

36 WEEKS • FOUR TERMS

Answer & teaching guide

This guide accompanies the ICONIC GAMES printable workbook. Use it after an attempt, or to support teaching. It is not the answer key for the different online programme.

How to assess

Maths: accept equivalent fractions, exact values or appropriately rounded decimals with correct units. Look at the method as well as the final number. Reading: accept defensible responses grounded in the printed evidence. Writing and application: use the criteria below, not a single preferred opinion.

Developing

The learner states an idea but needs support to link evidence, explain methods or qualify claims.

Secure

The learner uses relevant evidence, shows a valid method and gives a clear, purposeful explanation with a limitation.

Extending

The learner compares alternatives, tests assumptions, evaluates a counterpoint and revises a claim or design in response to evidence.

Keep feedback actionable

Name one strength, one specific improvement and a next step. Do not score learners against each other. Reading length, prior knowledge and learning support affect the time needed.

Safeguarding and safety

Keep wellbeing, relationships and money scenarios fictional. Do not request personal disclosure. These are paper science and engineering models; do not conduct chemical, mains-electricity, hazard or expedition activities as homework. Use trusted-adult support when questions raise a concern.

FOR TEACHERS AND SUPPORT PEOPLE

Curriculum connections & sources

English: vocabulary in context, explicit and inferential comprehension, evaluating evidence and perspectives, organising purposeful writing, sentence and paragraph control, revision, oral explanation and reflection.

Mathematics & statistics: number and operations, percentages and proportional reasoning, algebra and patterns, measurement, geometry, statistics and probability. Spiral practice revisits multiple strands rather than claiming each case covers an entire strand.

Science, social studies and technology: evidence, modelling, systems, historical interpretation, rights and participation, design criteria, testing and trade-offs. These provide supplementary contexts; check local programme coverage and current implementation guidance.

Primary curriculum references · checked October 2026

<https://newzealandcurriculum.tahurangi.education.govt.nz/nzc---english-phase-3-years-7-8/5637290836.p>

<https://newzealandcurriculum.tahurangi.education.govt.nz/nzc---mathematics-and-statistics-phase-3-years-7-8/5637289333.p>

Independent resource. Curriculum alignment describes supported learning; it does not imply Ministry approval, formal assessment validity or complete coverage. Historical summaries and simplified science models should be discussed with their limitations.

Source and authorship note

Weekly case passages, teaching notes and evidence are adapted from ICONIC GAMES' senior Homework Club plans. Scenario datasets, organisations and case narratives are fictional unless a historical event or scientific explanation is clearly identified. Paper briefs and spiral maths tasks are purpose-built for this workbook. No learner has to locate an online file or simulator to answer the core tasks.

Marking writing and application

Look for: a clear purpose and audience; accurate use of two or more printed details; reasoning that connects evidence to the claim; a realistic limitation; coherent organisation; revision and careful language. For Year 8, also look for an alternative or counter-argument and evaluation of an assumption or trade-off. Accept different justified decisions.

PRIMARY SOURCES FOR SUPPORT PEOPLE

Background reference notes

These optional references support teaching discussions. Learners do not need to visit them to complete the workbook. The printed historical passages are summaries; scientific and civic models deliberately simplify real systems.

Voting rights in Aotearoa

Communal land ownership limited Māori participation under early property qualifications. Separate Māori seats were established in 1867; the first elections for them were in 1868.

<https://nzhistory.govt.nz/page/maori-and-vote>

Suffrage milestones

Discuss the 1879 and 1893 changes alongside remaining differences in access and influence. A legal entitlement alone does not show equal power.

<https://nzhistory.govt.nz/politics/womens-suffrage/brief-history>

Parliament and government

Distinguish lawmaking, administering government and interpreting law. New Zealand's parliamentary system also has overlap: Ministers are members of Parliament.

<https://www3.parliament.nz/en/visit-and-learn/how-parliament-works/our-system-of-government/>

Earthquake mechanisms

An earthquake releases accumulated stress along a fault. Hazard evidence does not provide an exact prediction of the time of a future earthquake.

<https://www.geonet.org.nz/earthquake/faq>

Seasons

Earth's axial tilt changes sunlight angle and day length across the year. The two hemispheres have opposite seasonal patterns.

<https://spaceplace.nasa.gov/seasons/>

TERM 1 • WEEK 1

The Story Behind the Story

Maths: answers and methods

1. $10\% \text{ Increase} \div \text{original} \times 100 = 8 \div 80 \times 100 = 10\%$.
2. $20\% \text{ Increase} \div \text{original} \times 100 = 28 \div 140 \times 100 = 20\%$.
3. 45 and 30. 15 equal parts; each part is 5. Multiply each ratio number by this amount.
4. $x = 9$. Subtract 3, then divide by 5; check $5 \times 9 + 3 = 48$.
5. Perimeter 40 cm; area 91 cm^2 . Perimeter = $2(\text{length} + \text{width})$; area = $\text{length} \times \text{width}$. Units differ.
6. $15\% \text{ Increase} \div \text{original} \times 100 = 18 \div 120 \times 100 = 15\%$. A valid independent check, estimate or diagram is required.
7. $38\% \text{ Increase} = 66 - 48 = 18$; $18 \div 48 \times 100 = 37.5\%$, or 38% to the nearest whole percent.

Reading: evidence-based guidance

1. Anchor the response in the passage: Three reports described the same public event.
2. Compare these details: The original statement gives a time, place and measured result, but does not claim a cause. / A commentator gives an interpretation and clearly labels it as opinion.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write an editorial judgement. Compare established facts with framing, evaluate the strongest claim and propose the evidence needed before publication.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 2

Feed Engine

Maths: answers and methods

1. $x = 4$. Subtract 3, then divide by 4; check $4 \times 4 + 3 = 19$.
2. $x = 3$. Subtract 5, then divide by 7; check $7 \times 3 + 5 = 26$.
3. Mean 6; median 5; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
4. 70° . Angles in a triangle total 180° ; $180 - 50 - 60$.
5. 22 sales. Contribution = \$5; $108 \div 5 = 21.6$. Round UP to whole sales.
6. $x = 10$. Subtract 4, then divide by 6; check $6 \times 10 + 4 = 64$. A valid independent check, estimate or diagram is required.
7. $8 \times 4 + 3 + 1 - 2 \times 2 = 8$. Substitute before adding and subtracting.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional platform changed its recommendation model to give more weight to predicted interest and watch completion.
2. Compare these details: The published test model weights predicted interest twice as heavily as diversity and does not include a safety-quality signal. / The platform says “our AI always shows the best content for you”. No definition of “best” or supporting evidence is provided.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Evaluate the recommendation model. Explain what it rewards, a diversity trade-off, a testing limitation and a justified safeguard.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 3

