Year 8 Home Learning Pack

Multiple activities to complete whilst not at school

Jan 2026

Home Learning Work Booklet – Introduction

Purpose of the Handbook

This home learning booklet has been created to support pupils when they are unable to attend school. Each page contains a different learning activity covering a range of subjects, including English, Maths, Science and the foundation subjects. The activities are designed to be engaging, practical and achievable, helping pupils to continue their learning in a manageable and positive way while at home.

Pupils should choose one activity at a time to complete, with the support of a parent, carer or another trusted adult where needed. There is no expectation to complete every page in one go; instead, pupils are encouraged to work at a pace that suits them. The focus should be on trying their best, enjoying learning and maintaining good learning habits until they are able to return to school.

Useful Free Learning Websites

Parents, carers and pupils may find the following free, UK-based websites helpful when completing home learning activities:

- BBC Bitesize – https://www.bbc.co.uk/bitesize - Clear lessons, videos and quizzes for all subjects and year groups.
- Oak National Academy – https://www.thenational.academy - High-quality video lessons aligned to the English National Curriculum.
- Times Tables Rock Stars – https://ttrockstars.com - Fun and interactive times tables practice.
- White Rose Maths – https://whiteroseeducation.com/parents - Maths videos, worksheets and guidance for parents.
- National Geographic Kids (UK) – https://www.natgeokids.com/uk - Engaging Science and Geography content.
- Topmarks – https://www.topmarks.co.uk - Educational games and activities linked to the UK curriculum.
- Phonics Play – https://www.phonicsplay.co.uk - Free phonics games and resources (some content available without login).
- Twinkl (Free Resources Section) – https://www.twinkl.co.uk/resources/free - Printable activities and resources across all subjects.

Learning Activities

Pupils may choose any activity from any section of the booklet. There is no set order to follow, and activities do not need to be completed in sequence. This flexibility allows pupils to select tasks that interest them or suit their confidence and energy levels on the day. The aim is to keep learning enjoyable and accessible, while encouraging pupils to remain curious and engaged during their time away from school.

1 - English

2 - Maths

3 - Science

4 - Foundation Subjects

5 - Mental Health and Wellbeing Reflective Tasks

6 - Lined, Squared and Plain Paper

01

English

Fiction Comprehension – Mystery Short Story

Text:
“The old library had been closed for decades, its doors chained and dust covering every shelf. Lucas had always been curious, and tonight, under the silver light of a full moon, he decided to explore. As he pushed the creaking doors open, the smell of old paper and mildew filled his nose. Shadows danced along the walls, cast by the flickering beam of his torch.
He moved cautiously between the rows of books, noticing the worn titles and cracked spines. Some books lay open as though recently read, yet there was no one there. Suddenly, a cold draft blew out his torch, leaving him in near darkness. A whisper of paper moving caused him to freeze. He thought he heard footsteps, but when he turned, nothing was there.
In the centre of the library, a lectern held an unusual book. Its pages were filled with symbols he did not recognise, diagrams that seemed to shift when he blinked. Lucas leaned closer, a sense of unease creeping over him. The shadows in the corners seemed to stretch, moving as if alive. He heard a low creak behind him, then the unmistakable sound of a book falling to the floor. Heart racing, he whispered to himself that it was probably just his imagination, but deep down he knew it was something else. Something — or someone — was in the library with him.”

Questions:
Summarise the main events of the story in your own words.

How does the author create suspense and tension in the first two paragraphs?

Identify three examples of descriptive language and explain the effect of each.

What clues suggest that Lucas might be in danger?

Predict what might happen next, giving evidence from the text.

Explain the effect of the phrase “the shadows in the corners seemed to stretch, moving as if alive.”

Find two words you do not know (e.g., lectern, unease) and infer their meaning from context.

How does the author make the library itself feel like a character in the story?

Discuss how Lucas’s curiosity contributes to the story’s tension.

Imagine you are Lucas; write a paragraph describing your thoughts and feelings at this moment.

Non-Fiction Comprehension – Space Exploration

Text:
“Since the early 1960s, humans have looked to the stars with a mixture of curiosity and ambition. Space exploration has opened windows to planets, stars, and galaxies that were once only imagined. Satellites orbiting Earth provide essential services: weather forecasting, global communications, GPS navigation, and scientific data collection. Meanwhile, robotic rovers traverse the Martian surface, sending photographs and measurements back to scientists thousands of miles away.

The search for extraterrestrial life drives much research. Scientists study extreme environments on Earth, such as deep-sea vents and Antarctic glaciers, to understand how life might survive elsewhere. Similarly, they examine the atmospheres of other planets and the composition of distant moons, seeking chemical signatures that could indicate life. Space agencies collaborate internationally to share technology, data, and resources, recognising that the cosmos belongs to no single nation.

Yet space travel is not without its challenges. Astronauts face microgravity, radiation, and extended periods of isolation, which can affect their physical and mental health. Missions are costly, requiring vast resources, advanced technology, and careful planning. Despite these difficulties, exploration drives innovation: materials designed for spacecraft often find uses in medicine, construction, and consumer technology.

Beyond scientific discovery, space inspires imagination. It challenges humans to ask big questions about our origins, our place in the universe, and the future of our species. The International Space Station represents a pinnacle of human cooperation, while planned missions to the Moon and Mars promise to expand our horizons further. In looking outward, we learn more about ourselves and the fragile planet we call home.”

Questions:
Summarise the main purposes of space exploration mentioned in the text.

List the risks and challenges of space travel.

How do scientists search for life on other planets?

Explain the meaning of “microgravity” and “chemical signatures” using context clues.

Identify examples of persuasive or emotive language in the text.

How does international collaboration benefit space exploration?

Find three words or phrases that you do not know and explain them using context clues.

Why does the author suggest that space exploration also teaches us about Earth?

Discuss how the text balances factual information with imaginative ideas.

Imagine you are an astronaut preparing for a mission; write a short diary entry about your thoughts and feelings.

Comparing Characters

Text A:
“Nathan was methodical and disciplined. Every morning, he made a schedule for the day and completed tasks in order of importance. In class, he paid meticulous attention to detail and rarely made mistakes. His friends appreciated his reliability, often asking for help with homework or projects. Nathan excelled in subjects requiring logic and structure, such as mathematics and science. Although highly capable, he sometimes found it difficult to adapt to unexpected situations and could become anxious when plans went awry.”
Text B:
“Isla was spontaneous and full of energy. She thrived in situations that demanded creativity and quick thinking, often improvising solutions on the spot. In lessons, she excelled in art, literature, and problem-solving activities that required imagination. Isla’s unpredictability sometimes caused problems — she would forget deadlines or overlook instructions — but her friends were inspired by her originality and enthusiasm. Teachers recognised her potential, encouraging her to channel her creativity responsibly. Her daring nature made her a natural leader in unstructured environments.”

Questions:
List three strengths and three weaknesses of Nathan.

List three strengths and three weaknesses of Isla.

Compare how Nathan and Isla handle unexpected challenges.

Which character’s traits might be more useful in a team project? Why?

Identify descriptive phrases that reveal personality traits.

Which character is more creative? Which is more organised? Use evidence.

Write a paragraph predicting how each character would behave in a completely new environment.

How does the author use contrast to highlight differences between Nathan and Isla?

Identify any words or phrases that suggest emotion or attitude.

Imagine Nathan and Isla must work together on a school project. Write a short dialogue showing how they interact.

Newspaper Article Writing

Prompt Text:
“During the annual town art exhibition, a highly anticipated painting vanished just as the event opened. Attendees discovered an empty frame where the artwork had been displayed, and security footage revealed a shadowy figure entering the gallery the previous night. Organisers and teachers were shocked; rumours spread quickly among students, families, and local artists. Some suspected a rival gallery owner, others suggested a student prank.
The exhibition continued, though the missing painting dominated conversations. Interviews with attendees revealed a mixture of curiosity, fear, and disappointment. Gallery staff reassured visitors that an investigation was underway and promised to recover the artwork if possible. Social media posts speculated about the thief’s identity, and debate raged over whether it had been premeditated or opportunistic. Despite the incident, the exhibition showcased other remarkable works and drew praise for organisation and creativity.”

