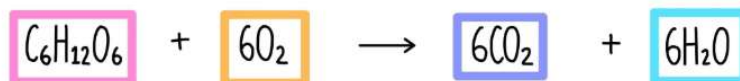
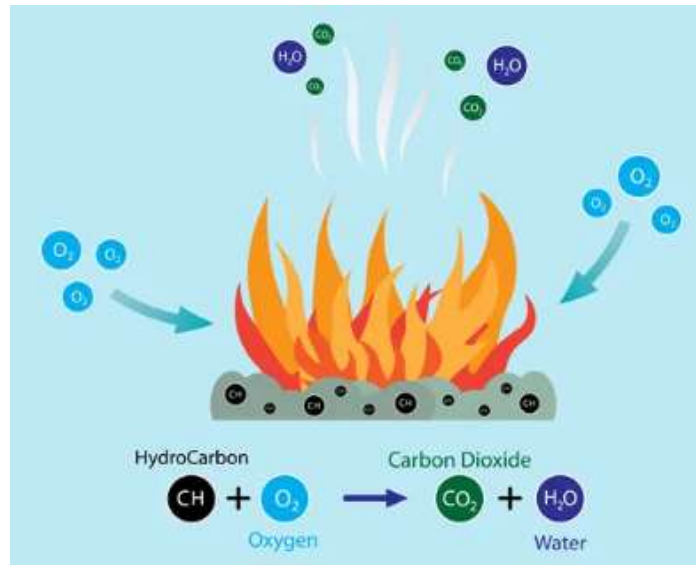


Year 8 Home Learning

Autumn Half Term 2 2026

Aspiration



Home Learning expectations

- -Written by yourself, in your own words.
- -Completed by the due date.
- -Finished to the best of your ability.
- -Closely followed the instructions.
- -Green panned and improved when needed.
- -Peer or self-assessed when asked to.
- -Presented so it is clear and neat
- -Proof read the work to ensure spelling, punctuation and grammar is to the best of your ability.

Task 8

Topic: Chemical Reactions – writing word equations

Instruction: Read the text below and then do the task.

The sound of the alarm wakes Sara up. She gets out of bed and goes to the kitchen where she fills up the kettle and puts it on to boil. She grabs two slices of bread and puts them in the toaster. The **water in the kettle is bubbling**, and it switches off so Sara pours the hot water into a mug with a teabag in it. The **water in the mug starts to turn brown** as the tea infuses. She removes the teabag, takes a teaspoon of sugar and stirs it into the tea **until the sugar crystals are invisible**. She pours in some milk.

Then she takes two eggs from the fridge, cracks them into a bowl and beats them with a fork to **mix the yolk into the white**. Sara takes some butter from the fridge and puts it into a pan, and turns up the heat. The **butter starts to melt** and foam. Sara pours the egg mixture into the pan onto the butter. The egg mixture **starts to solidify and turn opaque**. The smell from the toaster makes Sara look up. The **toast is starting to burn** and she can see some smoke rising from the toaster. She removes the toast as quickly as possible. It has turned a dark brown, but it is not too burned so she puts it on a plate and pours the eggs on top. Breakfast is served!

For every area of the text highlighted in **bold**, explain whether the change is a **chemical** change, or a **physical** change.

1. “**water in the kettle is bubbling**” .

It is a physical reaction because _____

2. “**water in the mug starts to turn brown**”

3. “**until the sugar crystals are invisible**”

4. “**the yolk into the white**”

Teacher ticks here	Tick	Student comment: How to improve	Peer assessed / Self-
Excellent homework (good comment)			
Good/completed			
Requires improvement			
Incomplete/unsatisfactory			

Task 2

Read the descriptions of chemical reactions below and write **word equations** to describe them.

1. When highly flammable propane gas encounters the oxygen in the air, it undergoes a vigorous and explosive chemical reaction, resulting in the formation of scorching carbon dioxide and steam.

Propane + oxygen → _____ + **water**

2. When corrosive hydrochloric acid meets caustic sodium hydroxide, a rapid and intense chemical reaction takes place, leading to the creation of a sodium chloride solution along with copious amounts of water.

