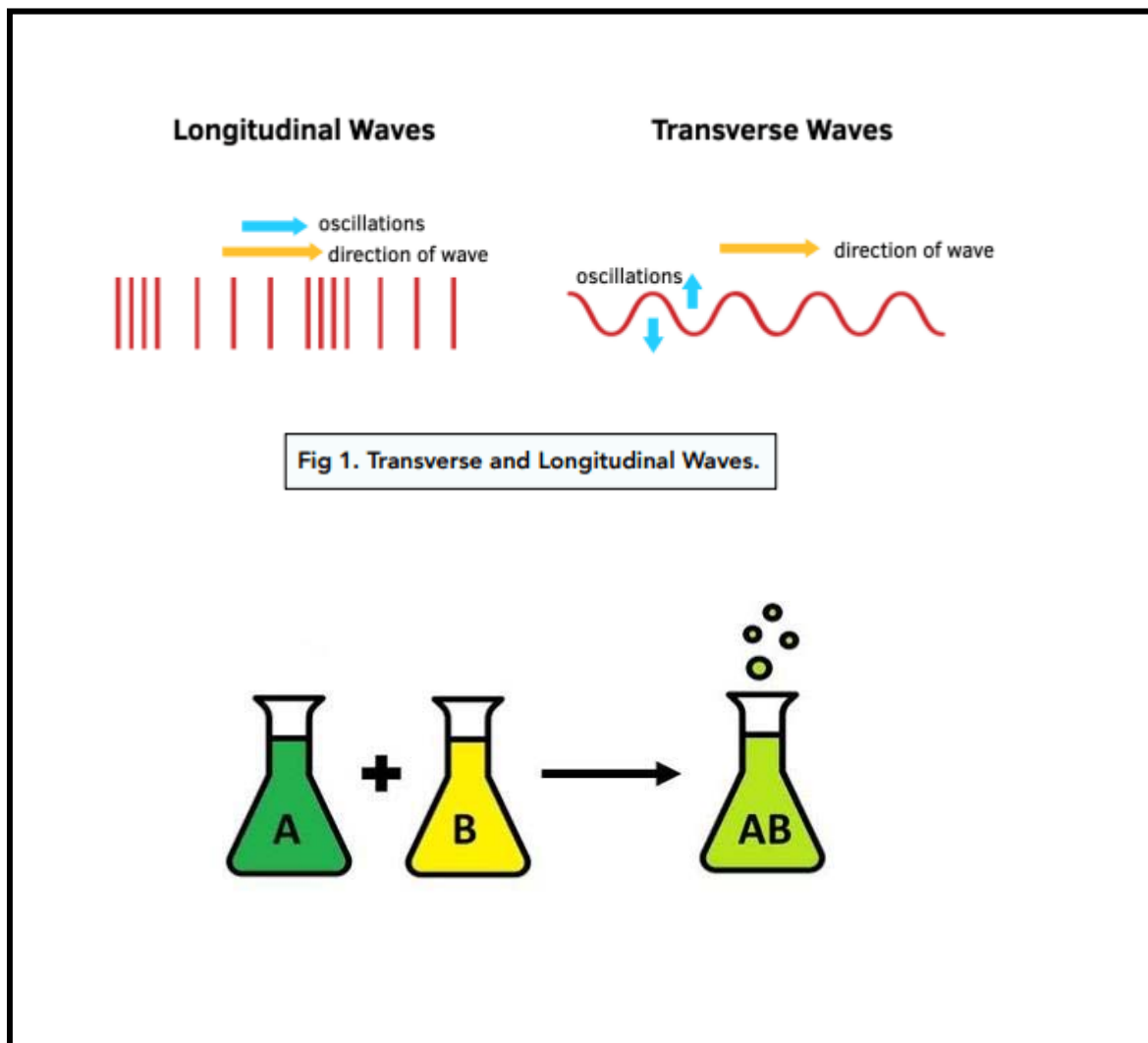


Year 8 Home Learning

Autumn half term 1 2026

Dedication



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 penned 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 1

Topic: Waves – Key words and definitions

Instructions: Using the booklet and the internet, research and fill in the missing blanks using the word bank below.

