Year 8

Term 1

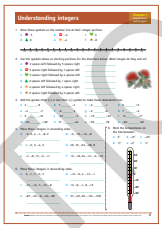
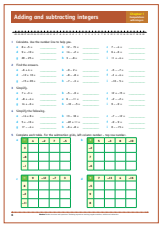
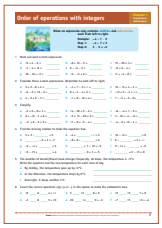
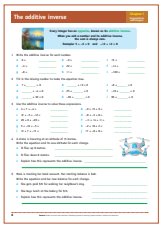
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Term 1 Teaching Overview

Week	High-Level Curriculum Focus	Student Book	Mathletics Online Lessons
1 **Integers**	**Number** Number structures and operations Locating, comparing and ordering, adding and subtracting negative and positive numbers on a number line and finding the additive inverse.	**Chapter 1: Computation with integers** **Pages 3–8**	**3 Skill Quests** **3 Activities (Courses)**
2 **Order of operations**	**Number** Number structures and operations Using exponents and evaluating expressions with integers, using the order of operations.	**Chapter 1: Computation with integers** **Pages 9–11**	**2 Challenges**
Checkpoint 1	Assess understanding of integers, including the additive inverse and order of operations.	**Pages 12–13**	
3 **Powers of 10**	**Number** Number structures and operations Reading, writing, representing, comparing, and ordering whole numbers and decimals using positive and negative powers of 10.	**Chapter 2: Place value and exponents** **Pages 15–20**	**2 Skill Quests** **2 Activities (Courses)**
4 **Exponents and roots**	**Number** Number structures and operations Using exponents to represent squares and cubes, and radicals for their roots. Using a calculator to approximate square and cube roots for other numbers.	**Chapter 2: Place value and exponents** **Pages 21–24**	**3 Skill Quests** **2 Activities (Courses)**
5 **Factors**	**Number** Number structures and operations Representing composite numbers as products of their prime factors, using exponents to summarise repeated factors	**Chapter 2: Place value and exponents** **Pages 25–27**	**1 Skill Quest** **1 Activity (Courses)**
Checkpoint 2	Assess understanding of place value and exponents, including powers of 10, squares, cubes and roots, and prime and composite numbers.	**Pages 28–29**	
6 **Fractions**	**Number** Number structures and operations Representing fractions, converting between fractions, and representing in simplest form. Multiplying whole numbers by fractions.	**Chapter 3: Fractions and decimals** **Pages 31–35**	**3 Skill Quests** **3 Activities (Courses)**
7 **Multiply and divide with fractions**	**Number** Number structures and operations Finding a whole amount when given a fraction and multiplying two fractions. Converting between fractions and decimals and comparing, and ordering decimals.	**Chapter 3: Fractions and decimals** **Pages 36–41**	**5 Skill Quests** **1 Activity (Courses)** **1 Challenge**
8 **Decimals**	**Number** Number structures and operations Rounding decimals, multiplying and dividing by powers of 10, and multiplying two decimals.	**Chapter 3: Fractions and decimals** **Pages 42–45**	**4 Skill Quests** **3 Activities (Courses)** **1 Challenge**
Checkpoint 3	Assess understanding of fractions and decimals, and skills in operations with both.	**Pages 46–47**	
9 **Percentages, fractions and decimals**	**Number** Number structures and operations Fractions and percentages represent proportional relationships. Comparing, ordering and converting between fractions, decimals and percentages.	**Chapter 4: Percentages, fractions and decimals** **Pages 49–54**	**3 Skill Quests** **4 Activities (Courses)**

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Term 1 Week 1 Overview Number: Number structures and operations
Chapter 1: Computations with integers: Integers