Instructions:
Write a headline summarising the event.

Compose an opening paragraph reporting the incident.

Include at least two quotes from attendees or witnesses.

Explain possible motives and suggest who might be responsible.

Conclude with next steps or likely outcomes.

Identify three words that make the story suspenseful or dramatic.

Explain why the author included social media reactions.

Write an additional paragraph speculating on the thief’s motives.

Identify any emotive language in the text.

Rewrite the article from the perspective of a student who attended the exhibition.

Modern vs Classic Texts

Text A (Classic):
“A dense fog enveloped the coastal town, muffling the clatter of horse-drawn carts and the distant call of seabirds. Lanterns flickered along the narrow streets, their light reflecting in puddles from the morning tide. Fishermen hauled in their catch, while children darted through alleyways, oblivious to the eerie silence that lingered beneath the fog. The air was damp and heavy, carrying the faint scent of salt and smoke. A sense of anticipation gripped the town, as though some unseen event was about to disrupt the calm. Each creaking signboard, each swaying rope, seemed to whisper warnings of change.”

Text B (Modern):
“Maya navigated the crowded streets, weaving between cyclists, skateboarders, and street performers. Her phone buzzed constantly with messages: ‘Where are you?’ ‘Hurry up!’ Neon signs flickered above, advertising cafes, shops, and cinema screenings. People clustered around the town square, whispering and pointing at something she could not yet see. Maya felt a strange mix of excitement and apprehension, sensing that something remarkable was about to happen. The city hummed with energy, the sounds of engines, chatter, and music blending into a chaotic symphony that mirrored her racing heartbeat.”

Questions:
Compare the setting in the classic and modern passages.

How is suspense created differently in each text?

Identify three examples of descriptive or figurative language in each passage.

Which passage is easier to imagine or relate to? Explain.

Find evidence in both passages suggesting that something important is about to occur.

Summarise each passage in 5–6 sentences.

Discuss differences in tone, style, and vocabulary.

Identify at least one metaphor, simile, or personification in each passage.

How does the author make the environment itself seem alive or important?

Write a paragraph imagining what might happen next in each setting.

Sentence Types and Structure

Text/Exercise:
“The storm raged outside.
Did you hear the thunder crash?
Close the windows before the rain comes!
What a terrifying night it is!
Lightning illuminated the sky, revealing the twisted branches of the old oak tree.”

Instructions:
Identify each sentence type: declarative, interrogative, imperative, exclamatory.

Combine two short sentences into a complex sentence using conjunctions (e.g., although, because, since).

Write 5 original sentences of each type.

Rewrite the paragraph to include at least two complex sentences.

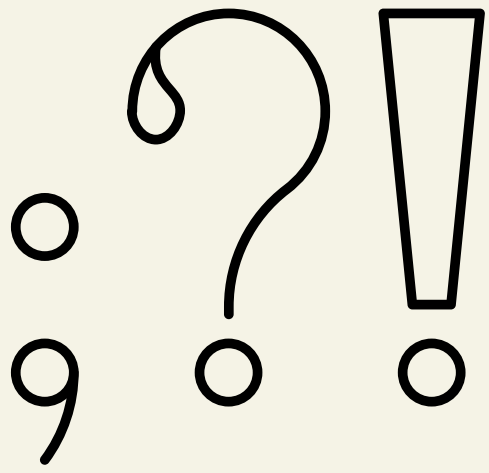
Punctuation Practice

Text:
yesterday evening sarah went to the carnival the rides were spinning wildly children were laughing and screaming cotton candy and popcorn filled the air “look at the fireworks” shouted sarah her brother “wow they’re amazing” she replied the music was loud and the lights flickered

Instructions:
Correct the punctuation in the passage, including full stops, commas, and quotation marks.

Explain why each punctuation mark is necessary.

Rewrite the corrected paragraph neatly, adding one descriptive sentence of your own.



Active and Passive Voice

Text:
The engineers tested the new bridge carefully.

The author wrote a thrilling adventure novel.

The cat chased the mouse across the garden.

The students completed a challenging science experiment.

The fire destroyed several houses in the village.

Instructions:
Rewrite each sentence in the passive voice.

Highlight the subject and object in both active and passive sentences.

Write 5 new sentences about school or home and convert them into passive voice.

Explain when passive voice might be more effective than active.

Direct and Indirect Speech

Text:
“I can’t believe we won the competition!” exclaimed Liam.
“I finished my essay last night,” said Hannah proudly.
“Please remember to bring your notes tomorrow,” reminded Mr. Thompson.
“Did you see the lightning?” shouted Aisha.

Instructions:
Convert all sentences to indirect speech.

Pay attention to tense, pronouns, and punctuation.

Write 5 original sentences in direct speech and convert them.

Explain why indirect speech is useful in reporting events.

Word Classes

Text:
“The exhausted explorers trudged through the dense jungle, their boots sinking into the thick mud. Exotic birds squawked above, and colourful flowers bloomed amid towering trees. A sudden roar echoed nearby, making them freeze. Each adventurer clutched their map tightly, hoping to reach the hidden temple before nightfall. The humid air smelled of damp earth and unknown plants, adding to the mystery of the uncharted land.”

Instructions:
Identify all nouns, verbs, adjectives, adverbs, conjunctions, and prepositions.

Write 5 original sentences using at least 3 different word classes in each.

Highlight the word class in your sentences.

Rewrite the paragraph, changing some nouns and adjectives to create a new scene.

Prefixes and Suffixes

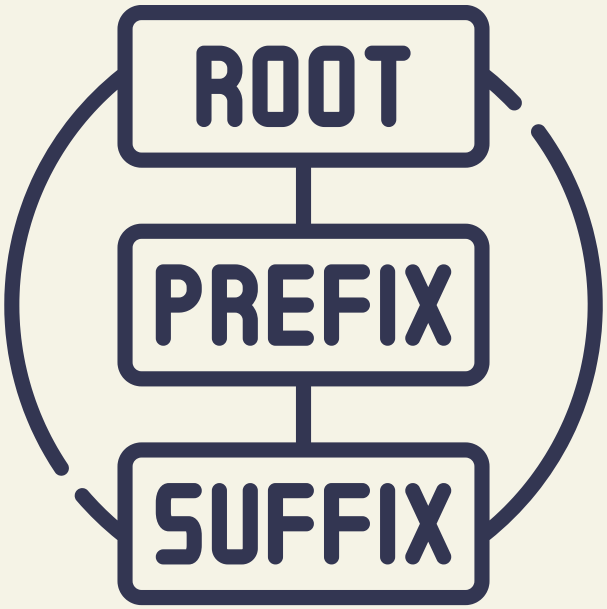
Task 11: Prefixes and Suffixes – Word Formation
Base Words: explore, act, help, move, create

Instructions:
Add prefixes (un-, dis-, re-, in-) and suffixes (-ful, -less, -ment, -ion) to make new words.

Write a sentence for each new word.

Create a short paragraph (100–150 words) using at least 10 new words.

Highlight the prefix or suffix in each word.



Synonyms and Antonyms

Text/Exercise:
Words: enormous, fragile, clever, harsh, luminous, daring, mysterious, patient, ancient, furious

Instructions:
Write a synonym and an antonym for each word.

Write 5 sentences using at least 3 synonyms or antonyms per sentence.

Challenge: write a short descriptive paragraph (80–120 words) using at least 6 words from the list.

