

Mathletics

The New Zealand Mathletics Programme for Years 0–8

**Designed for Classrooms.
Built for the Refreshed New Zealand Curriculum.**

Structured teaching. Mathematical reasoning. Connected learning.

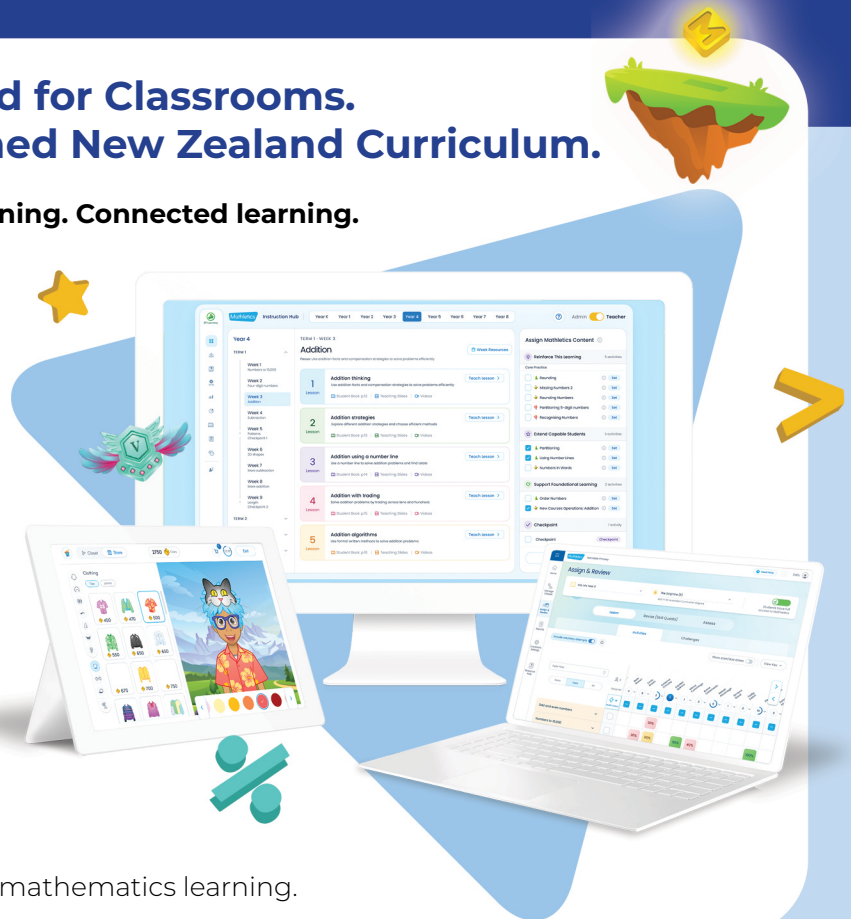
Mathletics combines:

- The Instruction Hub,
- student workbooks,
- teacher guides,
- daily lesson plans,
- online learning,
- and assessment tools

into one connected mathematics teaching and learning system for schools.

Aligned to the refreshed New Zealand Curriculum, the programme supports:

- explicit teaching,
- mathematical discussion,
- problem solving,
- reasoning and communication,
- and consistent progression toward future mathematics learning.



For Phase 1, 2 and 3: Years 0–8

What's included:

Phase 1 p7

Phase 2 p10

Phase 3 p14



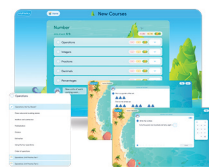
Student Books



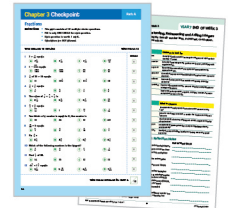
Teacher Guides



**The Instruction Hub
with Daily Lesson Plans
& Teaching Slides**



**Mathseeds &
Mathletics for
Online Learning**



**Checkpoints &
Assessment**

Structured support for teachers. Rich learning for students.

Explore the full programme mathletics.com/nz/programme

A Complete Mathematics Teaching & Learning System for Years 0–8

Supporting high-quality mathematics instruction through structured teaching, practical classroom resources and connected online learning.

Schools are seeking mathematics programmes that support consistent teaching across classrooms, reduce planning burden and provide structured progression. They need resources written for the New Zealand Curriculum that support both conceptual understanding and procedural fluency.

A Connected Teaching & Learning System

The New Zealand Mathletics Programme was designed to support these needs through a connected system of:



The Instruction Hub



Teacher Guides



Daily Lesson Plans



Student Workbooks



Mathseeds & Mathletics Online Learning

All components work together to support teachers with:

- structured weekly progression,
- explicit teaching guidance,
- ready-to-use lesson sequences,
- linked workbook practice,
- online reinforcement,
- and embedded assessment opportunities.

This helps reduce planning time while supporting consistent, high-quality mathematics instruction across the school.

Built Around Evidence-Based Mathematics Teaching

Explicit Teaching

I Do, We Do, You Do lesson structure

Structured Progression

Concepts sequenced carefully across the year

Deep Understanding

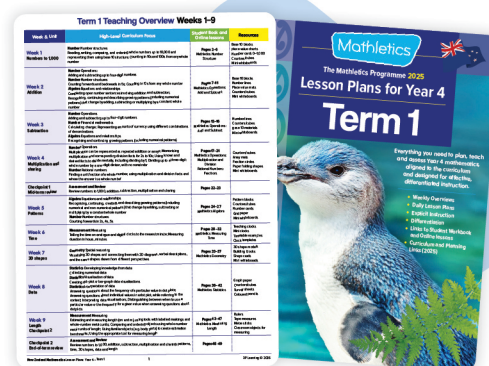
Conceptual understanding, fluency and reasoning

Assessment for Learning

Quick checks, checkpoints and reflection built into teaching

The programme supports a structured approach to mathematics where learning is explicit, cumulative, language-rich, and connected across concepts.

Students are guided from understanding to fluency to independent application through carefully sequenced instruction and practice.



Implementation & School Wide Impact

What This Looks Like in Classrooms

A typical teaching cycle includes:

1. Explicit teacher instruction
2. Guided classroom discussion and modelling
3. Structured workbook practice
4. Online reinforcement and feedback
5. Assessment and reflection

This creates a consistent learning cycle across classrooms while still allowing teachers flexibility

Designed to Support Excellent Teaching

The programme is designed to support teacher decision-making.

Teachers are provided with:

- weekly teaching overviews,
- detailed lesson plans,
- success criteria,
- vocabulary and sentence stems,
- differentiation suggestions,
- hands-on activity ideas,
- assessment prompts,
- and linked online practice.

This reduces planning pressure while supporting high-quality instruction.

Supporting Leadership

Whole-School Visibility and Consistency

For school leaders, the programme provides:

- a clear curriculum progression,
- consistency across classrooms,
- embedded assessment opportunities,
- visibility into student learning,
- and connected online reporting.

This helps leaders support implementation while maintaining flexibility for teacher practice and local curriculum design.

Flexible School Implementation

Schools can implement the programme in ways that suit their context.

Some schools may follow the weekly teaching sequence closely, while others may align the resources to existing planning structures.