Work bank: bounces • brain • colours • direction • ear • hertz • medium • peak • refraction • rest • second • signals • speed • vibrates

Wavelength	The distance between two corresponding points on a wave, for example from one _____ to the next peak.
Amplitude	The maximum displacement of a wave from its _____ position.
Frequency	The number of complete waves passing a point each _____. The unit is _____ (Hz).
Eardrum	A thin membrane found in the _____ that _____ when sound waves reach it.
Auditory Nerve	The nerve that carries electrical _____ from the ear to the _____.
Reflection	When a wave _____ off a surface and changes _____.
Refraction	The change in direction of a wave when it enters a different _____ and changes _____.
Dispersion	The splitting of white light into its different _____ due to different amounts of _____.

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

Task 2

Topic: How science works – Variables and graph plotting

Instructions: Complete the tasks below

Key information:

Independent variable: The variable that the investigator deliberately changes or selects different values for. There should only be one independent variable per investigation.

Dependent variable: The variable that is measured or observed as a result of changing the independent variable. It 'depends on' the independent variable.

Control variable: Any variable that is kept constant throughout an investigation to ensure the test is fair. If a control variable changed, it could affect the dependent variable and make results unreliable.

1. Match each term to its correct definition.

[4 marks]

Independent variable

The variable deliberately changed by the investigator

Dependent variable

A data point that does not fit the pattern of the other results

Control variable

A variable kept constant to ensure a fair test

Anomalous result

The variable measured as a result of the investigation

2. A student measures the loudness of a sound. They move a speaker further away from a sound meter and record the loudness of the sound.

a) What is the **independent variable**? (The variable that is being changed by the experimenter) (1 mark)

b) What is the **dependent variable**? (the variable being measured by the experimenter) (1 mark)

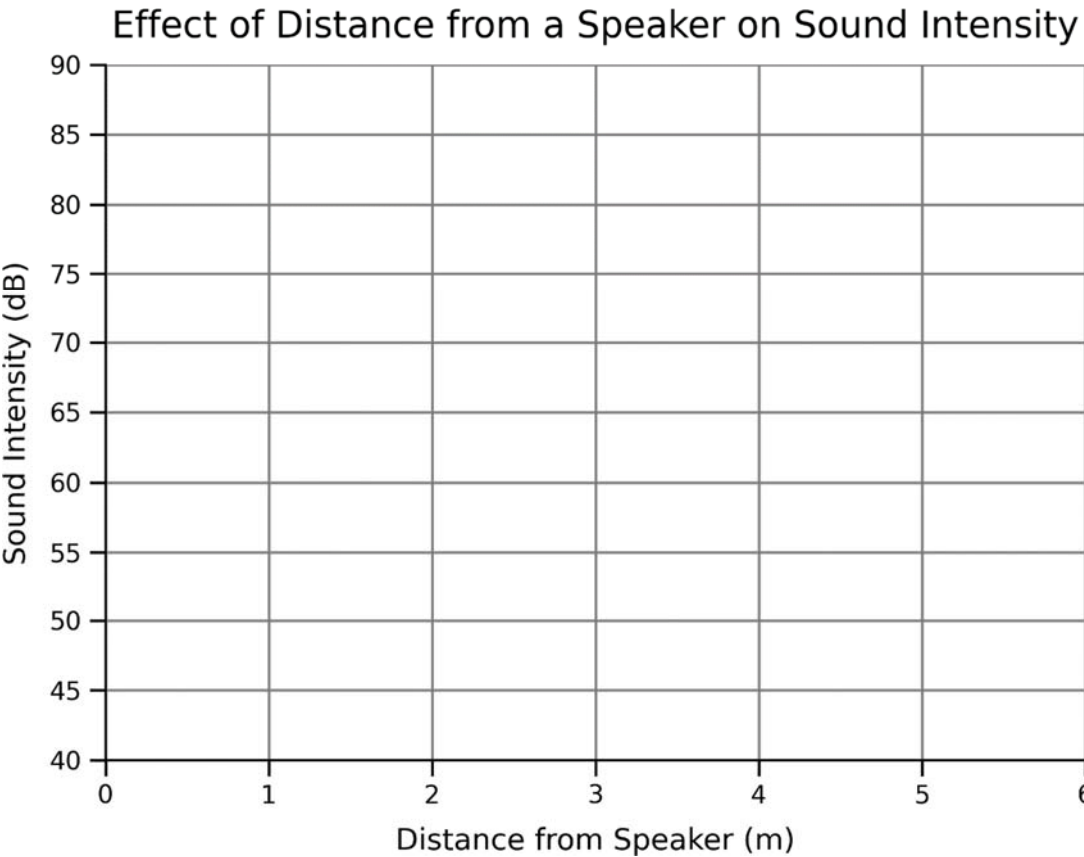
c) Give one **control variable**. (variables that must stay the same to ensure the test is fair) (1 mark)

