

ICONIC GAMES

YEAR 7

HOMework CLUB

PRINTABLE WORKBOOK

Explore • Question • Create

English • Mathematics & Statistics
Science • Social Studies • Technology

36 weeks • 4 terms

Aligned with the New Zealand Curriculum

Name: _____

School: _____

Year: _____

Started: _____

READ · REASON · MAKE · REFLECT

Welcome to your next level

A workbook made to grow with you

This Year 7 book is designed for learners aged about 10–13. It gives you 36 weeks of reading, writing, mathematics and applied thinking across four nine-week terms. You do not need a screen or internet access for the core tasks.

Some questions have one answer. Others ask you to weigh evidence, explain a choice and recognise uncertainty. An honest, well-supported answer matters more than a confident guess.

Your book. Your way.

Write here or in an exercise book. Use a pencil, ruler and eraser. A calculator is useful when a question involves large values; show the method as well as the result. Ask a trusted adult for support when you need it.

PDF and online are different

The printable workbook and online Homework Club are very different learning experiences. Both are designed to support learning aligned with the New Zealand Curriculum. Activities, examples, order and interaction may differ; neither version is a page-for-page copy of the other.

A clear alignment claim

This is an independent supplementary learning resource, not an official Ministry publication, approved textbook or complete curriculum. English and mathematics tasks support Phase 3 (Years 7–8) learning. Science, social studies and technology provide connected contexts; a teacher can adapt them to the school programme.

Safe, fictional cases

Case-study datasets and scenario accounts are fictional or simplified unless clearly identified as historical or scientific explanations. Use fictional people for wellbeing, money and relationships work. Do not share private experiences or identifying information. Laboratory, electrical, hazard and expedition tasks are paper models, not instructions for unsupervised real-world experiments.

THREE SHORT SESSIONS

How to use each week

Session 1 • Read and investigate

Read the passage and teaching note. Read the evidence on the writing page too. Answer the four reading questions, using details rather than guesses.

Session 2 • Write and communicate

Plan a short piece for a clear purpose and audience. Use two or more evidence items. Draft, check and improve the writing.

Session 3 • Maths and application

Study the worked example, then solve the seven maths tasks. Apply the week's ideas on paper and add a small step to your term project.

Suggested weekly time: 45–60 minutes. Split this across days; take longer when useful. A learner may complete fewer maths questions first and return for extension.

Writing space and expectations

Aim for 100–160 words for the main writing task, or an equivalent labelled design, speech script or structured response. Use an exercise book when you need more room. Quality of explanation and revision matters more than word count.

Check without copying

Use the separate answer guide after an honest attempt. Maths answers include methods. Reading and writing guidance accepts different defensible responses. Correct mistakes in another colour and explain what changed.

Support and stretch

Support: read aloud together, explain vocabulary, use a number line, or dictate an initial plan. Stretch: test an alternative, show a second method, or challenge a source's limitation. These options change the support, not the learner's worth.

FOUR TERMS • 36 WEEKS

Your learning map

Term 1 • REALITY CHECK

How do I know what to trust, what influences me, and what choices are actually mine?

Media • identity • digital life • money • relationships

Paper project: THE REALITY PROJECT. Create something that helps other rangatahi navigate information, digital life, money, wellbeing or safety.

Term 2 • POWER & PLACE

How do power, people and place shape the world we live in?

Aotearoa • history • civics • geography • economy

Paper project: OUR PLACE • OUR STORY. Investigate a place, event, movement or community story and turn evidence into an exhibition, documentary, podcast script, paper display.

Term 3 • SYSTEMS UNDER PRESSURE

What happens when a system is pushed — and how can we understand, repair or improve it?

Science • engineering • environment • survival

Paper project: RESILIENT SYSTEMS CHALLENGE. Choose a biological, environmental, physical, engineered or community-infrastructure system; map it, find weak points, model disruption, design an improvement, test, revise and present a more resilient solution.

Term 4 • MAKE YOUR MOVE

What can I create, improve or start — and how do I turn an idea into something real?

Creativity • enterprise • technology • future

Paper project: START SOMETHING. Turn an idea into a tested creation, service, campaign, digital experience, community solution or venture.

Mīharo alongside your learning

Optional companion reading: Mīharo Book Four: Ngā Haerenga. The series increases in reading challenge as learners grow. The core workbook tasks stand alone; you do not need the novel to complete them.

ENGLISH TOOLKIT

Read like an investigator

Before reading

Preview the title. Predict a question the text may answer. Notice who is speaking and whether the text is a report, explanation, advertisement or argument.

While reading

Underline a key claim. Circle unfamiliar words. Use context, meaningful word parts or a dictionary. Distinguish what is stated directly from what you infer.

After reading

Summarise the central idea. Compare it with the evidence. Ask whether another source supports it independently or merely repeats it.

Build an explanation

Claim → evidence → reasoning → limitation. Example: “The later caption makes a stronger claim than the original upload. It supplies no new source, so repetition does not establish the cause of the light.”

Write for an audience

Choose a purpose: explain, persuade, report, design or reflect. Plan connected paragraphs. Use precise subject words and link cause, contrast and consequence.

Revise with intent

Check meaning before spelling. Does every claim have support? Have you represented a counterpoint fairly? Then check sentences, punctuation, spelling, vocabulary and paragraph order.

MATHEMATICS & STATISTICS TOOLKIT

Maths methods worth keeping

Percentage change

$(\text{new} - \text{original}) \div \text{original} \times 100$. A fall gives a negative change; describe its size as a percentage decrease.

Fractions and ratios

Use common denominators to add or subtract. Multiply numerators and denominators to multiply. Divide by multiplying by a reciprocal. A ratio compares parts; it is not always a fraction of the whole.

Rates and scale

Unit rate = $\text{amount} \div \text{number of units}$. Distance = $\text{speed} \times \text{time}$. Time = $\text{distance} \div \text{speed}$. Keep units consistent; 30 minutes is 0.5 hours.

Geometry and measurement

Rectangle area = $\text{length} \times \text{width}$. Triangle area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height}$. Cuboid volume = $\text{length} \times \text{width} \times \text{height}$. Triangle angles total 180° .

Statistics and probability

Mean = $\text{total} \div \text{count}$. Median is the middle ordered value. Range = $\text{largest} - \text{smallest}$. Probability = $\text{favourable} \div \text{total equally likely outcomes}$; a model must state its assumptions.

Reasonableness

Estimate first. Show working, units and rounding. Substitute an equation solution back into the original. A graph's scale and a sample's selection affect interpretation.

A LITTLE PROGRESS EACH WEEK

Build a paper project

Your four projects can be a stapled booklet, annotated poster, exhibition labels, written pitch, paper prototype or illustrated system diagram. Simple pencil diagrams are enough; polished artwork is not required.

Week 1: Choose a focused question and audience.

Week 2: Define important terms and evidence criteria.

Week 3: Collect and label useful printed evidence.

Week 4: Make a first outline or model.

Week 5: Add numbers with context and units.

Week 6: Consider a counterpoint and limitation.

Week 7: Test or self-review your draft.

Week 8: Revise and explain the change.

Week 9: Present a qualified conclusion and reflect.

Respect people and place

Do not invent quotations or present fictional data as real research. Acknowledge source perspectives and gaps. Avoid treating Māori, migrants or other communities as a single viewpoint. Do not copy cultural symbols without appropriate context and permission. Use a fictional place when you cannot verify a local claim.

COMPLETION IS A RECORD, NOT A RANKING

Track your progress

Tick R (reading), W (writing), M (maths) and A (application) after an honest attempt. Add a small note about what you want to improve.

Term 1

Week 01 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 02 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 03 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 04 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 05 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 06 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 07 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 08 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 09 R ☐ W ☐ M ☐ A ☐ Next step: _____

Term 2

Week 01 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 02 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 03 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 04 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 05 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 06 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 07 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 08 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 09 R ☐ W ☐ M ☐ A ☐ Next step: _____

Term 3

Week 01 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 02 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 03 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 04 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 05 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 06 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 07 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 08 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 09 R ☐ W ☐ M ☐ A ☐ Next step: _____

Term 4

Week 01 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 02 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 03 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 04 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 05 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 06 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 07 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 08 R ☐ W ☐ M ☐ A ☐ Next step: _____

Week 09 R ☐ W ☐ M ☐ A ☐ Next step: _____

Learner signature: _____ Support person (optional): _____

TERM 1 • PLAN YOUR INQUIRY

REALITY CHECK

How do I know what to trust, what influences me, and what choices are actually mine?

Create something that helps other rangatahi navigate information, digital life, money, wellbeing or safety.

The nine-week route

1. A Post Goes Viral
2. The Algorithm
3. Influence Machine
4. Money Moves
5. Inside Out
6. Safe · Unsure · Not OK
7. The Newsroom
8. Creator Mode
9. Reality Check: The Final Mission

Project question:

Audience and purpose:

What I already know / what I need to find out:

TERM 1 • WEEK 1 • A POST GOES VIRAL

Read & investigate

The clip everyone is arguing about

By lunchtime, a short night-sky video had been shared thousands of times. Several reposts described the light as proof of a secret experiment, although the earliest upload did not make that claim. A local weather record matched the date and area shown in the clip. An astronomy educator said the footage could have more than one explanation and that the original file, direction of travel and exact recording location would be needed before reaching a firm conclusion.

Teaching note

Use the Reality Check sequence: CLAIM → SOURCE → EVIDENCE → CORROBORATE → CONCLUSION. A claim is what someone says happened. The source is where that claim came from. Evidence is information that supports, challenges or limits the claim. Corroborate means checking whether another independent source points the same way. Your conclusion should match the strongest evidence and say what is still uncertain. Repetition, confidence and popularity do not make a claim true.

1. Identify the main claim or problem. Give one detail that helps a reader understand it.

2. Use “Original upload” and “Expert explanation” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 1 · WEEK 1 · A POST GOES VIRAL

Maths & reasoning

Worked example

A count rises from 80 to 92. Find the percentage increase.

Increase $\div$ original $\times 100 = 12 \div 80 \times 100 = 15\%$. Answer: 15%

1. A count rises from 80 to 88. Find the percentage increase.

2. A count rises from 140 to 168. Find the percentage increase.

3. Split 60 counters in the ratio 9:6. How many belong in each group?

4. Solve $5x + 3 = 48$. Show how you check x .

5. A rectangle is 13 cm by 7 cm. Find its perimeter and area, with units.

6. A learner gives this answer: “15%” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A count rises from 120 to 138. Find the percentage increase.

7. A post rises from 2,000 views to 5,000 views. What is the percentage increase?

TERM 1 · WEEK 1 · A POST GOES VIRAL

Apply & reflect

Make thinking visible

Make a three-column evidence audit: CLAIM | WHAT SUPPORTS IT | WHAT LIMITS IT. Include three claims from this week. Mark one claim that needs a more cautious wording.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Choose a focused question and a fictional audience. Record why the question matters.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

How a feed learns from signals

A fictional video app records signals such as whether a clip is opened, how long it is watched, whether it is liked, saved, shared or skipped, and which accounts are followed. The app can use those signals to rank future clips. If someone watches several similar videos to the end, the system may show more of that topic. If the learner keeps watching only what is recommended, the feed can become less varied over time. Recommendation can be useful, but learners should know that their actions create data and that they can deliberately search for different viewpoints, topics and creators.

Teaching note

A recommendation algorithm takes INPUTS such as watch time, likes, skips or follows, applies RULES or a model, then produces an OUTPUT such as a ranked feed. The system can only work with the data it receives; it does not know your thoughts. Small choices can change the data trail and therefore change later recommendations.

1. Summarise the passage in two sentences. Keep facts separate from opinion or inference.

2. Use “Watch time” and ““The app knows me better than I know myself”” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Evidence desk · Read these alongside the passage.

One accidental tap: A single accidental like appears once. It may influence ranking, but one signal alone does not prove a stable preference.

Repeated skips: Several cooking clips are skipped within a few seconds. This provides repeated evidence that those clips are not holding attention.

“The app knows me better than I know myself”: This claim treats a prediction system as if it understands a person’s thoughts. The statement reaches beyond what the data shows.

Your writing brief

Explain an input → rule → output chain for a recommendation feed. Use one behaviour signal from the case and suggest one way to make a feed more varied.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 1 · WEEK 2 · THE ALGORITHM

Maths & reasoning

Worked example

Solve $4x + 4 = 24$. Show how you check x .

Subtract 4, then divide by 4; check $4 \times 5 + 4 = 24$. Answer: $x = 5$.

1. Solve $4x + 3 = 19$. Show how you check x .

2. Solve $7x + 5 = 26$. Show how you check x .

3. Data: 3, 5, 5, 7, 10. Find the mean, median and range.

4. Two angles in a triangle are 50° and 60° . Find the third and explain.

5. Fixed costs are \$108; price is \$10; unit cost is \$6. Find the minimum whole sales to break even.

6. A learner gives this answer: " $x = 10$." to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Solve $6x + 4 = 64$. Show how you check x .

7. A simple ranking rule gives +3 points for watching to the end, +2 for a like, and -2 for a quick skip. A science clip is watched to the end and liked. What score does it receive?

TERM 1 · WEEK 2 · THE ALGORITHM

Apply & reflect

Make thinking visible

Make a three-column evidence audit: CLAIM | WHAT SUPPORTS IT | WHAT LIMITS IT. Include three claims from this week. Mark one claim that needs a more cautious wording.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Define three key terms and decide what counts as convincing evidence.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

TERM 1 • WEEK 3 • INFLUENCE MACHINE

Read & investigate

The sale that feels urgent

A fictional company launches an advertisement for PulsePods. The ad repeats the phrase “40% OFF TODAY”, shows a creator wearing the product, and asks, “Why be the only one without them?” The creator post includes a paid-partnership label, but the main ad also says “everyone has them” without giving any evidence. The listed price falls from \$120 to \$72. Some parts of the campaign provide checkable information, while other parts rely on emotion, social pressure and exaggeration.

Teaching note

Use INFLUENCE VISION: PURPOSE → AUDIENCE → TECHNIQUE → EVIDENCE → CHOICE. First ask what the message wants the audience to think, feel or do. Then identify the technique — for example repetition, social pressure, emotive language or a discount claim. Check which parts are evidence and which parts are designed mainly to influence attention. Persuasion is not automatically dishonest; ethical persuasion gives people enough accurate information and space to make their own choice.

1. Explain a cause-and-effect relationship in the passage. Use a specific detail.

2. Use “Price panel” and ““Don’t be the only one left out”” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Write & communicate

Evidence desk · Read these alongside the passage.