Persuasion Lab

Maths: answers and methods

1. Saving \$12.00; price \$48.00. Find the percentage of the original price, then subtract the saving.
2. Saving \$21.00; price \$49.00. Find the percentage of the original price, then subtract the saving.
3. 90° . Angles in a triangle total 180° ; $180 - 50 - 40$.
4. Revenue \$220; profit \$30. Profit = revenue – variable costs – fixed costs = $220 - 120 - 70$. A negative result is a loss.
5. Mean 6; median 5; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
6. Saving \$22.50; price \$67.50. Find the percentage of the original price, then subtract the saving. A valid independent check, estimate or diagram is required.
7. $33\frac{1}{3}\%$ One item is free out of three equally priced items: $1 \div 3 \times 100 \approx 33.3\%$ off the normal three-item total.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional online store promotes a product through a creator partnership.
2. Compare these details: Testing shows the “10 minutes left” countdown restarts when the page is reopened, so the scarcity cue is not a real deadline. / The interface gives no source, sample or definition for the personalised social-proof claim.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Evaluate the interface. Distinguish legitimate persuasion from manipulation, consider the business counter-argument and recommend specific redesigns.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 4

Money Under Pressure

Maths: answers and methods

1. Cost \$6.15; change \$3.85. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
2. Cost \$7.00; change \$3.00. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
3. Circumference 37.68 cm; area 113.04 cm². Circumference = $2\pi r$; area = πr^2 . Radius is half the diameter.
4. 40 and 30. 14 equal parts; each part is 5. Multiply each ratio number by this amount.
5. 4 pages/min; 9 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
6. Cost \$7.20; change \$2.80. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10. A valid independent check, estimate or diagram is required.
7. \$48.60 $\$45 \times 1.08 = \$48.60$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional comparison shows three 12-month phone plans.
2. Compare these details: Plan A lists a \$180 upfront cost and \$32 per month for 12 months, allowing the full annual cost to be calculated. / No single plan can be cheapest and most suitable for every person because affordability constraints differ.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Compare the payment plans using the supplied costs. Recommend for one fictional user, then explain how an upfront-budget constraint could change the decision.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 5

Human Systems

Maths: answers and methods

1. 49/39 Use a common denominator for addition; divide by multiplying by the reciprocal.
2. 7/6 Use a common denominator for addition; divide by multiplying by the reciprocal.
3. 15 percentage points; 42.9% relative increase. $50 - 35 = 15$ points. Relative change = $15 \div 35 \times 100$. These measures answer different questions.
4. Perimeter 36 cm; area 56 cm². Perimeter = $2(\text{length} + \text{width})$; area = length $\times$ width. Units differ.
5. $x = 3$. Subtract 4, then divide by 5; check $5 \times 3 + 4 = 19$.
6. 54/11 Use a common denominator for addition; divide by multiplying by the reciprocal. A valid independent check, estimate or diagram is required.
7. 75% 18/24 simplifies to 3/4 by dividing numerator and denominator by 6.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional science video correctly explains that oxygen entering the lungs can move into the blood and be transported to cells.
2. Compare these details: In the lungs, oxygen moves into the blood and carbon dioxide moves from the blood to the air. / A fictional creator claims one drink can reset every body system in 48 hours but gives no mechanism or reliable source.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Evaluate the fictional science message. Explain interacting body systems, challenge an unsupported reset claim and propose an accurate replacement.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 6

Consent, Pressure & Power

Maths: answers and methods

1. $P(\text{red}) = 4/5$; $P(\text{not red}) = 1/5$. Count equally likely tokens, not colour names; probabilities add to 1.
2. $P(\text{red}) = 1/2$; $P(\text{not red}) = 1/2$. Count equally likely tokens, not colour names; probabilities add to 1.
3. Cost \$6.45; change \$3.55. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
4. 3300 g; one portion 660 g. $1 \text{ kg} = 1,000 \text{ g}$; divide the converted mass by 5.
5. 6500 g; one portion 1300 g. $1 \text{ kg} = 1,000 \text{ g}$; divide the converted mass by 5.
6. $P(\text{red}) = 1/2$; $P(\text{not red}) = 1/2$. Count equally likely tokens, not colour names; probabilities add to 1. A valid independent check, estimate or diagram is required.
7. $65\% \quad 52 \div 80 \times 100 = 65\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A single friendly message does not tell you whether a relationship is safe or unsafe.
2. Compare these details: A fictional friend asks once, accepts “no” immediately and does not punish, guilt or embarrass the other person. / One kind message or gift alone does not establish a harmful pattern without additional behaviour or context.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Analyse the fictional pattern of pressure. Distinguish consent from coercion, avoid inferring intent from a single friendly act and recommend safe support.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 7

The Newsroom: Context Matters

Maths: answers and methods

1. Mean 12; median 11; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
2. Mean 8; median 7; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
3. $P(\text{red}) = 4/5$; $P(\text{not red}) = 1/5$. Count equally likely tokens, not colour names; probabilities add to 1.
4. $20\% \text{ Increase} \div \text{original} \times 100 = 20 \div 100 \times 100 = 20\%$.
5. Cost \$6.70; change \$3.30. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
6. Mean 7; median 6; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum. A valid independent check, estimate or diagram is required.
7. $8.8\% (1,110 - 1,020) \div 1,020 \times 100 \approx 8.8\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: The fictional trial increased average weekday boardings from 1,020 to 1,110, which is an increase of 90.
2. Compare these details: Reports that average weekday boardings rose from 1,020 to 1,110 during the fictional trial and presents the change as strong growth. / A graphic starts its vertical axis at 1,000 rather than zero, making the 90-boarding increase look visually much larger.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write an editor’s note. Explain a framing or graph problem, use a numerical comparison with context, acknowledge limitations and give a balanced conclusion.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 8

Publish or Pull It?

Maths: answers and methods

1. $20\% \text{ Increase} \div \text{original} \times 100 = 16 \div 80 \times 100 = 20\%$.
2. $30\% \text{ Increase} \div \text{original} \times 100 = 42 \div 140 \times 100 = 30\%$.
3. 180 km. Multiply map distance by scale: 9×20 .
4. 25, 30; term $n = 5n + 0$. Add 5 each time; the n th term is $5(n-1)+5$.
5. 2 hours = 120 minutes. Time = distance $\div$ speed = $10 \div 5$. This assumes a steady speed with no stops.
6. $25\% \text{ Increase} \div \text{original} \times 100 = 30 \div 120 \times 100 = 25\%$. A valid independent check, estimate or diagram is required.
7. $15\% (230 - 200) \div 200 \times 100 = 15\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: The fictional campaign has a genuine result: sign-ups increased from 200 to 230, which is 15%.
2. Compare these details: The fictional campaign increased sign-ups from 200 to 230, a 15% increase. / The draft video has spoken information but no captions or transcript.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Make a publish, revise or withdraw decision. Evaluate accuracy, graph scale, privacy and accessibility. Consider the argument for speed before reaching a judgement.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 1 • WEEK 9