d) Make a prediction about how the loudness changes as the speaker moves further away. (2 marks)

As the speaker moves further away...

e) The results are shown below. Finish the line graph by plotting the plots and drawing a line of best fit to show visually represent the findings:

Distance from Speaker (m)	Sound Intensity (dB)
1	80
2	72
3	66
4	61
5	57
6	54



2 marks

Checklist

Plots drawn correctly ☐

A slightly curved line of best fit ☐

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

Task 3

Topic: Waves – Sound

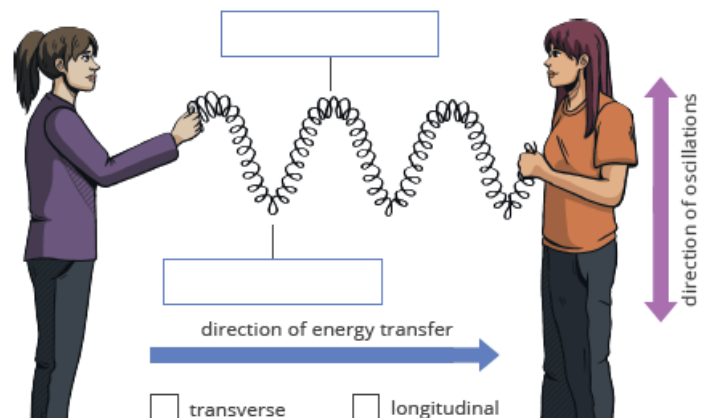
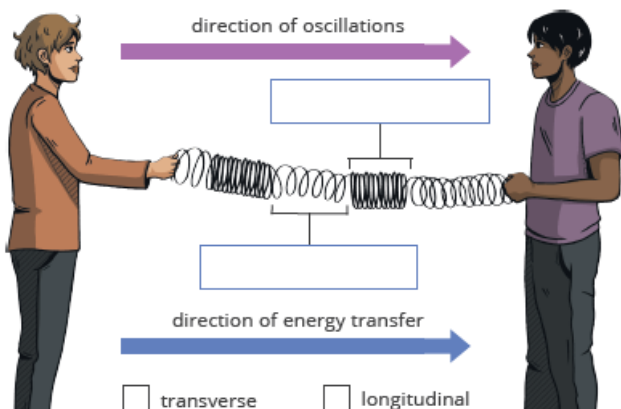
Instructions: Complete the following tasks to understand