3. In the presence of moisture, iron metal reacts with atmospheric oxygen in a slow and gradual chemical reaction, resulting in the formation of reddish-brown iron(III) oxide, commonly known as rust.

Teacher ticks here	Tick	Student comment: How to improve	Peer assessed / Self-
Excellent homework (good comment)			
Good/completed			
Requires improvement			
Incomplete/unsatisfactory			

Due Date: _____

Task 9

Topic: Respiration – key words and definitions

Instructions: Complete the keyword and definitions list by filling in the gaps. Use your Respiration booklet or the internet.

Keyword	Definition	Diagram/ example of this keyword
Independent variable		
	Numerical data, e.g. volume.	
Rate	The speed at which something changes.	
Aerobic respiration		
	Single-celled fungi involved in fermentation	
Breathing		
	The alveoli are where the lungs and the blood exchange oxygen and carbon dioxide during the process of breathing in and breathing out.	
	A sheet of muscle that separates the chest (or thoracic) cavity from the rest of the body.	
Fermentation		
	Gas produced in anaerobic respiration	
	Organelle where aerobic respiration takes place	

Teacher ticks here	Tick	Student comment: How to improve	Peer assessed / Self-
Excellent homework (good comment)			
Good/completed			
Requires improvement			
Incomplete/unsatisfactory			

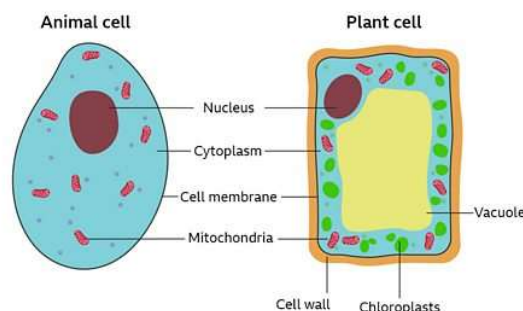
Task 10

Topic: Respiration basics

Instructions: Complete the following tasks to practice the basics of respiration and recap the structure of a cell. Use the key word list to help.

Key word list:

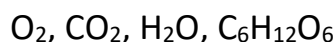
- **Mitochondria** – the part of the cell where respiration takes place.
- **Respiration** – a chemical reaction in cells that releases energy.
- **Oxygen** – a reactant needed for aerobic respiration.
- **Carbon dioxide** – a product made during aerobic respiration.
- **Breathing** – moving air into and out of the lungs; it is different from respiration



1. Look at the animal and plant cell above. State which sub-cellular structure respiration occurs in.
_____.

2. Write the word equation for aerobic respiration below:

3. Write the balanced chemical equation for respiration using the compounds below:



4. Write the word equation for the following:

a. Anaerobic respiration in yeast and plants

b. Anaerobic respiration in animals

5. Is respiration the same as breathing? Yes / No

6. Explain your answer to the above using the definitions of breathing and respiration

7. Stacy says "Respiration only occurs in animals". Is she correct? Explain your answer and use the information above.

Explanation..

Teacher ticks here	Tick	Student comment: How to improve	Peer assessed / Self-
Excellent homework (good comment)			
Good/completed			
Requires improvement			
Incomplete/unsatisfactory			

Task 11

Topic: Chemical Reactions – Combustion and thermal decomposition

Instructions: Complete the tasks below to understand the difference between thermal decomposition and combustion. Use the information below and your booklet to help you.

Thermal Decomposition

Thermal decomposition is a chemical reaction where a compound **breaks down into simpler substances when heated**.

- Heat is required.
- One substance breaks apart into two or more substances.
- Oxygen is not needed.

Example:

Word equation

Calcium carbonate → Calcium oxide + Carbon dioxide

Combustion

Combustion is a chemical reaction where a substance **burns in oxygen and releases energy**.

- Oxygen is required.
- Heat and light energy are released.
- New substances are formed.