Reality Check: Case Closed

Maths: answers and methods

1. 15 percentage points; 60.0% relative increase. $40 - 25 = 15$ points. Relative change = $15 \div 25 \times 100$. These measures answer different questions.
2. 15 percentage points; 37.5% relative increase. $55 - 40 = 15$ points. Relative change = $15 \div 40 \times 100$. These measures answer different questions.
3. 3 pages/min; 12 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
4. 210 km. Multiply map distance by scale: 6×35 .
5. $13/4$ Use a common denominator for addition; divide by multiplying by the reciprocal.
6. 15 percentage points; 42.9% relative increase. $50 - 35 = 15$ points. Relative change = $15 \div 35 \times 100$. These measures answer different questions. A valid independent check, estimate or diagram is required.
7. 25% $(300 - 240) \div 240 \times 100 = 25\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: The fictional programme gained 60 enrolments, rising from 240 to 300, while both a recommendation-system change and a creator campaign began at the same time.
2. Compare these details: Fictional programme enrolments rose from 240 to 300 after a recommendation-system change and creator campaign launched in the same month. / A sponsored post says the AI system “caused the programme to work better for everyone”. No evidence isolates AI as the cause of the outcomes.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write a final investigation report. Separate correlation from causation, include numerical evidence, present a counterpoint and identify two limitations.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 1

Reform Files

Maths: answers and methods

1. $30\% \text{ Increase} \div \text{original} \times 100 = 36 \div 120 \times 100 = 30\%$.
2. $15\% \text{ Increase} \div \text{original} \times 100 = 27 \div 180 \times 100 = 15\%$.
3. $25\% \text{ Increase} \div \text{original} \times 100 = 25 \div 100 \times 100 = 25\%$.
4. 17 sales. Contribution = \$5; $84 \div 5 = 16.8$. Round UP to whole sales.
5. 60° . Angles in a triangle total 180° ; $180 - 55 - 65$.
6. $10\% \text{ Increase} \div \text{original} \times 100 = 16 \div 160 \times 100 = 10\%$. A valid independent check, estimate or diagram is required.
7. About 68% The increase is $32,000 - 19,000 = 13,000$. Then $13,000 \div 19,000 \times 100 \approx 68.4\%$, so the rounded increase is about 68%.

Reading: evidence-based guidance

1. Anchor the response in the passage: The Liberal government came to power in 1891 and remained in office until 1912.
2. Compare these details: Thirteen petitions presented in 1893 carried nearly 32,000 signatures supporting votes for women, after earlier petition campaigns in 1891 and 1892. / The Liberal government held office from 1891 to 1912. Its reforms expanded the role of the state, while land policies also contributed to continuing Māori land loss.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Evaluate reform in the Liberal era. Explain who gained rights or protection and who might remain excluded. Challenge an "everyone benefited equally" claim.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 2

Empire & Resistance

Maths: answers and methods

1. -6°C . $-6 + 4 - 4 = -6$. Use a number line if useful.
2. -11°C . $-9 + 6 - 8 = -11$. Use a number line if useful.
3. -9°C . $-5 + 8 - 12 = -9$. Use a number line if useful.
4. Cost \$6.05; change \$3.95. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
5. $25\% \text{ Increase} \div \text{original} \times 100 = 25 \div 100 \times 100 = 25\%$.
6. -9°C . $-8 + 5 - 6 = -9$. Use a number line if useful. A valid independent check, estimate or diagram is required.
7. 164 years Subtract the start year from the end year: $1914 - 1750 = 164$ years.

Reading: evidence-based guidance

1. Anchor the response in the passage: European imperial expansion between about 1750 and 1914 involved trade, strategic rivalry, military power, political control and ideas about empire.
2. Compare these details: India sat at the centre of a major British eastern trading network. Commercial access, taxation and revenue were important incentives for expanding influence. / The transfer in 1858 changed who formally governed British India, but it did not end imperial rule. Resistance and political organising continued in different forms afterward.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain imperial control and resistance in India. Distinguish motive from mechanism, use the 1857–1858 turning point and identify an evidence limitation.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 3

Who Holds Power?

Maths: answers and methods

1. 35 and 15. 10 equal parts; each part is 5. Multiply each ratio number by this amount.
2. 15 and 25. 8 equal parts; each part is 5. Multiply each ratio number by this amount.
3. Perimeter 30 cm; area 44 cm². Perimeter = 2(length + width); area = length × width. Units differ.
4. 63 cm². Area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height} = \frac{1}{2} \times 18 \times 7$.
5. 45 cm². Area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height} = \frac{1}{2} \times 10 \times 9$.
6. 45 and 20. 13 equal parts; each part is 5. Multiply each ratio number by this amount. A valid independent check, estimate or diagram is required.
7. 36 seats Convert 30% to 0.30 and multiply by the 120-seat total: $0.30 \times 120 = 36$ seats in this simplified example.

Reading: evidence-based guidance

1. Anchor the response in the passage: It is easy to draw three separate boxes labelled Legislature, Executive and Judiciary, but New Zealand's system is more interesting than that diagram suggests.
2. Compare these details: Parliament makes laws, represents the people, approves taxation and spending, and holds the Government to account. New Zealand Parliament consists of the Sovereign and the House of Representatives. / In New Zealand general elections, MMP is designed so party representation in the House broadly reflects each party's share of the party vote, subject to electoral rules. The classroom seat calculation used here is deliberately simplified.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain legislative, executive and judicial functions in New Zealand. Describe one overlap between Parliament and Government and one accountability relationship.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 4

Population Shift

Maths: answers and methods

1. 40 and 20. 12 equal parts; each part is 5. Multiply each ratio number by this amount.
2. 20 and 30. 10 equal parts; each part is 5. Multiply each ratio number by this amount.
3. 2 hours = 120 minutes. Time = distance ÷ speed = 12 ÷ 6. This assumes a steady speed with no stops.
4. Circumference 43.96 cm; area 153.86 cm². Circumference = $2\pi r$; area = πr^2 . Radius is half the diameter.
5. 3,000.00 (rounded to 2 d.p.). Divide coefficients and subtract powers: $(6 \div 2) \times 10^3$.
6. 15 and 25. 8 equal parts; each part is 5. Multiply each ratio number by this amount. A valid independent check, estimate or diagram is required.
7. 12:5 Write the groups as 24:10, then divide both parts by their common factor 2. The simplest ratio is 12:5.