The programme is designed to support whole-school implementation, year-level consistency, small-group reinforcement, intervention, and independent online practice.

Support for Schools

To support successful implementation, schools have access to:

- FREE, comprehensive PLD for every school that uses the programme,
- onboarding webinars, downloadable samples, teacher support resources,
- and local New Zealand support.

The New Zealand Mathematics Programme is a connected mathematics teaching and learning system designed to support teachers, strengthen implementation and help every student build mathematical understanding, confidence and success.

The Mathletics Instruction Hub

Everything teachers need. Exactly when they need it.

The Instruction Hub brings together:

- Lesson Plans and Teaching slides,
- Student Book pages,
- Online reinforcement,
- Checkpoints,
- and differentiated learning pathways

into one connected weekly teaching experience.

Built for Structured Mathematics Teaching

Each week follows a connected learning cycle:

Teach → Practise → Reinforce → Check → Reflect

This helps teachers deliver structured mathematics lessons while reducing planning fragmentation and strengthening consistency across classrooms.

The screenshot displays the Mathletics Instruction Hub interface for Year 4. The top navigation bar includes 'Mathletics Instruction Hub' and year levels from Year K to Year 8, with 'Year 4' selected. A user profile icon and 'Admin Teacher' status are visible in the top right. The main content area is divided into three sections:

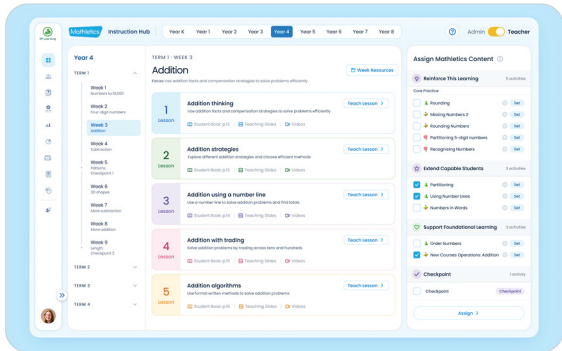
- Left Sidebar:** A vertical menu for 'Year 4' showing 'TERM 1' with weeks 1 through 9. 'Week 3 Addition' is highlighted.
- Central Content:** Displays 'TERM 1 - WEEK 3 Addition' with a focus on using addition facts and compensation strategies. It lists five lessons:
 - 1 Lesson: Addition thinking** (Use addition facts and compensation strategies to solve problems efficiently). Resources: Student Book: p.12, Teaching Slides, Videos.
 - 2 Lesson: Addition strategies** (Explore different addition strategies and choose efficient methods). Resources: Student Book: p.13, Teaching Slides, Videos.
 - 3 Lesson: Addition using a number line** (Use a number line to solve addition problems and find totals). Resources: Student Book: p.14, Teaching Slides, Videos.
 - 4 Lesson: Addition with trading** (Solve addition problems by trading across tens and hundreds). Resources: Student Book: p.15, Teaching Slides, Videos.
 - 5 Lesson: Addition algorithms** (Use formal written methods to solve addition problems). Resources: Student Book: p.16, Teaching Slides, Videos.
- Right Panel:** 'Assign Mathematics Content' section with three categories:
 - Reinforce This Learning (5 activities):** Rounding, Missing Numbers 2, Rounding Numbers, Partitioning 5-digit numbers, Recognising Numbers.
 - Extend Capable Students (3 activities):** Partitioning, Using Number Lines, Numbers in Words.
 - Support Foundational Learning (2 activities):** Order Numbers, New Courses Operations: Addition.
 - Checkpoint (1 activity):** Checkpoint.

Teaching + Differentiation + Assessment in One Place

Designed for Real Classrooms

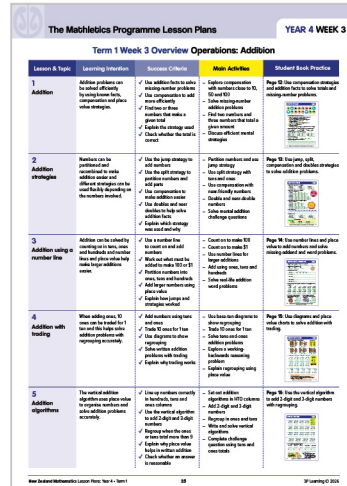
The Instruction Hub transforms the New Zealand Mathletics Programme from a collection of resources into a connected teaching and learning system — helping schools implement the refreshed New Zealand Curriculum with greater clarity, confidence and visibility.

One Connected Teaching & Learning Cycle



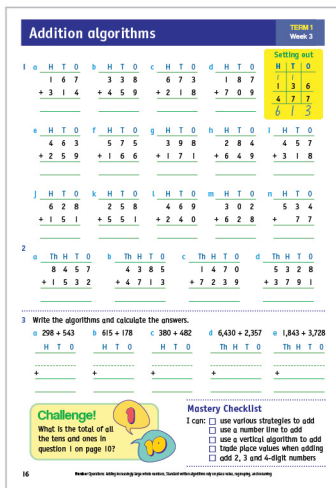
Instruction Hub

Brings together teaching, reinforcement, assessment and differentiation into one connected teaching and learning system.



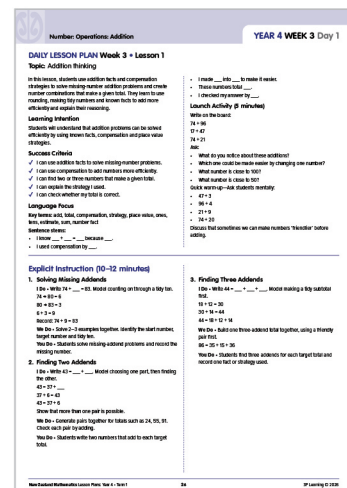
Weekly overview

Provides curriculum progression and planning visibility.



Workbook practice

Students apply and record mathematical thinking.



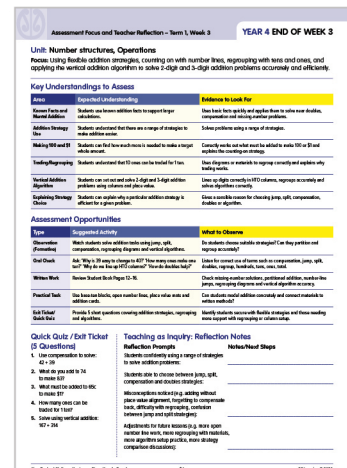
Daily lesson plan

Supports explicit teaching and classroom discussion.



Online reinforcement

Students consolidate skills independently with feedback.



Assessment and reflection

Teachers gather evidence and identify next steps.

Teacher Guide: Weekly and Term Overviews

Clear Progression Across the Curriculum

Weekly and term overviews help teachers see how mathematical understanding develops across the term, with concepts carefully sequenced to build understanding, fluency and reasoning.

Supporting Consistent Teaching

Shared learning intentions, success criteria and teaching focus support consistency across classrooms while still allowing flexibility for teacher practice.

Reducing Planning Workload

Teachers can quickly see:

- lesson focus,
 - key activities,
 - workbook links,
 - and online reinforcement,
- making planning more efficient and connected.