Price panel: The ad says “was \$120, now \$72”. Those numbers can be checked to see whether the 40% discount claim is accurate.

“Everyone has them”: No source or sales data is provided for the claim that everyone owns the product.

Sponsored creator clip: A creator demonstrates the headphones and the post includes a visible “paid partnership” label.

“Don’t be the only one left out”: This line uses social pressure and fear of missing out rather than evidence about product quality.

Your writing brief

Rewrite the promotion as an honest advertisement. Keep an engaging technique, explain the real price and remove unsupported urgency or claims. Add a note explaining your edits.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 1 • WEEK 3 • INFLUENCE MACHINE

Maths & reasoning

Worked example

A \$90 item has 25% off. Calculate the saving and sale price.

Find the percentage of the original price, then subtract the saving. Answer: Saving \$22.50; price \$67.50.

1. A \$60 item has 20% off. Calculate the saving and sale price.

2. A \$70 item has 30% off. Calculate the saving and sale price.

3. Two angles in a triangle are 50° and 40° . Find the third and explain.

4. A stall has fixed costs \$70, unit cost \$6, and price \$10. Find revenue and profit for 20 sales.

5. Data: 3, 5, 5, 7, 10. Find the mean, median and range.

6. A learner gives this answer: “Saving \$22.50; price \$67.50.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A \$90 item has 25% off. Calculate the saving and sale price.

7. PulsePods are advertised as “was \$120, now \$72”. What percentage discount is this?

TERM 1 · WEEK 3 · INFLUENCE MACHINE

Apply & reflect

Make thinking visible

Make a three-column evidence audit: CLAIM | WHAT SUPPORTS IT | WHAT LIMITS IT. Include three claims from this week. Mark one claim that needs a more cautious wording.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Collect three relevant details from the printed weekly sources; label their origins.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

TERM 1 • WEEK 4 • MONEY MOVES

Read & investigate

When every dollar has another job

A fictional learner has \$120 available for a short-term money plan. Transport costs \$24, phone data for the scenario costs \$18, and lunch ingredients cost \$30. The learner also wants to save \$30 toward a larger goal. Optional choices include a \$22 cinema trip, a \$15 game item and a \$45 hoodie. There is enough money for the essentials and savings, but not for every extra. A useful budget therefore requires priorities, accurate arithmetic and an understanding that choosing one extra may mean giving up another.

Teaching note

A budget is a plan for limited money. Start with the total available, protect important needs and savings, then compare the choices left. Use $\text{DISCOUNT} = \text{original price} \times \text{percentage}$, and $\text{UNIT PRICE} = \text{total cost} \div \text{number of units}$. The cheapest-looking sticker is not always the best value.

1. Which detail would you put first in a summary, and why? Explain its importance.

2. Use “Price check” and “Savings goal” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 1
 ·
 WEEK 4
 ·
 MONEY MOVES

Write & communicate

Evidence desk
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 Read these alongside the passage.

Price check: A jacket marked “25% off \$80” should cost \$60 because 25% of \$80 is \$20.

Bundle deal: Two items for \$12 can be compared with one for \$7 by calculating the cost per item.

“Only \$5 a week”: The ad gives a weekly amount but does not state how many weeks must be paid, so the total cost is missing.

Savings goal: Setting money aside first changes how much remains for optional spending and makes the trade-off visible.

Your writing brief

Recommend a fictional spending plan using the costs in the sources. Separate needs from wants, protect savings and explain an opportunity cost. State any assumption about money available.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check:
 ☐
clear purpose
☐
evidence
☐
linked ideas
☐
precise words
☐
punctuation

TERM 1 • WEEK 4 • MONEY MOVES

Maths & reasoning

Worked example

A stall has fixed costs \$60, unit cost \$7, and price \$11. Find revenue and profit for 20 sales.

Profit = revenue – variable costs – fixed costs = 220 – 140 – 60. A negative result is a loss. Answer: Revenue \$220; profit \$20.

1. A stall has fixed costs \$60, unit cost \$6, and price \$10. Find revenue and profit for 20 sales.

2. A stall has fixed costs \$90, unit cost \$3, and price \$7. Find revenue and profit for 20 sales.

3. A circle has radius 6 cm. Use $\pi = 3.14$ to find circumference and area.

4. Split 56 counters in the ratio 8:6. How many belong in each group?

5. 12 pages are printed in 3 minutes at a constant rate. Find the rate and time for 36 pages.

6. A learner gives this answer: “Revenue \$220; profit \$0.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A stall has fixed costs \$80, unit cost \$7, and price \$11. Find revenue and profit for 20 sales.

7. A 6-pack costs \$15 and a 4-pack costs \$11. Which has the lower unit price?

TERM 1 · WEEK 4 · MONEY MOVES

Apply & reflect

Make thinking visible

Make a three-column evidence audit: CLAIM | WHAT SUPPORTS IT | WHAT LIMITS IT. Include three claims from this week. Mark one claim that needs a more cautious wording.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Draft a diagram, table or outline. Mark a claim that needs checking.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

No single dashboard tells the whole story

A fictional learner has had a busy week. Their sleep record is 7, 8, 6, 9 and 8 hours across five nights. They also skipped lunch twice and stopped taking their usual walk. None of those details proves exactly how they will feel, but together they give useful context. Patterns can suggest questions to investigate, not diagnose a person from a dashboard. A viral post offering one quick fix for everything is much weaker because it promises the same result for everyone and gives no trustworthy source. A safer response is to use practical supports, notice whether things improve and ask a trusted adult or qualified professional when extra help is needed.

Teaching note

Bodies and wellbeing change over time, and people do not all follow one exact timetable. Sleep, food, movement, stress, relationships and development can interact, so one number never tells the whole story. Reliable information explains what is known, names limits, avoids promising one perfect result for everyone and separates general guidance from personal medical advice. When someone is worried or something is not improving, asking a trusted adult or qualified professional is a sensible next step.

1. What is the writer trying to help the reader understand? Support your answer with a detail.

2. Use “Variation note” and “Support pathway” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 1 · WEEK 5 · INSIDE OUT

Write & communicate

Evidence desk · Read these alongside the passage.

Variation note: People do not all develop at exactly the same age or speed.

Quick-fix post: A fictional creator promises one routine will solve several different wellbeing problems for everyone, but gives no reliable source.

Fictional sleep data: Five nights are recorded as 7, 8, 6, 9 and 8 hours.

Support pathway: Asking a trusted adult or qualified professional is a reasonable next step when someone is worried.

Your writing brief

Write advice for a fictional learner. Offer three low-risk wellbeing supports, explain why people vary and include trusted-adult support. Do not disclose personal experiences.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 1 • WEEK 5 • INSIDE OUT

Maths & reasoning

Worked example

Data: 7, 9, 9, 11, 14. Find the mean, median and range.

Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum. Answer: Mean 10; median 9; range 7.

1. Data: 7, 9, 9, 11, 14. Find the mean, median and range.

2. Data: 3, 5, 5, 7, 10. Find the mean, median and range.

3. A result changes from 35% to 50%. Find the percentage-point change AND relative percentage increase.

4. A rectangle is 14 cm by 4 cm. Find its perimeter and area, with units.

5. Solve $5x + 4 = 19$. Show how you check x.

6. A learner gives this answer: “Mean 12; median 11; range 7.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Data: 9, 11, 11, 13, 16. Find the mean, median and range.

7. The fictional sleep record is 7, 8, 6, 9 and 8 hours. What are the mean and range?

TERM 1 · WEEK 5 · INSIDE OUT

Apply & reflect

Make thinking visible

Make a three-column evidence audit: CLAIM | WHAT SUPPORTS IT | WHAT LIMITS IT. Include three claims from this week. Mark one claim that needs a more cautious wording.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Add a numerical comparison and explain its context. Check units and denominators.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

TERM 1 • WEEK 6 • SAFE • UNSURE • NOT OK

Read & investigate

Care is not the same as control

Kindness, attention, gifts and friendship are not automatically warning signs. The important question is how someone responds to boundaries and choice. In a healthy interaction, people can say no, change their mind and ask others for advice. Pressure can look like repeated requests, guilt, threats, secrecy or making someone feel responsible for another person’s reaction. If a message or situation feels unsafe or confusing, a young person can pause, leave the conversation, block or report an account and tell a trusted adult. They do not need to be certain something is wrong before asking for help.

Teaching note

A boundary is a limit that helps protect safety, privacy or comfort. Consent must be freely given and can be changed or withdrawn. Pressure, secrecy, threats, repeated boundary-testing or attempts to isolate someone are warning signs. You do not have to prove that something is wrong before asking a trusted adult for help.

1. Explain a contrast or tension in the passage. Refer to both sides.

2. Use “Clear boundary” and “Ordinary kindness” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 1 • WEEK 6 • SAFE • UNSURE • NOT OK

Maths & reasoning

Worked example

A bag has 8 red and 3 blue tokens. A token is chosen at random. Find $P(\text{red})$ and $P(\text{not red})$.

Count equally likely tokens, not colour names; probabilities add to 1. Answer: $P(\text{red}) = 8/11$; $P(\text{not red}) = 3/11$.

1. A bag has 8 red and 2 blue tokens. A token is chosen at random. Find $P(\text{red})$ and $P(\text{not red})$.

2. A bag has 4 red and 4 blue tokens. A token is chosen at random. Find $P(\text{red})$ and $P(\text{not red})$.

3. One notebook costs \$1.29. Find the cost of 4, then the change from \$10.

4. Convert 3.3 kg to grams, then find the mass of one of 5 equal portions.

5. Convert 6.5 kg to grams, then find the mass of one of 5 equal portions.

6. A learner gives this answer: " $P(\text{red}) = 1/2$; $P(\text{not red}) = 1/2$." to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A bag has 3 red and 3 blue tokens. A token is chosen at random. Find $P(\text{red})$ and $P(\text{not red})$.

7. In a fictional anonymous survey, 18 of 24 learners said they would ask a trusted adult for help if an online message felt unsafe. What percentage is that?

TERM 1 • WEEK 6 • SAFE • UNSURE • NOT OK

Apply & reflect

Make thinking visible

Make a three-column evidence audit: CLAIM | WHAT SUPPORTS IT | WHAT LIMITS IT. Include three claims from this week. Mark one claim that needs a more cautious wording.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Write a fair counterpoint. Identify a gap or voice the project does not represent.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

Same event, different emphasis

Both fictional reports agree on several facts: the trial happened on Saturday, 240 people attended, and a voluntary survey received 60 responses. Report A emphasises attendance and positive comments. Report B emphasises the survey and dissatisfaction among some respondents. Neither emphasis is automatically false, but a reader should not confuse emphasis with the whole story. The survey can describe its respondents, but because only one quarter of visitors answered it, stronger claims about every visitor would need more evidence.

Teaching note

News reports make choices about what to lead with, which quotes to include and what context to give. Two reports can contain accurate facts and still create different impressions. A careful reader checks the shared facts first, then notices framing, missing context and uncertainty. A responsible bulletin does not turn a possibility into a certainty.

1. Identify one explicit fact and one reasonable inference. Explain the evidence for the inference.

2. Use “Report A” and “Clickbait repost” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 1 • WEEK 7 • THE NEWSROOM

Maths & reasoning

Worked example

A count rises from 200 to 240. Find the percentage increase.

Increase $\div$ original $\times 100 = 40 \div 200 \times 100 = 20\%$. Answer: 20%

1. A count rises from 200 to 230. Find the percentage increase.

2. A count rises from 120 to 150. Find the percentage increase.

3. A bag has 8 red and 2 blue tokens. A token is chosen at random. Find P(red) and P(not red).

4. A count rises from 100 to 120. Find the percentage increase.

5. One notebook costs \$1.34. Find the cost of 4, then the change from \$10.

6. A learner gives this answer: “20%” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A count rises from 100 to 120. Find the percentage increase.

7. 60 of 240 fictional visitors completed the survey. What percentage of visitors responded?

TERM 1 · WEEK 7 · THE NEWSROOM

Apply & reflect

Make thinking visible

Make a three-column evidence audit: CLAIM | WHAT SUPPORTS IT | WHAT LIMITS IT. Include three claims from this week. Mark one claim that needs a more cautious wording.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Make a draft page or paper prototype. Ask someone to comment, or use the checklist yourself.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

Attention is useful; accuracy is non-negotiable

A strong creator chooses a message that is both interesting and supportable. The fictional project recorded 90 participants, and 72 completed the activity. That is 80%. A post can say “8 in 10 participants completed the activity”, but it should not imply that 80% of the whole town took part. Clear captions, readable text and source attribution make the post easier to trust and easier to use. Feedback from another person can also reveal what is confusing, missing or visually overwhelming.

Teaching note

Good communication can be persuasive without becoming misleading. Start with the audience and purpose, then choose one accurate message, make the most important information easy to find, label the source and keep captions readable. User testing is useful because a design that makes sense to its creator may still confuse someone else.

1. Suggest a more precise alternative title. Explain how it represents the passage accurately.

2. Use “Source statistic” and “Attribution note” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Maths & reasoning

Worked example

Split 32 counters in the ratio 3:5. How many belong in each group?

8 equal parts; each part is 4. Multiply each ratio number by this amount. Answer: 12 and 20.

1. Split 28 counters in the ratio 3:4. How many belong in each group?

2. Split 48 counters in the ratio 6:6. How many belong in each group?

3. A map uses 1 cm : 20 km. Two places are 9 cm apart on the map. Find the actual distance.

4. Sequence: 5, 10, 15, 20. Give the next two terms and a rule for term n.

5. A fictional vehicle travels 7.5 km at a steady 5 km/h. Find the time in hours and minutes.

6. A learner gives this answer: “20 and 20.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Split 40 counters in the ratio 5:5. How many belong in each group?

7. 72 of 90 fictional participants completed the activity. What percentage is that?

TERM 1 · WEEK 8 · CREATOR MODE

Apply & reflect

Make thinking visible

Make a three-column evidence audit: CLAIM | WHAT SUPPORTS IT | WHAT LIMITS IT. Include three claims from this week. Mark one claim that needs a more cautious wording.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Revise one choice in response to evidence or feedback. Record before and after.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

TERM 1 • WEEK 9 • REALITY CHECK: THE FINAL MISSION

Read & investigate

The strongest answer may be qualified

The fictional event drew 360 entries, close to the organiser capacity of 400. A voluntary exit survey collected 90 responses, and 72 of those were positive. That means 80% of survey respondents were positive, but only one quarter of attendees completed the survey. A sponsored creator describes the event as loved by “basically everyone”, which goes further than the evidence can support. A separate safety log records three minor first-aid incidents and no evacuation. The evidence can support several specific statements, but it cannot prove that every attendee had the same experience.