Lesson & Topic	Learning Intention	Success Criteria	Main Activities	Student Book Practice
1 **Understanding integers**	Locate, compare and order positive and negative integers.	✓ Locate positive and negative integers on a number line ✓ Interpret movement left and right on a number line ✓ Compare integers using > and < ✓ Order integers in ascending and descending order ✓ Represent positive and negative temperatures	– Locate integers on a number line – Explore movement between positive and negative values – Compare integer values using inequality symbols – Order sets of positive and negative integers – Connect integers to temperature contexts – **Mathletics Online Practice Skill Quest: Positive & negative numbers, number line; Activities (Courses): Comparing Integers (<, =, >)**	**Page 3:** Locate, compare and order positive and negative integers using number lines and apply integers to temperatures. 
2 **Adding and subtracting integers**	Apply strategies to accurately add and subtract positive and negative integers.	✓ Add positive and negative integers ✓ Subtract positive and negative integers ✓ Interpret double signs correctly ✓ Use a number line to support calculations ✓ Apply integer operations in context	– Model addition and subtraction on a number line – Explore the effect of like and different signs – Calculate with positive and negative integers – Find missing values in integer equations – Apply integer subtraction to changes in elevation – **Skill Quest: Add & subtract integers**	**Pages 4–5:** Add and subtract positive and negative integers, interpret signs, find missing values and apply integer operations to contextual problems.  
3 **Add and subtract integers**	Apply addition and subtraction strategies to calculate efficiently with integers.	✓ Calculate with positive and negative integers ✓ Select the correct operation and sign ✓ Simplify integer calculations accurately ✓ Apply addition and subtraction across zero ✓ Complete integer operation tables	– Consolidate addition and subtraction of integers – Compare strategies for calculations involving negative values – Simplify expressions involving positive and negative integers – Work across zero accurately – Complete addition and subtraction grids – **Activities (Courses): Integers: Subtraction; More with Integers**	**Page 6:** Consolidate addition and subtraction of integers through calculations, expressions and operation tables. 
4 **Order of operations with integers**	Evaluate expressions involving integers using the correct order of operations.	✓ Evaluate three- and four-term integer expressions ✓ Work from left to right when operations have equal priority ✓ Apply addition and subtraction accurately within expressions ✓ Find missing values in integer equations ✓ Select operations to make statements true	– Evaluate multi-term integer expressions – Apply left-to-right calculation appropriately – Find missing numbers in equations – Model changes in temperature using integers – Insert operations to create true statements – **Skill Quest: Order of operations, integers**	**Page 7:** Evaluate multi-term integer expressions, find missing values and apply the correct order of operations to integer problems. 
5 **The additive inverse**	Identify and apply additive inverses to simplify integer calculations.	✓ Identify the additive inverse of an integer ✓ Recognise that additive inverses have a sum of zero ✓ Complete equations involving additive inverses ✓ Use additive inverses to simplify expressions ✓ Explain additive inverses in practical contexts	– Identify opposite integer pairs – Connect additive inverses to a sum of zero – Complete equations using additive inverses – Simplify expressions by identifying inverse pairs – Apply additive inverses to altitude and financial contexts	**Page 8:** Identify and use additive inverses to complete equations, simplify expressions and explain changes in contextual situations. 

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Chapter 1: Computations with integers: Integers

Focus: Assess students' ability to locate, compare and order integers; calculate with positive and negative integers; apply the order of operations; and use additive inverses to simplify calculations and solve problems.

Key Understandings to Assess

Area	Expected Understanding	Evidence to Look For
Understanding integers	Locate, compare and order positive and negative integers and interpret their position on a number line.	Locates integers, uses > and < correctly, orders integers and interprets positive and negative values in context.
Adding integers	Add positive and negative integers using appropriate strategies.	Calculates integer sums accurately, interprets signs correctly and uses number-line movement where appropriate.
Subtracting integers	Subtract positive and negative integers and recognise the effect of subtracting a negative value.	Calculates differences accurately, handles double signs correctly and applies subtraction across zero.
Order of operations	Evaluate multi-term integer expressions using operations in the correct sequence.	Works accurately from left to right where operations have equal priority and finds missing values in integer equations.
Additive inverse	Recognise additive inverses and use inverse pairs to simplify calculations.	Identifies opposite integers, recognises that their sum is zero and applies additive inverses efficiently in expressions and contexts.

Assessment Opportunities

Assessment Type	Suggested Activity	What to Observe
Observation (Formative)	Observe students locating integers and solving addition and subtraction calculations during lesson activities.	Are students interpreting negative values correctly and selecting accurate strategies for calculations?
Oral Check	Ask students to explain how a number line can be used to compare integers and model addition or subtraction.	Can students explain the direction and size of integer changes using appropriate mathematical language?
Mathematical Discussion	Give students integer calculations with different signs and ask them to compare strategies and justify their answers.	Can students explain sign changes, additive inverses and calculation strategies clearly and accurately?
Written Work	Review student book pages 3–8.	Accuracy with locating and ordering integers, addition and subtraction, multi-term expressions, order of operations and additive inverses.
Exit Ticket	Use the five-question check below at the end of the week.	Can students independently apply integer concepts and select appropriate strategies?

Quick Quiz / Exit Ticket (5 Questions)

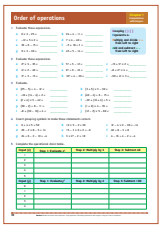
1. Put these integers in ascending order: −12, 5, −3, 0, 8
2. Calculate: −7 + 13
3. Calculate: 8 − −5
4. Evaluate from left to right: −6 + 11 − 9 + 3
5. Complete the equation and explain the relationship between the two integers: −17 + ____ = 0

Teaching as Inquiry: Reflection Notes

Reflection Prompts	Notes/Next Steps
Did students understand positive and negative integers?	
Do students require further support, and with which specific integer concept or strategy?	
Could students independently select and apply appropriate strategies for adding and subtracting integers?	
Can students explain and justify their mathematical reasoning using integer language and notation?	
What misconceptions were evident about negative numbers, double signs, order of operations or additive inverses?	
Do students need further reinforcement with number lines, integer notation or representations?	