Reading: evidence-based guidance

1. Anchor the response in the passage: Imagine two fictional countries with the same total population.
2. Compare these details: Age structure: 0–14 = 24%, 15–64 = 66%, 65+ = 10%. Net migration is slightly positive and concentrated among working-age adults. / Age structure alone does not tell us income, health status, housing supply, productivity, policy choices or exact future behaviour.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Compare fictional population patterns. Explain different service pressures and the possible effect of migration. Distinguish a modelled possibility from a prediction.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 5

Money, Tax & Economy

Maths: answers and methods

1. $25\% \text{ Increase} \div \text{original} \times 100 = 50 \div 200 \times 100 = 25\%$.
2. $10\% \text{ Increase} \div \text{original} \times 100 = 12 \div 120 \times 100 = 10\%$.
3. Revenue \$200; profit \$20. Profit = revenue – variable costs – fixed costs = $200 - 100 - 80$. A negative result is a loss.
4. Saving \$12.00; price \$28.00. Find the percentage of the original price, then subtract the saving.
5. $P(\text{red}) = 7/10$; $P(\text{not red}) = 3/10$. Count equally likely tokens, not colour names; probabilities add to 1.
6. $30\% \text{ Increase} \div \text{original} \times 100 = 30 \div 100 \times 100 = 30\%$. A valid independent check, estimate or diagram is required.
7. 5% The basket rises by $\$336 - \$320 = 16$. Compare the increase with the original \$320: $16 \div 320 \times 100 = 5\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: Imagine a household with wages coming in, bills and purchases going out, some money saved and some debt being repaid.
2. Compare these details: Inflation is a rise in average prices across many goods and services. If income stays unchanged while prices rise, purchasing power falls. / The simulator uses invented household amounts and simplified flows. It is not a forecast and does not reproduce real tax brackets, lending contracts or every part of the New Zealand economy.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain connected money flows for a fictional household facing higher prices or reduced income. Consider a response, public services and two model limitations.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 6

Government Lab

Maths: answers and methods

1. $30\% \text{ Increase} \div \text{original} \times 100 = 24 \div 80 \times 100 = 30\%$.
2. $15\% \text{ Increase} \div \text{original} \times 100 = 21 \div 140 \times 100 = 15\%$.
3. Saving \$10.00; price \$30.00. Find the percentage of the original price, then subtract the saving.
4. Mean 8; median 7; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
5. Revenue \$200; profit \$20. Profit = revenue – variable costs – fixed costs = $200 - 100 - 80$. A negative result is a loss.
6. $10\% \text{ Increase} \div \text{original} \times 100 = 12 \div 120 \times 100 = 10\%$. A valid independent check, estimate or diagram is required.
7. $60\% \text{ Use part} \div \text{whole} \times 100: 252 \div 420 \times 100 = 60\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: Imagine a fictional Government bill that would limit some public assemblies near a government facility.
2. Compare these details: New Zealand recognises the Legislature, Executive and Judiciary. Broadly, Parliament makes law, Government develops and administers policy and law, and courts interpret and apply law independently. / Public submissions are valuable participation evidence, but people and groups choose whether to submit. Submission percentages therefore should not automatically be treated as representative polling of the whole country.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Evaluate the fictional bill. Use institutional roles, rights reasoning and submission data. Present the strongest counter-argument before recommending a next step.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 7

Hazard Lab

Maths: answers and methods

1. Revenue \$160; profit \$60. Profit = revenue – variable costs – fixed costs = 160 – 60 – 40. A negative result is a loss.
2. Revenue \$200; profit \$30. Profit = revenue – variable costs – fixed costs = 200 – 100 – 70. A negative result is a loss.
3. $x = 7$. Subtract 6, then divide by 3; check $3 \times 7 + 6 = 27$.
4. 2 hours = 120 minutes. Time = distance ÷ speed = $12 \div 6$. This assumes a steady speed with no stops.
5. 41, 50; term $n = 9n - 4$. Add 9 each time; the n th term is $9(n-1)+5$.
6. Revenue \$180; profit \$40. Profit = revenue – variable costs – fixed costs = 180 – 80 – 60. A negative result is a loss. A valid independent check, estimate or diagram is required.
7. \$3.4m Add committed spending: $\$9.2m + \$4.8m + \$2.6m = 16.6m$. Subtract from \$20.0m: $\$20.0m - 16.6m = \$3.4m$ remaining.

Reading: evidence-based guidance

1. Anchor the response in the passage: Imagine two communities exposed to the same earthquake shaking.
2. Compare these details: Both fictional communities receive the same earthquake shaking scenario. Different outcomes therefore cannot be explained by hazard size alone. / The Hazard Lab uses invented costs and simplified probabilities. It is designed for reasoning practice, not as an engineering assessment or prediction for a real community.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Compare hazard impacts in two fictional communities. Trace direct and indirect effects, recommend a resilience priority and explain a cost or equity trade-off.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 8

People on the Move

Maths: answers and methods

1. $15\% \text{ Increase} \div \text{original} \times 100 = 18 \div 120 \times 100 = 15\%$.
2. $25\% \text{ Increase} \div \text{original} \times 100 = 45 \div 180 \times 100 = 25\%$.
3. 20 cm^2 . Area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height} = \frac{1}{2} \times 8 \times 5$.
4. 1,750.00 (rounded to 2 d.p.). Divide coefficients and subtract powers: $(7 \div 4) \times 10^3$.
5. Circumference 50.24 cm; area 200.96 cm^2 . Circumference = $2\pi r$; area = πr^2 . Radius is half the diameter.
6. $20\% \text{ Increase} \div \text{original} \times 100 = 32 \div 160 \times 100 = 20\%$. A valid independent check, estimate or diagram is required.
7. 15% The decrease is $4,000 - 3,400 = 600$. Then $600 \div 4,000 \times 100 = 15\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional population desk is tracking movement between places.
2. Compare these details: A fictional 19-year-old moves from a small town to a city for study and part-time work, while remaining closely connected to whānau at home. / One migration story cannot establish why a whole population moves, and a population graph cannot describe every individual experience.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain changes in origin and destination places. Distinguish an individual account from population evidence and avoid generalising about every migrant.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 2 • WEEK 9

Power & Place Summit

Maths: answers and methods

1. 15 percentage points; 42.9% relative increase. $50 - 35 = 15$ points. Relative change = $15 \div 35 \times 100$. These measures answer different questions.
2. 15 percentage points; 30.0% relative increase. $65 - 50 = 15$ points. Relative change = $15 \div 50 \times 100$. These measures answer different questions.
3. (1, 2); 4 left, 5 up. Add the horizontal and vertical changes separately.
4. -11°C . $-8 + 7 - 10 = -11$. Use a number line if useful.
5. -4°C . $-4 + 4 - 4 = -4$. Use a number line if useful.
6. 15 percentage points; 33.3% relative increase. $60 - 45 = 15$ points. Relative change = $15 \div 45 \times 100$. These measures answer different questions. A valid independent check, estimate or diagram is required.
7. Area B: 20% Area A grows by 3,600, so $3,600 \div 24,000 \times 100 = 15\%$. Area B grows by 1,600, so $1,600 \div 8,000 \times 100 = 20\%$. Area B has the larger percentage growth.