Context Clues

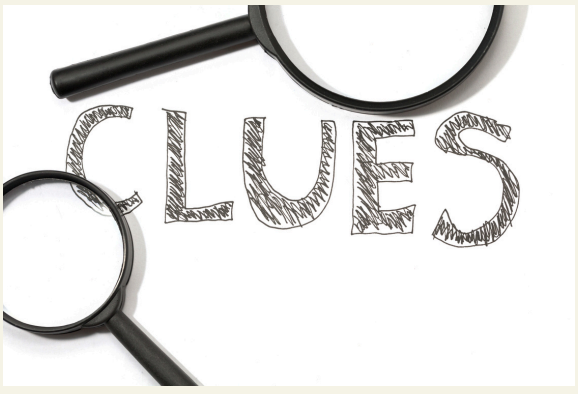
Text:
“The abandoned carnival ground was eerily silent. Rusting rides creaked in the wind, and tattered banners flapped against the poles. The smell of old popcorn and burnt sugar lingered in the air. Shadows stretched across the cracked pavement, creating shapes that seemed to move. A sudden gust of wind whispered through the hollow Ferris wheel, sending a shiver down Alex’s spine. Every corner of the deserted site felt alive with hidden secrets, waiting to be discovered.”

Instructions:
Identify 5 challenging words (e.g., eerily, tattered, hollow, lingered, whispered).

Use context clues to guess their meanings.

Check a dictionary and write the correct definitions.

Write a paragraph of your own using at least 3 of these words correctly.



Homophones and Confusing Words

Text/Exercise:

Fill in the blanks with the correct word: their/there/they’re, your/you’re, affect/effect, accept/except, dessert/desert

_____ going to the new cinema tonight.

Can you bring _____ homework?

The weather may _____ our plans.

Everyone was invited _____ Tom.

We had ice cream for _____ after dinner.
Instructions:

Complete the sentences correctly.

Write 5 of your own sentences using these homophones.

Explain the difference in meaning between each pair.

Word Families

Base Words: act, move, help, create, speak

Instructions:
List as many words as possible for each base (e.g., actor, action, active, activity).

Write a paragraph (100–150 words) using at least 8 words from your word families.

Highlight which base each word comes from.

Challenge: include at least one complex sentence using words from different families.

Story Writing

Prompt Text:
“A sudden blackout plunged the town into darkness. Streetlights flickered out, and electronic devices failed simultaneously. Mia stepped cautiously into the alley, her heart pounding. Somewhere in the shadows, she thought she heard footsteps — deliberate, slow, and approaching. The faint glimmer of a distant lantern revealed movement, but she could not see who or what was coming.”
Instructions:
Continue the story for 500–600 words.

Include dialogue, description, suspense, and tension.

Use at least 5 adjectives, 5 adverbs, and 3 figurative expressions.

End with a dramatic or surprising twist.

Descriptive Writing

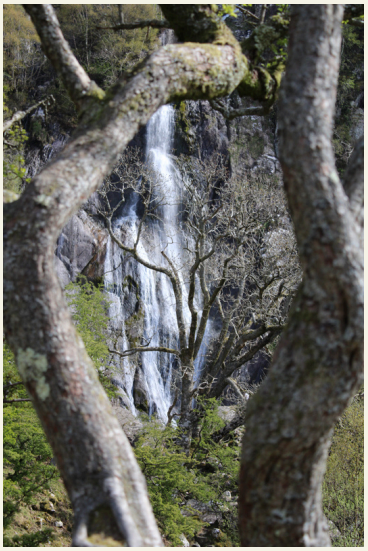
Prompt Text:
“You have discovered a hidden valley surrounded by towering cliffs. Strange, luminous plants glow in the twilight, and a river of silver water winds through the valley floor. Enormous birds with iridescent feathers swoop overhead, while the sound of distant waterfalls creates an ethereal melody. You sense that the valley is alive, ancient, and full of secrets waiting to be uncovered.”

Instructions:
Write a 250–300 word descriptive paragraph about the valley.

Include all five senses (sight, sound, smell, touch, taste).

Use at least 3 similes, 3 metaphors, and 2 personifications.

Challenge: create a character exploring the valley and describe their reactions.



Poetry Analysis

Text: Excerpt from The Raven (simplified)
“Once upon a midnight dreary, while I pondered, weak and weary,
Over many a quaint and curious volume of forgotten lore,
While I nodded, nearly napping, suddenly there came a tapping,
As if someone gently rapping, rapping at my chamber door.”

Questions:
Identify rhyme and rhythm patterns.

Find examples of alliteration and repetition.

How does the poet create suspense and a sense of mystery?

Explain the imagery in the first stanza.

Summarise the scene in your own words.

Predict what might happen next in the poem.

Poetry Writing

Prompt Text:
Write a poem of 12–16 lines about one of these themes:
Adventure

Friendship

Mystery

Nature

Instructions:
Use rhyme, rhythm, and figurative language.

Include at least 2 similes, 2 metaphors, and 1 personification.

Challenge: use at least 5 descriptive adjectives to create vivid imagery.

Read aloud to check the rhythm and flow.

Letter Writing – Community Issue

Prompt Text:
Imagine you are writing to the local council about a pressing problem in your community (e.g. dangerous playground equipment, litter, excessive noise, or unsafe crossings).
Instructions:
Write a formal letter including:

Address and date

Salutation

Introduction explaining the issue

Paragraph describing why it is a problem

Suggested solution

Closing and signature

Use formal language, paragraphing, and persuasive techniques.

Aim for 250–300 words.

Challenge: include at least two rhetorical questions and one emotive word.

02

Maths Activities

Linear Equations

Text/Problem:

Solve the following equations:
$3x + 7 = 19$

$5y - 12 = 18$

$4a + 9 = 3a + 20$

Tasks:

Solve each equation step by step.

Check your answers by substituting back into the original equation.

Create 2 of your own linear equations for practice.

Write a short explanation of the method you used.

Simultaneous Equations

Text/Problem:
Solve the system:
$x + y = 12$
$2x - y = 3$

Tasks:
Solve using substitution.

Solve using elimination.

Verify your solution.

Create one similar system of equations to challenge a friend.

Algebraic Expressions

Text/Problem:
Simplify and expand:
$3(x + 4) – 2x$

$(2x + 5)(x – 3)$

$4a – 3(a – 2) + 5$

Tasks:
Simplify each expression fully.

Factorize one of your simplified expressions.

Create two expressions of your own to expand.

Explain in words how to expand and simplify expressions.

Fractions, Decimals, and Percentages

Text/Problem:
Convert 7/8 to a decimal and a percentage.

0.375 as a fraction in its simplest form.

Increase £120 by 15% and decrease £85 by 20%.

Tasks:
Solve the conversions and percentage calculations.

Create a real-life word problem using percentages.

Solve your own percentage word problem.

Write a short paragraph explaining the method to convert between fractions, decimals, and percentages.

Ratio and Proportion

Text/Problem:
A recipe uses sugar and flour in the ratio 3:5. If you use 300g of sugar:
How much flour is needed?

If you want to make half the recipe, how much sugar and flour do you need?

Tasks:
Solve both problems step by step.

Draw a bar model to represent the ratio visually.

Create your own ratio question involving money or ingredients.

Explain why understanding ratio is useful in real life

Geometry – Angles

Text/Problem:
In a triangle, two angles are 45° and 65°. Find the third angle.

A quadrilateral has angles 90°, 85°, and 110°. Find the fourth angle.