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Term 1 Week 2 Overview Number: Number structures and operations
Chapter 1: Computations with integers: Order of operations

Lesson & Topic	Learning Intention	Success Criteria	Main Activities	Student Book Practice
1 **Order of operations with exponents**	Apply exponents and the order of operations to evaluate numerical expressions accurately.	✓ Identify the base and exponent in a power ✓ Evaluate powers accurately ✓ Calculate exponents before other operations ✓ Apply multiplication, division, addition and subtraction in the correct order ✓ Recognise patterns when multiplying powers with the same base	– Review base and exponent notation – Evaluate powers and expressions containing exponents – Apply the order of operations to multi-step expressions – Expand powers with the same base – Explore patterns in exponents	**Page 9:** Evaluate powers and multi-step expressions using exponents and the correct order of operations. 
2 **Order of operations**	Apply the order of operations to evaluate expressions involving integers, exponents and grouping symbols.	✓ Apply multiplication and division before addition and subtraction ✓ Evaluate exponents before other operations ✓ Use grouping symbols correctly ✓ Evaluate multi-step expressions accurately ✓ Insert grouping symbols to make statements true	– Review the order of operations – Evaluate expressions involving integers and exponents – Apply grouping symbols to multi-step calculations – Insert grouping symbols to create true statements – Complete operational chains using powers and integer operations – **Mathletics Online Practice Challenge: Operations: Missing operators**	**Page 10:** Apply the order of operations to expressions involving integers, exponents and grouping symbols. 
3 **Problem solving with integers**	Select and apply integer operations to solve problems in a range of contexts.	✓ Represent contextual situations using positive and negative integers ✓ Select appropriate integer operations ✓ Calculate changes involving positive and negative values ✓ Interpret solutions in context ✓ Check that solutions are reasonable	– Interpret positive and negative quantities in context – Model changes in temperature, position and direction – Solve financial and measurement problems using integers – Apply integer operations to multi-step situations – Explain and check solutions in context – **Challenge: Operations: Adding up to zero**	**Page 11:** Apply integer operations to solve real-world problems involving temperature, position, direction, money, depth, elevation and other positive and negative changes. 

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Chapter 1: Computations with integers: Order of operations

Focus: Assess students' ability to evaluate exponents, apply the order of operations and use integer operations accurately to solve contextual problems.

Key Understandings to Assess

Area	Expected Understanding	Evidence to Look For
Exponents	Interpret and evaluate powers using base and exponent notation.	Identifies bases and exponents, evaluates powers and expands powers accurately.
Order of operations	Apply the correct sequence of operations when evaluating numerical expressions.	Calculates exponents first, applies multiplication and division before addition and subtraction, and works accurately from left to right where required.
Grouping symbols	Understand how grouping symbols affect the value and order of a calculation.	Evaluates grouped expressions accurately and inserts grouping symbols to make mathematical statements true.
Multi-step expressions	Evaluate expressions involving integers, exponents and multiple operations.	Selects the correct sequence of steps, calculates accurately and checks solutions for errors.
Problem solving with integers	Select and apply integer operations to solve problems involving positive and negative quantities.	Represents situations mathematically, chooses appropriate operations and interprets answers correctly in context.

Assessment Opportunities

Assessment Type	Suggested Activity	What to Observe
Observation (Formative)	Observe students evaluating expressions involving exponents, integers and multiple operations.	Are students following the correct sequence of operations and calculating accurately?
Oral Check	Ask students to explain why exponents, grouping symbols or multiplication and division must be considered before addition and subtraction.	Can students explain the order of operations and justify the sequence of their calculations?
Mathematical Discussion	Give students two similar expressions with different grouping symbols and ask them to compare the results.	Can students explain how grouping changes the order of calculation and the resulting value?
Written Work	Review student book pages 9–11.	Accuracy with exponents, order of operations, grouping symbols, multi-step expressions and contextual integer problems.
Exit Ticket	Use the five-question check below at the end of the week.	Can students independently select and apply the correct order of operations and integer strategies?
Checkpoint 1	Use the computations with integers checkpoint to assess understanding (student book pages 12–13).	Record class responses to identify skills to revisit, then use the Notes / Actions column to record any follow-up teaching needed.

Quick Quiz / Exit Ticket (5 Questions)

1. Evaluate: 4^3
2. Evaluate: $50 - 4 \times 3^2$
3. Evaluate: $-8 + 24 \div 6 - 3$
4. Insert grouping symbols to make this statement true:
   $20 - 2 \times 8 - 5 = 14$
5. A submarine is at −35 m. It rises 18 m, then descends 12 m. Write an expression and calculate its final depth.

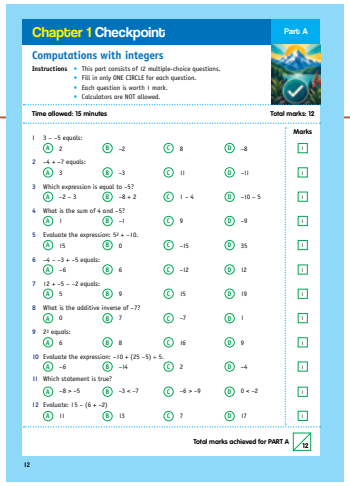
Teaching as Inquiry: Reflection Notes

Reflection Prompts	Notes/Next Steps
Did students understand exponents and the order of operations?	
Do students require further support, and with which specific concept or strategy?	
Could students independently determine the correct sequence when evaluating multi-step expressions?	
Can students explain and justify their use of grouping symbols and order of operations?	
What misconceptions were evident about exponents, operation priority, negative numbers or grouping symbols?	
Do students need further support translating contextual problems into integer calculations?	