1. Complete the keywords for the following definitions using the following word bank:

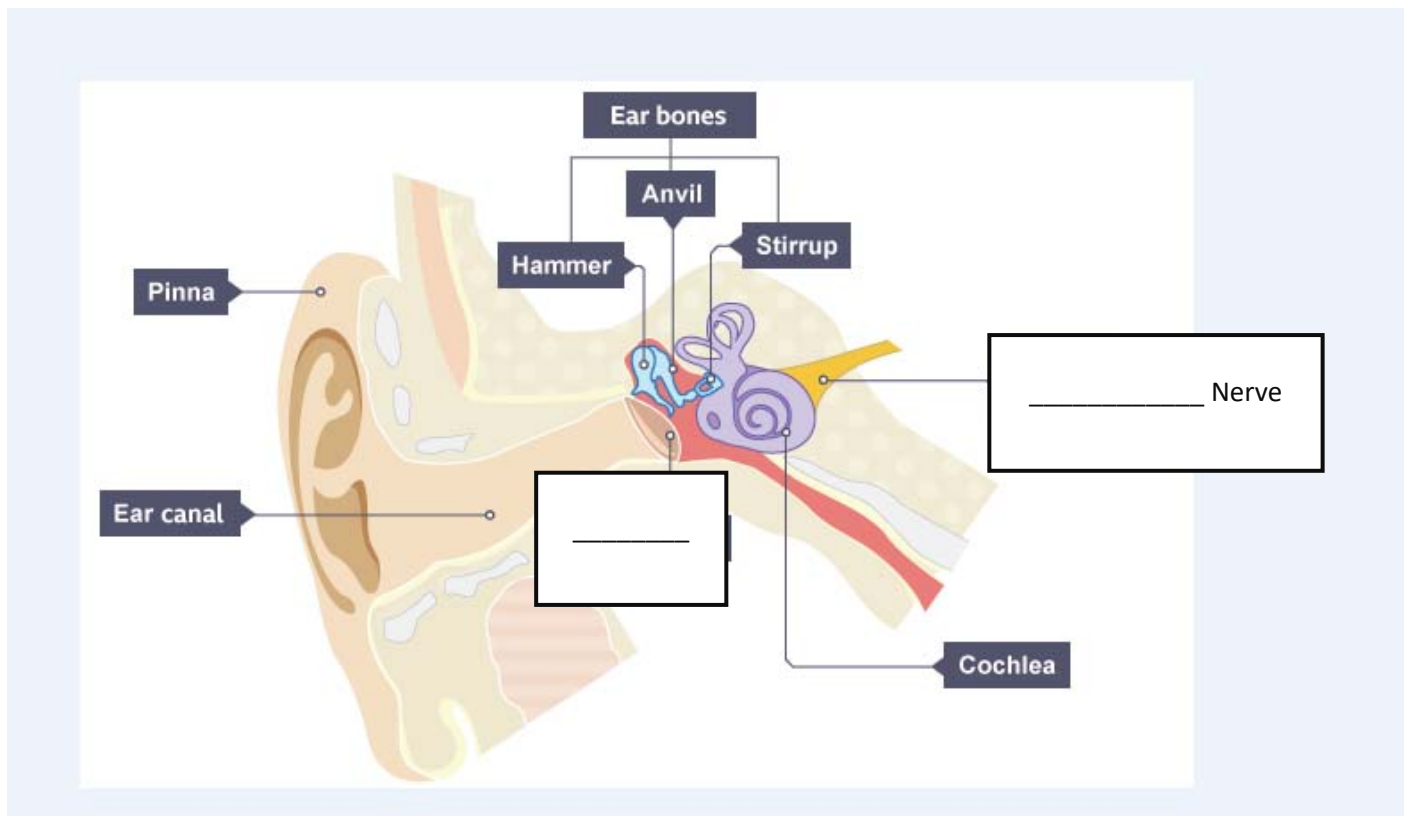
luminous | medium | normal | oscillation | photo-sensitive | vacuum

Definition	Key Word
An absence of matter.	
A substance or material that carries a wave.	
A word that describes objects that emit light.	
A line at right angles to a surface.	
Reacting to light, for example, by changing colour or producing an electrical signal.	
Regular movement from the resting position which varies in position and magnitude.	

2. Complete the labels on each of the waves and tick the correct type of wave.



3. Label the following diagram of the ear:



4. State the function of each of the following:

a. Ear drum = _____

b. Auditory nerve = _____

c. Cochlea = _____

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

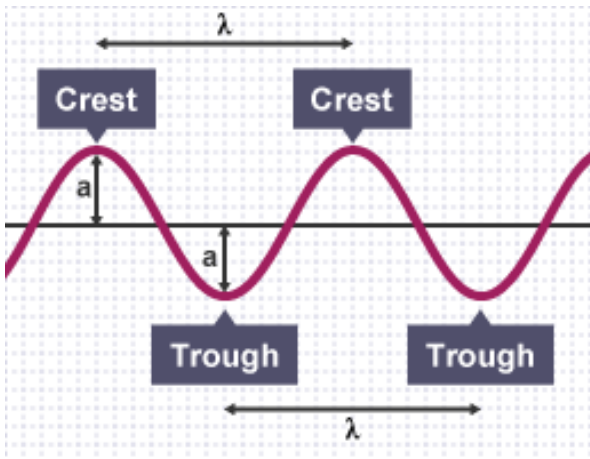
Task 4

Topic: Waves – Frequency and Amplitude

Instructions: Use the information to understand frequency and amplitude.