Teaching note

This is the final mission. Do not look for one magic source. Build the evidence chain yourself: identify the claim, check where each piece of information came from, compare sources, test the numbers, name limitations and make a conclusion that stays inside the evidence. Strong thinkers can say “partly supported” or “not enough evidence yet”.

1. What conclusion does this passage support, and what would go beyond its evidence?

2. Use “Attendance record” and “Safety log” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Write & communicate

Evidence desk · Read these alongside the passage.

Attendance record: The fictional event recorded 360 entries. Organisers had planned for up to 400 people.

Exit survey: 90 people completed a voluntary exit survey. 72 rated the event positively, 9 negatively and 9 were neutral.

Sponsored creator post: A paid creator says “basically everyone loved it” but does not mention that the post is based on organiser-provided material.

Safety log: The fictional event log records three minor first-aid incidents and no emergency evacuation.

Your writing brief

Write a final case judgement. Use three evidence items, distinguish attendance from satisfaction or safety, and explain one missing piece of evidence.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 1 · WEEK 9 · REALITY CHECK: THE FINAL MISSION

Maths & reasoning

Worked example

Data: 4, 6, 6, 8, 11. Find the mean, median and range.

Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum. Answer: Mean 7; median 6; range 7.

1. Data: 4, 6, 6, 8, 11. Find the mean, median and range.

2. Data: 7, 9, 9, 11, 14. Find the mean, median and range.

3. 12 pages are printed in 4 minutes at a constant rate. Find the rate and time for 36 pages.

4. A map uses 1 cm : 35 km. Two places are 6 cm apart on the map. Find the actual distance.

5. Calculate $\frac{3}{4} + \frac{3}{13}$. Give a simplified fraction.

6. A learner gives this answer: “Mean 9; median 8; range 7.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Data: 6, 8, 8, 10, 13. Find the mean, median and range.

7. 90 of 360 fictional attendees completed the exit survey. What percentage of attendees responded?

TERM 1 · WEEK 9 · REALITY CHECK: THE FINAL MISSION

Apply & reflect

Make thinking visible

Make a three-column evidence audit: CLAIM | WHAT SUPPORTS IT | WHAT LIMITS IT. Include three claims from this week. Mark one claim that needs a more cautious wording.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Finish the paper project and write a qualified conclusion. Reflect on one next step.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

TERM 1 · REVIEW AND PROJECT SHOWCASE

Pause, check, improve

1. Summarise the most important idea from this term in your own words.

2. Choose two weeks. Explain a connection between their evidence or systems.

3. Correct one maths error. Show the original misconception and a reliable method.

4. Present your paper project: central claim, strongest evidence and a limitation.

5. What changed after a counterpoint, test or feedback? Give a specific example.

6. Set one achievable next step. What support or strategy will help?

TERM 2 • PLAN YOUR INQUIRY

POWER & PLACE

How do power, people and place shape the world we live in?

Investigate a place, event, movement or community story and turn evidence into an exhibition, documentary, podcast script, paper display.

The nine-week route

1. The Aotearoa Files
2. After the Signing
3. Who Gets a Say?
4. Revolution!
5. Factory World
6. Democracy Lab
7. Faultline
8. Edge of the World
9. The Exhibition

Project question:

Audience and purpose:

What I already know / what I need to find out:

Read & investigate

Same signing moment, different wording

Te Tiriti o Waitangi was first signed at Waitangi on 6 February 1840. There were Māori and English texts, and the Māori version was not an exact translation of the English. In Article 1 the Māori text uses the word kawanatanga, while the English text uses sovereignty. In Article 2 the Māori text guarantees tino rangatiratanga over lands, villages and taonga, while the English text guarantees undisturbed possession of lands, forests, fisheries and other properties. Twelve years later, the New Zealand Constitution Act 1852 created representative institutions, but voting rights were still restricted. Most Māori land was held communally, so the property rules meant relatively few Māori men could qualify to vote under the general franchise at that time.

Teaching note

Historical evidence is strongest when we ask what a source is, when it was created, who created it and what question it can actually answer. Te Tiriti o Waitangi and the English Treaty text were both produced in 1840, but they are not exact equivalents. Comparing them is more useful than pretending there is no difference. Later laws and historian explanations add context, but they answer different questions.

1. Identify the main claim or problem. Give one detail that helps a reader understand it.

2. Use “PRIMARY · Te Tiriti text, 1840” and “SECONDARY · modern historical explanation” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Evidence desk · Read these alongside the passage.

SECONDARY · modern historical explanation: Modern historical accounts emphasise that the Māori and English texts are not exact translations and that differences between them have been debated ever since 1840.

Write an archive label explaining political authority in Aotearoa between 1840 and 1852. Refer carefully to the different Treaty texts and name a limitation of the evidence.

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 2 • WEEK 1 • THE AOTEAROA FILES

Maths & reasoning

Worked example

Temperature starts at -5°C , rises 3°C , then falls 4°C . What is it now?

$-5 + 3 - 4 = -6$. Use a number line if useful. Answer: -6°C .

1. Temperature starts at -5°C , rises 7°C , then falls 12°C . What is it now?

2. Temperature starts at -8°C , rises 4°C , then falls 6°C . What is it now?

3. A count rises from 100 to 125. Find the percentage increase.

4. Fixed costs are \$84; price is \$6; unit cost is \$2. Find the minimum whole sales to break even.

5. Two angles in a triangle are 55° and 65° . Find the third and explain.

6. A learner gives this answer: “ -8°C .” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Temperature starts at -7°C , rises 3°C , then falls 4°C . What is it now?

7. How many years elapsed between the first signing of Te Tiriti in 1840 and the Constitution Act in 1852?

TERM 2 · WEEK 1 · THE AOTEAROA FILES

Apply & reflect

Make thinking visible

Draw a cause → change → consequence chain or a labelled place-and-power map. Include four details from the printed evidence. Mark one missing voice or uncertain link.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Choose a focused question and a fictional audience. Record why the question matters.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

Conflict was built from pressure, choices and flashpoints

The New Zealand Wars cannot be explained by one event alone. During the 1850s settler numbers rose and demand for land increased. Many Māori communities were already debating how to protect land, mana and political authority. Kīngitanga emerged in 1858 as one response. In 1860 fighting began at Waitara after a disputed land purchase. In 1863 Crown forces invaded Waikato after crossing the Mangatāwhiri Stream. The wars involved different groups and motives in different regions. Afterward, confiscation under the New Zealand Settlements Act removed large areas of Māori land and created consequences that continued long after the fighting ended.

Teaching note

Historical conflict usually develops through several interacting causes. In mid-19th-century Aotearoa, settler numbers and demand for land grew, many Māori sought to retain land and authority, Kīngitanga developed as a movement for unity and mana, and disputes over land purchases became flashpoints. The New Zealand Wars involved different iwi, hapū, Crown forces, settlers and Māori allies in different places and at different times. Raupatu after the wars caused major land loss and long-term consequences for affected communities.

1. Summarise the passage in two sentences. Keep facts separate from opinion or inference.

2. Use “Population and land pressure” and “Raupatu” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 2 • WEEK 2 • AFTER THE SIGNING

Maths & reasoning

Worked example

18 pages are printed in 3 minutes at a constant rate. Find the rate and time for 54 pages.

Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate. Answer: 6 pages/min; 9 minutes.

1. 12 pages are printed in 2 minutes at a constant rate. Find the rate and time for 36 pages.

2. 36 pages are printed in 4 minutes at a constant rate. Find the rate and time for 108 pages.

3. Temperature starts at -5°C , rises 7°C , then falls 12°C . What is it now?

4. One notebook costs \$1.21. Find the cost of 4, then the change from \$10.

5. A count rises from 100 to 125. Find the percentage increase.

6. A learner gives this answer: “8 pages/min; 9 minutes.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. 24 pages are printed in 3 minutes at a constant rate. Find the rate and time for 72 pages.

7. Kīngitanga was established in 1858 and Crown forces invaded Waikato in 1863. How many years elapsed?

TERM 2 · WEEK 2 · AFTER THE SIGNING

Apply & reflect

Make thinking visible

Draw a cause → change → consequence chain or a labelled place-and-power map. Include four details from the printed evidence. Mark one missing voice or uncertain link.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Define three key terms and decide what counts as convincing evidence.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

A vote depends on the rules of the system

New Zealand gained representative institutions in the 1850s, but the early franchise was restricted. Men had to be at least 21 and meet property qualifications. Māori men were not explicitly excluded by race, yet communal landholding meant relatively few could satisfy the individual-property rules used for the general franchise. In 1867 Parliament created four Māori electorates and extended voting in those seats to Māori men aged 21 and over. Further changes removed the property qualification for other men in 1879 and extended the vote to adult women in 1893. Looking at who could vote in each period helps show the difference between having an elected institution and having broad political participation.

Teaching note

Representative government does not automatically mean everyone can vote. Under the 1852 Constitution Act, voting for the elected House was limited to men aged 21 or over who met property qualifications. Those rules did not explicitly exclude Māori, but most Māori land was communally held, so relatively few Māori men could qualify through the general franchise. The Māori Representation Act 1867 created four Māori electorates and allowed Māori men aged 21 and over to vote in them without the same property requirement. The property qualification for other men was removed in 1879, and women gained the parliamentary vote in 1893. Each change altered who could participate, while representation remained an ongoing issue.

1. Explain a cause-and-effect relationship in the passage. Use a specific detail.

2. Use “1852 Constitution Act” and “Franchise expansion” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 2 • WEEK 3 • WHO GETS A SAY?

Write & communicate

Evidence desk • Read these alongside the passage.

1852 Constitution Act: The Act created an elected House of Representatives. Voters had to be male, aged 21 or over, and meet specified property ownership, lease or rental qualifications.

Early Māori participation: The 1852 franchise was theoretically colour-blind, but most Māori land was held communally rather than by individual title. NZ History records that only about 100 Māori voted in the 1853 election out of a total electorate of 5,849.

Māori Representation Act 1867: The Act created four Māori electorates. Māori men aged 21 and over could vote in those seats without the general property qualification.

Franchise expansion: The property requirement for non-Māori men was removed in 1879. In 1893 adult women, Māori and Pākehā, gained the parliamentary vote.

Your writing brief

Explain changes in voting eligibility. Use dates and rules in the evidence. Distinguish gaining a legal vote from having equal influence.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 2 • WEEK 3 • WHO GETS A SAY?

Maths & reasoning

Worked example

A count rises from 160 to 192. Find the percentage increase.

Increase $\div$ original $\times 100 = 32 \div 160 \times 100 = 20\%$. Answer: 20%

1. A count rises from 160 to 184. Find the percentage increase.

2. A count rises from 80 to 100. Find the percentage increase.

3. A rectangle is 11 cm by 4 cm. Find its perimeter and area, with units.

4. A triangle has base 18 cm and perpendicular height 7 cm. Find its area.

5. A triangle has base 10 cm and perpendicular height 9 cm. Find its area.

6. A learner gives this answer: “20%” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A count rises from 200 to 240. Find the percentage increase.

7. About 100 Māori voted in the 1853 election out of a total electorate of 5,849. Approximately what percentage is 100 out of 5,849?

TERM 2 · WEEK 3 · WHO GETS A SAY?

Apply & reflect

Make thinking visible

Draw a cause → change → consequence chain or a labelled place-and-power map. Include four details from the printed evidence. Mark one missing voice or uncertain link.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Collect three relevant details from the printed weekly sources; label their origins.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

Pressure is not the same as trigger

By 1789 France was facing several connected problems. The state had serious debts and struggled to reform taxation. The social system gave legal privileges to the First and Second Estates, while the Third Estate included the great majority of the population. Poor harvests and high food prices added pressure for many households. When the Estates-General met in May 1789, arguments over representation became a political crisis. The Third Estate declared itself the National Assembly in June, and the storming of the Bastille followed on 14 July. In August, the Assembly abolished feudal privileges and adopted the Declaration of the Rights of Man and of the Citizen. A strong explanation does not say “the Bastille caused the Revolution”; it shows how pressures, decisions and events connected.

Teaching note

The French Revolution grew from interacting pressures rather than one event. The monarchy faced serious financial problems, the social order privileged the clergy and nobility, many ordinary people faced economic and food pressure, and arguments over representation intensified in 1789. The Estates-General met in May. The Third Estate declared itself the National Assembly in June. The Bastille fell on 14 July. Privileges were abolished on 4 August, and the Declaration of the Rights of Man and of the Citizen was adopted on 26 August. Those events changed political expectations, but the Revolution continued for years and produced further conflict and change.

1. Which detail would you put first in a summary, and why? Explain its importance.

2. Use “STRUCTURE · Three Estates” and “CHANGE · August 1789” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 2 • WEEK 4 • REVOLUTION!

Maths & reasoning

Worked example

Temperature starts at -8°C , rises 6°C , then falls 10°C . What is it now?

$-8 + 6 - 10 = -12$. Use a number line if useful. Answer: -12°C .

1. Temperature starts at -8°C , rises 5°C , then falls 8°C . What is it now?

2. Temperature starts at -4°C , rises 7°C , then falls 12°C . What is it now?

3. A fictional vehicle travels 9 km at a steady 6 km/h. Find the time in hours and minutes.

4. A circle has radius 7 cm. Use $\pi = 3.14$ to find circumference and area.

5. Calculate $(6 \times 10^5) \div (2 \times 10^2)$. Give an ordinary number.

6. A learner gives this answer: “ -7°C .” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Temperature starts at -3°C , rises 6°C , then falls 10°C . What is it now?

7. The Bastille was stormed on 14 July 1789 and the Declaration of the Rights of Man and of the Citizen was adopted on 26 August 1789. How many days elapsed between those dates?

TERM 2 · WEEK 4 · REVOLUTION!

Apply & reflect

Make thinking visible

Draw a cause → change → consequence chain or a labelled place-and-power map. Include four details from the printed evidence. Mark one missing voice or uncertain link.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Draft a diagram, table or outline. Mark a claim that needs checking.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

More output does not answer every historical question

Industrialisation changed production, work and place at the same time. Mechanised textile factories could produce at scales that were difficult for small workshops to match. New industrial jobs drew people toward growing towns, and expanding production supported trade and investment. But output data alone do not tell us whether workers were safe, healthy, secure or fairly treated. Evidence about working hours, child labour and factory conditions led to campaigns and gradual regulation. The 1833 Factory Act was one important step because it limited children’s factory hours and introduced inspectors. Historians therefore need more than one measure: production can rise while some groups experience serious costs.