Embedded Assessment

Assessment opportunities are built directly into lessons through:

- mathematical discussion,
- workbook practice,
- and teacher observation.

This helps teachers identify misconceptions and respond quickly.

Checkpoints & Connected Assessment

Student books include structured checkpoints that assess conceptual understanding, fluency, reasoning, and application.

Online Assessment & Reporting

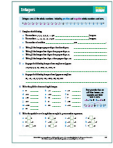


Mathletics provides online assessment and reporting tools that allow teachers to:

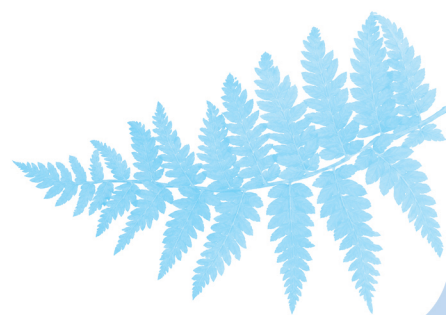
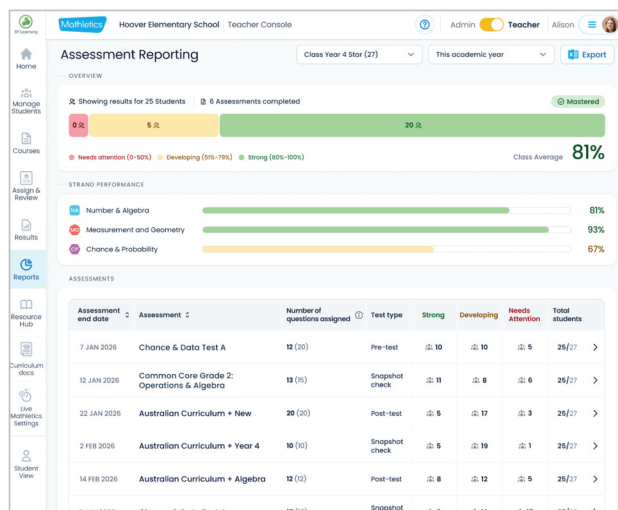
- monitor progress,
- identify learning gaps,
- view class and individual achievement,
- and support data-informed teaching decisions.

One Connected Assessment System

Together, workbook tasks, checkpoints, lesson reflections and online reporting create a connected assessment cycle that supports:

- ongoing formative assessment,
- consistent teacher judgement,
- targeted intervention,
- and visible student progress over time.

The Mathematics Programme Lesson Plans				YEAR 7 WEEK 3
Term 1 Week 3 Overview Computations with Integers – Understanding, Representing and Adding Integers				
Lesson & Topic	Learning Intention	Success Criteria	Main Activities	Student Book Practice
1 Integers	Integers can represent positive and negative values used in real-world situations such as temperature, elevation, movement and finance.	<ul style="list-style-type: none"> ✓ Identify positive and negative integers ✓ Locate integers on a number line ✓ Compare and order integers ✓ Identify additive inverses ✓ Use integers in real-world contexts 	<ul style="list-style-type: none"> – Introduce integers using temperature, elevation and money contexts – Explore positive and negative values on number lines – Compare and order integers – Investigate opposites and additive inverses – Discuss why zero is neither positive nor negative 	<p>Page 17: Identify integers, order positive and negative numbers, identify additive inverses and compare integers using inequality symbols.</p> 
2 Plotting on Number Lines & Using Integers	Number lines can be used to represent movement, direction, position and change involving integers.	<ul style="list-style-type: none"> ✓ Plot integers accurately on a number line ✓ Represent movement left and right ✓ Use integers to model real-world situations ✓ Solve movement problems involving integers ✓ Explain reasoning using number lines 	<ul style="list-style-type: none"> – Plot positive and negative integers on number lines – Represent movement and change visually – Explore hiking, banking, elevator and game-score contexts – Solve multi-step movement problems – Discuss how crossing zero changes value 	<p>Pages 18–19: Plot integers on number lines, model movement and solve real-world integer problems involving position, temperature, money and score changes.</p> 
3 Adding Integers	Adding integers represents movement and change and can be modelled visually using number lines and patterns.	<ul style="list-style-type: none"> ✓ Add positive and negative integers ✓ Use number lines to model integer addition ✓ Recognise additive inverse patterns ✓ Solve real-world integer problems ✓ Explain integer addition reasoning 	<ul style="list-style-type: none"> – Model integer addition using movement on number lines – Explore adding positive and negative values – Investigate additive inverses and opposites – Solve contextual integer problems – Identify and explain integer patterns 	<p>Pages 20–21: Add integers using number lines, evaluate positive and negative integer expressions and investigate integer patterns and reasoning tasks.</p> 



Mathletics for Phase 1: Years 0–3

Building strong mathematical foundations through structured, connected and engaging learning experiences.

The refreshed New Zealand Curriculum places strong emphasis on helping students develop deep understanding of: number structures, additive thinking, place value, patterns and relationships, mathematical language and number fact fluency.

The New Zealand Mathletics Programme for Years 0–3 has been designed to support this progression through carefully sequenced learning experiences aligned to the refreshed curriculum.

Teacher tools for effective curriculum delivery:

The programme integrates:

Teacher Support	Student Learning
Teacher Guides	Student Workbooks
Daily Lesson Plans	Mathseeds Online Learning
Weekly Planning	Checkpoints & Assessment

Supporting Structured Early Mathematics Learning

The programme reflects the Refreshed New Zealand Curriculum, by including:

- explicit teaching,
- scaffolded learning,
- mathematical discussion,
- retrieval and reinforcement,
- fluency development, and ongoing formative assessment.

This helps students build understanding gradually and confidently while strengthening mathematical communication and reasoning.

Connected Print and Online Learning

Mathseeds provides engaging online reinforcement that supports students in developing:

- number sense,
- counting and place value understanding,
- addition and subtraction,
- fact fluency, while developing positive attitudes towards mathematics learning.

The combination of:

- explicit classroom teaching,
- structured workbook practice,

- engaging online reinforcement, and cumulative review helps students build strong mathematical foundations across Years 0–3.

Designed to Support Teachers and Diverse Learners

The programme helps teachers reduce planning fragmentation through:

- carefully sequenced curriculum progression,
- connected Teacher Guides, Lesson Plans and Student Books,
- embedded assessment opportunities,
- and structured reinforcement pathways.

Mathseeds placement and differentiated online learning pathways helps support students requiring:

- additional reinforcement,
- foundational strengthening,
- or extension and challenge.

This creates a more connected, visible and manageable approach to early mathematics teaching and learning.



Visual scaffolding builds understanding





Clear pictorial models help students develop subtraction understanding before moving to abstract number work.


Carefully sequenced progression


Students move from visual subtraction to equations and then to structured word problems.


Subtraction
TERM 1
Week 6

1 Find the answers.

 $4 - 2 = \square$	 $6 - 3 = \square$
 $8 - 4 = \square$	 $10 - 5 = \square$

2  3 ducks. 1 walks away. How many left?

3  4 turtles. 2 swim away. How many left?

4  5 crabs. 4 run away. How many left?