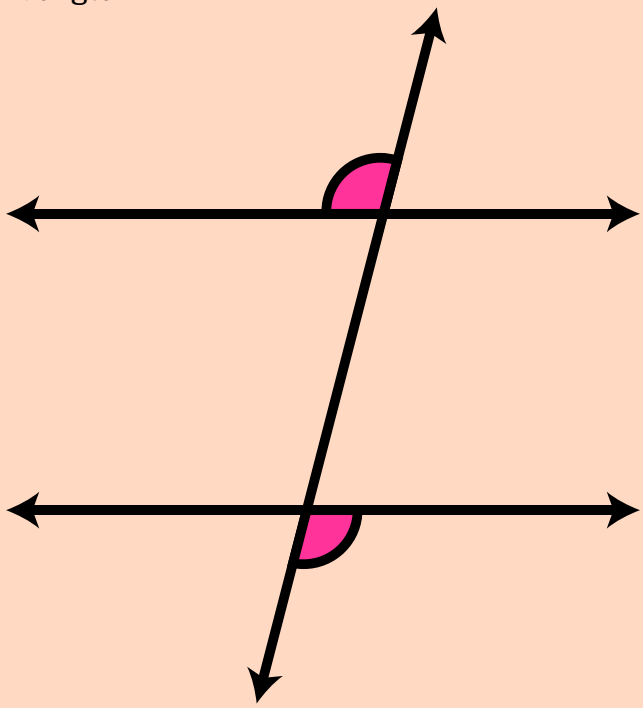
A straight line is 180°. If one angle is 70°, find its adjacent angle.

Tasks:
Solve each angle problem.

Draw the triangle and quadrilateral to scale.

Research one property of angles in polygons.

Explain in words how to find missing angles.



Probability

ext/Problem:
A bag contains 5 red, 3 blue, and 2 green balls.
Find the probability of picking a red ball.

Find the probability of picking a blue or green ball.

What is the probability of not picking a red ball?

Tasks:
Solve the probability questions.

Represent the probabilities as fractions, decimals, and percentages.

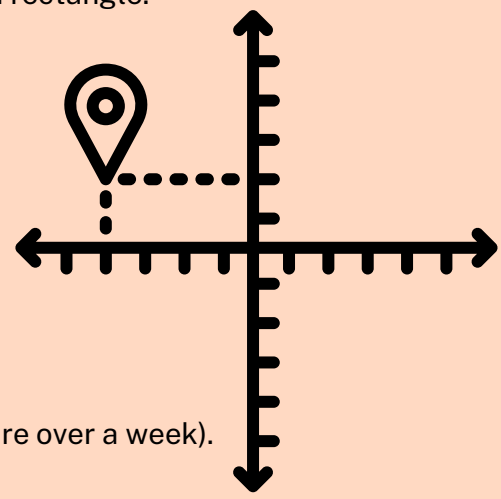
Create your own probability question with coins or dice.

Explain in words how to calculate probabilities.

Coordinates and Graphs

Text/Problem:
Plot the points A(2,3), B(5,3), C(5,7), D(2,7) and join them to make a rectangle.

Plot y = 2x + 1 for x = -2, -1, 0, 1, 2.



Tasks:
Draw the rectangle and label vertices.

Plot the line graph and connect points.

Identify the gradient and y-intercept from your graph.

Create a simple line graph from a real-life dataset (e.g., temperature over a week).

Pythagoras' Theorem

Text/Problem:
A right-angled triangle has sides of 6cm and 8cm. Find the hypotenuse.
Another triangle has a hypotenuse of 10cm and one side 6cm. Find the other side.

Tasks:
Solve both problems step by step.

Draw both triangles to scale.

Research one real-life application of Pythagoras' theorem.

Write a paragraph explaining how to use the theorem in everyday situations.

Transformations

Text/Problem:
Translate the triangle with vertices (1,1), (2,3), (3,1) by (3, -1).

Reflect the same triangle in the y-axis.

Rotate the triangle 90° clockwise about the origin.

Tasks:
Perform all transformations on a grid.

Describe the effect of each transformation in words.

Create your own shape and apply at least two transformations.

Explain the difference between translation, reflection, and rotation.

Problem-Solving Challenge

Text/Problem:
A school is raising money. Each student donates £2. There are 350 students. They spend £200 on materials and £50 on advertising. How much money do they raise in profit?

Tasks:
Solve the profit problem step by step.

Create a diagram or table to represent the spending and earnings.

Write a similar problem involving profit, cost, and revenue.

Explain in words how you approached the solution.

Statistics – Mean, Median, Mode, Range

Text/Problem:
“Data: 12, 15, 18, 20, 15, 17, 15.”

Questions:
Find the mean.

Find the median.

Find mode.

Find range.

Create your own data set and calculate these.

Time – Durations, Conversions

Text/Problem:
“A train departs at 08:45 and arrives at 12:20. Duration?”

Questions:
Calculate duration.

Convert 3 hours 35 minutes to minutes.

Film starts 18:30 and lasts 1hr 50min. End time?

Create your own time duration problem.

Explain method.

Measures – Length, Mass, Capacity, Conversions

Text/Problem:
“A tank 3.2m × 1.5m × 0.8m. Convert to cm^3 and litres ($1L=1000cm^3$).”

Questions:
Calculate volume in m^3.

Convert to cm^3.

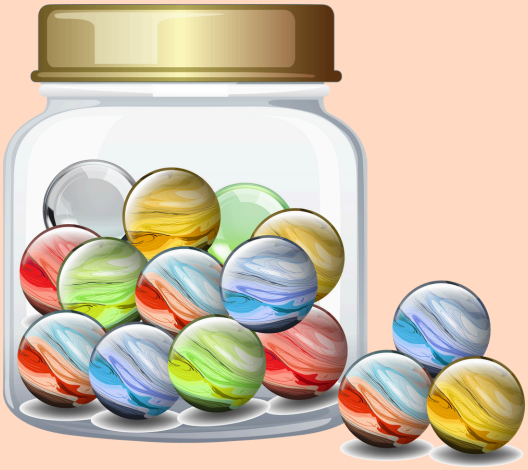
Convert to litres.

1 litre water = 1kg. Weight of 10L?

Create your own measure conversion problem.

Probability – Simple Events

Text/Problem:
“A bag contains 3 red, 4 blue, and 5 green marbles. Find the probability of picking red, blue, or green.”



Questions:
Write probabilities as fractions.

Convert probabilities to percentages.

Draw a probability tree diagram for 2 draws.

A dice is rolled once. Probability of even number?

Create your own probability problem.

Statistics – Mean, Mode, Median, Range

Text/Problem:
“Data set: 5, 8, 12, 8, 7, 10, 8.”

Questions:
Find the mean.

Find the mode.

Find the median.

Find the range.

Create a data set and calculate mean, mode, median, and range.

Money Problems

Text/Problem:
“A shop sells 12 pens at £2.50 each and 8 notebooks at £3.75 each. Calculate total cost and revenue if sold at £5 each.”

Questions:
Calculate cost of pens.

Calculate cost of notebooks.

Calculate revenue.

Calculate profit.

Create your own word problem involving money.

Time – Duration and Conversions

Text/Problem:
“A film starts at 14:20 and lasts 2 hours 35 minutes. What time does it end?”

Questions:
Calculate end time.

Convert 2 hours 35 minutes to minutes.

A train leaves at 09:45 and arrives at 12:10. Duration?

Create a time duration problem.

Explain your method.

Measurement – Length, Mass, Capacity

Text/Problem:
“A tank is 2.5m long, 1.2m wide, and 0.8m high. 1 litre of water = 1kg.”

Questions:
Calculate volume of the tank.

Convert volume to litres.

Calculate weight if filled with water.

Convert 2.5m to cm and mm.

Create your own measurement problem.

Mixed Operations Challenge

Text/Problem:
“A shop buys 15 boxes of pencils at £3.25 each and 10 boxes of crayons at £4.50 each. They sell each box for £6. Calculate profit.”

Questions:
Calculate total cost of pencils.

Calculate total cost of crayons.

Calculate total revenue.

Calculate profit.

Create your own mixed operation word problem.