Teaching note

During the Industrial Revolution, production in parts of Britain shifted from many small workshops and home-based processes toward larger factories using machinery and power. Textile manufacturing was one major area of change. Mechanisation could increase output and support expanding trade, while factory systems also changed where and how people worked. Industrial towns grew rapidly. Working conditions varied, but long hours and child labour became major public concerns. Factory legislation developed gradually; the 1833 Factory Act restricted children’s hours in textile factories and created a factory inspectorate. A strong historical explanation therefore separates technological change, production gains, urban growth, working conditions and later reform instead of pretending everyone experienced industrialisation in the same way.

1. What is the writer trying to help the reader understand? Support your answer with a detail.

2. Use “PRODUCTION · factory shift” and “REFORM · Factory Act 1833” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 2 • WEEK 5 • FACTORY WORLD

Maths & reasoning

Worked example

54 pages are printed in 6 minutes at a constant rate. Find the rate and time for 162 pages.

Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate. Answer: 9 pages/min; 18 minutes.

1. 45 pages are printed in 5 minutes at a constant rate. Find the rate and time for 135 pages.

2. 10 pages are printed in 2 minutes at a constant rate. Find the rate and time for 30 pages.

3. A stall has fixed costs \$80, unit cost \$5, and price \$9. Find revenue and profit for 20 sales.

4. A \$40 item has 30% off. Calculate the saving and sale price.

5. A bag has 7 red and 3 blue tokens. A token is chosen at random. Find $P(\text{red})$ and $P(\text{not red})$.

6. A learner gives this answer: “4 pages/min; 18 minutes.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. 24 pages are printed in 6 minutes at a constant rate. Find the rate and time for 72 pages.

7. In the fictional simulator, a workshop produces 12 cloth units per hour and a mechanised mill produces 36. By what percentage has the hourly production rate increased?

TERM 2 · WEEK 5 · FACTORY WORLD

Apply & reflect

Make thinking visible

Draw a cause → change → consequence chain or a labelled place-and-power map. Include four details from the printed evidence. Mark one missing voice or uncertain link.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Add a numerical comparison and explain its context. Check units and denominators.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

Participation is evidence — but representation must be checked

A fictional community is deciding how to upgrade a public space. Rangatahi ask for a half-court and social area. An accessibility advocate asks for step-free paths and usable seating. Nearby residents raise concerns about late-night noise, while another group wants more planting and shade. An online survey receives 80 voluntary responses and a petition gathers 620 signatures. All of this is useful evidence, but the sources answer different questions. A petition shows organised support among signers. A self-selected survey describes its respondents. A submission can explain an impact in depth even if only one person raises it. A fair recommendation should therefore compare reasons, costs, affected groups and missing voices rather than treating the biggest number as an automatic decision.

Teaching note

Democratic participation is broader than voting. People can make submissions, organise petitions, take part in peaceful protest, attend meetings and contact representatives. These forms of participation can provide important evidence about views and impacts, but they do not automatically measure the opinion of everyone. A petition shows organised support among its signers; a self-selected survey describes its respondents unless the sampling method justifies a broader claim. Good civic reasoning therefore asks WHO PARTICIPATED → WHAT EVIDENCE WAS PROVIDED → WHO MAY BE MISSING → WHAT TRADE-OFFS EXIST → WHAT CAN WE RESPONSIBLY CONCLUDE.

1. Explain a contrast or tension in the passage. Refer to both sides.

2. Use “PUBLIC SUBMISSIONS” and “SURVEY LIMIT” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Write & communicate

Evidence desk • Read these alongside the passage.

PUBLIC SUBMISSIONS: Submissions allow people and groups to explain how a proposal may affect them and to provide reasons, evidence or alternatives. The number of submissions alone does not prove which view is held by the whole population.

PETITIONS: A petition can show organised support for a request and can bring an issue to decision-makers. Its signatures are evidence of support among the people who signed, not automatically a representative poll.

PEACEFUL ASSEMBLY: Freedom of peaceful assembly is affirmed in the New Zealand Bill of Rights Act 1990. Peaceful protest can be a form of civic participation.

SURVEY LIMIT: A fictional online survey with voluntary responses can be useful for understanding respondents, but selection bias may limit claims about the whole community.

Your writing brief

Recommend a public-space proposal from the evidence. Consider cost, user needs and representation. State what more you would need to know before approving it.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

Maths & reasoning

Worked example

A stall has fixed costs \$30, unit cost \$3, and price \$7. Find revenue and profit for 20 sales.

Profit = revenue – variable costs – fixed costs = 140 – 60 – 30. A negative result is a loss. Answer: Revenue \$140; profit \$50.

1. A stall has fixed costs \$30, unit cost \$7, and price \$11. Find revenue and profit for 20 sales.

2. A stall has fixed costs \$60, unit cost \$4, and price \$8. Find revenue and profit for 20 sales.

3. A \$40 item has 25% off. Calculate the saving and sale price.

4. Data: 5, 7, 7, 9, 12. Find the mean, median and range.

5. A stall has fixed costs \$80, unit cost \$5, and price \$9. Find revenue and profit for 20 sales.

6. A learner gives this answer: “Revenue \$140; profit \$30.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A stall has fixed costs \$50, unit cost \$3, and price \$7. Find revenue and profit for 20 sales.

7. In the fictional survey, 44 of 80 respondents chose the half-court option. What percentage is that?

TERM 2 · WEEK 6 · DEMOCRACY LAB

Apply & reflect

Make thinking visible

Draw a cause → change → consequence chain or a labelled place-and-power map. Include four details from the printed evidence. Mark one missing voice or uncertain link.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Write a fair counterpoint. Identify a gap or voice the project does not represent.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

A landscape can look still while the crust keeps moving

Aotearoa New Zealand sits across an active tectonic plate boundary. Plate movement is slow, but the forces involved can deform rock and build stress on faults over long periods. When a fault slips suddenly, stored energy travels through the ground as seismic waves. Scientists use instruments, mapped faults, landforms, rock records and earthquake locations to investigate this activity. Those observations can improve understanding of where hazards exist and how the crust behaves. They do not create an exact timetable for the next earthquake. Good geological reasoning therefore separates what the evidence shows — an active, deforming landscape — from claims that go further than the evidence can support.

Teaching note

Earth’s outer shell is broken into tectonic plates that move slowly over time. Aotearoa New Zealand sits across the active boundary between the Pacific and Australian plates. Plate interaction deforms the crust and builds stress on faults. When accumulated stress is released suddenly, the crust can move and generate an earthquake. Geological evidence can show that a region is active and help scientists understand hazards, but it does not provide a clock that tells us the exact time, place and size of the next earthquake. Use the sequence PLATE MOVEMENT → STRESS / DEFORMATION → FAULT MOVEMENT → SEISMIC WAVES → OBSERVED EFFECTS.

1. Identify one explicit fact and one reasonable inference. Explain the evidence for the inference.

2. Use “TECTONIC SETTING” and “PREDICTION CLAIM” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Write & communicate

Evidence desk • Read these alongside the passage.

TECTONIC SETTING: Aotearoa New Zealand lies across the boundary of the Pacific and Australian tectonic plates. Their interaction produces earthquakes, active deformation and volcanic activity in different parts of the country.

FAULT OFFSET: A fictional river channel and rock layer are displaced across a mapped fault trace. The offset is evidence that the landscape has moved in the past.

MONITORING CLUSTER: A network map shows repeated small earthquakes and measured ground movement across the fictional region. These observations support the conclusion that the crust is active.

PREDICTION CLAIM: A social post says the latest small earthquakes prove a major earthquake will strike the town next Tuesday. The evidence shown cannot establish an exact future time, place and magnitude.

Your writing brief

Explain plate movement → stress → fault movement → seismic waves. Use two observations and explain why evidence of activity is not an exact earthquake prediction.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 2 • WEEK 7 • FAULTLINE

Maths & reasoning

Worked example

A map uses 1 cm : 20 km. Two places are 4 cm apart on the map. Find the actual distance.

Multiply map distance by scale: 4×20 . Answer: 80 km.

1. A map uses 1 cm : 15 km. Two places are 4 cm apart on the map. Find the actual distance.

2. A map uses 1 cm : 25 km. Two places are 7 cm apart on the map. Find the actual distance.

3. Solve $3x + 6 = 27$. Show how you check x.

4. A fictional vehicle travels 9 km at a steady 6 km/h. Find the time in hours and minutes.

5. Sequence: 5, 14, 23, 32. Give the next two terms and a rule for term n.

6. A learner gives this answer: "120 km." to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A map uses 1 cm : 20 km. Two places are 6 cm apart on the map. Find the actual distance.

7. In the Faultline training map, 1 cm represents 25 km. A monitoring station is 75 km from the modelled epicentre. What radius should be drawn on the map?

TERM 2 · WEEK 7 · FAULTLINE

Apply & reflect

Make thinking visible

Draw a cause → change → consequence chain or a labelled place-and-power map. Include four details from the printed evidence. Mark one missing voice or uncertain link.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Make a draft page or paper prototype. Ask someone to comment, or use the checklist yourself.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

A route is a moving decision, not a line on a map

The fictional expedition map shows a valley route climbing steadily toward a high saddle before dropping to a shelter. The valley contains features shaped by flowing water and past ice. A river crosses the lower route, while exposed slopes and deposited debris mark other landscape processes. The planned journey looks manageable under the starting conditions, but the forecast changes as elevation increases: temperature falls, visibility worsens and daylight becomes more limited. Good expedition planning therefore combines geographic understanding with repeated decision-making. Distance matters, but so do elevation, pace, conditions, equipment and the ability to turn back or choose a safer alternative.

Teaching note

Landscapes change through processes acting over time. Rivers erode, transport and deposit sediment. Glaciers also erode and transport material, leaving features such as valleys and moraines as ice advances or retreats over long periods. Moving safely through an alpine environment requires a separate kind of reasoning: MAP → CONDITIONS → CAPABILITY → EQUIPMENT → DECISION → RECHECK. A route that looks possible on a map may become unsuitable when temperature, river level, daylight or visibility changes. Good risk communication is specific about the hazard, who may be affected, what action reduces exposure and what uncertainty remains.

1. Suggest a more precise alternative title. Explain how it represents the passage accurately.

2. Use “MAP FILE” and “ROUTE LIMIT” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Write & communicate

Evidence desk · Read these alongside the passage.

MAP FILE: The fictional route is 8.4 km long and climbs from 620 m to 1,180 m before descending to the shelter.

LANDSCAPE FILE: A broad U-shaped valley, exposed rock and a ridge of deposited debris are consistent with past glacial shaping in the fictional landscape.

CONDITIONS FILE: The fictional forecast shows temperature falling from 4°C at the start to –2°C near the high point, with visibility worsening later in the day.

ROUTE LIMIT: A map and forecast support planning, but they cannot guarantee real-time track, river or weather conditions. The simulation is not real-world trip advice.

Your writing brief

Write an expedition planning note from the supplied conditions. Explain one landscape process, one route concern and a reason to alter or abandon a plan.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

Maths & reasoning

Worked example

A fictional vehicle travels 10.5 km at a steady 7 km/h. Find the time in hours and minutes.

Time = distance $\div$ speed = $10.5 \div 7$. This assumes a steady speed with no stops. Answer: 1.5 hours = 90 minutes.

1. A fictional vehicle travels 9 km at a steady 6 km/h. Find the time in hours and minutes.

2. A fictional vehicle travels 12 km at a steady 8 km/h. Find the time in hours and minutes.

3. A triangle has base 8 cm and perpendicular height 5 cm. Find its area.

4. Calculate $(7 \times 10^5) \div (4 \times 10^2)$. Give an ordinary number.

5. A circle has radius 8 cm. Use $\pi = 3.14$ to find circumference and area.

6. A learner gives this answer: “1.5 hours = 90 minutes.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A fictional vehicle travels 10.5 km at a steady 7 km/h. Find the time in hours and minutes.

7. The route is 8.4 km. A group travels the first 5.6 km before changing route. What fraction of the original route have they completed?

TERM 2 · WEEK 8 · EDGE OF THE WORLD

Apply & reflect

Make thinking visible

Draw a cause → change → consequence chain or a labelled place-and-power map. Include four details from the printed evidence. Mark one missing voice or uncertain link.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Revise one choice in response to evidence or feedback. Record before and after.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

The wall tells a story because the curator makes choices

An exhibition is an argument made through selection, sequence and explanation. A map can show where things were located. An oral-history account can show how one person experienced a place. A planning document can record an official proposal and its stated reasons. An editorial can reveal a public argument while still using persuasive language. None of those sources automatically speaks for everyone. The curator therefore has to decide which evidence is relevant, how to label it accurately, which voices are missing and where uncertainty should remain visible. Good curation makes the evidence trail easier to inspect rather than hiding the choices behind a polished display.

Teaching note

A strong exhibition does not hide complexity behind decoration. Use CURATE → ATTRIBUTE → CONNECT → LIMIT → PRESENT. CURATE the sources that answer the question. ATTRIBUTE who created each source and what kind of evidence it provides. CONNECT evidence to a claim without stretching beyond it. LIMIT the claim by naming uncertainty, missing voices or disagreement. PRESENT the interpretation so an audience can follow the evidence trail. A polished display can still be misleading if its labels overclaim what the sources prove.

1. What conclusion does this passage support, and what would go beyond its evidence?

2. Use “MAP” and “MISSING VOICE” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Evidence desk · Read these alongside the passage.

MISSING VOICE: The collection contains little evidence from young people or workers displaced by later changes. That gap limits how complete the exhibition can be.

Write a curator statement for a four-item exhibition. State an interpretation, use different source types and acknowledge a missing voice or competing interpretation.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

Maths & reasoning

Worked example

Split 44 counters in the ratio 6:5. How many belong in each group?

11 equal parts; each part is 4. Multiply each ratio number by this amount. Answer: 24 and 20.

1. Split 40 counters in the ratio 6:4. How many belong in each group?

2. Split 60 counters in the ratio 9:6. How many belong in each group?

3. Translate point (5, -3) by (-3, 4). Give the new point and describe the movement.

4. Temperature starts at -8°C, rises 6°C, then falls 10°C. What is it now?

5. Temperature starts at -4°C, rises 3°C, then falls 4°C. What is it now?

6. A learner gives this answer: “32 and 20.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Split 52 counters in the ratio 8:5. How many belong in each group?

7. Your exhibition wall has 12 equal display panels. You allocate 3 to maps/data, 5 to source evidence and 4 to interpretation/reflection. What percentage of the panels are used for source evidence?