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CHECKPOINT 1

Chapter 1: Computations with integers


Chapter 1 Checkpoint Part A

Computations with integers

Instructions
- This part consists of 12 multiple-choice questions.
- Fill in only ONE CIRCLE for each question.
- Each question is worth 1 mark.
- Calculators are NOT allowed.

Time allowed: 15 minutes Total marks: 12

Marks

1 3 − −5 equals:
A 2 B −2 C 8 D −8 1

2 −4 + −7 equals:
A 3 B −3 C 11 D −11 1

3 Which expression is equal to −5?
A −2 − 3 B −8 + 2 C 1 − 4 D −10 − 5 1

4 What is the sum of 4 and −5?
A 1 B −1 C 9 D −9 1

5 Evaluate the expression: 5² + −10.
A 15 B 0 C −15 D 35 1

6 −4 − −3 + −5 equals:
A −6 B 6 C −12 D 12 1

7 12 + −5 − −2 equals:
A 5 B 9 C 15 D 19 1

8 What is the additive inverse of −7?
A 0 B 7 C −7 D 1 1

9 2⁴ equals:
A 6 B 8 C 16 D 9 1

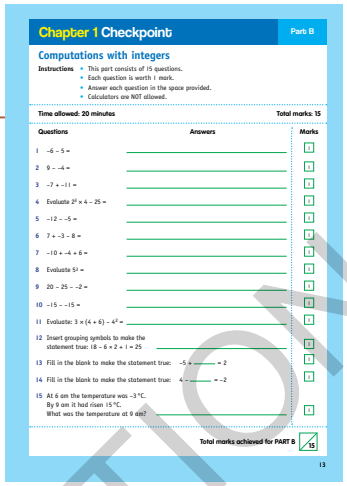
10 Evaluate the expression: −10 + (25 − 5) ÷ 5.
A −6 B −14 C 2 D −4 1

11 Which statement is true?
A −8 > −5 B −3 < −7 C −6 > −9 D 0 < −2 1

12 Evaluate: 15 − (6 + −2)
A 11 B 13 C 7 D 17 1

Total marks achieved for PART A /12

12


Chapter 1 Checkpoint Part B

Computations with integers

Instructions
- This part consists of 15 questions.
- Each question is worth 1 mark.
- Answer each question in the space provided.
- Calculators are NOT allowed.

Time allowed: 20 minutes Total marks: 15

Questions Answers Marks

1 −6 − 5 = 1
2 9 − −4 = 1
3 −7 + −11 = 1
4 Evaluate 2⁵ × 4 − 25 = 1
5 −12 − −5 = 1
6 7 + −3 − 8 = 1
7 −10 + −4 + 6 = 1
8 Evaluate 5¹ = 1
9 20 − 25 − −2 = 1
10 −15 − −15 = 1
11 Evaluate: 3 × (4 + 6) − 4² = 1
12 Insert grouping symbols to make the statement true: 18 − 6 × 2 + 1 = 25 1
13 Fill in the blank to make the statement true: −5 + ____ = 2 1
14 Fill in the blank to make the statement true: 4 − ____ = −2 1
15 At 6 am the temperature was −3 °C. By 9 am it had risen 15 °C. What was the temperature at 9 am? 1

Total marks achieved for PART B /15

13

Purpose

This checkpoint assesses students' understanding of integer addition and subtraction, additive inverses, powers and order of operations. Students apply integer computation skills to numerical expressions, equations, comparisons and a real-world temperature context.

Part A: 12 marks | Part B: 15 marks | Total: 27 marks

Assessment Overview

Part / Questions	Focus	Skills Assessed
A1–A4, A6–A8; B1–B3, B5–B7, B9–B10	Integer operations	Adds and subtracts positive and negative integers, evaluates expressions and identifies additive inverses
A9; B4, B8	Powers	Evaluates powers and uses powers within numerical expressions
A5, A10, A12; B11–B12	Order of operations	Applies the correct order of operations, including powers and grouping symbols, to evaluate expressions
A11	Comparing integers	Compares positive and negative integers and identifies true inequality statements
B13–B14	Missing values	Uses integer relationships and inverse operations to determine missing values in equations
B15	Integers in context	Applies integer addition to interpret a change in temperature

Achievement Rubric

Score Range	Progress Descriptor	Interpretation	Suggested Follow-Up
24–27	Exceeding	Strong and consistent understanding of integer operations, powers and order of operations. Accurately applies these skills to expressions, equations, comparisons and contextual problems, including unfamiliar combinations.	Extend with multi-step integer expressions, more complex order-of-operations problems, missing-value equations and contextual problems involving changes above and below zero.
20–23	Proficient	Secure understanding of most assessed concepts, with only occasional errors when calculating with integers, powers or order of operations.	Reinforce any isolated errors and provide targeted practice with integer signs, powers, grouping symbols or missing-value equations as needed.
15–19	Consolidating	Sound understanding of several concepts, with some gaps or inconsistencies in integer calculations, powers, comparisons or operation sequence.	Continue guided practice using number lines, worked examples and explicitly sequenced integer expressions, with attention to powers and order of operations.
8–14	Developing	Developing understanding of integer concepts but requires support to calculate accurately and apply operation rules independently.	Revisit integer addition and subtraction, additive inverses and powers before building to simple order-of-operations expressions and missing-value equations.
0–7	Emerging	Beginning to develop foundational understanding of positive and negative integers and requires substantial support to interpret and complete integer computations.	Provide explicit reteaching using number lines and concrete or visual representations, focusing on integer relationships, addition and subtraction before introducing powers and multi-step expressions.