24 Number Operations: Subtracting one-digit numbers up to 20; Separating groups of up to 20 objects; Solving one-step problems involving subtraction using pictorial representations

Mathematical language support

Key subtraction vocabulary is reinforced throughout each activity and problem type.

Structured problem solving

Students apply subtraction thinking through scaffolded real-world problem-solving tasks.


Built for structured mathematics teaching







The sequence supports explicit teaching, modelling, fluency and cumulative reinforcement.

Connected reinforcement and support

Mathseeds provides additional fluency and foundational reinforcement linked to classroom learning.

Take away
TERM 1
Week 6

 Take away 2.

 $5 \rightarrow \square$	 $\square \rightarrow \square$
 $\square \rightarrow \square$	 $\square \rightarrow \square$
 $\square \rightarrow \square$	 $\square \rightarrow \square$

22 Number Operations: Subtracting one-digit numbers up to 20; Separating groups of up to 20 objects

Subtraction stories
TERM 1
Week 6

1 4 fish. 1 swims away. Subtract =
Take some away.
How many left?

2 3 cats. 2 run away.
How many left?

3 4 bikes. 2 ride away.
How many left?

4 5 cars. 2 drive away.
How many left?

Challenge! 8 mice. 3 run away. How many left?

25 Number Operations: Solving one-step problems involving subtraction using pictorial representations

Daily Lesson Plans: Supporting High-Quality Teaching

Explicit Teaching Structure

Clear “I Do, We Do, You Do” teaching sequence builds student confidence step-by-step.

Mathematical Language Support

Key vocabulary, sentence stems and discussion prompts.

Assessment and Reflection

Quick questions and prompts help teachers check understanding.

Number: Operations

YEAR 1 WEEK 6 Day 4

DAILY LESSON PLAN Week 6 • Lesson 4

Topic: Subtraction stories

In this lesson, students solve simple subtraction story problems using pictures, drawings, objects and counting-back strategies. Students learn that subtraction stories describe situations where some objects are taken away and fewer remain.

Learning Intention
Students will understand that subtraction can be used to solve real-life take-away story problems.

Success Criteria

- ✓ I can solve subtraction story problems.
- ✓ I can use pictures or objects to help me subtract.
- ✓ I can count how many are left after taking away.
- ✓ I can use counting back to solve subtraction problems.
- ✓ I can explain how I solved a subtraction story.

Number: Operations

YEAR 1 WEEK 6 Day 4

Differentiation Tips

Support

- Use concrete materials such as counters or toy animals.
- Focus on subtraction within 5 first.
- Encourage students to physically remove objects while counting.

Extension

- Challenge students to solve subtraction stories mentally.
- Ask students to create and illustrate their own subtraction stories.
- Introduce subtraction problems using larger numbers to 20.

Teaching as Inquiry
Observe which students can independently connect story situations to subtraction and which students still rely heavily on concrete materials.

Hands-On Activity 1 (10 minutes)
Act It Out Stories
Students act out subtraction stories using counters, toy animals or classroom objects, e.g. 4 giraffes at the waterhole. 2 walk away. Students explain how many are left and describe the subtraction process.

Hands-On Activity 2 (10 minutes)
Subtraction Story Creator
Students create their own subtraction story using drawings or manipulatives. They share their story with a partner, who solves the subtraction problem. Encourage students to explain their thinking using mathematical language.

Student Book Practice
Students complete page 25 of their workbooks: **Subtraction stories**
Focus: Solve subtraction story problems using pictures, drawings and counting-back strategies.

Mathseeds Online Practice
Lesson: Lesson 47, Subtraction
Focus: Solve subtraction problems using objects and equations. represent objects with a written numeral to solve subtraction problems. Represent a written numeral with objects to solve subtraction problems.

Number: Operations

YEAR 1 WEEK 6 Day 4

Reflect and Check (5 minutes)

Quick questions:

- What is 4 take away 1?
- What is 5 take away 2?
- What tells us a story problem is subtraction?
- How does counting back help solve subtraction problems?

Exit Question
‘Which strategy helps you solve subtraction stories most easily?’

Feedback
Praise students for using subtraction vocabulary such as subtract, take away, left and count back when explaining their thinking.

Next Steps for Teacher (Teaching as Inquiry)

- Identify students who still need support connecting stories to subtraction.
- Provide additional practice with subtraction stories and concrete materials.
- Extend confident students with larger subtraction problems and independent story creation.

Curriculum and Planning Links
NZ Curriculum – Number
Operations
Knowledge

- When subtracting numbers, the order of numbers is important.

Practices

- Subtracting one-digit numbers up to 20
- Separating groups of up to 20 objects
- Solving one-step problems involving subtraction using objects and pictorial representations

Language Focus
Key terms: subtraction, take away, left, fewer, count back, minus, story problem, number sentence

Sentence stems:

- ___ take away ___ equals ___
- I started with ___
- ___ went away, so there were ___ left.
- I counted back to solve the problem.
- Subtraction means taking some away.

Launch Activity (5 minutes)
Tell a simple subtraction story aloud, e.g. 5 birds were sitting on a tree. 2 flew away.
Ask: ‘How many birds are left?’
Students solve using fingers or counters.
Assessment for Learning
Ask:
• What tells us this is a subtraction story?
• What happens when some objects go away?
• How can we find how many are left?

3. Using Counting Back Strategies

I Do • Model solving 5 take away 2 using counting back. Count aloud: 5, 4, 3.
Explain: Counting back helps us subtract without recounting everything.
We Do • Practise counting back together with several examples.
Ask: ‘What number do we start at?’
You Do • Students solve subtraction story problems using counting-back strategies. Check for understanding with quick oral questions.

Differentiation Support

Targeted support, extension ideas and teacher inquiry prompts.

Hands-On Learning Activities

Practical activities using counters, drawings and classroom objects.

Connected Practice and Reinforcement

Student workbooks and Mathseeds online practice reinforce classroom learning.

Mathletics for Phase 2: Years 4–6

Supporting connected, engaging and confidence-building mathematics learning.

As students move through Years 4–6, the refreshed New Zealand Curriculum places increasing emphasis on:

- multiplicative thinking, fractions, mathematical communication,
- fluency, problem solving
- and applying mathematics across concepts and contexts.

Teacher tools for effective curriculum delivery:

The programme integrates:

Teacher Support	Student Learning
Teacher Guides	Student Workbooks
Daily Lesson Plans	Mathletics Online Learning
Weekly Planning	Checkpoints & Assessment

into one connected mathematics teaching and learning system fully aligned to the refreshed New Zealand Curriculum.

Supporting Structured Mathematics Teaching

The programme supports:

- explicit teaching and modelling,
- mathematical discussion and reasoning,
- connected workbook and online learning,
- fluency and reinforcement,
- visible student progress
- and reduced planning workload through connected lesson plans, teacher support and curriculum sequencing.

This helps teachers reduce planning load while supporting consistent classroom practice.

Designed for Today's Mathematics Classrooms

Step-by-Step Concept Videos

Mathletics New Courses videos guide students through concepts using worked examples, visual models and clear explanations.

These can be used during whole-class teaching, revision or independent reinforcement.