03
Science

Cells and Microscopy

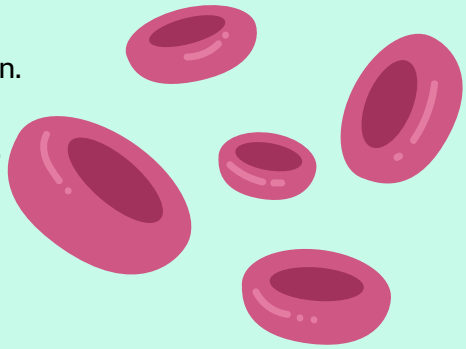
Text:
“All living organisms are made of cells, which are the fundamental units of life. Some organisms, like bacteria, are single-celled, while others, like humans, are multicellular. Plant and animal cells have different structures to suit their functions. Plant cells contain a cell wall, chloroplasts for photosynthesis, and a large vacuole for storing water and nutrients. Animal cells, in contrast, have smaller vacuoles and no chloroplasts.
The invention of the microscope transformed biology. Early scientists struggled to see cells clearly with simple lenses, but modern microscopes, including electron microscopes, allow researchers to view the intricate details of organelles and even molecules. Observing cells helps scientists understand diseases, develop medicines, and explore how life functions at a microscopic level.”

Tasks:
Draw a detailed plant and animal cell, labelling all parts.

Compare and contrast plant and animal cells in a table.

Research one organelle and write 4–5 sentences explaining its function.

Describe two ways modern microscopes differ from early microscopes.



The Digestive System

Text:
“The human digestive system breaks down food into smaller molecules that the body can use for energy, growth, and repair. The process begins in the mouth, where food is chewed and mixed with saliva containing enzymes that start breaking down starch. The food passes through the oesophagus into the stomach, where gastric acid and enzymes digest proteins. The semi-liquid food, called chyme, moves into the small intestine, where nutrients are absorbed into the bloodstream through tiny finger-like projections called villi. The remaining water and waste move into the large intestine, where water is absorbed, and faeces are stored in the rectum before excretion.”

Tasks:
Create a flowchart showing the journey of food through the digestive system.

Explain the role of enzymes in digestion.

Calculate the time it takes for food to move through the digestive system (use research to find average times for each stage).

Write a paragraph explaining how a diet lacking fibre might affect digestion.

Circulatory System

Text:
“The circulatory system transports blood, nutrients, gases, and wastes around the body. The heart acts as a pump, ensuring blood flows to all organs. Blood is carried by arteries, veins, and capillaries. Red blood cells transport oxygen from the lungs to the tissues, while white blood cells defend against infection. Plasma carries nutrients, hormones, and waste products. Platelets allow blood to clot, preventing excessive bleeding. The heart’s four chambers – two atria and two ventricles – coordinate to push blood around the body efficiently. Lifestyle factors, such as diet, exercise, and smoking, can affect heart health.”

Tasks:
Draw a labelled diagram of the heart, showing blood flow.

Compare arteries, veins, and capillaries in a table.

Research one cardiovascular disease and write 6–8 sentences explaining its causes and prevention.

Explain how exercise affects heart rate and circulation.

Reproduction and Human Development

Text:
“Reproduction in humans involves the male and female reproductive systems. Males produce sperm in the testes, which travel through ducts and are mixed with fluids to form semen. Females produce eggs in the ovaries, released during ovulation. Fertilisation occurs when a sperm fuses with an egg, forming a zygote. This zygote divides repeatedly, developing into an embryo in the uterus. During pregnancy, the fetus grows and develops organs, eventually being born after about nine months. Puberty triggers physical and hormonal changes that prepare the body for reproduction.”
Tasks:
Label diagrams of male and female reproductive systems.

Write a timeline showing the stages from fertilisation to birth.

Research one hormonal change during puberty and explain its effect.

Discuss in a paragraph how lifestyle choices can affect reproductive health.

Photosynthesis and Plant Nutrition

Text:
“Photosynthesis is the process by which plants make food using sunlight, carbon dioxide, and water. Chlorophyll in chloroplasts captures light energy, converting carbon dioxide and water into glucose and oxygen. Photosynthesis is vital for life on Earth, providing energy for plants and oxygen for animals. Plants also absorb minerals from the soil, such as nitrogen, phosphorus, and potassium, which are essential for growth. Factors affecting photosynthesis include light intensity, carbon dioxide concentration, temperature, and water availability.”

Tasks:
Draw a labelled diagram of photosynthesis.

Write the word and chemical equations for photosynthesis.

Design an experiment to test how light intensity affects photosynthesis.

Explain why photosynthesis is crucial for ecosystems.

States of Matter and Particle Theory

Text:
“All matter is made of particles that behave differently in solids, liquids, and gases. In solids, particles are closely packed and vibrate in place. In liquids, particles are close but move past each other. In gases, particles are far apart and move freely. Heating or cooling can change matter from one state to another. Evaporation, condensation, melting, freezing, and sublimation are examples of these changes. Understanding particle movement helps explain phenomena like diffusion, pressure, and gas laws.”

Tasks:
Draw diagrams showing particle arrangements in solids, liquids, and gases.

Explain how heating and cooling affect particle movement.

Research and describe one real-world example of sublimation.

Solve a problem: If 50 g of ice melts at 0°C, how much energy is absorbed? (Hint: research latent heat of fusion).

Mixtures and Separation Techniques

Text:
“Mixtures are combinations of two or more substances that are not chemically bonded. They can be separated using physical methods. Filtration separates insoluble solids from liquids. Evaporation removes a liquid from a solution, leaving the solute behind. Distillation separates liquids with different boiling points. Chromatography separates substances based on solubility and movement through a medium. Understanding mixtures is important in industries like food production, pharmaceuticals, and environmental science.”

Tasks:
Describe the difference between a mixture and a compound.

Draw a labelled diagram of a distillation apparatus.

Design an experiment to separate a mixture at home.

Write a short paragraph explaining the importance of separation techniques in daily life.

Elements, Compounds, and Reactions

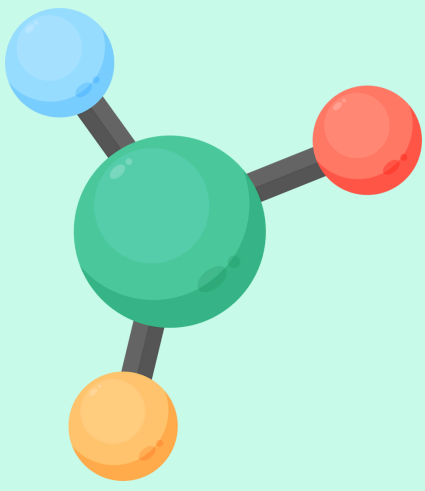
Text:
“Elements are pure substances consisting of only one type of atom. Compounds are substances formed when elements chemically combine. Chemical reactions involve the rearrangement of atoms to create new substances. Evidence of reactions includes colour change, gas production, temperature change, or precipitate formation. The periodic table organises elements based on properties, allowing predictions about chemical behaviour. Scientists use this knowledge to create medicines, materials, and fuels.”

Tasks:
List 5 elements and 5 compounds with their chemical formulas.

Identify signs of chemical reactions in everyday life.

Write a balanced chemical equation for a simple reaction (e.g., hydrogen + oxygen → water).

Explain why chemical reactions are different from physical changes.



Acids, Bases, and pH

Text:
“Acids and bases are chemical substances with opposite properties. Acids taste sour and have pH values below 7, while bases (alkalis) taste bitter and have pH values above 7. Neutral substances have a pH of 7. Indicators, like litmus paper or universal indicator, show whether a substance is acidic, neutral, or basic. Everyday examples include lemon juice, vinegar (acidic), and baking soda, soap (basic). Understanding pH is important in medicine, agriculture, and environmental protection.”

Tasks:
Test household substances for pH and record results in a table.

Explain why acid rain is harmful to the environment.

Design a simple experiment to neutralise an acid using a base.

Write a paragraph explaining how pH affects soil fertility.

Energy Resources and Environmental Impact

Text:
“Energy is essential for daily life and can be obtained from renewable and non-renewable sources. Non-renewable sources, like coal, oil, and gas, are limited and produce greenhouse gases. Renewable sources, like solar, wind, hydroelectric, and geothermal, are sustainable and reduce pollution. Using energy efficiently and reducing waste is important to conserve resources and combat climate change. Scientists and engineers are developing technologies to harness renewable energy more effectively.”