TERM 2 · WEEK 9 · THE EXHIBITION

Apply & reflect

Make thinking visible

Draw a cause → change → consequence chain or a labelled place-and-power map. Include four details from the printed evidence. Mark one missing voice or uncertain link.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Finish the paper project and write a qualified conclusion. Reflect on one next step.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

TERM 2 · REVIEW AND PROJECT SHOWCASE

Pause, check, improve

1. Summarise the most important idea from this term in your own words.

2. Choose two weeks. Explain a connection between their evidence or systems.

3. Correct one maths error. Show the original misconception and a reliable method.

4. Present your paper project: central claim, strongest evidence and a limitation.

5. What changed after a counterpoint, test or feedback? Give a specific example.

6. Set one achievable next step. What support or strategy will help?

TERM 3 • PLAN YOUR INQUIRY

SYSTEMS UNDER PRESSURE

What happens when a system is pushed — and how can we understand, repair or improve it?

Choose a biological, environmental, physical, engineered or community-infrastructure system; map it, find weak points, model disruption, design an improvement, test, revise and present a more resilient solution.

The nine-week route

1. Cell City
2. Powered by the Sun
3. Ecosystem: Critical
4. Matter Lab
5. Heatwave
6. Force Lab
7. Lost
8. Build It Better
9. System Failure

Project question:

Audience and purpose:

What I already know / what I need to find out:

Read & investigate

A city works because different parts do different jobs

A cell is small, but it is not simple. Different structures carry out different jobs, and the cell depends on those jobs being coordinated. A membrane helps regulate exchange with the surroundings. Cytoplasm provides the setting for many reactions. The nucleus contains genetic information, while mitochondria are involved in releasing usable energy. Plant cells have additional structures including a cell wall, chloroplasts and a large vacuole. Specialised cells take the same systems idea further: a root-hair cell, for example, has a shape suited to absorption. The important question is not only “What is this part called?” but “What changes in the system if this part cannot do its job?”

Teaching note

A cell is the basic structural unit of living things. In a simplified school model, the CELL MEMBRANE controls movement into and out of the cell, CYTOPLASM is where many chemical reactions occur, the NUCLEUS contains genetic material, and MITOCHONDRIA are involved in releasing usable energy through respiration. Plant cells also have a CELL WALL for support, a large VACUOLE containing cell sap, and CHLOROPLASTS that contain chlorophyll and are involved in photosynthesis. The key systems idea is PART → FUNCTION → INTERACTION → WHOLE CELL. A specialised cell is not “better”; its structures are suited to a particular function.

1. Identify the main claim or problem. Give one detail that helps a reader understand it.

2. Use “BOUNDARY FAILURE” and “SPECIALISED CELL” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 3 • WEEK 1 • CELL CITY

Maths & reasoning

Worked example

A map uses 1 cm : 35 km. Two places are 7 cm apart on the map. Find the actual distance.

Multiply map distance by scale: 7×35 . Answer: 245 km.

1. A map uses 1 cm : 30 km. Two places are 7 cm apart on the map. Find the actual distance.

2. A map uses 1 cm : 15 km. Two places are 3 cm apart on the map. Find the actual distance.

3. Fixed costs are \$72; price is \$8; unit cost is \$4. Find the minimum whole sales to break even.

4. A cuboid measures 9 cm $\times$ 6 cm $\times$ 3 cm. Find its volume.

5. Translate point (5, -3) by (-3, 4). Give the new point and describe the movement.

6. A learner gives this answer: “315 km.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A map uses 1 cm : 35 km. Two places are 9 cm apart on the map. Find the actual distance.

7. A diagram shows a cell 60 mm wide, while the real cell is 0.06 mm wide. How many times larger is the diagram than the real cell?

TERM 3 · WEEK 1 · CELL CITY

Apply & reflect

Make thinking visible

Draw a labelled system model with at least four parts and arrows showing interactions. Mark a possible failure point, its downstream effect and one proposed improvement.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Choose a focused question and a fictional audience. Record why the question matters.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

Energy enters the living system as light

Inside a leaf, chloroplasts contain chlorophyll that absorbs light. During photosynthesis, that captured energy is used in a process that forms glucose from carbon dioxide and water, while oxygen is produced. The glucose stores chemical energy. A plant may use sugars to build other materials, store them, or break them down during respiration to release usable energy. This is why a plant is not simply “making oxygen”: it is part of a larger energy system. If light, water or carbon dioxide becomes limiting, the outputs of the system can change. A fair investigation changes one main factor at a time so the evidence is easier to interpret.

Teaching note

Photosynthesis is a system for capturing light energy. In a simplified model, CARBON DIOXIDE + WATER → GLUCOSE + OXYGEN, with light energy captured by chlorophyll in chloroplasts. The glucose stores chemical energy and can be used to build materials, stored, or broken down during RESPIRATION to release usable energy for life processes. Plants photosynthesise and respire. To investigate one factor fairly, identify the INDEPENDENT VARIABLE you change, the DEPENDENT VARIABLE you measure and the relevant CONTROLLED VARIABLES you keep consistent. Use INPUT → PROCESS → OUTPUT → EVIDENCE.

1. Summarise the passage in two sentences. Keep facts separate from opinion or inference.

2. Use “BIO-DOME BASELINE” and “SOIL CLAIM” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 3 · WEEK 2 · POWERED BY THE SUN

Write & communicate

Evidence desk · Read these alongside the passage.

BIO-DOME BASELINE: In the fictional chamber model, medium light with correct water and normal carbon dioxide produces a positive starch test and 10 oxygen units per minute.

LOW LIGHT RUN: With water and carbon dioxide unchanged, low light produces 5 oxygen units per minute in the teaching model.

HIGH LIGHT RUN: With water and carbon dioxide unchanged, high light produces 15 oxygen units per minute. The model is simplified and should not be treated as a prediction for every real plant.

RESPIRATION FILE: Plants also carry out cellular respiration. Photosynthesis stores energy in glucose; respiration can release usable energy from glucose for cell processes.

SOIL CLAIM: A fictional post says “plants get all their energy from soil”. Soil can supply water and mineral ions, but the claim confuses material inputs with the light-energy source captured during photosynthesis.

Your writing brief

Explain how a plant obtains and uses energy. Include photosynthesis and respiration, one limiting input and a fair-test principle.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 3 • WEEK 2 • POWERED BY THE SUN

Maths & reasoning

Worked example

Sequence: 2, 10, 18, 26. Give the next two terms and a rule for term n .

Add 8 each time; the n th term is $8(n-1)+2$. Answer: 34, 42; term $n = 8n - 6$.

1. Sequence: 6, 14, 22, 30. Give the next two terms and a rule for term n .

2. Sequence: 3, 7, 11, 15. Give the next two terms and a rule for term n .

3. Calculate $7/12 + 5/13$. Give a simplified fraction.

4. 6 pages are printed in 2 minutes at a constant rate. Find the rate and time for 18 pages.

5. Split 40 counters in the ratio 6:4. How many belong in each group?

6. A learner gives this answer: “14, 17; term $n = 3n - 1$.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Sequence: 2, 5, 8, 11. Give the next two terms and a rule for term n .

7. A light-response table records oxygen output of 4, 8, 12, 15 and 16 units per minute at 20%, 40%, 60%, 80% and 100% light. Which conclusion best fits the data?

TERM 3 · WEEK 2 · POWERED BY THE SUN

Apply & reflect

Make thinking visible

Draw a labelled system model with at least four parts and arrows showing interactions. Mark a possible failure point, its downstream effect and one proposed improvement.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Define three key terms and decide what counts as convincing evidence.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

When the dashboard moves, the whole system may be moving

Kōwhai Stream Reserve is a fictional monitoring site used for this investigation. Its baseline record shows cool water, relatively high dissolved oxygen, low algae cover and a higher index of sensitive stream invertebrates. Four weeks after streamside shade is reduced and a nutrient-rich runoff event is recorded, several indicators change. The water is warmer, dissolved oxygen is lower, algae cover is greater and the sensitive-invertebrate index falls. These patterns fit a system under pressure, but they do not prove that one factor caused every change. Shade, nutrients, flow, weather and interactions among organisms may all matter. Strong ecosystem reasoning traces plausible pathways while staying clear about what the data can and cannot establish.

Teaching note

An ecosystem is a connected system, not a list of species. PRODUCERS capture energy, CONSUMERS obtain energy by eating other organisms, and DECOMPOSERS recycle matter from dead material. ABIOTIC factors such as temperature, light, water flow and dissolved oxygen can change the conditions organisms experience. When one part changes, effects can move through the food web. A useful investigation therefore asks CHANGE → DIRECT EFFECT → INDIRECT EFFECT → DATA → LIMIT. Correlation between two changes can be important evidence, but it does not by itself prove that one variable caused the other.

1. Explain a cause-and-effect relationship in the passage. Use a specific detail.

2. Use “BASELINE · fictional stream data” and “OVERCLAIM” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 3 • WEEK 3 • ECOSYSTEM: CRITICAL

Maths & reasoning

Worked example

A count rises from 200 to 230. Find the percentage increase.

Increase $\div$ original $\times 100 = 30 \div 200 \times 100 = 15\%$. Answer: 15%

1. A count rises from 200 to 220. Find the percentage increase.

2. A count rises from 120 to 144. Find the percentage increase.

3. Sequence: 6, 14, 22, 30. Give the next two terms and a rule for term n .

4. Calculate $4/7 + 3/8$. Give a simplified fraction.

5. A map uses 1 cm : 30 km. Two places are 7 cm apart on the map. Find the actual distance.

6. A learner gives this answer: “15%” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A count rises from 100 to 115. Find the percentage increase.

7. The sensitive-invertebrate index falls from 72 to 54. What is the percentage decrease?

TERM 3 · WEEK 3 · ECOSYSTEM: CRITICAL

Apply & reflect

Make thinking visible

Draw a labelled system model with at least four parts and arrows showing interactions. Mark a possible failure point, its downstream effect and one proposed improvement.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Collect three relevant details from the printed weekly sources; label their origins.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

A useful model explains patterns without pretending to be a photograph

Matter can change even when we cannot see its particles directly. A solid keeps its shape because its particles stay in closely packed positions while vibrating. A liquid flows because its particles can move around one another. A gas spreads through its container because its particles are much farther apart and move freely. Heating can increase particle motion, while cooling reduces it. If a material expands as it warms, a particle model represents this mainly through changed spacing — not by drawing each particle larger. State changes such as melting and condensation can be explained by changes in particle movement and arrangement while the substance remains the same kind of substance. The model is useful precisely because it simplifies reality, so its limitations should stay visible.

Teaching note

The particle model helps explain matter that is too small to see directly. In a SOLID, particles are closely packed and vibrate around fixed positions. In a LIQUID, particles remain close together but can move past one another. In a GAS, particles are much farther apart and move freely through the available space. Heating usually increases particle motion; cooling reduces it. During thermal expansion, the particles themselves do not swell — average spacing between particles can increase. Changes such as MELTING, FREEZING, EVAPORATION / BOILING and CONDENSATION change the state of a substance, not its chemical identity. Use OBSERVATION → PARTICLE MODEL → EXPLANATION → MODEL LIMIT.

1. Which detail would you put first in a summary, and why? Explain its importance.

2. Use “SOLID MODEL” and “MODEL LIMIT” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Write & communicate

Evidence desk • Read these alongside the passage.

SOLID MODEL: The simplified solid model shows particles packed closely in an ordered arrangement, vibrating around positions rather than travelling through the whole sample.

LIQUID MODEL: The liquid model keeps particles close together but allows them to move past one another, helping explain why a liquid flows while retaining roughly the same volume.

GAS MODEL: The gas model shows particles widely spaced and moving throughout the available container. The empty-looking space is part of the model, not evidence that gas has no matter.

EXPANSION CHECK: When the virtual sample is heated, the model increases particle motion and average spacing. The particle dots do not become larger because thermal expansion is not particles physically swelling.

MODEL LIMIT: The animated dots are not literal photographs of atoms or molecules. Their size, colour and spacing are exaggerated so patterns can be seen.

Your writing brief

Explain solid, liquid and gas using particle arrangement and movement. Include heating and cooling, and explain why particles do not simply grow bigger.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 3 · WEEK 4 · MATTER LAB

Maths & reasoning

Worked example

Temperature starts at -3°C , rises 5°C , then falls 8°C . What is it now?

$-3 + 5 - 8 = -6$. Use a number line if useful. Answer: -6°C .

1. Temperature starts at -3°C , rises 4°C , then falls 6°C . What is it now?

2. Temperature starts at -6°C , rises 6°C , then falls 10°C . What is it now?

3. A cuboid measures $9\text{ cm} \times 2\text{ cm} \times 3\text{ cm}$. Find its volume.

4. A bag has 5 red and 4 blue tokens. A token is chosen at random. Find $P(\text{red})$ and $P(\text{not red})$.

5. A \$50 item has 30% off. Calculate the saving and sale price.

6. A learner gives this answer: “ -8°C .” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Temperature starts at -5°C , rises 5°C , then falls 8°C . What is it now?

7. A virtual chamber cools from 6°C to -8°C . What is the total temperature decrease?

TERM 3 · WEEK 4 · MATTER LAB

Apply & reflect

Make thinking visible

Draw a labelled system model with at least four parts and arrows showing interactions. Mark a possible failure point, its downstream effect and one proposed improvement.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Draft a diagram, table or outline. Mark a claim that needs checking.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

Insulation changes the rate, not the direction of energy transfer

During the fictional heatwave, the water supply begins cooler than the surrounding air. Thermal energy therefore tends to transfer from the warmer surroundings toward the cooler contents. Some transfer can occur through the container walls by conduction, through moving air by convection and through radiation from warmer surroundings or sunlight. Insulation is useful because it can reduce the rate of this transfer. To compare materials fairly, the starting temperature, lid position, location and test duration should remain consistent while the wall material changes. The virtual results can then be compared, but they are still a model rather than a guarantee of how every real container will perform.

Teaching note

THERMAL ENERGY moves when there is a temperature difference. CONDUCTION transfers energy through direct particle interactions, especially through solids. CONVECTION transfers energy through the movement of fluids such as air or water. RADIATION transfers energy by electromagnetic waves and does not require direct contact. Conductors allow thermal energy to transfer relatively quickly; insulators slow that transfer. In an insulation investigation, use TEMPERATURE DIFFERENCE → TRANSFER PATHWAY → RATE → EVIDENCE → DESIGN. A good insulator reduces the rate of transfer; it does not create cold or stop transfer forever.