Reading: evidence-based guidance

1. Anchor the response in the passage: A final interpretation should become more precise as evidence is tested.
2. Compare these details: A source can establish what a person, institution or record said or showed in its context, but its perspective and purpose still need evaluation. / A source that complicates the preferred interpretation is valuable because it tests whether the case is robust enough to survive challenge.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a summit position statement. Combine evidence from history, civics or geography, defend a data representation and qualify the claim after considering a challenge.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 · WEEK 1

Inheritance Lab

Maths: answers and methods

1. $P(\text{red}) = 7/12$; $P(\text{not red}) = 5/12$. Count equally likely tokens, not colour names; probabilities add to 1.
2. $P(\text{red}) = 3/5$; $P(\text{not red}) = 2/5$. Count equally likely tokens, not colour names; probabilities add to 1.
3. 15 sales. Contribution = \$5; $72 \div 5 = 14.4$. Round UP to whole sales.
4. 216 cm^3 . Volume = length $\times$ width $\times$ height. Use cubic units.
5. (1, 2); 4 left, 5 up. Add the horizontal and vertical changes separately.
6. $P(\text{red}) = 3/5$; $P(\text{not red}) = 2/5$. Count equally likely tokens, not colour names; probabilities add to 1. A valid independent check, estimate or diagram is required.
7. $1/4$ For $Gg \times Gg$, the four equally likely model combinations are GG, Gg, Gg and gg. One of the four is gg, so the model proportion is $1/4$.

Reading: evidence-based guidance

1. Anchor the response in the passage: DNA stores genetic information.
2. Compare these details: DNA carries genetic information. Genes are sections of DNA rather than separate substances floating outside it. / A single-gene Punnett-style model is useful for learning probability, but it does not represent the full complexity of most human traits.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain DNA, chromosome, gene and allele. Interpret a $Gg \times Gg$ model, explain variation and state two limits of a simplified one-gene model.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 · WEEK 2

Adapt or Change

Maths: answers and methods

1. 15 percentage points; 33.3% relative increase. $60 - 45 = 15$ points. Relative change = $15 \div 45 \times 100$. These measures answer different questions.
2. 15 percentage points; 60.0% relative increase. $40 - 25 = 15$ points. Relative change = $15 \div 25 \times 100$. These measures answer different questions.
3. 91/60 Use a common denominator for addition; divide by multiplying by the reciprocal.
4. 3 pages/min; 6 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
5. 30 and 20. 10 equal parts; each part is 5. Multiply each ratio number by this amount.
6. 15 percentage points; 75.0% relative increase. $35 - 20 = 15$ points. Relative change = $15 \div 20 \times 100$. These measures answer different questions. A valid independent check, estimate or diagram is required.
7. 40 percentage points Percentage-point change is direct subtraction: $76\% - 36\% = 40$ percentage points.

Reading: evidence-based guidance

1. Anchor the response in the passage: A population can contain inherited differences before the environment changes.
2. Compare these details: The fictional island model begins with 36% of the population carrying the deeper-bill trait and 64% the narrower-bill trait. The model assumes the variation is inherited. / The island seed-eater is a teaching simulation. Real populations are affected by many genetic, environmental, behavioural and chance processes not represented here.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain how inherited variation and selection can change trait frequency over generations. Compare evidence and distinguish population change from purposeful individual change.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 • WEEK 3

Mixture Mystery

Maths: answers and methods

1. 45 and 10. 11 equal parts; each part is 5. Multiply each ratio number by this amount.
2. 25 and 20. 9 equal parts; each part is 5. Multiply each ratio number by this amount.
3. 38, 46; term $n = 8n - 2$. Add 8 each time; the n th term is $8(n-1)+6$.
4. $32/21$ Use a common denominator for addition; divide by multiplying by the reciprocal.
5. 210 km. Multiply map distance by scale: 7×30 .
6. 20 and 15. 7 equal parts; each part is 5. Multiply each ratio number by this amount. A valid independent check, estimate or diagram is required.
7. 6 g per 100 mL The 300 mL sample contains 18 g. One third of 300 mL is 100 mL, so one third of 18 g is 6 g. Concentration = 6 g per 100 mL.

Reading: evidence-based guidance

1. Anchor the response in the passage: Sample 8B is deliberately messy.
2. Compare these details: The 300 mL virtual sample contains 18 g dissolved salt, visible fine sand, gravel and iron filings. The exact masses of the undissolved solids are known only after separation. / A separate fictional solubility test for Crystal Q records 12 g dissolving per 100 mL at 20°C and 28 g per 100 mL at 60°C. The data apply to Crystal Q only and should not be generalised to every solute.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a paper laboratory method for separating the sample. Justify each method by a physical property and explain why filtration does not remove dissolved salt.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 • WEEK 4

Change Lab

Maths: answers and methods

1. -4°C . $-3 + 5 - 6 = -4$. Use a number line if useful.
2. -9°C . $-6 + 7 - 10 = -9$. Use a number line if useful.
3. 72 cm^3 . Volume = length $\times$ width $\times$ height. Use cubic units.
4. $P(\text{red}) = 5/9$; $P(\text{not red}) = 4/9$. Count equally likely tokens, not colour names; probabilities add to 1.
5. Saving \$15.00; price \$35.00. Find the percentage of the original price, then subtract the saving.
6. -7°C . $-5 + 6 - 8 = -7$. Use a number line if useful. A valid independent check, estimate or diagram is required.
7. 8°C Temperature increase = final – initial = $29^{\circ}\text{C} - 21^{\circ}\text{C} = 8^{\circ}\text{C}$.

Reading: evidence-based guidance

1. Anchor the response in the passage: Change Lab begins with observations, not labels.
2. Compare these details: A virtual pure substance changes from solid to liquid as temperature rises. After cooling, the same substance forms a solid again. The model shows no new particle type. / A colour or temperature change can be useful evidence, but either observation alone may have more than one possible explanation.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Compare a physical and chemical change. Separate observation from inference, evaluate evidence for new substances and explain why a single clue can mislead.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 · WEEK 5

Circuit City

Maths: answers and methods

1. $x = 7$. Subtract 4, then divide by 4; check $4 \times 7 + 4 = 32$.
2. $x = 6$. Subtract 6, then divide by 7; check $7 \times 6 + 6 = 48$.
3. 3300 g; one portion 660 g. $1 \text{ kg} = 1,000 \text{ g}$; divide the converted mass by 5.
4. (2, 0); 4 left, 5 up. Add the horizontal and vertical changes separately.
5. 72 cm^3 . Volume = length $\times$ width $\times$ height. Use cubic units.
6. $x = 4$. Subtract 5, then divide by 6; check $6 \times 4 + 5 = 29$. A valid independent check, estimate or diagram is required.
7. 0.50 A Use $I = V \div R$. $I = 3 \text{ V} \div 6 \Omega = 0.50 \text{ A}$.