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CHECKPOINT 1 Class Review

Year 8 Mathematics Chapter 1: Computations with integers

Class: **Date:**

After students complete and partner-mark the checkpoint, review each question as a class. Ask students to raise a hand for any question that they found challenging. Record the overall class response to identify skills to revisit. Use the **Notes / Actions** column to record any follow-up teaching needed.

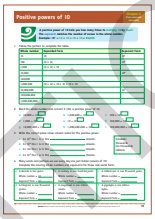
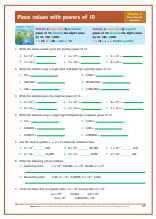
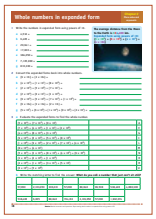
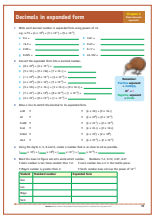
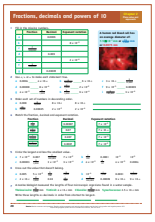
✓ **Secure** — few students need support
▲ **Review** — a group of students needs further practice
✕ **Reteach** — many students need further support

Class Check

Part	Task	Class Check	Notes / Actions
A1	Subtract a negative integer from a positive integer.		
A2	Add a negative integer to a negative integer.		
A3	Identify an expression that is equal to –5.		
A4	Find the sum of a positive and negative integer.		
A5	Evaluate an expression involving a power and a negative integer.		
A6	Evaluate an expression involving several negative integers.		
A7	Evaluate an expression involving positive and negative integers.		
A8	Identify the additive inverse of a negative integer.		
A9	Evaluate a power.		
A10	Evaluate an expression using the correct order of operations.		
A11	Compare integers and identify a true inequality.		
A12	Evaluate an expression involving grouping symbols.		
B1	Subtract a positive integer from a negative integer.		
B2	Subtract a negative integer from a positive integer.		
B3	Add negative integers.		
B4	Evaluate an expression involving a power, multiplication and subtraction.		
B5	Subtract a negative integer from a negative integer.		
B6	Evaluate an expression involving positive and negative integers.		
B7	Evaluate an expression involving positive and negative integers.		
B8	Evaluate a power.		
B9	Evaluate an expression involving positive and negative integers.		
B10	Subtract a negative integer from a negative integer.		
B11	Evaluate an expression using the correct order of operations.		
B12	Insert grouping symbols to make a number statement true.		
B13	Determine a missing value in an addition equation.		
B14	Determine a missing value in a subtraction equation.		
B15	Calculate a temperature after a positive change.		
	TOTAL:	/ 27	

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Term 1 Week 3 Overview Number: Number structures and operations
Chapter 2: Place value and exponents: Powers of 10

Lesson & Topic	Learning Intention	Success Criteria	Main Activities	Student Book Practice
1 **Positive powers of 10**	Read, write and represent whole numbers using positive powers of 10.	✓ Recognise powers of 10 in exponent form ✓ Connect exponents to repeated multiplication by 10 ✓ Convert between whole numbers and positive powers of 10 ✓ Link powers of 10 to place value positions	– Explore patterns in positive powers of 10 – Connect repeated multiplication to exponent notation – Convert between whole numbers and powers of 10 – Relate powers of 10 to place value and real-world contexts – **Mathletics Online Practice Skill Quest: Represent numbers in expanded form** – **Activities (Courses): Number structure: Index Notation/ Exponent Notation**	**Page 15:** Represent whole numbers as positive powers of 10 and connect exponent notation to place value. 
2 **Negative powers of 10**	Represent fractions and decimals using negative powers of 10.	✓ Recognise negative powers of 10 as repeated division by 10 ✓ Convert between negative powers, fractions and decimals ✓ Connect negative powers to decimal place value ✓ Explain patterns as negative exponents decrease	– Explore patterns in negative powers of 10 – Connect repeated division by 10 to negative exponents – Represent negative powers as fractions and decimals – Relate negative powers to decimal place value – **Activities (Courses): Number structure: Scientific Notation**	**Page 16:** Represent negative powers of 10 as fractions and decimals and connect them to decimal place value. 
3 **Place value with powers of 10**	Use positive and negative powers of 10 to represent, compare and expand whole numbers and decimals.	✓ Multiply single digits by positive and negative powers of 10 ✓ Compare and order numbers represented using powers of 10 ✓ Write whole numbers in expanded form using powers of 10 ✓ Convert expanded forms back to whole numbers	– Connect powers of 10 to the value of digits – Represent and compare numbers using exponent notation – Order values expressed in different forms – Expand and reconstruct whole numbers using powers of 10 – **Skill Quest: Write numbers using powers of 10**	**Pages 17–18:** Use powers of 10 to represent, compare and order numbers and write whole numbers in expanded form.  
4 **Decimals in expanded form**	Represent decimal numbers in expanded form using positive and negative powers of 10.	✓ Identify the place value of digits in decimals ✓ Write decimals in expanded form using powers of 10 ✓ Convert expanded forms back to decimal notation ✓ Use place value reasoning to construct and identify decimals	– Connect decimal place values to powers of 10 – Expand decimals using positive and negative exponents – Reconstruct decimals from expanded notation – Reason about digit position and decimal value	**Page 19:** Represent decimals in expanded form using positive and negative powers of 10 and convert between forms. 
5 **Fractions, decimals and powers of 10**	Connect and compare fractions, decimals and powers of 10 as equivalent representations.	✓ Convert between fractions, decimals and exponent notation ✓ Compare equivalent values in different forms ✓ Order values represented as fractions, decimals and powers of 10 ✓ Use place value to justify comparisons and conversions	– Connect fractions with denominators that are powers of 10 to decimals – Match equivalent fraction, decimal and exponent forms – Compare and order values represented in different forms – Apply conversions to contextual measurements	**Page 20:** Convert, compare and order fractions, decimals and powers of 10 and identify equivalent representations. 

