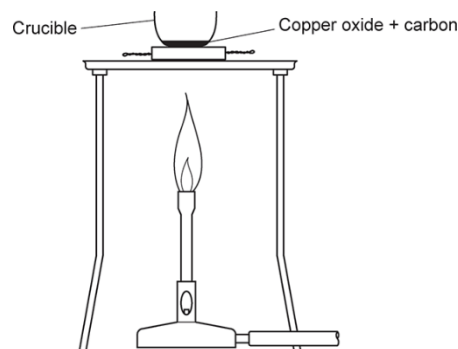
Look, Cover, Write, Check

Question	Answer
What is an independent variable?	
What is the definition of repeatable?	
What is the cause of a systematic error?	
What is the definition of reliable (sometimes called precise)?	
What is a control variable?	
What is the definition of accurate?	
What is the cause of a zero error?	
What is the definition of reproducible?	
What is the definition of valid?	
What is the cause of a random error?	

Look, Cover, Write, Check

Question	Answer
	The control variables are what you keep the same.
What is the definition of repeatable?	
What is the cause of a random error?	
	Reproducible means that someone else can repeat the experiment and obtain similar results.
	Valid means the investigation is appropriate to answer the question: only one variable is changed.
What is an independent variable?	
	Results which are reliable are consistent with one another: this means they have a small range.
	A zero error is caused by a lack of calibration (setting the equipment to zero before use). All results are affected in the same way.
What is the cause of a systematic error?	
What is the definition of accurate?	

1(a). In an experiment a student heats copper oxide and carbon to produce copper.



Complete the word equation for the reaction.

copper oxide + carbon → copper + [1]

(b). The student measures the mass of copper made in the experiment.

She repeated the experiment four times.

Experiment	1	2	3	4
Mass of copper oxide (g)	2.4	2.4	2.4	2.4
Mass of copper (g)	1.7	1.7	0.8	1.6

i. Look at the mass of copper made in **Experiment 3**.

Suggest why the result of **Experiment 3** is different and why it should **not** be used to calculate the mean.

[2]

ii. Calculate the **mean** mass of copper formed. Do **not** include the result of **Experiment 3** in your calculation.

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

Mean mass of copper = g [3]

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



Y10 Combined T6 W6 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

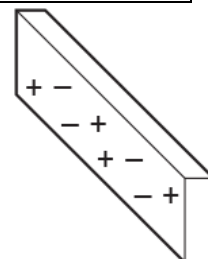
Question	Answer
What is the difference between an insulator and a conductor?	
Describe the charge of protons, electrons and neutrons.	
Describe how static electricity is generated.	
How are objects discharged?	
What is current?	
What are the units of current?	
What is the difference between conventional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

1. The plastic rod in is electrically neutral. Explain how the diagram shows this.

[1]



2. A student rubs the plastic rod with a cloth. The plastic rod gains a positive charge.

She holds the positively charged plastic rod above her head, as shown

Explain why the hairs on her head stand up.

You may add to the diagram to explain your answer.

[3]



3. The student repeats the experiment with a metal rod.

Her hair does **not** stand on end. Suggest why.

[1]

Due Date:	Friday, 19th July 2024
Student Number:	
Name:	



Y10 Combined T6 W7 P3 - Resistance and Resistors

Question	Answer
What is resistance?	Resistance is a measure of how difficult it is for current to flow through a component.
What are the units for resistance?	Ohms (Ω)
How is resistance, current and potential difference related?	Potential difference = Current x Resistance
What causes resistance?	The collisions of electrons with positive ions in the wire.
Describe the relationship between resistance and temperature in a thermistor.	As temperature increases resistance decreases.
Describe the relationship between resistance and light intensity in an LDR.	As light intensity increases resistance decreases.
What does LDR stand for?	Light dependent resistor
Where are thermistors used?	Thermostats / ovens
Where are LDRs used?	Street lights, screen lighting for your mobile phone
How do you find the total resistance in a series circuit?	Add up all the individual resistances in the circuit.

Look, Cover, Write, Check

Question	Answer
What is resistance?	
What are the units for resistance?	
How is resistance, current and potential difference related?	
What causes resistance?	
Describe the relationship between resistance and temperature in a thermistor.	
Describe the relationship between resistance and light intensity in an LDR.	
What does LDR stand for?	
Where are thermistors used?	
Where are LDRs used?	
How do you find the total resistance in a series circuit?	

Look, Cover, Write, Check

Question	Answer
How do you find the total resistance in a series circuit?	
	Light dependent resistor
	As temperature increases resistance decreases.
What causes resistance?	
Where are LDRs used?	
	Resistance is a measure of how difficult it is for current to flow through a component.
Where are thermistors used?	
What are the units for resistance?	
How is resistance, current and potential difference related?	
	As light intensity increases resistance decreases.

Q1. A student investigated how the resistance of a piece of wire varied with the length of the wire.

- (a) Which quantity must stay the same so the wire behaves as an ohmic conductor? Tick (✓) **one** box.

Air pressure

Density of the wire

Temperature of the wire

(1)

- (b) Write down the equation which links current (I), potential difference (V) and resistance (R).

(1)

- (c) For one length of wire the potential difference across the wire was 1.68 V. The current in the wire was 0.70 A. Calculate the resistance of this length of wire.

Resistance = _____ Units _____ (4)