Connected Print and Online Learning

Student Workbooks and Mathletics activities reinforce the same concepts across multiple learning experiences, helping students revisit and strengthen understanding over time.

Supporting Diverse Learners

Mathseeds can support students requiring foundational strengthening, additional fluency practice or reinforcement alongside whole-class mathematics learning.

Assessment and Progress Visibility

Checkpoints, workbook observation and online reporting help teachers monitor understanding, fluency and progress over time.



The programme supports mathematics learning that is structured, engaging, cumulative, discussion-rich, and connected across mathematical concepts.

Students progressively move from guided learning towards increasingly independent reasoning, problem solving and mathematical confidence.

How it works in Phase 2: Years 4–6

Addition in Year 4: From Flexible Thinking to Formal Algorithms

Students build understanding progressively before moving into abstract written methods.

Addition thinking
TERM 1
Week 3

What do we know about the answer if we add:

- 1 74 and 96? It is about 100 more than 74 because 96 is about 100. It will end with a 0 because 4 ones plus 6 ones are 10.
- 2 17 and 47? It is about 50 more than 17 because 47 is about 50. It will end with a 4 because 7 plus 7 is 14. It is about 50 plus 20. It will be 50 plus 14. Take 3 off the 17 to make the 47 into 50.
- 3 74 and 21? It is 1 more than 74 and 20.
- 4 Two numbers to equal 43?
Look for 7 and 6, or 8 and 5, or 2 and 1, or 9 and 4 in the ones to end with a 3.

1 Use compensation strategies plus your addition facts to answer these questions.

a $74 + \underline{\quad} = 83$ b $\underline{\quad} + 47 = 64$ c $63 + \underline{\quad} = 88$
 d $\underline{\quad} + 47 = 59$ e $96 + \underline{\quad} = 105$ f $15 + \underline{\quad} = 53$

2 Use the clues and facts to find two numbers that total:

a $24 = \underline{\quad} + \underline{\quad}$ b $55 = \underline{\quad} + \underline{\quad}$ c $91 = \underline{\quad} + \underline{\quad}$
 d $25 = \underline{\quad} + \underline{\quad}$ e $90 = \underline{\quad} + \underline{\quad}$ f $99 = \underline{\quad} + \underline{\quad}$
 g $26 = \underline{\quad} + \underline{\quad}$ h $62 = \underline{\quad} + \underline{\quad}$ i $78 = \underline{\quad} + \underline{\quad}$

3 Find three numbers that total:
 a $144 = \underline{\quad} + \underline{\quad} + \underline{\quad}$ b $86 = \underline{\quad} + \underline{\quad} + \underline{\quad}$

4 What strategies and facts helped you in question 3?

12 Number Operations: Adding increasingly large whole numbers. Addition can be carried out mentally, using known facts, place value and partitioning, or column methods.

Page 12

Building flexible number thinking

Students begin with compensation and known facts before formal written methods are introduced.

Page 13

Using multiple strategies

Students compare split, jump and doubles strategies to develop efficient mental calculation.

Addition strategies
TERM 1
Week 3

1 Partition numbers and use the jump strategy.

a $48 + 15 = \underline{\quad}$ b $66 + 35 = \underline{\quad}$ c $54 + 27 = \underline{\quad}$
 d $87 + 36 = \underline{\quad}$ e $33 + 49 = \underline{\quad}$ f $68 + 83 = \underline{\quad}$
 g $124 + 35 = \underline{\quad}$ h $118 + 67 = \underline{\quad}$ i $136 + 49 = \underline{\quad}$

2 Partition numbers and use the split strategy.

a $58 + 14 = 50 + 10 + 8 + 4 = \underline{\quad}$
 b $75 + 45 = \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$
 c $46 + 86 = \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$
 d $93 + 75 = \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$
 e $127 + 67 = \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$
 f $155 + 36 = \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$
 g $137 + 43 = \underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$

3 Partition numbers and use the compensation strategy.

a $42 + 39 = 42 + 40 - 1 = \underline{\quad}$
 b $63 + 32 = \underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$
 c $18 + 78 = \underline{\quad} + \underline{\quad} - \underline{\quad} = \underline{\quad}$
 d $54 + 19 = \underline{\quad} + \underline{\quad} - \underline{\quad} = \underline{\quad}$
 e $146 + 59 = \underline{\quad} + \underline{\quad} - \underline{\quad} = \underline{\quad}$
 f $316 + 68 = \underline{\quad} + \underline{\quad} - \underline{\quad} = \underline{\quad}$

4 Double these numbers.

11	12	13	14	15	16	17	18	19	20

5 Use doubles to help.

a $14 + 15 = \underline{\quad}$ b $16 + 15 = \underline{\quad}$ c $11 + 12 = \underline{\quad}$
 d $20 + 19 = \underline{\quad}$ e $57 + 58 = \underline{\quad}$ f $124 + 123 = \underline{\quad}$
 g $109 + 107 = \underline{\quad}$ h $143 + 145 = \underline{\quad}$ i $217 + 216 = \underline{\quad}$

Challenge! Add these mentally!

a $53 + 59 = \underline{\quad}$ b $237 + 212 = \underline{\quad}$ c $408 + 353 = \underline{\quad}$
 d $294 + 106 = \underline{\quad}$ e $556 + 147 = \underline{\quad}$ f $527 + 495 = \underline{\quad}$

Number Operations: Adding increasingly large whole numbers. Addition can be carried out mentally, using known facts, place value and partitioning, or column methods.

13

Page 14

Visualising addition on number lines

Number lines help students connect place value understanding to larger addition problems.

Addition using a number line
TERM 1
Week 3

1 What must be added to make 100? Count on tens first, then ones.

a 63 b 46 c 28 d 55 e 71

2 What must be added to make \$1? Count on.

a 12c b 39c c 65c
 d 82c e 97c

3 Use the number lines for these.

a $143 + 28 = \underline{\quad}$

b $256 + 134 = \underline{\quad}$ _____

c $195 + 266 = \underline{\quad}$ _____

d $2,318 + 1,274 = \underline{\quad}$ _____

e $4,534 + 2,128 = \underline{\quad}$ _____

4 Add the ones first, then the tens, then the hundreds. Use one of your strategies to check your answer.

a $\begin{array}{r} 63 \\ + 24 \\ \hline \end{array}$ b $\begin{array}{r} 85 \\ + 12 \\ \hline \end{array}$ c $\begin{array}{r} 79 \\ + 20 \\ \hline \end{array}$ d $\begin{array}{r} 231 \\ + 356 \\ \hline \end{array}$ e $\begin{array}{r} 410 \\ + 379 \\ \hline \end{array}$ f $\begin{array}{r} 105 \\ + 573 \\ \hline \end{array}$

g $\begin{array}{r} 327 \\ + 512 \\ \hline \end{array}$ h $\begin{array}{r} 282 \\ + 614 \\ \hline \end{array}$ i $\begin{array}{r} 135 \\ + 464 \\ \hline \end{array}$ j $\begin{array}{r} 783 \\ + 105 \\ \hline \end{array}$ k $\begin{array}{r} 416 \\ + 83 \\ \hline \end{array}$ l $\begin{array}{r} 922 \\ + 573 \\ \hline \end{array}$

5 There are 1,231 jelly beans in one bowl and 1,267 in another. How many jelly beans altogether?
 +

6 At the fish market Joe sold 782 fish and Jill sold 1,307 fish. How many were sold altogether?
 +

14 Number Operations: Adding increasingly large whole numbers. Addition can be carried out mentally, using known facts, place value and partitioning, or column methods. Standard written algorithms rely on place value, regrouping, and renaming.