Information section 1:

Amplitude: The amplitude of a wave is the distance from the centre line (or the still position) to the top of a peak/crest or to the bottom of a trough. Shown by a . The larger the amplitude, the louder the sound is.



Questions 1

1. Which of the following has a larger amplitude? Circle the letter.

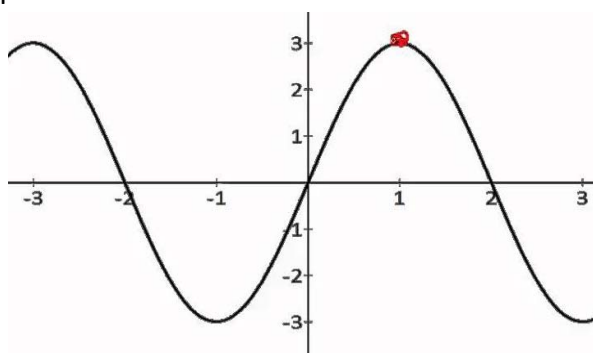
a. A blue sinusoidal wave on a dashed horizontal center line. The amplitude is small, with peaks and troughs close to the center line.

b. A blue sinusoidal wave on a dashed horizontal center line. The amplitude is medium, with peaks and troughs at a moderate distance from the center line.

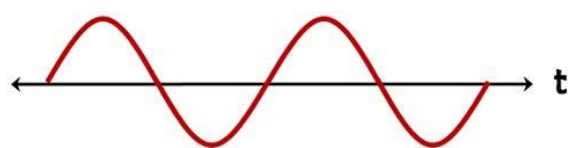
c. A blue sinusoidal wave on a dashed horizontal center line. The amplitude is large, with peaks and troughs at a significant distance from the center line.

2. What is the amplitude of this wave? Circle the letter.

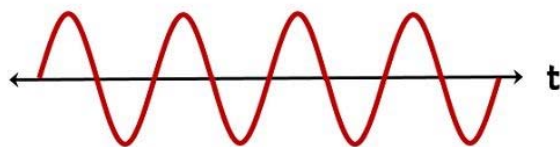
- a. 1
- b. 2
- c. 3
- d. 4



Information set 2: Frequency: The *frequency* (Hz) of a wave is the number of waves passing a point in a certain time. We normally use a time of one second, so this gives frequency the unit *hertz (Hz)* since one hertz is equal to one wave per second.



Low frequency signal

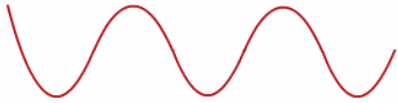


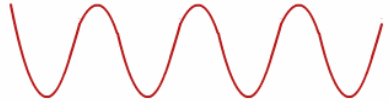
High frequency signal

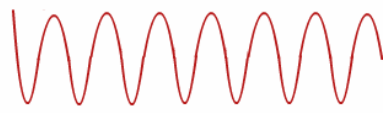
Circuit Globe

Question set 2:

3. State the unit for frequency. _____ (____)
4. High frequency means what about the sound?
 - a. High pitch
 - b. Low pitch
5. Which of the following shows the highest frequency? Circle the wave.

d. 

b. 

c. 
6. Draw wave that decreases in frequency but increases in amplitude (gets louder and the pitch gets deeper)

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

Task 5

Topic: Chemical Reactions (Y7 Periodic table recap)

Instructions: Complete the tasks below using the periodic table in your diary and the internet.