1. What is the writer trying to help the reader understand? Support your answer with a detail.

2. Use “BASELINE · virtual model” and “OVERCLAIM” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 3 • WEEK 5 • HEATWAVE

Maths & reasoning

Worked example

One notebook costs \$1.43. Find the cost of 4, then the change from \$10.

Multiply the unit cost by quantity. Check the decimal place; subtract from \$10. Answer: Cost \$5.72; change \$4.28.

1. One notebook costs \$1.42. Find the cost of 4, then the change from \$10.

2. One notebook costs \$1.29. Find the cost of 4, then the change from \$10.

3. Convert 3.3 kg to grams, then find the mass of one of 5 equal portions.

4. Translate point (6, -5) by (-3, 4). Give the new point and describe the movement.

5. A cuboid measures 9 cm × 2 cm × 3 cm. Find its volume.

6. A learner gives this answer: “Cost \$5.32; change \$4.68.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. One notebook costs \$1.33. Find the cost of 4, then the change from \$10.

7. The bare-metal model rises from 6.0°C to 15.0°C, while the foam model rises from 6.0°C to 8.6°C. How much smaller is the foam model’s temperature rise?

TERM 3 · WEEK 5 · HEATWAVE

Apply & reflect

Make thinking visible

Draw a labelled system model with at least four parts and arrows showing interactions. Mark a possible failure point, its downstream effect and one proposed improvement.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Add a numerical comparison and explain its context. Check units and denominators.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

A force does not act alone — motion depends on the combined system

The delivery cart is affected by more than the force pushing it forward. Friction and other resistive forces can act in the opposite direction. To understand what the cart will do, the relevant forces must be combined into a net force. If they balance, the net force is zero and the cart does not accelerate. If the forward force is larger, the cart accelerates forward. If an opposing force dominates, motion changes in the opposite direction. Engineering adds another complication: simply removing friction is not always desirable because tyres, brakes and shoes rely on friction for control. A useful test therefore changes one factor at a time, measures the outcome and revises the design from evidence.

Teaching note

A FORCE is a push or pull. When forces acting on an object are BALANCED, the net force is zero; this means the object does not accelerate, although it may still be moving at constant velocity. When forces are UNBALANCED, the net force is not zero and the object's motion changes. FRICTION often acts against relative motion, but engineers may need some friction for grip and braking. Materials can also respond to force: ELASTIC deformation is reversible when the force is removed, while PLASTIC deformation leaves a permanent change. Use FORCES → NET FORCE → MOTION → EVIDENCE → REVISION.

1. Explain a contrast or tension in the passage. Refer to both sides.

2. Use “BASELINE · virtual cart” and “OVERCLAIM” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Write & communicate

Evidence desk • Read these alongside the passage.

BASELINE • virtual cart: With a 20 N forward applied force, 10 N opposing friction and a 10 kg model load, the simplified simulator gives a 10 N forward net force.

FRICTION TEST: Keeping the applied force and load the same but increasing opposing friction to 20 N reduces the model net force to 0 N.

APPLIED-FORCE TEST: Keeping friction and load at baseline while increasing the applied force to 30 N increases the model net force to 20 N forward.

FRICTION TRADE-OFF: Lower friction can reduce resistance, but a transport system may still need friction for traction, steering or braking. The best design depends on purpose.

OVERCLAIM: A fictional note says “balanced forces mean the cart must be stopped”. Zero net force means no acceleration; an object can also continue at constant velocity.

Your writing brief

Explain balanced and unbalanced forces. Use the cart evidence, include a net-force calculation and identify a friction trade-off.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 3 · WEEK 6 · FORCE LAB

Maths & reasoning

Worked example

Solve $5x + 6 = 51$. Show how you check x .

Subtract 6, then divide by 5; check $5 \times 9 + 6 = 51$. Answer: $x = 9$.

1. Solve $5x + 5 = 45$. Show how you check x .

2. Solve $8x + 2 = 58$. Show how you check x .

3. Calculate $(4 \times 10^5) \div (4 \times 10^2)$. Give an ordinary number.

4. A result changes from 40% to 55%. Find the percentage-point change AND relative percentage increase.

5. A result changes from 20% to 35%. Find the percentage-point change AND relative percentage increase.

6. A learner gives this answer: " $x = 5$." to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Solve $7x + 6 = 41$. Show how you check x .

7. A cart has a 30 N forward applied force and 10 N of opposing friction. What is the net force?

TERM 3 • WEEK 6 • FORCE LAB

Apply & reflect

Make thinking visible

Draw a labelled system model with at least four parts and arrows showing interactions. Mark a possible failure point, its downstream effect and one proposed improvement.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Write a fair counterpoint. Identify a gap or voice the project does not represent.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

A route is a decision that has to survive new information

The search map begins with a last-known position rather than a perfect live location. The map can show distance, terrain and possible routes, while the forecast gives information about conditions likely to change. Neither source is enough alone. A shorter route may cross terrain that becomes unsuitable as visibility or water levels change. A longer route may take more time but provide a more defensible margin. Daylight and group capability also matter. Strong navigation reasoning therefore keeps returning to the same question: has anything changed enough that the plan should change too? The best answer is not always to continue. Sometimes the evidence supports slowing down, changing route, stopping at a safer point or requesting additional support.

Teaching note

Navigation is a SYSTEM: POSITION + MAP + TERRAIN + CONDITIONS + TIME + CAPABILITY → DECISION → RECHECK. A map gives a model of place, not the whole situation. Grid coordinates help locate position; scale converts map distance into real distance; terrain changes travel difficulty; weather can alter visibility, water levels and exposure; daylight limits available time; and group capability affects what a realistic route looks like. Good decisions are updated when evidence changes. A route that was reasonable at 11:00 may not still be reasonable at 15:00. This is a fictional learning simulation, not real-world trip or rescue advice.

1. Identify one explicit fact and one reasonable inference. Explain the evidence for the inference.

2. Use “LAST-KNOWN POSITION” and “MODEL LIMIT” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 3 · WEEK 7 · LOST

Write & communicate

Evidence desk · Read these alongside the passage.

LAST-KNOWN POSITION: The fictional team checked in at grid D3 at 13:10 before moving toward the northern track junction.

MAP + SCALE: The simplified map uses 1 grid square = 1 km. Route A is shorter but crosses steep terrain; Route B is longer but stays on lower-gradient track.

WEATHER UPDATE: A fictional front is expected to reduce visibility on exposed high ground and increase stream flow later in the afternoon.

DAYLIGHT: The scenario gives 2 hours 20 minutes of usable daylight at the moment the route must be reconsidered.

MODEL LIMIT: The map, forecast and travel-time estimates simplify reality and cannot guarantee track, water or weather conditions at every point.

Your writing brief

Write a navigation brief. Compare the route or condition evidence, include a time calculation and explain when requesting support or turning back is appropriate.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 3 • WEEK 7 • LOST

Maths & reasoning

Worked example

A fictional vehicle travels 7.5 km at a steady 5 km/h. Find the time in hours and minutes.

Time = distance $\div$ speed = $7.5 \div 5$. This assumes a steady speed with no stops. Answer: 1.5 hours = 90 minutes.

1. A fictional vehicle travels 13.5 km at a steady 9 km/h. Find the time in hours and minutes.

2. A fictional vehicle travels 9 km at a steady 6 km/h. Find the time in hours and minutes.

3. Split 40 counters in the ratio 5:5. How many belong in each group?

4. Solve $8x + 2 = 50$. Show how you check x .

5. A rectangle is 9 cm by 6 cm. Find its perimeter and area, with units.

6. A learner gives this answer: “1.5 hours = 90 minutes.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A fictional vehicle travels 7.5 km at a steady 5 km/h. Find the time in hours and minutes.

7. A fictional route is 7.2 km long. At an estimated average travel rate of 3.6 km/h, how long would the route take before adding any safety margin or delays?

TERM 3 · WEEK 7 · LOST

Apply & reflect

Make thinking visible

Draw a labelled system model with at least four parts and arrows showing interactions. Mark a possible failure point, its downstream effect and one proposed improvement.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Make a draft page or paper prototype. Ask someone to comment, or use the checklist yourself.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

A better build is one you can explain, not just one with a higher score

The final prototype combines several subsystems. Its frame carries load, the drive creates movement, the electrical supply powers the system and the control method determines when movement stops. These choices interact. A reinforced frame may improve stability but increase mass. A stronger drive may reduce delivery time but use more energy. A sensor may improve control but create another dependency. The engineering challenge is therefore not to maximise every number. It is to define what matters, test the system under pressure, identify the weakest point and make a change that can be justified by the evidence.

Teaching note

Engineering systems combine parts that must work together. INPUTS provide energy, information or materials. PROCESSES transform or move those inputs, and OUTPUTS are the results the system produces. A useful design also has CRITERIA that can be tested and CONSTRAINTS that limit what is possible. Engineers rarely get a perfect first version. They use BUILD → TEST → FIND WEAKNESS → REVISE → RETEST. Strong iteration changes a design for a reason supported by evidence, while tracking trade-offs such as mass, material use, energy, cost, speed or complexity.

1. Suggest a more precise alternative title. Explain how it represents the passage accurately.

2. Use “BASELINE BUILD” and “WEAK ITERATION” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 3 • WEEK 8 • BUILD IT BETTER

Maths & reasoning

Worked example

A count rises from 160 to 184. Find the percentage increase.

Increase $\div$ original $\times 100 = 24 \div 160 \times 100 = 15\%$. Answer: 15%

1. A count rises from 160 to 176. Find the percentage increase.

2. A count rises from 80 to 96. Find the percentage increase.

3. Data: 6, 8, 8, 10, 13. Find the mean, median and range.

4. Two angles in a triangle are 50° and 60° . Find the third and explain.

5. Fixed costs are \$60; price is \$9; unit cost is \$5. Find the minimum whole sales to break even.

6. A learner gives this answer: “15%” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A count rises from 200 to 230. Find the percentage increase.

7. A baseline model has stability 72/100. After one justified revision it reaches 86/100. By how many points did the stability score increase?

TERM 3 · WEEK 8 · BUILD IT BETTER

Apply & reflect

Make thinking visible

Draw a labelled system model with at least four parts and arrows showing interactions. Mark a possible failure point, its downstream effect and one proposed improvement.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Revise one choice in response to evidence or feedback. Record before and after.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

The loudest alarm is not always the first problem

Station Kōwhai has several alarms, but the timing matters. The power controller fault appears first. Soon afterward, systems that depend on reliable electrical energy begin behaving abnormally: the cold-store compressor cycles, the water pump drops out and greenhouse irrigation stops. The blocked access gate is important because it slows repair, but it does not explain why several electrically dependent systems changed together. A useful systems diagnosis looks for shared dependencies and asks which repair restores the greatest number of functions without creating new risks. It also plans for the next failure: a backup pump, protected battery reserve, better monitoring or a manual bypass may prevent one controller fault from causing the same cascade again.

Teaching note

A complex failure is rarely solved by treating each alarm as an isolated fact. Use SYSTEM MAP → ROOT CAUSE → CASCADE → PRIORITY → REPAIR → RESILIENCE. A ROOT CAUSE is an upstream problem that helps explain several later failures. A SYMPTOM is evidence that something is wrong but may not be the original fault. CASCADING FAILURE happens when one disrupted part changes conditions for other parts. Resilience can come from redundancy, backup energy, alternative pathways, monitoring, spare capacity or designs that fail safely. The goal is not to make failure impossible; it is to reduce the chance that one fault collapses the whole system.

1. What conclusion does this passage support, and what would go beyond its evidence?

2. Use “POWER LOG” and “MODEL LIMIT” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 3 · WEEK 9 · SYSTEM FAILURE

Write & communicate

Evidence desk · Read these alongside the passage.

POWER LOG: Main generation falls from 100% to 58% after a controller fault. Non-essential loads remain connected, so the battery reserve is being depleted faster than planned.

COLD STORE: Cold-store temperature rises from 3°C to 11°C over four hours after ventilation and compressor operation become intermittent.

WATER SYSTEM: Water pressure drops after the electric pump begins cycling off. The storage tank still contains water, suggesting supply exists but movement through the system is unreliable.

GREENHOUSE: Irrigation stops when the pump loses power. Plants are not yet damaged, but the biological system will be affected if water delivery is not restored.

ACCESS ROUTE: A service route is blocked by a mechanical gate failure. It affects repair access but does not explain the simultaneous power, cold-store and water symptoms.

MODEL LIMIT: The station data is simplified and incomplete. Several faults could coexist, so the strongest diagnosis should stay proportional to the evidence.

Your writing brief

Write an incident report. Trace a likely upstream failure through three effects. Prioritise two repairs and explain an uncertainty.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

Maths & reasoning

Worked example

A result changes from 45% to 60%. Find the percentage-point change AND relative percentage increase.

$60 - 45 = 15$ points. Relative change = $15 \div 45 \times 100$. These measures answer different questions. Answer: 15 percentage points; 33.3% relative increase.

1. A result changes from 45% to 60%. Find the percentage-point change AND relative percentage increase.

2. A result changes from 25% to 40%. Find the percentage-point change AND relative percentage increase.

3. Two angles in a triangle are 50° and 40° . Find the third and explain.

4. A stall has fixed costs \$30, unit cost \$5, and price \$9. Find revenue and profit for 20 sales.

5. Data: 6, 8, 8, 10, 13. Find the mean, median and range.

6. A learner gives this answer: “15 percentage points; 75.0% relative increase.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A result changes from 20% to 35%. Find the percentage-point change AND relative percentage increase.

7. Station output falls from 100% to 58%. What percentage-point drop is this?

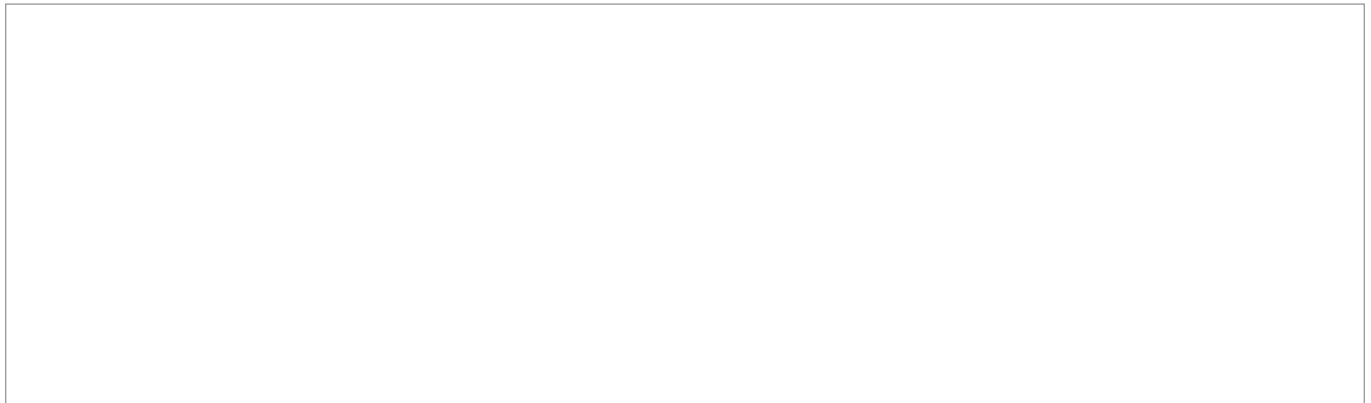
TERM 3 · WEEK 9 · SYSTEM FAILURE

Apply & reflect

Make thinking visible

Draw a labelled system model with at least four parts and arrows showing interactions. Mark a possible failure point, its downstream effect and one proposed improvement.