Reading: evidence-based guidance

1. Anchor the response in the passage: Circuit City uses a deliberately simplified low-voltage model.
2. Compare these details: The idealised two-lamp series model records total current 0.25 A and about 1.5 V across each identical lamp. / A fictional post claims that because the virtual circuit is easy to rewire, household mains circuits can be experimented with in the same way. The simulation does not support that claim.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Recommend a circuit layout using the fault evidence. Explain current and voltage, include $V = IR$ and evaluate an independence-versus-complexity trade-off.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 · WEEK 6

Pressure Lab

Maths: answers and methods

1. Perimeter 34 cm; area 70 cm². Perimeter = 2(length + width); area = length × width. Units differ.
2. Perimeter 34 cm; area 52 cm². Perimeter = 2(length + width); area = length × width. Units differ.
3. 1,000.00 (rounded to 2 d.p.). Divide coefficients and subtract powers: $(4 \div 4) \times 10^3$.
4. 15 percentage points; 37.5% relative increase. $55 - 40 = 15$ points. Relative change = $15 \div 40 \times 100$. These measures answer different questions.
5. 15 percentage points; 75.0% relative increase. $35 - 20 = 15$ points. Relative change = $15 \div 20 \times 100$. These measures answer different questions.
6. Perimeter 40 cm; area 96 cm². Perimeter = 2(length + width); area = length × width. Units differ. A valid independent check, estimate or diagram is required.
7. 15,000 Pa Pressure = force ÷ area. $900 \text{ N} \div 0.06 \text{ m}^2 = 15,000 \text{ N/m}^2$, which is 15,000 Pa.

Reading: evidence-based guidance

1. Anchor the response in the passage: Two designs can carry the same force yet interact very differently with a surface.
2. Compare these details: A 600 N force spread over 0.02 m² gives 30,000 Pa in the idealised model. / The $P = F \div A$ calculation assumes an idealised average pressure over a known contact area. Real materials can deform and loads can be uneven, creating local stresses the simple model does not show.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Explain pressure using force and contact area. Compare two calculations with units and discuss a structural limitation of load spreading.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 • WEEK 7

Space Systems

Maths: answers and methods

- 1,000.00 (rounded to 2 d.p.). Divide coefficients and subtract powers: $(6 \div 6) \times 10^3$.
- 3,000.00 (rounded to 2 d.p.). Divide coefficients and subtract powers: $(9 \div 3) \times 10^3$.
- 25 and 25. 10 equal parts; each part is 5. Multiply each ratio number by this amount.
- $x = 6$. Subtract 2, then divide by 8; check $8 \times 6 + 2 = 50$.
- Perimeter 30 cm; area 54 cm². Perimeter = 2(length + width); area = length $\times$ width. Units differ.
- 4,000.00 (rounded to 2 d.p.). Divide coefficients and subtract powers: $(8 \div 2) \times 10^3$. A valid independent check, estimate or diagram is required.
- 390 $\times$ Divide the distances written in the same unit: $1.50 \times 10^8 \div 3.84 \times 10^5 \approx 390.6$. So the Sun is approximately 390 times farther from Earth than the Moon is.

Reading: evidence-based guidance

- Anchor the response in the passage: Astronomical systems are so large that almost every classroom diagram makes compromises.
- Compare these details: Average Earth–Moon distance $\approx 3.84 \times 10^5$ km; average Earth–Sun distance $\approx 1.50 \times 10^8$ km. A classroom diagram that fits both on one screen must compress distances heavily. / Most Solar System diagrams enlarge objects and shrink distances. They are useful relational models but usually cannot represent size and distance accurately at the same time.. Accept a justified support, challenge or qualification; evidence does not need to agree.
- Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
- Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Correct a misleading space display. Explain Moon phases and seasons, use scale evidence and identify two ways a diagram can mislead.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 · WEEK 8

Build It Better

Maths: answers and methods

1. $10\% \text{ Increase} \div \text{original} \times 100 = 16 \div 160 \times 100 = 10\%$.
2. $20\% \text{ Increase} \div \text{original} \times 100 = 16 \div 80 \times 100 = 20\%$.
3. Mean 9; median 8; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
4. 70° . Angles in a triangle total 180° ; $180 - 50 - 60$.
5. 12 sales. Contribution = \$5; $60 \div 5 = 12$. Round UP to whole sales.
6. $15\% \text{ Increase} \div \text{original} \times 100 = 30 \div 200 \times 100 = 15\%$. A valid independent check, estimate or diagram is required.
7. 25% The drop is $88 - 66 = 22$ points. Relative decrease = $22 \div 88 \times 100 = 25\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A final engineering system can include a structure, energy supply, drive mechanism, sensors and control logic.
2. Compare these details: A fictional integrated design can score well under normal operation while still depending heavily on one power path or one control pathway. Normal performance alone is not a resilience test. / A technically resilient design can still be poor overall if it is excessively resource-intensive, inaccessible, difficult to maintain or unsafe when it fails.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Evaluate an integrated build. Compare normal and fault evidence, trace a dependency and justify redundancy or feedback with a quantified trade-off.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 3 · WEEK 9

System Failure: Blackout

Maths: answers and methods

1. 15 percentage points; 33.3% relative increase. $60 - 45 = 15$ points. Relative change = $15 \div 45 \times 100$. These measures answer different questions.
2. 15 percentage points; 60.0% relative increase. $40 - 25 = 15$ points. Relative change = $15 \div 25 \times 100$. These measures answer different questions.
3. 90° . Angles in a triangle total 180° ; $180 - 50 - 40$.
4. Revenue \$200; profit \$70. Profit = revenue – variable costs – fixed costs = $200 - 100 - 30$. A negative result is a loss.
5. Mean 9; median 8; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
6. 15 percentage points; 75.0% relative increase. $35 - 20 = 15$ points. Relative change = $15 \div 20 \times 100$. These measures answer different questions. A valid independent check, estimate or diagram is required.
7. 34 percentage points Percentage-point difference is direct subtraction: $40\% - 6\% = 34$ percentage points.