(1)	(2)											(3)	(4)	(5)	(6)	(7)	(8)
1 H hydrogen 1.0	2 He helium 4.0	Key atomic number Symbol name relative atomic mass										13 B boron 10.8	14 C carbon 12.0	15 N nitrogen 14.0	16 O oxygen 16.0	17 F fluorine 19.0	18 Ne neon 20.2
3 Li lithium 6.9	4 Be beryllium 9.0											13 Al aluminum 27.0	14 Si silicon 28.1	15 P phosphorus 31.0	16 S sulfur 32.1	17 Cl chlorine 35.5	18 Ar argon 39.9
11 Na sodium 23.0	12 Mg magnesium 24.3	3	4	5	6	7	8	9	10	11	12	31 Ga gallium 69.7	32 Ge germanium 72.6	33 As arsenic 74.9	34 Se selenium 79.0	35 Br bromine 79.9	36 Kr krypton 83.8
19 K potassium 39.1	20 Ca calcium 40.1	21 Sc scandium 45.0	22 Ti titanium 47.9	23 V vanadium 50.9	24 Cr chromium 52.0	25 Mn manganese 54.9	26 Fe iron 55.8	27 Co cobalt 58.9	28 Ni nickel 58.7	29 Cu copper 63.5	30 Zn zinc 65.4	49 In indium 114.8	50 Sn tin 118.7	51 Sb antimony 121.8	52 Te tellurium 127.6	53 I iodine 126.9	54 Xe xenon 131.3
37 Rb rubidium 85.5	38 Sr strontium 87.6	39 Y yttrium 88.9	40 Zr zirconium 91.2	41 Nb niobium 92.9	42 Mo molybdenum 95.9	43 Tc technetium	44 Ru ruthenium 101.1	45 Rh rhodium 102.9	46 Pd palladium 106.4	47 Ag silver 107.9	48 Cd cadmium 112.4	81 Tl thallium 204.4	82 Pb lead 207.2	83 Bi bismuth 209.0	84 Po polonium	85 At astatine	86 Rn radon
55 Cs caesium 132.9	56 Ba barium 137.3	57–71 lanthanoids		72 Hf hafnium 178.5	73 Ta tantalum 180.9	74 W tungsten 183.8	75 Re rhenium 186.2	76 Os osmium 190.2	77 Ir iridium 192.2	78 Pt platinum 195.1	79 Au gold 197.0	111 Rg roentgenium	112 Cn copernicium			114 Fl flerovium	116 Lv livermorium
87 Fr francium	88 Ra radium	89–103 actinoids		104 Rf rutherfordium	105 Db dubnium	106 Sg seaborgium	107 Bh bohrium	108 Hs hassium	109 Mt meitnerium	110 Ds darmstadtium	111 Rg roentgenium	112 Cn copernicium			114 Fl flerovium	116 Lv livermorium	

57 La lanthanum 138.9	58 Ce cerium 140.1	59 Pr praseodymium 140.9	60 Nd neodymium 144.2	61 Pm promethium 144.9	62 Sm samarium 150.4	63 Eu europium 152.0	64 Gd gadolinium 157.2	65 Tb terbium 158.9	66 Dy dysprosium 162.5	67 Ho holmium 164.9	68 Er erbium 167.3	69 Tm thulium 168.9	70 Yb ytterbium 173.0	71 Lu lutetium 175.0
89 Ac actinium	90 Th thorium 232.0	91 Pa protactinium	92 U uranium 238.1	93 Np neptunium	94 Pu plutonium	95 Am americium	96 Cm curium	97 Bk berkelium	98 Cf californium	99 Es einsteinium	100 Fm fermium	101 Md mendelevium	102 No nobelium	103 Lr lawrencium



- On the periodic table above, identify where the groups are.
- On the periodic table above, write the numbers for the period number.
- On the periodic table above, circle the following elements: Hydrogen, Oxygen, Iron, Neon, Helium, Sodium.
- Write the chemical formula for the following elements in the table below. The first one has been done for you.

Name of element	Chemical formula
Oxygen	O
Calcium	
Sodium	

- Identify some common elements and compounds below:

Chemical formula of element/compound	Name of the element/compound
H ₂ O	Water
CO ₂	
O ₂	
Challenge: C ₆ H ₁₂ O ₆	

Teacher ticks here

Tick

Student comment: How to improve

Excellent homework (**good comment**)

Good/completed

Requires improvement

Incomplete/unsatisfactory

Peer
assessed /
Self-

Task 6

Topic: Chemical Reactions: Balancing equations

Instructions: Identify the number of atoms of each element in the examples below. Use this to explain whether the equations are balanced or not. The first one has been done for you.