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Chapter 2: Place value and exponents: Powers of 10

Focus: Assess students' ability to use positive and negative powers of 10 to represent, convert, compare and order whole numbers, decimals and fractions, and express numbers in expanded form.

Key Understandings to Assess

Area	Expected Understanding	Evidence to Look For
Positive powers of 10	Represent whole numbers using positive powers of 10 and connect exponents to place value.	Converts between whole numbers, repeated multiplication and exponent notation and identifies corresponding place values.
Negative powers of 10	Represent negative powers of 10 as fractions and decimals.	Connects negative exponents with repeated division, fractions and decimal place values.
Place value and powers of 10	Use powers of 10 to represent, compare and order whole numbers and decimals.	Determines values, compares different representations and orders numbers accurately.
Expanded form	Represent whole numbers and decimals in expanded form using powers of 10.	Expands and reconstructs numbers using positive and negative powers of 10.
Equivalent representations	Connect fractions, decimals and powers of 10 as equivalent representations.	Converts between forms and uses place value reasoning to compare and order values.

Assessment Opportunities

Assessment Type	Suggested Activity	What to Observe
Observation (Formative)	Observe students converting and comparing numbers represented using powers of 10 during lesson activities.	Are students recognising place value patterns and selecting appropriate representations accurately?
Oral Check	Ask students to explain how positive and negative exponents relate to multiplying or dividing by 10.	Can students explain the relationship between exponent notation, place value, fractions and decimals?
Mathematical Discussion	Give equivalent values in fraction, decimal and exponent form and ask students to compare and justify their reasoning.	Can students make connections between representations and justify comparisons using place value?
Written Work	Review student book pages 15–20.	Accuracy with positive and negative powers of 10, expanded form, equivalent representations, comparing and ordering numbers.
Exit Ticket	Use the five-question check below at the end of the week.	Can students independently convert between representations and apply powers of 10 accurately?

Quick Quiz / Exit Ticket (5 Questions)

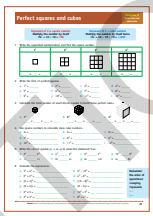
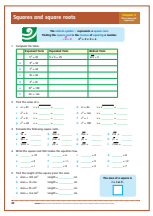
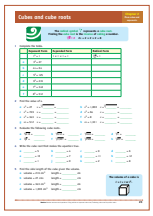
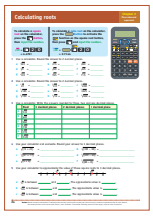
1. Write 1,000,000 as a positive power of 10.
2. Write 10^{-4} as a fraction and a decimal.
3. Write 7×10^{-3} as a decimal.
4. Write 305.07 in expanded form using powers of 10.
5. Represent 0.0006 as a fraction and in exponent notation.

Teaching as Inquiry: Reflection Notes

Reflection Prompts	Notes/Next Steps
Did students understand positive and negative powers of 10?	
Do students require further support, and with which specific concept or representation?	
Could students independently convert between exponent, fraction and decimal forms?	
Could students use place value reasoning to compare and order numbers?	
What misconceptions were apparent about negative exponents, decimal place value or expanded form?	
Does vocabulary, notation, or the use of models and representations need further reinforcement?	