Draw, label or make a table here.



Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Finish the paper project and write a qualified conclusion. Reflect on one next step.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

TERM 3 • REVIEW AND PROJECT SHOWCASE

Pause, check, improve

1. Summarise the most important idea from this term in your own words.

2. Choose two weeks. Explain a connection between their evidence or systems.

3. Correct one maths error. Show the original misconception and a reliable method.

4. Present your paper project: central claim, strongest evidence and a limitation.

5. What changed after a counterpoint, test or feedback? Give a specific example.

6. Set one achievable next step. What support or strategy will help?

TERM 4 • PLAN YOUR INQUIRY

MAKE YOUR MOVE

What can I create, improve or start — and how do I turn an idea into something real?

Turn an idea into a tested creation, service, campaign, digital experience, community solution or venture.

The nine-week route

1. Creator Studio
2. Design for Humans
3. Start Something
4. Price It
5. Future Tech
6. Prototype
7. My Next Level
8. Pitch It
9. Launch

Project question:

Audience and purpose:

What I already know / what I need to find out:

Read & investigate

A creative choice is a decision, not decoration

A designer can communicate an idea before the audience reads a single sentence. Size, position, rhythm, colour, sound and silence all influence what is noticed first and how a piece feels. The same concept can become calm and reflective in one medium, urgent in another, or confusing if too many elements compete. Symbols add another layer because they carry context. A responsible creator asks what a symbol means, where it comes from and whether using it is appropriate, rather than treating culture as a visual shortcut.

Teaching note

Creative communication works through PURPOSE → AUDIENCE → CHOICE → EFFECT. A focal point directs attention. Repetition can create rhythm. Contrast can separate ideas. Negative space can make one element feel more important. Sound, timing and silence create different effects from colour and shape. Symbols are not universal: context matters, and culturally significant imagery should not be copied simply because it looks distinctive.

1. Identify the main claim or problem. Give one detail that helps a reader understand it.

2. Use “COMPOSITION” and “DECORATION CLAIM” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Write & communicate

Evidence desk • Read these alongside the passage.

- COMPOSITION: A large high-contrast element placed away from competing detail is likely to become a visual focal point.
- MEDIUM: A pause in audio can create emphasis in a way that has no exact visual equivalent; changing medium can therefore change how meaning is experienced.
- SYMBOL: A symbol can carry different meanings for different audiences, communities or contexts. Meaning should be researched rather than assumed.
- DECORATION CLAIM: “Any cultural pattern can be used anywhere as long as it looks good.” This ignores context, ownership, tikanga and permission.

Your writing brief

Compare two ways of communicating the same message. Explain deliberate choices of layout, words and medium for a stated audience.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 4 · WEEK 1 · CREATOR STUDIO

Maths & reasoning

Worked example

Split 56 counters in the ratio 9:5. How many belong in each group?

14 equal parts; each part is 4. Multiply each ratio number by this amount. Answer: 36 and 20.

1. Split 52 counters in the ratio 9:4. How many belong in each group?

2. Split 44 counters in the ratio 5:6. How many belong in each group?

3. A circle has radius 5 cm. Use $\pi = 3.14$ to find circumference and area.

4. Split 36 counters in the ratio 4:5. How many belong in each group?

5. 14 pages are printed in 2 minutes at a constant rate. Find the rate and time for 42 pages.

6. A learner gives this answer: “16 and 20.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Split 36 counters in the ratio 4:5. How many belong in each group?

7. A poster is designed at 1200 px × 800 px. If it is scaled proportionally to 600 px wide, what height should it be?

TERM 4 · WEEK 1 · CREATOR STUDIO

Apply & reflect

Make thinking visible

Draw a paper design or decision plan. Label the user need, two constraints, a success criterion and a test. Show one revision that evidence might require.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Choose a focused question and a fictional audience. Record why the question matters.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

If people cannot use it, the design problem is not finished

A fictional community information station has a large screen but still creates barriers. Its text is small and low-contrast. The controls are mounted high. Instructions are written as a dense paragraph, and there is no audio or simplified alternative. None of those problems means every user will struggle in the same way, but each creates avoidable friction. Human-centred design makes the intended users, constraints and test criteria explicit before choosing a solution.

Teaching note

Human-centred design starts with PEOPLE → NEED → BARRIER → CRITERIA → REDESIGN → TEST. Accessibility is not a decorative extra added at the end. A design may function for one person while creating unnecessary barriers for another. Strong redesigns make the success criterion visible: readable at a stated distance, reachable within a stated height range, understandable with less reading, or available through more than one mode.

1. Summarise the passage in two sentences. Keep facts separate from opinion or inference.

2. Use “LOW CONTRAST” and “AESTHETICS ONLY” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Write & communicate

Evidence desk · Read these alongside the passage.

LOW CONTRAST: The fictional display uses pale grey text on a pale background, making key information harder to distinguish.

REACH: The only interactive control is mounted at 1.75 m, so some users cannot comfortably reach it.

READING LOAD: Important instructions are presented as one dense paragraph with no headings, sequence or plain-language summary.

AESTHETICS ONLY: A redesign proposal changes colours but does not address the identified access barrier.

Your writing brief

Write a redesign brief. Identify two user barriers, propose two changes and set a measurable success criterion.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

Maths & reasoning

Worked example

A rectangle is 8 cm by 8 cm. Find its perimeter and area, with units.

Perimeter = $2(\text{length} + \text{width})$; area = $\text{length} \times \text{width}$. Units differ. Answer: Perimeter 32 cm; area 64 cm².

1. A rectangle is 8 cm by 7 cm. Find its perimeter and area, with units.

2. A rectangle is 11 cm by 4 cm. Find its perimeter and area, with units.

3. A result changes from 50% to 65%. Find the percentage-point change AND relative percentage increase.

4. A rectangle is 10 cm by 8 cm. Find its perimeter and area, with units.

5. Solve $8x + 3 = 75$. Show how you check x.

6. A learner gives this answer: “Perimeter 36 cm; area 80 cm².” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A rectangle is 10 cm by 8 cm. Find its perimeter and area, with units.

7. A rectangular information panel is 80 cm wide and 45 cm high. What is its area?

TERM 4 · WEEK 2 · DESIGN FOR HUMANS

Apply & reflect

Make thinking visible

Draw a paper design or decision plan. Label the user need, two constraints, a success criterion and a test. Show one revision that evidence might require.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Define three key terms and decide what counts as convincing evidence.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

Useful ideas solve something specific

Three fictional teams want to start something. One proposes reusable wayfinding kits for community events. Another wants a repair-and-swap pop-up. A third suggests a low-cost activity pass. Each creates a different kind of value, and each leaves some needs unsolved. The strongest choice depends on the evidence available, how difficult the idea is to deliver and what outcome matters most. A project can be worthwhile even if its main value is not profit.

Teaching note

Use PROBLEM → WHO → EVIDENCE → OPTIONS → VALUE → CHOICE. Value can be financial, practical, environmental, creative or social. A strong idea does not begin with “this would be cool”; it begins with a reason someone would use, support or benefit from it. Survey evidence can help, but sample size and who answered still matter.

1. Explain a cause-and-effect relationship in the passage. Use a specific detail.

2. Use “EVENT WAYFINDING” and “FOUNDER EXCITEMENT” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 4 · WEEK 3 · START SOMETHING

Write & communicate

Evidence desk · Read these alongside the passage.

EVENT WAYFINDING: In a fictional event survey, 27 of 40 respondents say they have struggled to find activities or entrances at a large community event.

REPAIR POP-UP: A fictional waste audit finds 18 repairable small items in one collection period, suggesting some items could stay in use longer.

ACTIVITY ACCESS: A fictional youth group says cost and transport are two barriers to joining activities; an activity pass may help cost but does not solve transport.

FOUNDER EXCITEMENT: “I love this idea, so everyone else will too.” Enthusiasm is useful motivation but not evidence of need.

Your writing brief

Recommend one idea for a fictional venture. Explain the problem, intended users, value, feasibility and one assumption that needs testing.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 4 · WEEK 3 · START SOMETHING

Maths & reasoning

Worked example

A count rises from 100 to 110. Find the percentage increase.

Increase $\div$ original $\times 100 = 10 \div 100 \times 100 = 10\%$. Answer: 10%

1. A count rises from 100 to 130. Find the percentage increase.

2. A count rises from 160 to 184. Find the percentage increase.

3. One notebook costs \$1.23. Find the cost of 4, then the change from \$10.

4. Convert 6.2 kg to grams, then find the mass of one of 5 equal portions.

5. Convert 9.4 kg to grams, then find the mass of one of 5 equal portions.

6. A learner gives this answer: “10%” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A count rises from 140 to 154. Find the percentage increase.

7. In a fictional survey, 27 of 40 people report a wayfinding problem. What percentage is that?

TERM 4 · WEEK 3 · START SOMETHING

Apply & reflect

Make thinking visible

Draw a paper design or decision plan. Label the user need, two constraints, a success criterion and a test. Show one revision that evidence might require.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Collect three relevant details from the printed weekly sources; label their origins.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

A sale is not profit until the costs are counted

A fictional pop-up product starts with a variable cost of \$6 per unit: \$4.50 for materials and \$1.50 for packaging. There is also a \$30 setup cost. If the selling price is \$10, each sale contributes \$4 toward fixed cost and then profit. When the supplier raises the unit cost by \$1.20, that contribution falls unless the price, product, supplier or scope changes. Good financial planning recalculates rather than hiding the change.

Teaching note

Use UNIT COST → PRICE → REVENUE → ALL COSTS → PROFIT/LOSS → RECHECK. REVENUE is money received from sales. PROFIT is what remains after relevant costs are subtracted. A price must be considered alongside demand, affordability, competitors, value and costs. Ethical pricing communicates real prices honestly; a made-up “was” price is not evidence of a genuine discount.

1. Which detail would you put first in a summary, and why? Explain its importance.

2. Use “VARIABLE COST” and “FAKE SALE” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 4 • WEEK 4 • PRICE IT

Maths & reasoning

Worked example

A stall has fixed costs \$50, unit cost \$4, and price \$8. Find revenue and profit for 20 sales.

Profit = revenue – variable costs – fixed costs = $160 - 80 - 50$. A negative result is a loss. Answer: Revenue \$160; profit \$30.

1. A stall has fixed costs \$50, unit cost \$3, and price \$7. Find revenue and profit for 20 sales.

2. A stall has fixed costs \$80, unit cost \$5, and price \$9. Find revenue and profit for 20 sales.

3. A bag has 4 red and 6 blue tokens. A token is chosen at random. Find P(red) and P(not red).

4. A count rises from 160 to 184. Find the percentage increase.

5. One notebook costs \$1.28. Find the cost of 4, then the change from \$10.

6. A learner gives this answer: “Revenue \$160; profit \$10.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A stall has fixed costs \$70, unit cost \$4, and price \$8. Find revenue and profit for 20 sales.

7. After the supplier change, variable cost is \$7.20 per unit. If 20 units sell for \$10 each and fixed setup cost is \$30, what is the profit?

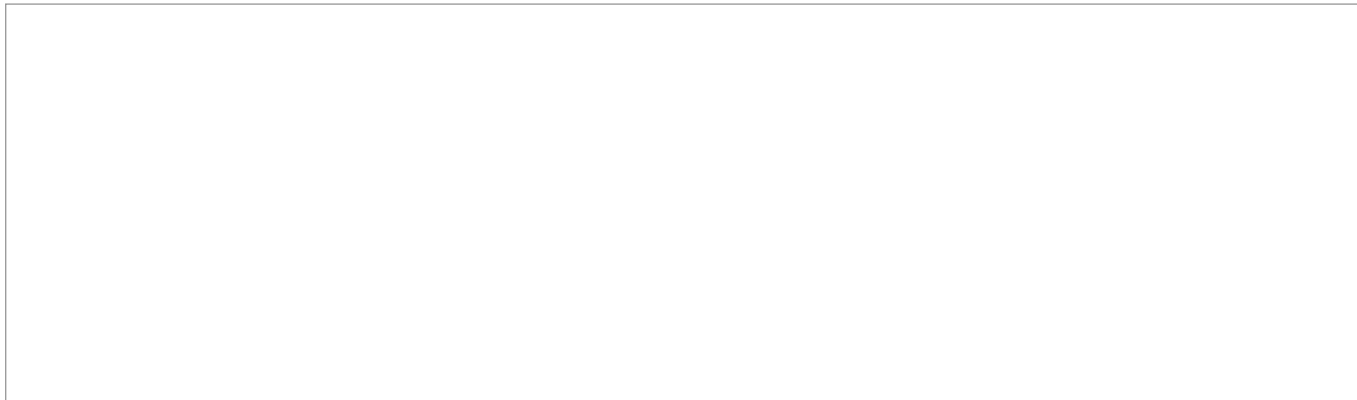
TERM 4 · WEEK 4 · PRICE IT

Apply & reflect

Make thinking visible

Draw a paper design or decision plan. Label the user need, two constraints, a success criterion and a test. Show one revision that evidence might require.

Draw, label or make a table here.



Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Draft a diagram, table or outline. Mark a claim that needs checking.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

Future-ready means knowing where the human stays

A fictional youth hub uses small automations for reminders and message triage. Clear low-risk rules can save time, but the team does not treat automation as a replacement for judgement. It limits the data collected, checks uncertain outputs and keeps a person responsible for decisions that could affect someone. The point of technology is not to remove people from every process; it is to use the right tool for the right task.