Tasks:
Compare renewable and non-renewable energy in a table.

Calculate the carbon footprint of using a kettle daily for a month.

Research one renewable energy technology and write a 6–8 sentence report.

Design a plan to reduce energy consumption at home or school.

Forces and Motion

Text:
“A force is a push or pull that can change an object’s motion, shape, or speed. Forces include gravity, friction, air resistance, tension, and applied forces. Newton’s laws of motion describe how objects respond to forces: the first law states that an object will remain at rest or move at a constant speed unless acted on by a force; the second law relates force, mass, and acceleration (F = ma); the third law states that every action has an equal and opposite reaction. Forces are all around us, from pushing a door to the friction slowing a sliding object.”

Tasks:
Draw a diagram showing forces acting on a moving car.

Solve a calculation: A 10 kg object accelerates at 3 m/s^2. Find the force.

Identify three real-life examples of Newton’s third law.

Design a simple investigation to measure friction using household materials.

Energy and Work

Text:
“Energy is the capacity to do work. It exists in many forms: kinetic (moving objects), potential (stored energy), thermal, chemical, electrical, and light. Energy cannot be created or destroyed, only transferred or transformed. Work is done when a force moves an object over a distance. Machines like levers, pulleys, and gears help transfer energy efficiently. Understanding energy transfer is crucial in engineering, sports, and everyday life, from designing cars to reducing household energy consumption.”

Tasks:
Calculate work: A 15 N force moves a box 4 m.

Draw an energy transfer diagram for a bouncing ball.

Research one renewable energy system and explain how it converts energy.

Write a paragraph explaining how energy efficiency can save money and reduce pollution.

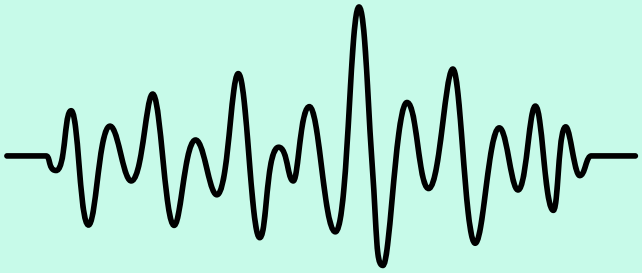
Waves, Sound, and Light

Text:
“Waves transfer energy without transporting matter. Sound waves are longitudinal, produced by vibrating objects, and travel faster in solids than in air. Pitch depends on frequency, and loudness depends on amplitude. Light waves are transverse and travel in straight lines, reflecting, refracting, and diffracting as they move through different materials. Shadows occur when light is blocked, and lenses can focus or spread light rays. Understanding waves helps explain communication, optics, and music technology.”
Tasks:
Compare longitudinal and transverse waves in a table.

Draw a diagram showing reflection and refraction of light through a prism.

Investigate how sound travels through air, water, or solids and record observations.

Calculate frequency given wavelength and wave speed: A wave travels 340 m/s with a wavelength of 2 m.



Electricity and Circuits

Text:
“Electricity is the flow of electric charge through a conductor. Circuits include a power source, wires, and components like bulbs, resistors, or motors. In series circuits, all components share the same current, whereas in parallel circuits, each branch receives full voltage. Conductors allow electricity to flow, insulators prevent it, and safety is essential to avoid shocks. Electrical energy can be converted into light, heat, and motion, powering countless devices in everyday life.”

Tasks:
Draw a series and a parallel circuit with labels.

Explain why parallel circuits are used in homes.

Measure voltage and current in a simple battery-powered circuit (if safe to do so).

Write a paragraph describing energy transformations in an electric fan.

Magnetism

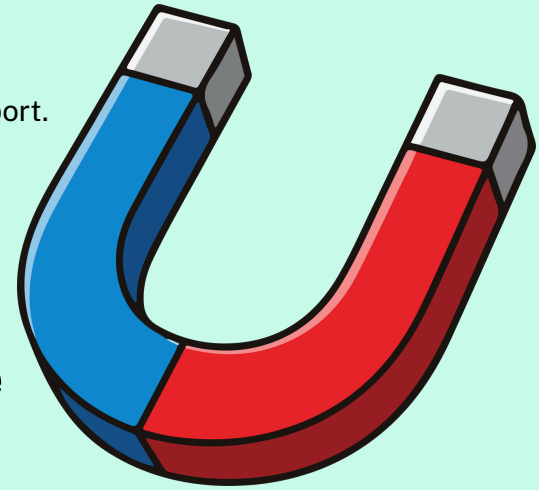
Text:
“Magnets attract or repel certain metals, creating a magnetic field. Like poles repel, opposite poles attract. Earth behaves like a giant magnet, which is why compasses point north. Magnetic fields are invisible but can be visualised using iron filings or sensors. Magnets are used in motors, generators, magnetic levitation trains, and electronic devices. The study of magnetism is also key in medical imaging, such as MRI scanners.”

Tasks:
Draw the magnetic field around a bar magnet using field lines.

Investigate the strength of different magnets using paper clips and record results.

Explain how magnetic forces are used in electric motors.

Research one modern application of magnetism and write a short report.



Heat Transfer and Temperature

Text:
“Heat is a form of energy that transfers from hotter objects to cooler ones. There are three main methods of heat transfer: conduction, convection, and radiation. Conductors, such as metals, transfer heat efficiently, while insulators, like wood or plastic, do not. Convection occurs in fluids when hot particles rise and cold particles sink, creating currents. Radiation transfers heat through electromagnetic waves and can occur in a vacuum. Understanding heat transfer is important in designing buildings, cooking, and climate science.”

Tasks:
Draw a diagram showing conduction, convection, and radiation.

Design a simple experiment to compare insulating materials.

Explain why metal feels colder than wood at the same temperature.

Write a paragraph explaining how heat transfer affects weather patterns.

04
Foundation Subjects

Climate Change and Its Effects

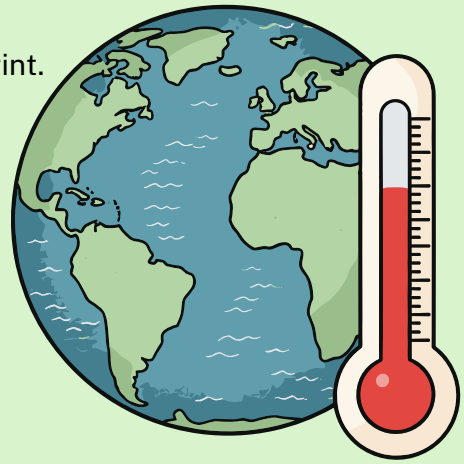
Text:
“Climate change is the long-term alteration of Earth’s weather patterns caused by natural processes and human activity. Greenhouse gases such as carbon dioxide trap heat in the atmosphere, leading to rising temperatures. Consequences include melting glaciers, rising sea levels, extreme weather events, and impacts on wildlife and human communities.”

Tasks:
Draw a diagram showing the greenhouse effect.

Research one recent extreme weather event and describe its impact.

Write a paragraph explaining how human activities contribute to climate change.

Suggest three actions individuals can take to reduce their carbon footprint.



Population and Urbanisation

Text:
“Urban areas are growing rapidly due to migration from rural areas and population growth. Cities face challenges such as housing shortages, traffic congestion, and pollution. Urbanisation can provide better access to jobs, education, and healthcare, but it also puts pressure on infrastructure and resources.”

Tasks:
Create a chart showing the advantages and disadvantages of urbanisation.

Research one major city and describe its population issues.

Draw a map showing urban vs rural areas.

Write a paragraph suggesting solutions to urban challenges.

River Processes

Text:
“Rivers shape the landscape through erosion, transportation, and deposition. Erosion wears away the riverbanks and bed. Transportation moves sediment downstream. Deposition occurs when the river loses energy, forming features like deltas, floodplains, and levees.”