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Term 1 Week 4 Overview Number: Number structures and operations
Chapter 2: Place value and exponents: Exponents and roots

Lesson & Topic	Learning Intention	Success Criteria	Main Activities	Student Book Practice
1 **Perfect squares and cubes**	Recognise, calculate and apply perfect squares and cubes using exponent notation.	✓ Identify square and cube numbers ✓ Write squares and cubes as repeated multiplication ✓ Calculate perfect squares and cubes ✓ Compare square and cube values ✓ Evaluate expressions involving squares and cubes	– Model squares and cubes using arrays and blocks – Generate sequences of perfect squares and cubes – Connect exponent notation to repeated multiplication – Compare and evaluate expressions involving powers – **Mathletics Online Practice Skill Quest: Square & cube roots**	**Page 21:** Identify and calculate perfect squares and cubes and evaluate expressions involving exponents. 
2 **Squares and square roots**	Connect perfect squares with square roots and use radical notation to represent square roots.	✓ Connect squaring and finding a square root as inverse operations ✓ Recognise and use the square root symbol ✓ Evaluate square roots of perfect squares ✓ Solve equations involving squares and square roots ✓ Apply square roots to find side lengths	– Connect exponent, expanded and radical forms – Explore square roots as the inverse of squaring – Evaluate square roots of perfect squares – Apply square roots to dimensions of squares – **Activities (Courses): Number structure: Square Roots 1**	**Page 22:** Represent and evaluate square roots of perfect squares and use square roots to find unknown side lengths. 
3 **Cubes and cube roots**	Connect perfect cubes with cube roots and use radical notation to represent cube roots.	✓ Connect cubing and finding a cube root as inverse operations ✓ Recognise and use cube root notation ✓ Evaluate cube roots of perfect cubes ✓ Solve equations involving cubes and cube roots ✓ Apply cube roots to find side lengths	– Connect exponent, expanded and radical forms – Explore cube roots as the inverse of cubing – Evaluate cube roots of perfect cubes – Apply cube roots to dimensions of cubes – **Skill Quest: Cube roots for cube numbers**	**Page 23:** Represent and evaluate cube roots of perfect cubes and use cube roots to find unknown side lengths. 
4 **Calculating roots**	Calculate and approximate square and cube roots using a calculator and appropriate rounding.	✓ Use a calculator to find square and cube roots ✓ Round roots to specified decimal places ✓ Evaluate expressions containing roots ✓ Locate approximate square roots between consecutive whole numbers ✓ Check whether approximations are reasonable	– Use calculator functions to calculate square and cube roots – Round roots to different levels of precision – Evaluate expressions involving roots and operations – Estimate and locate irrational square roots on a number line – **Skill Quest: Square & cube roots: Approximating square & cube roots** – **Activities (Courses): Number structure: Estimate Square Roots**	**Page 24:** Calculate and approximate square and cube roots, round accurately and evaluate expressions involving roots. 

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Chapter 2: Place value and exponents: Exponents and roots

Focus: Assess students' ability to identify and calculate squares and cubes, evaluate square and cube roots, and approximate roots accurately using a calculator.

Key Understandings to Assess

Area	Expected Understanding	Evidence to Look For
Perfect squares and cubes	Recognise and calculate perfect squares and cubes using exponent notation.	Connects exponents to repeated multiplication and calculates and compares square and cube values.
Squares and square roots	Understand square roots as the inverse of squaring and use radical notation correctly.	Evaluates square roots of perfect squares and solves equations involving squares and square roots.
Cubes and cube roots	Understand cube roots as the inverse of cubing and use cube root notation correctly.	Evaluates cube roots of perfect cubes and solves equations involving cubes and cube roots.
Calculating and approximating roots	Calculate and approximate square and cube roots and round to a specified degree of accuracy.	Uses calculator functions correctly, rounds accurately and locates approximate roots between appropriate whole numbers.

Assessment Opportunities

Assessment Type	Suggested Activity	What to Observe
Observation (Formative)	Observe students working with squares, cubes and roots during lesson activities.	Are students making accurate connections between powers and their corresponding roots?
Oral Check	Ask students to explain why squaring and finding a square root, or cubing and finding a cube root, are inverse operations.	Can students explain the relationship between powers and roots using appropriate mathematical language and notation?
Mathematical Discussion	Give students several square and cube roots and ask them to identify which can be evaluated exactly and which require approximation.	Can students distinguish perfect squares and cubes from values requiring approximation and justify their reasoning?
Written Work	Review student book pages 21–24.	Accuracy with perfect squares and cubes, square and cube roots, radical notation, calculator use and rounding.
Exit Ticket	Use the five-question check below at the end of the week.	Can students independently calculate, interpret and approximate squares, cubes and roots?

Quick Quiz / Exit Ticket (5 Questions)

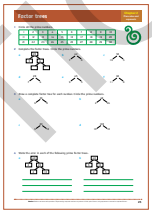
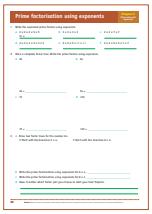
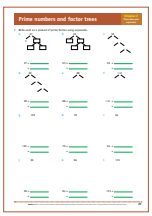
1. Calculate 9^2 and 4^3.
2. Evaluate $\sqrt{121}$.
3. Evaluate $\sqrt[3]{512}$.
4. A square has an area of 144 cm^2. What is its side length?
5. Without calculating first, state the two whole numbers between which $\sqrt{50}$ lies. Then use a calculator to find $\sqrt{50}$ to 2 decimal places.

Teaching as Inquiry: Reflection Notes

Reflection Prompts	Notes/Next Steps
Did students understand squares, cubes and their roots?	
Do students require further support, and with which specific concept or notation?	
Could students independently recognise and evaluate perfect squares and cubes?	
Can students explain the inverse relationship between powers and roots?	
What misconceptions were evident about exponents, radical notation, square roots or cube roots?	
Do calculator skills, vocabulary or representations need further reinforcement?	