Example:

Word equation

Methane + Oxygen → Carbon dioxide + Water

1. Match each keyword to the correct definition by writing the letter that corresponds.

Keywords

1. Combustion ____
2. Thermal decomposition ____
3. Reactant ____
4. Product ____
5. Oxygen ____

Definitions

- A. Substance needed for burning
 - B. A substance present at the start of a reaction
 - C. A reaction where a substance burns
 - D. A reaction where heat breaks down a compound
 - E. A substance formed during a reaction
-

2. Use the words below to fill in the gaps:

oxygen, heat, burns, breakdown, energy

1. Thermal decomposition requires _____.
 2. Combustion requires _____.
 3. During combustion a fuel _____.
 4. Thermal decomposition causes the _____ of a compound.
 5. Combustion releases _____.
-

3. Thermal Decomposition equations, complete the blanks.

1. Calcium carbonate $\rightarrow$ _____ + Carbon dioxide
 2. Magnesium carbonate $\rightarrow$ _____ + _____
-

4. Combustion equations, complete the blanks.

1. Methane + Oxygen $\rightarrow$ _____ + Water
 2. Hydrogen + Oxygen $\rightarrow$ _____
-

5. Write **Thermal Decomposition** or **Combustion** in the blank.

Reaction	Type
$\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$	_____
$\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$	_____
$\text{MgCO}_3 \rightarrow \text{MgO} + \text{CO}_2$	_____
$2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$	_____

6. Write a paragraph explaining the difference between thermal decomposition and combustion, use one of the equations above to explain.

4 marks

Teacher ticks here	Tick	Student comment: How to improve	Peer assessed / Self-
Excellent homework (good comment)			
Good/completed			
Requires improvement			
Incomplete/unsatisfactory			

Task 12

Topic: How science works: Analysing data in a table

Instructions: Complete the tasks below to describe the following tables and graphs.

1. Fill in the missing words to describe what the table shows:

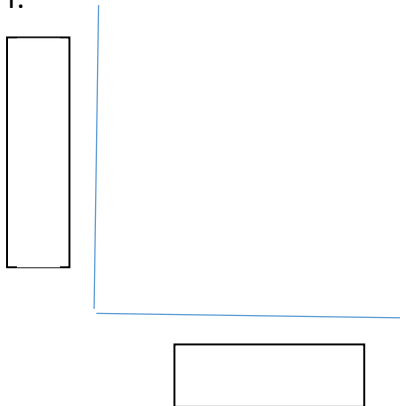
a. As the _____ increases, the speed _____.

b. Which weight had the highest speed?

2. Describe the following table, use question 1 to help you structure this. Also, include data in your answer:

e. Sketch a line to show what the graph might look like. Add the axis labels and units.

f.



g. What is the independent variable in this investigation? _____

h. What is the dependent variable in this investigation? _____

i. Why do we ignore anomalies when we draw a line of best fit? _____

Weight (N)	Speed (m/s)
0.1	1.0
0.3	2.0
0.5	3.0
0.7	4.0
0.9	5.0

Time (hr)	Volume (cm ³)
0.5	34
1.0	40
1.5	45
2.0	51
2.5	56

Teacher ticks here	Tick	Student comment: How to improve	Peer assessed / Self-
Excellent homework (good comment)			
Good/completed			
Requires improvement			
Incomplete/unsatisfactory			

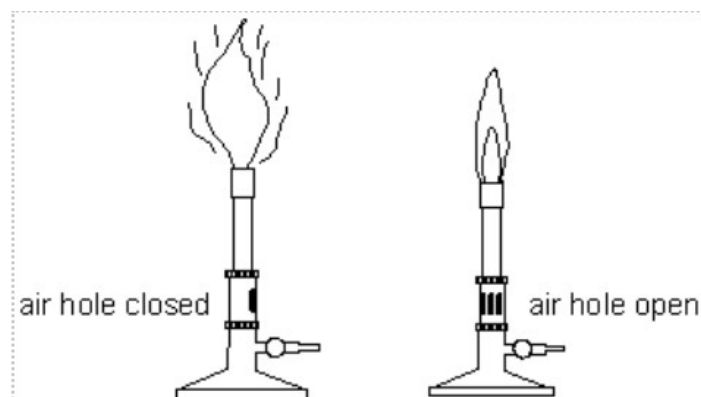
Task 13

Topic: Exam practice – Chemical reactions

Instructions: Complete the exam style questions to practice the chemical reactions topic. You should set yourself a 10 minute timer and complete with no help, then use your booklet or the internet to help you in another colour pen.