Tasks:
Draw a labeled diagram showing erosion, transportation, and deposition.

Describe how a meander forms.

Research one flood management strategy.

Write a paragraph explaining why river management is important.

The Industrial Revolution

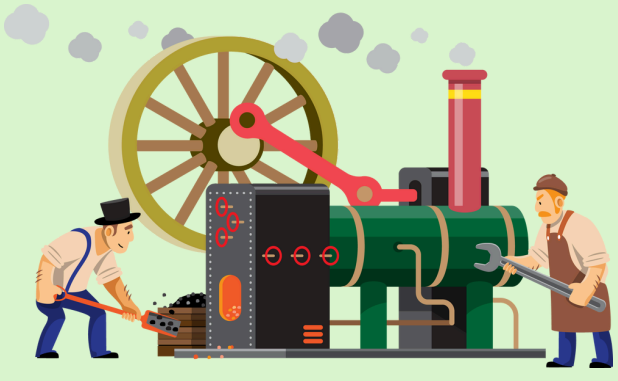
Text:
“The Industrial Revolution began in Britain in the 18th century. It transformed economies from farming to manufacturing. Factories, steam engines, and urbanisation changed the way people lived and worked. Child labour and poor working conditions were common, prompting social reform movements.”

Tasks:
Create a timeline of key Industrial Revolution inventions.

Write a diary entry from the perspective of a factory worker.

Research one social reformer and summarise their impact.

Draw a diagram showing the difference between rural and industrial towns.



World War I

“World War I (1914–1918) involved countries across Europe and beyond. Trench warfare, new weapons, and total war had devastating effects on soldiers and civilians. The Treaty of Versailles ended the war but created tensions leading to World War II.”

Tasks:
Draw a trench cross-section and label key features.

Write a short letter as a soldier on the front line.

Research one key battle and summarise it.

Create a mind map showing causes and effects of World War I.

Beliefs and Practices in World Religions

Text:
“Different religions have unique beliefs and practices. Christianity emphasises love and forgiveness, Islam teaches submission to Allah and prayer, Hinduism focuses on dharma and karma, and Buddhism teaches the Four Noble Truths and the Eightfold Path.”
Tasks:
Create a table showing key beliefs and practices of four religions.

Research one religious festival and explain its significance.

Draw symbols associated with each religion.

Write a paragraph explaining how understanding religion promotes tolerance.

Ethical Issues – Animal Rights

Text:
“Different religions and ethical systems have views on how humans should treat animals. Some promote vegetarianism, cruelty-free living, or conservation. Ethical debates focus on testing, hunting, and farming practices.”

Tasks:
List three arguments for and against animal testing.

Research one religious perspective on animal welfare.

Write a balanced paragraph presenting both sides of an ethical issue.

Draw a poster promoting responsible treatment of animals.

Exploring Musical Genres

Text:
“Music can be divided into genres such as classical, jazz, rock, and world music. Each genre has distinctive instruments, rhythms, and structures. Understanding music from different cultures promotes appreciation and creativity.”

Tasks:
Research one musical genre and list its key features.

Listen to a piece of music from that genre and describe its instruments and mood.

Create a short rhythm or melody inspired by the genre.

Write a paragraph explaining why music differs across cultures.

Composing Music

Text:
“Composing music involves creating melody, harmony, rhythm, and dynamics. Composers experiment with tempo, key, and instrumentation to evoke emotions and tell stories.”

Tasks:
Write a 4–8 bar melody using notation or a piano app.

Add rhythmic patterns or percussion to accompany the melody.

Record or perform your composition.

Write a paragraph explaining your creative choices.

Healthy Lifestyles

Text:
“A healthy lifestyle includes a balanced diet, regular exercise, adequate sleep, and mental wellbeing. Physical activity strengthens the heart, muscles, and bones. Nutrition provides energy, while sleep and stress management support mental health.”

Tasks:
Create a weekly plan incorporating exercise, meals, and sleep.

Research one mental health strategy for teenagers.

Write a paragraph explaining why balance is important.

Reflect: set a personal health goal for the week.

Citizenship and Rights

Text:
“Citizenship involves understanding rights and responsibilities. Young people have legal rights, such as education and protection, and responsibilities, such as respecting others and participating in the community.”

Tasks:
Make a poster showing five rights and five responsibilities.

Research one way teenagers can participate in the community.

Write a paragraph explaining the importance of respecting others’ rights.

Create a scenario showing responsible citizenship.

Digital Citizenship

Text:
“Being safe online involves protecting personal information, communicating respectfully, and understanding digital footprints. Social media, messaging, and online gaming require responsibility and critical thinking.”

Tasks:
Make a guide for safe online behaviour.

Research one example of positive online use.

Write a paragraph on the dangers of oversharing personal information.

Design a digital safety poster for your peers.

Portrait Drawing

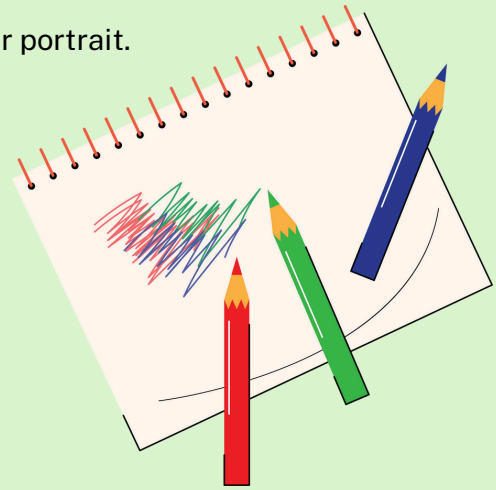
Text:
“Portraits capture a person’s appearance and character. Artists use proportion, shading, and perspective to create realism. Observing carefully helps capture likeness and expression.”

Tasks:
Draw a portrait of a family member, friend, or famous person.

Add shading to show light and shadow.

Annotate your drawing to explain your techniques.

Write a paragraph about the challenges and successes of your portrait.



Exploring Art Styles

Text:
“Different art movements, such as Impressionism, Cubism, and Surrealism, show how artists interpret the world. Techniques, colours, and subject matter vary widely.”

Tasks:
Research one art movement and list key features.

Create a piece inspired by that style.

Compare your artwork to an original artist’s work.

Write a paragraph explaining your creative decisions.

Mechanical Systems

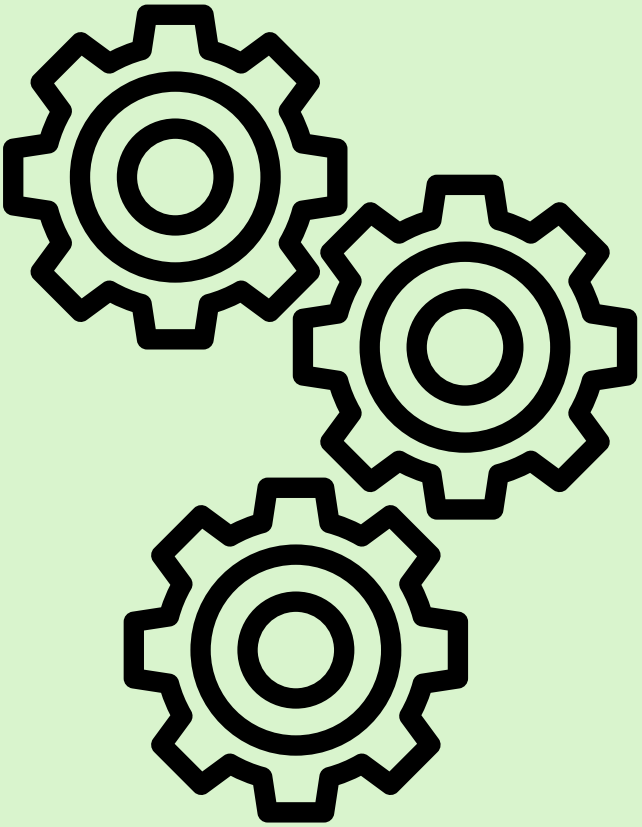
Text:
“Mechanical systems, including levers, pulleys, gears, and cams, transfer force and motion. Engineers use these principles to design machines efficiently and safely.”
Tasks:

Draw three mechanical systems and label parts.