Phase 2 Student Workbooks

Addition in Year 4: From Flexible Thinking to Formal Algorithms

Students build understanding progressively before moving into abstract written methods.

Addition with trading
TERM 1
Week 3

1 Cross off 10 ones and add 1 ten in each diagram.

eg $46 + 15 = 61$

a $\square + \square = \square$

b $\square + \square = \square$

c $\square + \square = \square$

d $\square + \square = \square$

2 a

Tens	Ones
5	7
+	9

 b

Tens	Ones
6	4
+	8

 c

Tens	Ones
3	5
+	6

 d

Tens	Ones
8	3
+	8

e

Tens	Ones
4	9
+	2

 f

Tens	Ones
3	5
+	3

 g

Tens	Ones
2	8
+	4

 h

Tens	Ones
7	8
+	1

3 a

H	T	O
2	6	
+	4	3

 b

H	T	O
	1	4
+	3	5

 c

H	T	O
	7	6
+	3	4

 d

H	T	O
	8	1
+	2	9

 e

H	T	O
		9
+		1

Work backwards

The children have 68 marbles altogether. John has 8 less than Tim. Tim has 3 more than Ali who has half as many as Von. Von has 28 marbles. How many do John, Tim and Ali have?

Number Operations: Adding increasingly large whole numbers; Standard written algorithms rely on place value, regrouping, and renaming

Page 15

Making regrouping visible

Base-ten models help students understand WHY trading works before using formal algorithms.

Addition algorithms
TERM 1
Week 3

1 a

H	T	O
1	6	7
+	3	1

 b

H	T	O
3	3	8
+	4	5

 c

H	T	O
6	7	3
+	2	1

 d

H	T	O
1	8	7
+	7	0

e

H	T	O
4	6	3
+	2	5

 f

H	T	O
5	7	5
+	1	6

 g

H	T	O
3	9	8
+	1	7

 h

H	T	O
2	8	4
+	6	4

 i

H	T	O
4	5	7
+	3	1

j

H	T	O
6	2	8
+	1	5

 k

H	T	O
2	5	8
+	5	5

 l

H	T	O
4	6	9
+	2	4

 m

H	T	O
3	0	2
+	6	2

 n

H	T	O
5	3	4
+		7

2 a

Th	H	T	O
8	4	5	7
+	1	5	3

 b

Th	H	T	O
4	3	8	5
+	4	7	1

 c

Th	H	T	O
1	4	7	0
+	7	2	3

 d

Th	H	T	O
5	3	2	8
+	3	7	9

3 Write the algorithms and calculate the answers.

a $298 + 543$ b $615 + 178$ c $380 + 482$ d $6,430 + 2,357$ e $1,843 + 3,728$

f

H	T	O
+		

 g

H	T	O
+		

 h

H	T	O
+		

 i

Th	H	T	O
+			

 j

Th	H	T	O
+			

Challenge!

What is the total of all the tens and ones in question 1 on page 10?

Mastery Checklist

I can: use various strategies to add use a number line to add use a vertical algorithm to add trade place values when adding add 2, 3 and 4-digit numbers

16 Number Operations: Adding increasingly large whole numbers; Standard written algorithms rely on place value, regrouping, and renaming

Page 16

Moving to abstract written methods

Students now apply the vertical algorithm with stronger conceptual understanding underneath it.

Teacher Support Built into Every Step



The Instruction Hub



Teacher Guides



Daily Lesson Plans



Student Workbooks



Mathletics Online Learning

Daily Lesson Plans: Supporting High-Quality Teaching

Clear lesson focus

Teachers can immediately see what students are learning and how success will be measured.

Support without creating multiple lessons

Teachers are provided with practical suggestions for extension and support.

Assessment embedded into teaching

Quick checks help teachers identify misconceptions and decide next steps.

Number: Operations: Addition

YEAR 4 WEEK 3 Day 1

DAILY LESSON PLAN Week 3 • Lesson 1
Topic: Addition thinking

In this lesson, students use addition facts and compensation strategies to solve missing-number addition problems and create number combinations that make a given total. They learn to use rounding, making tidy numbers and known facts to add more efficiently and explain their reasoning.

Learning Intention
Students will understand that addition problems can be solved efficiently by using known facts, compensation and place value strategies.

Success Criteria

- ✓ I can use addition facts to solve missing-number problems.
- ✓ I can use compensation to add numbers more efficiently.
- ✓ I can find two or three numbers that make a given total.
- ✓ I can explain the strategy I used.
- ✓ I can check whether my total is correct.

Language Focus
Key terms: add, total, compensation, strategy, place value, ones, tens, estimate, sum, number fact

Sentence stems:

- I know ___ + ___ = ___ because ___.
- I used compensation by ___.

Explicit Instruction (10–12 minutes)

1. Solving Missing Addends
I Do • Write $74 + \underline{\quad} = 83$. Model counting on through a tidy ten.
 $74 + 80 = 6$
 $80 + 83 = 3$
 $6 + 3 = 9$
Record: $74 + 9 = 83$
We Do • Solve 2–3 examples together. Identify the start number, target number and tidy ten.
You Do • Students solve missing-addend problems and record the missing number.

2. Finding Two Addends
I Do • Write $43 = \underline{\quad} + \underline{\quad}$. Model choosing one part, then finding the other.
 $43 = 37 + \underline{\quad}$
 $37 + 6 = 43$
 $43 = 37 + 6$
Show that more than one pair is possible.
We Do • Generate pairs together for totals such as 24, 55, 91. Check each pair by adding.
You Do • Students write two numbers that add to each target total.

3. Finding Three Addends
I Do • Write $44 = \underline{\quad} + \underline{\quad} + \underline{\quad}$. Model making a tidy subtotal first.
 $18 + 12 = 30$
 $30 + 14 = 44$
 $44 = 18 + 12 + 14$
We Do • Build one three-addend total together, using a friendly pair first.
 $86 = 35 + 15 + 36$
You Do • Students find three addends for each target total and record one fact or strategy used.

• I made ___ into ___ to make it easier.
• These numbers total ___.
• I checked my answer by ___.

Launch Activity (5 minutes)
Write on the board:
 $74 + 96$
 $17 + 47$
 $74 + 21$
Ask:
• What do you notice about these additions?
• Which one could be made easier by changing one number?
• What number is close to 100?
• What number is close to 50?
Quick warm-up—Ask students mentally:
• $47 + 3$
• $96 + 4$
• $21 + 9$
• $74 + 20$
Discuss that sometimes we can make numbers 'friendlier' before adding.