Practice Questions

Q1. The diagrams show two Bunsen burners. One burner has the air hole closed, and the other has the air hole open.



(a) Explain why opening the air hole of a Bunsen burner makes the flame hotter.

..... 1 mark

(b) Natural gas is methane, CH_4 . It is burned in a Bunsen burner.

Complete the word equation for the chemical reaction in the clear blue flame.

methane + $\rightarrow$ + 2 marks

Have a go at writing the chemical formula equation below

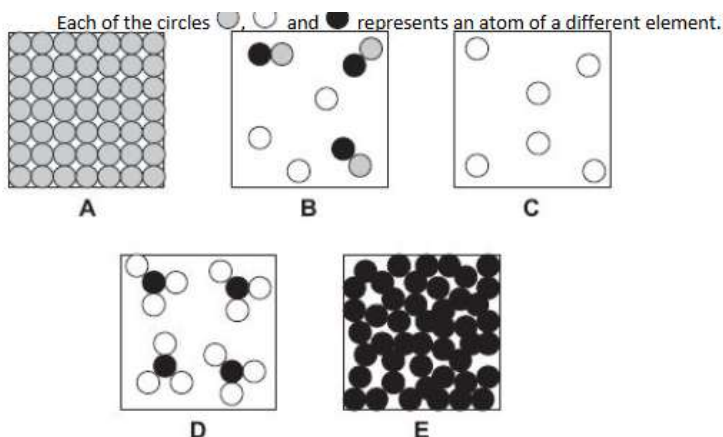
..... + $\rightarrow$ + 2 marks

Q2. (a) The diagrams below show the arrangement of atoms or molecules in five substances A, B, C, D and E. Each of the circles, ,  and  represents an atom of a different element.

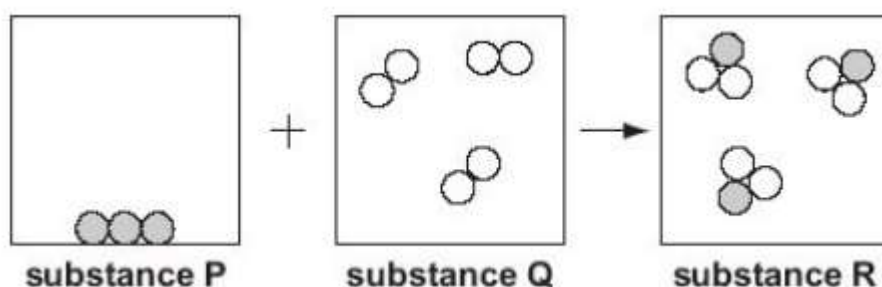
Give the letter of the diagram which represents:

(i) a mixture of gases 1 mark

(ii) a single compound. 1 mark



(b) The diagram below shows a model of a chemical reaction between two substances.



(i) How can you tell from the diagram that a chemical reaction took place between substance P and substance Q?

.....1 mark

(ii) Substance P is carbon. Suggest what substances Q and R could be.

substance Q substance R1 mark

(iii) How does the diagram show that mass has been conserved in this reaction?

.....1 mark

Q3. Michelle added universal indicator solution to four liquids. Michelle uses the pH chart to fill in a table of results.

pH chart

pH	1	2	3	4	5	6	7	8	9	10	11	12	13	14
colour	red			orange			green	blue			purple			

(a) The table below shows some of Michelle's results. Complete the table of results below, using the pH chart below.

liquid	colour of universal indicator solution	pH range
milk	green	7
rain water	orange	
hydrochloric acid	red	
bleach	purple	

2 marks

Teacher ticks here	Tick	Student comment: How to improve	Peer assessed / Self-
Excellent homework (good comment)	☐		
Good/completed	☐		
Requires improvement	☐		
Incomplete/unsatisfactory	☐		