Reading: evidence-based guidance

1. Anchor the response in the passage: Facility Zero goes dark at 02:14, but the dashboard does not provide a perfect story.
2. Compare these details: At 02:14 the facility bus voltage falls sharply. Two critical loads transfer to backup power, while one ventilation controller fails to transfer. / The failed ventilation controller has one power-transfer module and no independent fallback path. It is a plausible single point of failure.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a technical incident report. Compare two hypotheses, use four evidence items, prioritise two interventions and identify a diagnostic test and residual risk.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 1

Creator Studio: Identity

Maths: answers and methods

1. $20\% \text{ Increase} \div \text{original} \times 100 = 40 \div 200 \times 100 = 20\%$.
2. $30\% \text{ Increase} \div \text{original} \times 100 = 36 \div 120 \times 100 = 30\%$.
3. Circumference 31.40 cm; area 78.50 cm². Circumference = $2\pi r$; area = πr^2 . Radius is half the diameter.
4. 20 and 25. 9 equal parts; each part is 5. Multiply each ratio number by this amount.
5. 7 pages/min; 6 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
6. $25\% \text{ Increase} \div \text{original} \times 100 = 25 \div 100 \times 100 = 25\%$. A valid independent check, estimate or diagram is required.
7. 27 seconds Convert 30% to 0.30 and multiply by the full duration: $0.30 \times 90 \text{ seconds} = 27 \text{ seconds}$.

Reading: evidence-based guidance

1. Anchor the response in the passage: Creators make choices about who is visible, what is emphasised, which voices are heard and what context is supplied.
2. Compare these details: The same image can read differently on a gallery wall, in a fast social-video sequence or beside a spoken personal narrative. / "If the audience likes the look, context does not matter." Popularity does not remove responsibility for meaning or representation.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a creative-director brief. Explain audience and medium, a representation risk, a cultural-responsibility check and a change after critique.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 · WEEK 2

Founder Lab

Maths: answers and methods

1. $25\% \text{ Increase} \div \text{original} \times 100 = 20 \div 80 \times 100 = 25\%$.
2. $10\% \text{ Increase} \div \text{original} \times 100 = 14 \div 140 \times 100 = 10\%$.
3. 15 percentage points; 30.0% relative increase. $65 - 50 = 15$ points. Relative change = $15 \div 50 \times 100$. These measures answer different questions.
4. Perimeter 36 cm; area 80 cm². Perimeter = $2(\text{length} + \text{width})$; area = $\text{length} \times \text{width}$. Units differ.
5. $x = 9$. Subtract 3, then divide by 8; check $8 \times 9 + 3 = 75$.
6. $30\% \text{ Increase} \div \text{original} \times 100 = 36 \div 120 \times 100 = 30\%$. A valid independent check, estimate or diagram is required.
7. 63.3% Use $\text{part} \div \text{whole} \times 100$: $38 \div 60 \times 100 = 63.333\ldots\%$, so approximately 63.3%.

Reading: evidence-based guidance

1. Anchor the response in the passage: The fictional founder begins with an app idea, but the research complicates it.
2. Compare these details: 7 of 8 friends say they would download the proposed app. The sample is convenient but narrow and closely connected to the founder. / "Because information is fragmented, an app is definitely the best solution." The evidence identifies a problem but does not compare solutions.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a founder-research memo. Evaluate the evidence, use a percentage, identify sampling bias and revise a problem statement before proposing a low-cost test.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 3

Make the Numbers Work

Maths: answers and methods

1. 10 sales. Contribution = \$5; $48 \div 5 = 9.6$. Round UP to whole sales.
2. 17 sales. Contribution = \$5; $84 \div 5 = 16.8$. Round UP to whole sales.
3. Cost \$6.15; change \$3.85. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
4. 6200 g; one portion 1240 g. $1 \text{ kg} = 1,000 \text{ g}$; divide the converted mass by 5.
5. 9400 g; one portion 1880 g. $1 \text{ kg} = 1,000 \text{ g}$; divide the converted mass by 5.
6. 15 sales. Contribution = \$5; $72 \div 5 = 14.4$. Round UP to whole sales. A valid independent check, estimate or diagram is required.
7. 20 Contribution per unit = $15 - \$6 = \$9$. Break-even units = fixed cost $\div$ contribution per unit = $180 \div \$9 = 20$ units.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional venture has \$180 in fixed costs, \$6 variable cost per unit and a \$15 selling price.
2. Compare these details: Fixed cost = \$180, variable cost = \$6 per unit, price = \$15 per unit. Contribution toward fixed cost is therefore \$9 per unit. / The model does not prove 26 customers will buy. Demand remains an assumption requiring separate evidence.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Evaluate a financial model. Show break-even assumptions, explain a cost shock and recommend evidence needed before committing resources.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 4

Future Tech

Maths: answers and methods

1. $10\% \text{ Increase} \div \text{original} \times 100 = 12 \div 120 \times 100 = 10\%$.
2. $20\% \text{ Increase} \div \text{original} \times 100 = 36 \div 180 \times 100 = 20\%$.
3. $P(\text{red}) = 2/5$; $P(\text{not red}) = 3/5$. Count equally likely tokens, not colour names; probabilities add to 1.
4. $15\% \text{ Increase} \div \text{original} \times 100 = 24 \div 160 \times 100 = 15\%$.
5. Cost \$6.40; change \$3.60. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
6. $15\% \text{ Increase} \div \text{original} \times 100 = 24 \div 160 \times 100 = 15\%$. A valid independent check, estimate or diagram is required.
7. 20 Convert 25% to 0.25 and multiply by 80: $0.25 \times 80 = 20$ cases.

Reading: evidence-based guidance

1. Anchor the response in the passage: A fictional team uses an AI tool to summarise anonymous feedback and then checks the summary against the source comments.
2. Compare these details: A fictional tool summarises anonymised feedback, and a person checks the summary against the original comments before using it. / "If AI is faster, using it must be better." Speed is one criterion and does not settle accuracy, fairness, privacy, energy use or accountability.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Evaluate an AI-assisted workflow. Identify suitable tasks, a data risk, a human-review rule and an efficiency-versus-consequence trade-off.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 5

My Future

Maths: answers and methods

1. 6 pages/min; 9 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
2. 9 pages/min; 15 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
3. 75 km. Multiply map distance by scale: 5×15 .
4. 36, 44; term $n = 8n - 4$. Add 8 each time; the n th term is $8(n-1)+4$.
5. 2 hours = 120 minutes. Time = distance $\div$ speed = $18 \div 9$. This assumes a steady speed with no stops.
6. 8 pages/min; 12 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate. A valid independent check, estimate or diagram is required.
7. 300 Two sessions each week give $2 \times 25 = 50$ minutes per week. Over 6 weeks: $50 \times 6 = 300$ minutes.