Explain how each system transfers force.

Research a real-world machine and describe its mechanism.

Design a simple mechanism for a household task.



Fitness Planning

Text:
“Fitness involves strength, endurance, flexibility, and coordination. Planning exercises ensures all aspects of fitness are developed safely.”

Tasks:
Create a one-week fitness plan including cardio, strength, and flexibility exercises.

Record your performance in each session.

Research one type of exercise that improves flexibility.

Write a paragraph reflecting on your plan’s effectiveness.

Team Sports Tactics

Text:
“Team sports require strategy, communication, and understanding of positions. Tactics can maximise performance and teamwork.”

Tasks:
Choose a team sport and draw a diagram of player positions.

Explain three tactics that can improve team performance.

Research a professional team’s strategy.

Write a paragraph reflecting on how tactics affect outcomes.

Dance and Movement

Text:
“Dance combines rhythm, expression, and coordination. Choreography tells a story or conveys emotion through movement. Warm-up and cool-down prevent injury.”

Tasks:
Create a short dance sequence (2–3 minutes).

Record or perform the sequence.

Annotate each move explaining its purpose.

Write a paragraph on how movement communicates emotion.

Outdoor Adventure and Orienteering

Text:
“Orienteering involves navigation using a map and compass. Outdoor activities develop fitness, problem-solving, and teamwork skills. Safety and preparation are essential.”

Tasks:
Draw a simple map of your local area or garden.

Plan a short orienteering route and mark checkpoints.

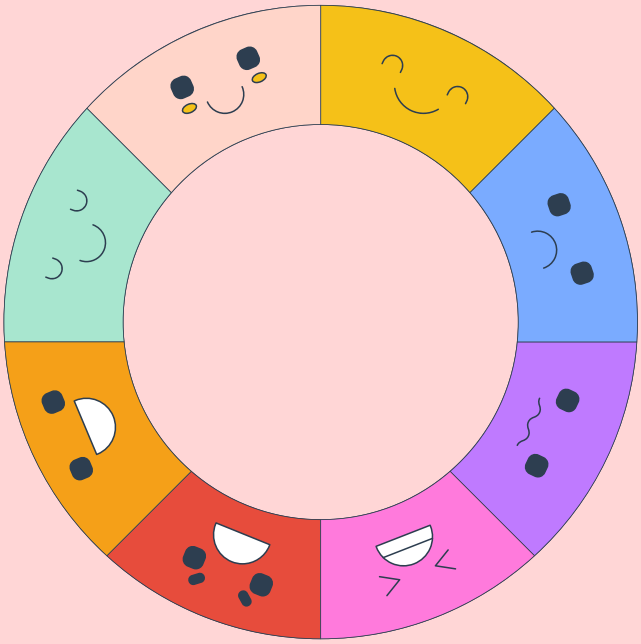
Explain how you would use a compass to navigate.

Reflect on the skills required for outdoor navigation.

05

Mental Health and Wellbeing Reflective Tasks

My Emotions Diary



Objective: Increase awareness of emotions.
Instructions:
Keep a diary for one week.

Each day, write down:

How you felt in the morning, afternoon, and evening.

What caused these feelings.

At the end of the week, reflect:

Which emotions appeared most often?

What situations made you feel happy or calm?

Reflection Prompt: How can you respond to emotions in a positive way next time?

Gratitude Journal

Objective: Foster positive thinking.
Instructions:
Write 3 things you are grateful for today.

Explain why they are important to you.

Share your favourite entry with someone if you want.

Reflection Prompt: How does focusing on gratitude affect your mood?

My Safe Space Drawing

Objective: Explore safe places and coping strategies.
Instructions:
Draw a place where you feel safe and calm.

Add details about:

What you see, hear, and smell there.

Who you are with or if you are alone.

Write a paragraph explaining why this space makes you feel safe.

Reflection Prompt: How can you use this safe space in real life when you feel stressed?

Mood Tracker Wheel

Objective: Identify patterns in emotions.
Instructions:
Draw a circle divided into 7 sections for each day of the week.

Use colours or symbols to represent your mood each day.

Reflect on:

Which colours appear most?

Are there any triggers for certain moods?

Reflection Prompt: How can understanding your mood patterns help you manage them?

Positive Affirmations

Objective: Build self-esteem.
Instructions:
Write 5 positive statements about yourself, e.g., “I am brave,” “I am creative.”

Repeat them aloud daily.

Create a poster to display your affirmations in your room.

Reflection Prompt: How do these statements make you feel about yourself?

My Support Network Map

Objective: Recognise support systems.
Instructions:
Draw a circle with your name in the middle.

Around it, write the names of people you trust or who support you.

Include teachers, friends, family, or others.

Colour code: e.g., green = talk to often, yellow = sometimes, red = rarely.

Reflection Prompt: Who can you turn to when you feel upset or worried?

Stress Busters List

Objective: Identify coping strategies.
Instructions:
List 10 activities that help you feel calm when stressed (e.g., drawing, listening to music, walking).

Try at least 3 this week.

Write a short reflection after each activity about how it made you feel.

Reflection Prompt: Which strategies worked best for you and why?

Mindfulness Colouring

Objective: Practice mindfulness and focus.
Instructions:
Use a mindfulness colouring sheet or draw a mandala.

Colour slowly, focusing on the shapes and patterns.

Take deep breaths and notice your thoughts, but do not judge them.

Reflection Prompt: How did concentrating on colouring affect your mind and body?

My Achievements Journal

Objective: Recognise personal strengths.
Instructions:
Write down 3 achievements from the past week.

They can be big or small (e.g., completing homework, helping a friend).

Reflect on the skills or qualities you used to achieve them.

Reflection Prompt: How can you build on these strengths in the future?

Worry Box Exercise

Objective: Externalise worries.
Instructions:
Write down worries on small pieces of paper.

Place them in a box or envelope.

Once a day, pick one, read it, and write a positive action you could take or a thought to calm it.

Kindness Challenge

Objective: Promote empathy and social wellbeing.
Instructions:
Plan 3 acts of kindness this week (e.g., compliment a friend, help someone at home).

Record what you did and how it made you feel.

Reflect on how it made others feel.

Reflection Prompt: How did doing kind acts affect your mood and the mood of others?

Mood Playlist

Objective: Use music for emotional regulation.
Instructions:
Create a playlist of songs that make you feel:

Happy

Calm

Motivated

Listen to one playlist daily and note how it changes your mood.

Reflection Prompt: Which type of music is most effective for you? Why?

Thought Clouds

Objective: Recognise negative thoughts and replace them with positive ones.
Instructions:
Draw thought clouds on a page.

Write down negative thoughts in one colour.

Rewrite each thought positively in a different colour.

Discuss or reflect on how this changes your feelings.

Reflection Prompt: How can reframing thoughts help you manage stress or anxiety?

Goal Setting and Reflection

Objective: Promote personal growth.
Instructions:
Set 3 short-term goals for the week.

Break each goal into small steps.

At the end of the week, reflect:

Did you achieve them?

What helped or hindered you?

Reflection Prompt: What can you do differently next week to succeed?

Journaling About Challenges

Objective: Build resilience and problem-solving skills.
Instructions:
Write about a challenge you faced recently.

Describe:

What happened

How you felt

How you reacted

Reflect on how you could handle it differently next time.

Reflection Prompt: What did you learn about yourself from this experience?

My Happiness Map

Objective: Recognise sources of happiness.
Instructions:
Draw a map with yourself in the centre.

Branch out to list people, activities, and places that make you happy.

Colour-code by type of happiness (social, physical, creative, etc.)

Reflection Prompt: How can you increase time spent on things that make you happy?