Teaching note

Use PURPOSE → INPUT → RULE → OUTPUT → CHECK. Automation is useful when the task and rule are clear. AI can generate or classify patterns, but it can still make errors and reflect limitations in data or design. A safe system collects only the data it needs, protects that data and keeps a human check where the outcome could matter.

1. What is the writer trying to help the reader understand? Support your answer with a detail.

2. Use “RULE” and “HYPE CLAIM” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Maths & reasoning

Worked example

A bag has 6 red and 4 blue tokens. A token is chosen at random. Find $P(\text{red})$ and $P(\text{not red})$.

Count equally likely tokens, not colour names; probabilities add to 1. Answer: $P(\text{red}) = 3/5$; $P(\text{not red}) = 2/5$.

1. A bag has 6 red and 3 blue tokens. A token is chosen at random. Find $P(\text{red})$ and $P(\text{not red})$.

2. A bag has 9 red and 5 blue tokens. A token is chosen at random. Find $P(\text{red})$ and $P(\text{not red})$.

3. A map uses 1 cm : 15 km. Two places are 5 cm apart on the map. Find the actual distance.

4. Sequence: 4, 12, 20, 28. Give the next two terms and a rule for term n .

5. A fictional vehicle travels 13.5 km at a steady 9 km/h. Find the time in hours and minutes.

6. A learner gives this answer: " $P(\text{red}) = 2/3$; $P(\text{not red}) = 1/3$." to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A bag has 8 red and 4 blue tokens. A token is chosen at random. Find $P(\text{red})$ and $P(\text{not red})$.

7. A filter flags 18 of 120 fictional messages for human review. What percentage is flagged?

TERM 4 · WEEK 5 · FUTURE TECH

Apply & reflect

Make thinking visible

Draw a paper design or decision plan. Label the user need, two constraints, a success criterion and a test. Show one revision that evidence might require.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Add a numerical comparison and explain its context. Check units and denominators.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

TERM 4 • WEEK 6 • PROTOTYPE

Read & investigate

The point of version one is information

A prototype is a question made physical or digital. The first version does not need to look finished; it needs to expose assumptions. If a test fails, record what happened, change the feature linked to the failure and repeat the test. Comparing version one and version two under the same criterion gives stronger evidence than changing several things at once and guessing which change helped.

Teaching note

Prototype with CRITERIA → BUILD → TEST → FAILURE EVIDENCE → REVISION → RETEST. A failed test is useful if it reveals what to improve. Do not move the goalposts after testing. Change the design, not the definition of success, unless new evidence shows the original criterion itself was inappropriate.

1. Explain a contrast or tension in the passage. Refer to both sides.

2. Use “CRITERION” and “LOOKS STRONGER” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Evidence desk · Read these alongside the passage.

VERSION 1: The base stays inside the footprint but the tall side panel twists loose during the shake test.

LOOKS STRONGER: A visual impression without a repeat test does not show whether the failure was fixed.

Write a prototype log. Explain the criteria, failure, proposed revision and how a controlled retest would show improvement.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 4 • WEEK 6 • PROTOTYPE

Maths & reasoning

Worked example

A cuboid measures 7 cm × 5 cm × 3 cm. Find its volume.

Volume = length × width × height. Use cubic units. Answer: 105 cm³.

1. A cuboid measures 7 cm × 4 cm × 3 cm. Find its volume.

2. A cuboid measures 3 cm × 6 cm × 3 cm. Find its volume.

3. 18 pages are printed in 3 minutes at a constant rate. Find the rate and time for 54 pages.

4. A map uses 1 cm : 30 km. Two places are 9 cm apart on the map. Find the actual distance.

5. Calculate $\frac{5}{7} + \frac{1}{4}$. Give a simplified fraction.

6. A learner gives this answer: “135 cm³.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A cuboid measures 9 cm × 5 cm × 3 cm. Find its volume.

7. A prototype footprint is 30 cm by 20 cm. What area does it use?

TERM 4 · WEEK 6 · PROTOTYPE

Apply & reflect

Make thinking visible

Draw a paper design or decision plan. Label the user need, two constraints, a success criterion and a test. Show one revision that evidence might require.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Write a fair counterpoint. Identify a gap or voice the project does not represent.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

Independence is not doing everything alone

A student preparing for Year 8 has several kinds of work in one week. One task needs remembering, one needs repeated practice and one still does not make sense after two serious attempts. Using the same strategy for all three is inefficient. A readiness system matches the strategy to the problem, protects a realistic amount of time and includes a route for asking for help before confusion compounds.

Teaching note

Independent learning is PLAN → TRY → RETRIEVE → CHECK → ADJUST → ASK. Rereading can help you re-enter a topic, but retrieval practice tests whether you can produce the idea yourself. Spacing gives you more than one encounter with the material. Help-seeking is a learning strategy, not a failure, especially when you can show what you tried and where the confusion starts.

1. Identify one explicit fact and one reasonable inference. Explain the evidence for the inference.

2. Use “RETRIEVAL” and “LABEL” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

Write & communicate

Evidence desk • Read these alongside the passage.

RETRIEVAL: Closing the notes and explaining a process from memory reveals what is actually retrievable, then checking corrects errors.

SPACING: Three 20-minute sessions across several days create repeated retrieval opportunities rather than one single exposure.

DISTRACTION FRICTION: Putting a phone away or blocking notifications for a short planned session removes a predictable interruption.

LABEL: “I am just not a maths person.” A fixed label does not identify the strategy, prerequisite knowledge or support that might change performance.

Your writing brief

Write a realistic study plan. Include retrieval, spacing, distraction management and help seeking. Explain how to adjust an unrealistic plan.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 4 • WEEK 7 • MY NEXT LEVEL

Maths & reasoning

Worked example

48 pages are printed in 6 minutes at a constant rate. Find the rate and time for 144 pages.

Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate. Answer: 8 pages/min; 18 minutes.

1. 40 pages are printed in 5 minutes at a constant rate. Find the rate and time for 120 pages.

2. 8 pages are printed in 2 minutes at a constant rate. Find the rate and time for 24 pages.

3. A count rises from 160 to 192. Find the percentage increase.

4. Fixed costs are \$36; price is \$10; unit cost is \$6. Find the minimum whole sales to break even.

5. Two angles in a triangle are 55° and 65° . Find the third and explain.

6. A learner gives this answer: “3 pages/min; 18 minutes.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. 18 pages are printed in 6 minutes at a constant rate. Find the rate and time for 54 pages.

7. You have 100 minutes available across four study days. If you plan 25 minutes each day, what percentage of the available time is used?

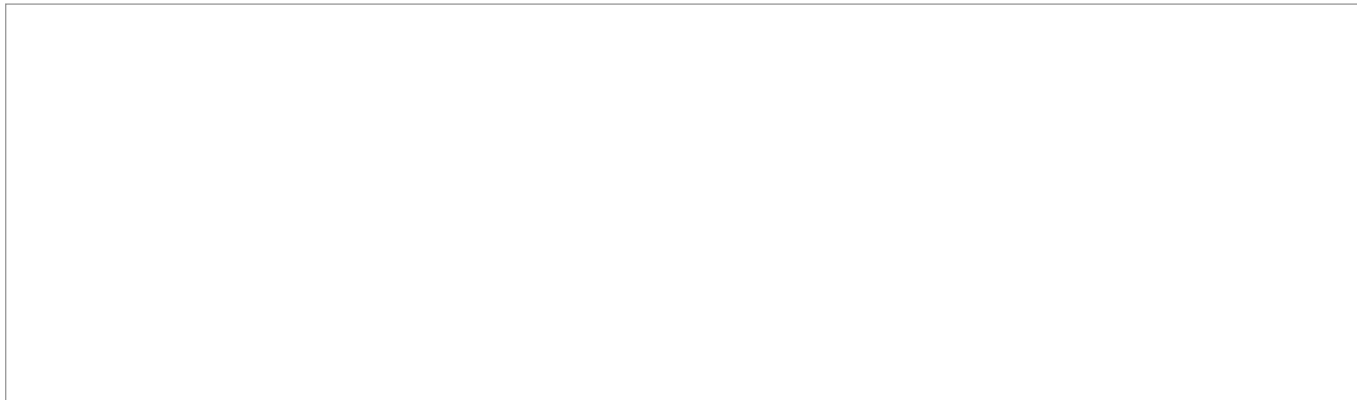
TERM 4 · WEEK 7 · MY NEXT LEVEL

Apply & reflect

Make thinking visible

Draw a paper design or decision plan. Label the user need, two constraints, a success criterion and a test. Show one revision that evidence might require.

Draw, label or make a table here.



Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.



This week's paper project step

Make a draft page or paper prototype. Ask someone to comment, or use the checklist yourself.



Reflect: What did you change after checking evidence, calculations or feedback?



Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

A pitch is a guided decision, not a pile of features

An audience cannot remember every detail of a project. A pitch therefore selects a sequence: what matters, who it matters to, what was tried and what the evidence says. The presenter can use speech, video, audio, slides or writing, but the medium should make the reasoning clearer rather than distract from it. Good pitches also say what they need next: feedback, permission, resources, testing or support.

Teaching note

A strong pitch is HOOK → PROBLEM → WHO → IDEA → EVIDENCE → LIMIT → ASK. The hook earns attention; it does not replace evidence. One useful graph or number with context is often stronger than a crowded slide. A limitation can increase trust when you explain how you would manage or test it.

1. Suggest a more precise alternative title. Explain how it represents the passage accurately.

2. Use “USER NEED” and “HYPE” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 4 · WEEK 8 · PITCH IT

Maths & reasoning

Worked example

Split 44 counters in the ratio 9:2. How many belong in each group?

11 equal parts; each part is 4. Multiply each ratio number by this amount. Answer: 36 and 8.

1. Split 60 counters in the ratio 9:6. How many belong in each group?

2. Split 32 counters in the ratio 5:3. How many belong in each group?

3. Temperature starts at -8°C , rises 6°C , then falls 10°C . What is it now?

4. One notebook costs \$1.45. Find the cost of 4, then the change from \$10.

5. A count rises from 160 to 192. Find the percentage increase.

6. A learner gives this answer: “16 and 8.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. Split 24 counters in the ratio 4:2. How many belong in each group?

7. A 2-minute pitch reserves 30 seconds for evidence. What percentage of the total pitch is evidence time?

TERM 4 · WEEK 8 · PITCH IT

Apply & reflect

Make thinking visible

Draw a paper design or decision plan. Label the user need, two constraints, a success criterion and a test. Show one revision that evidence might require.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Revise one choice in response to evidence or feedback. Record before and after.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

Read & investigate

The final challenge is choosing the tool

Kōwhai Junction is fictional, but its design problem resembles many real community decisions: limited money, several needs and incomplete evidence. Survey respondents could select more than one activity, so the totals cannot be treated as separate populations. A mixed-zone proposal costs less than the total budget and addresses several common uses, but it still requires decisions about supervision, storage and how the space changes over time.

Teaching note

Final missions use ORIENT → SELECT EVIDENCE → CALCULATE → COMPARE → DECIDE → COMMUNICATE → REFLECT. You will not always be told “this is the maths part” or “this is the writing part”. Real problems mix evidence, quantities, people, constraints and communication. The goal is to choose the right tool yourself.

1. What conclusion does this passage support, and what would go beyond its evidence?

2. Use “USE SURVEY” and “DECORATION OPTION” on the next page. Explain how they support, challenge or qualify each other.

3. Choose an important subject word from the passage or teaching note. Explain its meaning in context and use it accurately in a new sentence.

4. Write one useful question that the evidence does not answer. Explain what additional information would help.

TERM 4 · WEEK 9 · LAUNCH

Write & communicate

Evidence desk · Read these alongside the passage.

USE SURVEY: In a fictional 80-person survey, 46 select quiet study, 39 creative making and 37 low-cost recreation; respondents could choose more than one option.

BUDGET: The mixed-zone option costs \$16,500, leaving \$1,500 contingency inside the \$18,000 budget.

SINGLE COMMENT: One respondent wants a giant screen wall. It is a valid view but does not by itself represent the full group.

DECORATION OPTION: A \$17,500 decoration refresh improves appearance but does not directly respond to the three most common use needs.

Your writing brief

Write a launch recommendation. Balance evidence, cost and user needs. Include one implementation step and reflect on a change in your reasoning.

Plan: audience / main claim / evidence / limitation

Draft and revise (continue in your exercise book if needed).

Check: ☐ clear purpose ☐ evidence ☐ linked ideas ☐ precise words ☐ punctuation

TERM 4 • WEEK 9 • LAUNCH

Maths & reasoning

Worked example

A stall has fixed costs \$30, unit cost \$4, and price \$8. Find revenue and profit for 20 sales.

Profit = revenue – variable costs – fixed costs = $160 - 80 - 30$. A negative result is a loss. Answer: Revenue \$160; profit \$50.

1. A stall has fixed costs \$30, unit cost \$3, and price \$7. Find revenue and profit for 20 sales.

2. A stall has fixed costs \$60, unit cost \$5, and price \$9. Find revenue and profit for 20 sales.

3. A rectangle is 14 cm by 8 cm. Find its perimeter and area, with units.

4. A triangle has base 10 cm and perpendicular height 6 cm. Find its area.

5. A triangle has base 16 cm and perpendicular height 8 cm. Find its area.

6. A learner gives this answer: “Revenue \$160; profit \$30.” to the following task. Show a different checking method, or a diagram, and explain whether it is reasonable. A stall has fixed costs \$50, unit cost \$4, and price \$8. Find revenue and profit for 20 sales.

7. The budget is \$18,000 and the mixed-zone plan costs \$16,500. What percentage of the budget remains as contingency?

TERM 4 · WEEK 9 · LAUNCH

Apply & reflect

Make thinking visible

Draw a paper design or decision plan. Label the user need, two constraints, a success criterion and a test. Show one revision that evidence might require.

Draw, label or make a table here.

Make a defensible decision

Use the printed case to recommend a next step. State a choice, two supporting details and a limitation. Explain what evidence would make you revise the choice.

This week's paper project step

Finish the paper project and write a qualified conclusion. Reflect on one next step.

Reflect: What did you change after checking evidence, calculations or feedback?

Self-check: ☐ I explained why. ☐ I checked units/sources. ☐ I named uncertainty.

TERM 4 • REVIEW AND PROJECT SHOWCASE

Pause, check, improve

1. Summarise the most important idea from this term in your own words.

2. Choose two weeks. Explain a connection between their evidence or systems.

3. Correct one maths error. Show the original misconception and a reliable method.

4. Present your paper project: central claim, strongest evidence and a limitation.

5. What changed after a counterpoint, test or feedback? Give a specific example.

6. Set one achievable next step. What support or strategy will help?