Reading: evidence-based guidance

1. Anchor the response in the passage: Year 8 students are often asked what they want to do in the future before they have had the chance to try many possibilities.
2. Compare these details: “I want to become more confident creating and sharing digital work” is a direction, not yet a measurable goal. / A vision board does not make an outcome happen by itself; action, opportunity, support and changing circumstances still matter.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Turn a fictional or personal interest into a measurable goal. State first steps, support, a barrier and a review point. You may keep all details fictional.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 6

Prototype: Systems

Maths: answers and methods

1. Mean 10; median 9; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
2. Mean 6; median 5; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum.
3. 6 pages/min; 9 minutes. Divide amount by time to get the unit rate. Triple the pages means triple the time at the same rate.
4. 270 km. Multiply map distance by scale: 9×30 .
5. 20/7 Use a common denominator for addition; divide by multiplying by the reciprocal.
6. Mean 12; median 11; range 7. Mean = total $\div$ 5; median is the middle ordered value; range = maximum – minimum. A valid independent check, estimate or diagram is required.
7. 2% Mean = total $\div$ number of trials. $(1 + 2 + 1 + 4) \div 4 = 8 \div 4 = 2\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A prototype that succeeds once under perfect conditions may still be fragile.
2. Compare these details: The fictional unit must log for eight hours, keep sensor error within $\pm 2\%$ on average and tolerate one primary-sensor failure. / Removing the 4% trial because it makes the average look worse hides relevant reliability evidence.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a systems test report. Summarise normal and fault results, use the mean, explain a dependency and evaluate the cost of a redesign.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 7

Real-World Challenge

Maths: answers and methods

1. $25\% \text{ Increase} \div \text{original} \times 100 = 45 \div 180 \times 100 = 25\%$.
2. $10\% \text{ Increase} \div \text{original} \times 100 = 10 \div 100 \times 100 = 10\%$.
3. $20\% \text{ Increase} \div \text{original} \times 100 = 32 \div 160 \times 100 = 20\%$.
4. 8 sales. Contribution = \$5; $36 \div 5 = 7.2$. Round UP to whole sales.
5. 60° . Angles in a triangle total 180° ; $180 - 55 - 65$.
6. $30\% \text{ Increase} \div \text{original} \times 100 = 24 \div 80 \times 100 = 30\%$. A valid independent check, estimate or diagram is required.
7. 68% The cost difference is $\$520\text{k} - \$310\text{k} = \$210\text{k}$. Relative to Option B: $210 \div 310 \times 100 \approx 67.7\%$, which rounds to about 68%.

Reading: evidence-based guidance

1. Anchor the response in the passage: Te Awa Bay is fictional, but the decision structure is realistic.
2. Compare these details: More car parking: estimated \$420k, strong car access, removes green space and does little for people who cannot drive. / "The cheapest option is automatically the best." Cost is one criterion and does not settle access, safety or long-term operation.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Recommend an option for the real-world case. Balance three criteria, a quantitative comparison, stakeholder impact and the strongest counter-argument.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 8

Pitch & Portfolio

Maths: answers and methods

1. $30\% \text{ Increase} \div \text{original} \times 100 = 60 \div 200 \times 100 = 30\%$.
2. $15\% \text{ Increase} \div \text{original} \times 100 = 18 \div 120 \times 100 = 15\%$.
3. -11°C . $-8 + 7 - 10 = -11$. Use a number line if useful.
4. Cost \$7.25; change \$2.75. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
5. $20\% \text{ Increase} \div \text{original} \times 100 = 32 \div 160 \times 100 = 20\%$.
6. $10\% \text{ Increase} \div \text{original} \times 100 = 10 \div 100 \times 100 = 10\%$. A valid independent check, estimate or diagram is required.
7. 24% The time decreases by $50 - 38 = 12$ seconds. Relative decrease = $12 \div 50 \times 100 = 24\%$.

Reading: evidence-based guidance

1. Anchor the response in the passage: A strong capstone can still have weaknesses.
2. Compare these details: An early draft beside a revision note can show why the final design changed. / A final screenshot with no explanation does not show how evidence affected the decision.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. "More evidence" alone is too vague.

Writing and application

Successful response: Write a pitch and defence. Include evidence with context, a trade-off, the strongest challenge question and a reasoned response.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

TERM 4 • WEEK 9

Launch: Next Chapter

Maths: answers and methods

1. Cost \$6.25; change \$3.75. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
2. Cost \$7.10; change \$2.90. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10.
3. Perimeter 44 cm; area 112 cm². Perimeter = 2(length + width); area = length × width. Units differ.
4. 30 cm². Area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height} = \frac{1}{2} \times 10 \times 6$.
5. 64 cm². Area = $\frac{1}{2} \times \text{base} \times \text{perpendicular height} = \frac{1}{2} \times 16 \times 8$.
6. Cost \$7.30; change \$2.70. Multiply the unit cost by quantity. Check the decimal place; subtract from \$10. A valid independent check, estimate or diagram is required.
7. 2 hours Allocated time = 2.5 + 1.5 = 4 hours. Remaining time = 6 – 4 = 2 hours.

Reading: evidence-based guidance

1. Anchor the response in the passage: The end of Year 8 is a transition, not a final answer about who you are.
2. Compare these details: A final presentation should connect the original problem to evidence, testing, revision, trade-offs and the current recommendation. / “Choosing a goal at 12 or 13 means you should never change direction.” Future plans remain revisable.. Accept a justified support, challenge or qualification; evidence does not need to agree.
3. Accept a correct contextual definition plus an original sentence demonstrating meaning; copying a word without explanation is insufficient.
4. Accept a specific unresolved question and a relevant source, measurement or perspective that could address it. “More evidence” alone is too vague.

Writing and application

Successful response: Write a launch note and reflection. Explain one evidence-led revision, a trade-off, a goal review and a concrete next action with support.

Use the rubric above. Accept different conclusions if evidence and limitations are accurate. The diagram/table must show relationships, not just copy labels. No personal disclosure or online experiment is required.

FOUR PAPER PROJECTS

Project review & next steps

Term 1 • THE REALITY PROJECT

Accept a paper product with a focused question, correctly labelled evidence, a numerical comparison, a qualified conclusion and a record of revision. Evaluate the learner's reasoning and process rather than artwork or access to technology.

Term 2 • OUR PLACE • OUR STORY

Accept a paper product with a focused question, correctly labelled evidence, a numerical comparison, a qualified conclusion and a record of revision. Evaluate the learner's reasoning and process rather than artwork or access to technology.

Term 3 • RESILIENT SYSTEMS CHALLENGE

Accept a paper product with a focused question, correctly labelled evidence, a numerical comparison, a qualified conclusion and a record of revision. Evaluate the learner's reasoning and process rather than artwork or access to technology.

Term 4 • START SOMETHING

Accept a paper product with a focused question, correctly labelled evidence, a numerical comparison, a qualified conclusion and a record of revision. Evaluate the learner's reasoning and process rather than artwork or access to technology.

Term review answers

The six review prompts are reflective, not fixed-answer tests. Require specific references to weekly learning, a mathematically valid correction, and an achievable next step. A learner can identify uncertainty or a changed position as progress.