Number: Operations: Addition

YEAR 4 WEEK 3 Day 1

Differentiation Tips

Support

- Use number lines or tens frames
- Work with tidy-number additions first
- Model compensation step by step
- Use smaller totals before moving to larger ones
- Provide addition fact cards for support

Extension

- Find more than one strategy for the same addition
- Create their own missing-number problems
- Find multiple pairs and triples for one total
- Explain which strategy is most efficient and why

Teaching as Inquiry
Observe which students:
• can use compensation effectively
• can solve missing-number problems accurately
• use known addition facts confidently
• can make totals using two or three numbers
• explain their thinking clearly
• need support with flexible number strategies.

Hands-On Activity 1 (10 minutes)
Make It Tidy
Students are given addition cards such as:
• $68 + 32$
• $47 + 19$
• $96 + 28$
They decide whether compensation would help and explain how they would use it.

Hands-On Activity 2 (10–15 minutes)
Target Total Challenge
Students are given target numbers such as 24, 55, 91, 144 and 86. They find:
• two numbers that make the total
• three numbers that make the total
Then they compare answers with a partner.

Student Book Practice
Students complete page 12 of their workbooks: Addition thinking
Focus: Using compensation strategies, solving missing-number addition problems, using addition facts flexibly, finding two or three numbers that total a given amount, explaining addition strategies

Number: Operations: Addition

YEAR 4 WEEK 3 Day 1

Mathletics Online Practice
New Course Unit: Operations: Addition
Set: Are you ready?
Tests prior knowledge and provides data on potential areas of weakness to address.

Reflect and Check (5 minutes)

Quick-fire questions:
• Why is $74 + 96$ close to $74 + 100$?
• What do you add to 47 to make 64?
• Can 24 be made in more than one way?
• Why might compensation be faster than standard counting?
• How can you check your total?

Reflect and Share
How does compensation help make addition easier?

Next Steps for Teacher

- Reinforce compensation with friendly numbers like 10, 50 and 100
- Continue building confidence with missing-number addition
- Support students who need help using subtraction to check addition
- Extend confident students with larger totals and multiple strategies
- Build fluency in explaining mental addition methods

Curriculum & Planning Links
NZ Curriculum (2025) – Number
Operations
Knowledge

- Addition and subtraction can be carried out mentally, using known facts, place value and partitioning, or column methods.

Practices

- Adding and subtracting up to four-digit numbers

Supporting mathematical communication

Students learn to explain reasoning, compare strategies and justify answers using mathematical language.

I Do, We Do, You Do structure

Lessons follow a gradual release model to reduce cognitive load and build confidence.

Concrete and visual learning

Students use manipulatives, diagrams and models before moving to abstract methods.

Mathletics for Phase 3: Years 7 and 8

Supporting confident, connected and reasoning-focused mathematics classrooms.

Intermediate mathematics teaching requires more than isolated practice and procedural fluency. Teachers need programmes that support conceptual understanding, mathematical discussion, problem solving and clear curriculum progression — while also reducing planning workload and supporting diverse learners.

The New Zealand Mathletics Programme for Years 7–8 combines structured teaching resources, connected student materials and online reinforcement into one coherent mathematics teaching and learning system aligned to the refreshed New Zealand Curriculum.

Teacher tools for effective curriculum delivery:

The programme integrates:

Teacher Support	Student Learning
Teacher Guides	Student Workbooks
Daily Lesson Plans	Mathletics Online Learning
Weekly Planning	Checkpoints & Assessment

Each component works together to support:

- structured curriculum progression,
- explicit and discussion-rich teaching,
- mathematical reasoning and communication,
- linked workbook and online practice,
- embedded assessment opportunities,
- and consistent mathematics instruction across classrooms.

This helps schools reduce planning pressure while strengthening teaching consistency and student learning outcomes.



Built Around Evidence-Based Mathematics Teaching

Explicit Teaching with Mathematical Discussion

Worked examples, guided reasoning and classroom discussion support deep understanding.

Structured Curriculum Progression

Concepts are carefully sequenced to build understanding across number, algebra, geometry, measurement and statistics.

Reasoning + Fluency

Students develop conceptual understanding alongside efficient and accurate mathematical fluency.

Assessment Embedded Into Teaching

Reflection, checkpoints and classroom discussion provide ongoing evidence of student understanding.

The programme supports mathematics learning that is: explicit, cumulative, language-rich, reasoning-focused and connected across mathematical concepts. Students move progressively from visual models and guided reasoning towards abstraction, generalisation and independent problem solving.

Phase 3 Student Workbooks

Integers: Building Conceptual Understanding

Integers in Year 7: From Visual Models to Abstract Reasoning

Students build understanding of integers through number lines, movement, patterns and real-world contexts before formal integer rules are generalised.

Computations with integers

Integers help us describe changes in the real world — such as:

- temperature above and below zero,
 - money gained or lost,
 - height above or below sea level.
- They help us understand direction, change and comparison.



Visualising integers on number lines

Number lines help students compare, order and locate positive and negative integers spatially.

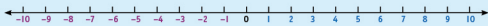
Representing addition as movement

Students use number lines to visualise integer addition as movement left and right before abstract rules are introduced.

Integers

Chapter 2
Computations with integers

Integers are all the whole numbers, including positive and negative whole numbers and zero.



1 Complete the following.

- a The numbers 1, 2, 3, 4, 5, 6, ... are _____ integers.
 b The numbers ..., -4, -3, -2, -1 are _____ integers.
 c The number 0 is neither _____ nor _____.

2 Write all the integers greater than 1 but less than 8. _____

- b Write all the integers less than 3 but greater than -4. _____
 c Write all the integers less than 2 but greater than -3. _____
 d Write all the integers less than -3 but greater than -10. _____

3 a Arrange the following integers from smallest to largest:

-10, 20, 5, 0, 72, -500, -9, -300, 12

b Arrange the following integers from largest to smallest:

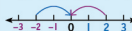
35, -15, -10, 8, 0, 26, 125, -200, -96, 58, 320

4 Write the additive inverse of each integer.

- | | | |
|--------------|-------------|-------------|
| a 9 _____ | b -4 _____ | c -8 _____ |
| d -73 _____ | e -64 _____ | f 8 _____ |
| g -62 _____ | h 15 _____ | i 7 _____ |
| j -27 _____ | k 6 _____ | l -59 _____ |
| m -120 _____ | n 36 _____ | o -82 _____ |
| p 18 _____ | | |

Every number has an additive inverse, an opposite and their sum is zero.