***Extension – balance the unbalanced equations!**

1.

2H ₂	+	O ₂	→	2H ₂ O
On the reactants' side			Element	On the products' side
4			H	4
2			O	2

The equation is **unbalanced / balanced** because...there are the same number of hydrogen and oxygen atoms on each side.

2.

2NaOH	+	H ₂ SO ₄	→	Na ₂ SO ₄	+	2H ₂ O
On the reactants' side			Element	On the products' side		
			Na			
			O			
			H			
			S			

The equation is **unbalanced / balanced** because...

3.

N ₂	+	H ₂	→	2NH ₃
On the reactants' side			Element	On the products' side
			N	
			H	

The equation is **unbalanced / balanced** because...

6.

Al(OH) ₃	+	3H ₂ SO ₄	→	Al ₂ (SO ₄) ₃	+	6H ₂ O
On the reactants' side			Element	On the products' side		
			Al			
			O			
			H			
			S			

The equation is **unbalanced / balanced** because...

Teacher ticks here

Tick

Student comment: How to improve

Excellent homework (**good comment**)

Good/completed

Requires improvement

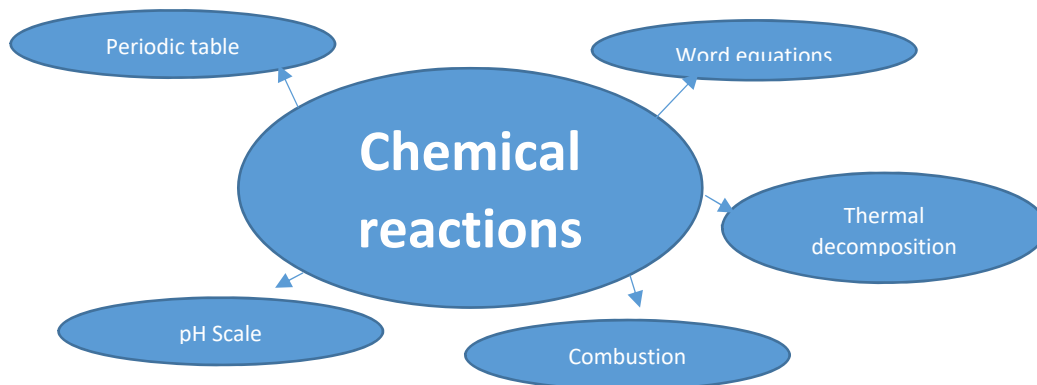
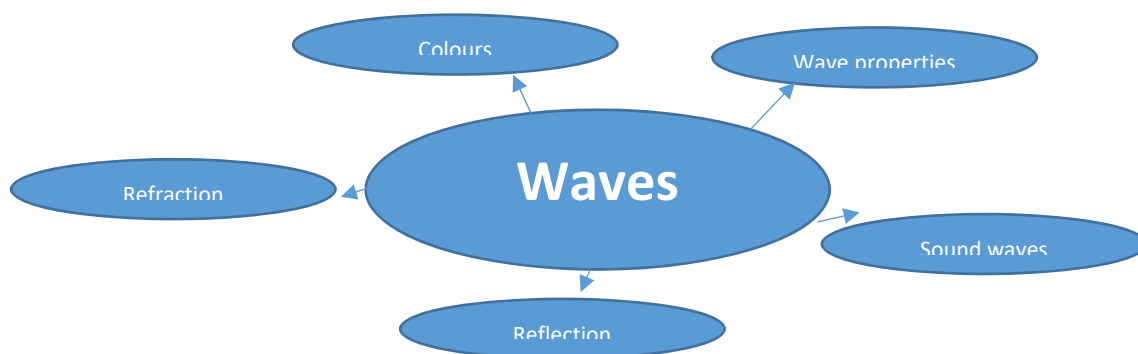
Incomplete/unsatisfactory

Peer
assessed /
Self-

Task 7

Topic: Revision homework Waves and Chemical Reactions

Instructions: Complete the poster below to revise Waves and Chemical Reactions. This should cover all of the points below.



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