$-2 + 2 = 0$ $2 + -2 = 0$

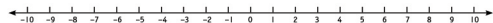


5 Write the symbol > or < in each box to make it a true number statement.

- | | | | |
|------------------------------------|-----------------------------------|----------------------------------|-----------------------------------|
| a 3 <input type="checkbox"/> 5 | b 8 <input type="checkbox"/> -4 | c -9 <input type="checkbox"/> -2 | d 5 <input type="checkbox"/> -3 |
| e 9 <input type="checkbox"/> -6 | f -10 <input type="checkbox"/> -1 | g -8 <input type="checkbox"/> -3 | h -15 <input type="checkbox"/> -7 |
| i -26 <input type="checkbox"/> -18 | j 16 <input type="checkbox"/> -2 | k -3 <input type="checkbox"/> 14 | l 7 <input type="checkbox"/> -2 |

Using integers

Chapter 2
Computations with integers



- 1 A hiker is currently on +1 position. Find where the hiker will be if he hikes:
- | | |
|--|--------------------------------------|
| a 4 steps up _____ | b 3 steps down _____ |
| c 2 steps up _____ | d 6 steps down _____ |
| e 5 steps up then 8 steps down _____ | f 4 steps down then 7 steps up _____ |
| g 4 steps down then 6 steps down _____ | h 1 step up then 9 steps down _____ |
- 2 Manahi's current bank account is -\$3. What will be her account balance if she:
- | | |
|--|---|
| a is charged \$7? _____ | b deposits \$8? _____ |
| c is charged \$6? _____ | d deposits \$10? _____ |
| e is charged \$8? _____ | f deposits \$4 and is then charged \$9? _____ |
| g is charged \$5 and then another \$3? _____ | h is charged \$7 and then deposits \$6? _____ |
- 3 Adam is currently 3 floors above ground level (+3). On what floor will he be if he goes:
- | | |
|---|---|
| a 2 floors up? _____ | b 4 floors down? _____ |
| c 3 floors up? _____ | d 5 floors down? _____ |
| e 2 floors up then 6 floors down? _____ | f 3 floors down then 5 floors up? _____ |
| g 1 floor up then 6 floors down? _____ | |
- 4 Donna is playing a game where the points score can be positive or negative. She has 3 points. How many points will she have if she:
- | | |
|---|--|
| a loses 4 points? _____ | b gains 2 points? _____ |
| c loses 7 points? _____ | d loses 10 points? _____ |
| e gains 2 points then loses 7 points? _____ | f gains 5 points then loses 10 points? _____ |
| g loses 4 points then loses another 4 points? _____ | |
- 5 Use positive and negative integers to solve each problem.
- a A scuba diver starts at sea level (0 m). She dives down 18 m, then rises 7 m. What depth is she now at? _____
- b The temperature in Christchurch is 4°C in the afternoon. Overnight, the temperature drops 11°C. What is the overnight temperature? _____
- c A gamer starts with 15 points. They lose 22 points during a challenge, then gain 9 points back. What is their final score? _____
- d A bank account balance is -\$14. A deposit of \$20 is made, then a payment of \$11 is taken out. What is the final balance? _____

Introducing integers through real-world meaning

Students connect integers to temperature, elevation, money and movement before formal operations begin.

Applying integers in authentic contexts

Students use integers to model real-life situations including hiking, banking, elevators and game scores.

Daily Lesson Plans: Supporting High-Quality Teaching

Learning Intention + Success Criteria

Clear mathematical purpose

Teachers can quickly identify the conceptual focus of the lesson and what successful understanding looks like.

Language Focus + Mathematical Communication

Building confident mathematical thinkers

Students learn to explain reasoning, justify solutions and communicate mathematical ideas using precise language.

Guided Discussion

Encouraging reasoning and explanation

Students compare strategies, explain patterns and critique mathematical thinking collaboratively.

Computations with Integers

YEAR 7 WEEK 3 Day 1

DAILY LESSON PLAN Year 7 • Term 1 • Week 3 • Lesson 1

Topic: Introduction to Integers
Student Book: Chapter 2 – Computations with Integers (pp. 16–17)

In this lesson, students are introduced to integers and explore how positive and negative numbers are used to represent real-world situations such as temperature, elevation, finance and movement. Students locate, compare and order integers on number lines, identify additive inverses and explain relationships between positive and negative values.

Learning Intention
Students will understand that integers include positive numbers, negative numbers and zero, and will use number lines and mathematical reasoning to compare, order and represent integers.

Success Criteria

- ✓ I can identify positive and negative integers
- ✓ I can locate integers correctly on a number line
- ✓ I can compare and order integers
- ✓ I can explain additive inverses and opposites
- ✓ I can use integers to describe real-world situations

Language Focus

Key Vocabulary
integer, positive number, negative number, zero, opposite, additive inverse, greater than, less than, ascending order, descending order, number line

Mathematical Symbols
 $>$, $<$, $=$, $+$, $-$

Mathematical Communication
___ is greater than ___ because it is further right on the number line.
The opposite of ___ is ___.
Zero is neither positive nor negative because ___.
These integers are ordered from smallest to largest by ___.

Computations with Integers

YEAR 7 WEEK 3 Day 1

Guided Discussion (10 minutes)

Students work in pairs on discussion tasks.

Prompt 1
Which is greater: -4 or 2?
Students must explain reasoning using the number line.

Prompt 2
Order these integers from smallest to largest:
-10, 20, 5, 0, 72, -500, -9
Students explain:
• which number is smallest
• why large negative numbers are further left

Prompt 3
Discuss: Why is zero neither positive nor negative?
Encourage multiple explanations.
Select students to share reasoning and critique ideas respectfully.

Independent Application (10 minutes)

Students independently complete challenge questions.
Suggested Extension Tasks

- Write three integers between:
• -12 and -5
• 8 and 15
- Create:
• the greatest negative integer possible using digits 3, 8 and 1
• the smallest positive integer possible using the same digits
- Explain why: $-3 > -10$
using both a number line and a real-world example.
- A diver is at -45 m and rises 18 m. What is the diver's new position? Students must show reasoning clearly.

Differentiation

Support

- Use vertical and horizontal number lines
- Use coloured counters for positive/negative values
- Begin with smaller integer ranges

Extension

- Explore integers in financial contexts
- Compare absolute value versus actual value
- Investigate patterns in opposite numbers

Computations with Integers

YEAR 7 WEEK 3 Day 1

Reflect & Reason (5 minutes)

Students work in pairs on discussion tasks.

Discuss:

- Why do negative numbers become smaller as they move left?
- How does the number line help us think mathematically?
- Why are opposites important in mathematics?
- Where do we use integers in real life?

Encourage students to respond to and build on each other's ideas.

Student Book Practice

Students complete **Integers p.17**.
Focus: identifying and ordering integers, additive inverses, inequality symbols, number line reasoning

Mathletics Online Practice

Skills Quest Topic: Integers on a number line

Reflect and Check

A temperature changes from 4°C to -3°C . Explain:
Students must represent reasoning mathematically and verbally.

Next Steps for Teacher (Teaching as Inquiry)

Next lesson will focus on:

- integers on number lines
- adding integers visually
- movement and direction models
- patterns involving positive and negative numbers

Observe which students:

- still struggle ordering negative numbers
- rely heavily on counting strategies
- can already reason flexibly about opposites and distance from zero

Explicit Teaching + Worked Examples

Supporting conceptual understanding

Short, focused teaching sequences use visual models, number lines and discussion to make abstract ideas visible.

Curriculum Links

Assessment embedded into teaching

Knowledge and practices clearly linked.

Student Practice

High quality independent practice

Clear links to both student book practice and online learning activities.

Independent Application

Applying mathematics flexibly

Students move from guided support to independent problem solving using increasingly complex contexts.