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Term 1 Week 5 Overview Number: Number structures and operations
Chapter 2: Place value and exponents: Factors

Lesson & Topic	Learning Intention	Success Criteria	Main Activities	Student Book Practice
1 **Factor trees**	Use factor trees to break composite numbers into their prime factors.	✓ Identify prime and composite numbers ✓ Break composite numbers into factor pairs ✓ Continue factor trees until all factors are prime ✓ Check whether a factor tree is complete ✓ Identify and explain errors in factor trees	– Review prime and composite numbers – Build factor trees using different factor pairs – Identify prime factors at the end of each branch – Analyse and correct errors in factor trees	**Page 25:** Identify prime numbers and construct, complete and check factor trees for composite numbers. 
2 **Prime factorisation using exponents**	Express composite numbers as products of prime factors using exponent notation.	✓ Write repeated prime factors using exponents ✓ Construct complete factor trees ✓ Express numbers as products of prime factors ✓ Use exponent notation to summarise repeated factors ✓ Explain why different factor trees give the same prime factorisation	– Convert repeated factors into exponent notation – Construct factor trees for composite numbers – Write prime factorisations using exponents – Compare different factor trees for the same number – **Mathletics Online Practice Skill Quest: Products of prime factors**	**Page 26:** Use factor trees to find prime factors and express prime factorisations using exponents. 
3 **Prime numbers and factor trees**	Apply factor trees and exponent notation to find the prime factorisation of composite numbers.	✓ Select suitable factor pairs to begin a factor tree ✓ Break factors down until all factors are prime ✓ Write prime factors as a multiplication ✓ Express repeated prime factors using exponents ✓ Check prime factorisations by multiplication	– Construct factor trees for a range of composite numbers – Identify all prime factors – Represent prime factorisations using exponents – Verify factorisations by reconstructing the original number – **Activities (Courses): Number structure: Prime factorisation with Indices**	**Page 27:** Find the prime factorisation of composite numbers using factor trees and express repeated prime factors with exponents. 

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Chapter 2: Place value and exponents: Factors

Focus: Assess students' ability to identify prime numbers, construct factor trees, and express composite numbers as products of prime factors using exponent notation.

Key Understandings to Assess

Area	Expected Understanding	Evidence to Look For
Prime and composite numbers	Distinguish between prime and composite numbers and identify prime factors.	Identifies prime numbers and recognises when a factor can be broken down further.
Factor trees	Use factor trees to decompose composite numbers into prime factors.	Constructs complete factor trees and continues each branch until all factors are prime.
Prime factorisation	Express composite numbers as products of their prime factors.	Identifies all prime factors and checks the factorisation by multiplication.
Exponent notation	Use exponents to represent repeated factors in a prime factorisation.	Combines repeated prime factors using exponent notation.

Assessment Opportunities

Assessment Type	Suggested Activity	What to Observe
Observation (Formative)	Observe students constructing and completing factor trees during lesson activities.	Are students selecting valid factor pairs and continuing each branch until only prime factors remain?
Oral Check	Ask students to explain how they know when a factor tree is complete.	Can students distinguish prime from composite factors and explain their reasoning clearly?
Mathematical Discussion	Compare two different factor trees for the same number and discuss their final prime factorisations.	Can students explain why different starting factor pairs lead to the same prime factorisation?
Written Work	Review student book pages 25–27.	Accuracy with identifying primes, constructing factor trees, finding prime factors and using exponent notation.
Exit Ticket	Use the five-question check below at the end of the week.	Can students independently find and represent the prime factorisation of composite numbers?
Checkpoint 2	Use the place value and exponents checkpoint to assess understanding (student book pages 28–29).	Record class responses to identify skills to revisit, then use the Notes / Actions column to record any follow-up teaching needed.

Quick Quiz / Exit Ticket (5 Questions)

1. Is 37 prime or composite? Explain how you know.
2. Write $2 \times 2 \times 2 \times 3 \times 3$ using exponents.
3. Construct a factor tree for 60 and write its prime factorisation using exponents.
4. Write 50,000,000 as a single digit multiplied by a positive power of 10.
5. Evaluate $\sqrt{81}$ and $\sqrt[3]{64}$.

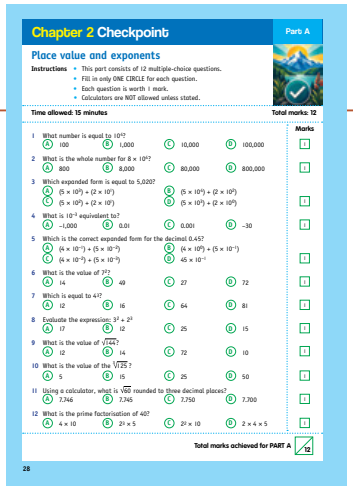
Teaching as Inquiry: Reflection Notes

Reflection Prompts	Notes/Next Steps
Did students understand prime and composite numbers?	
Do students require further support, and with which aspect of factorisation?	
Could students independently construct and complete accurate factor trees?	
Could students express repeated prime factors using exponent notation?	
What misconceptions were apparent about prime numbers, factors or complete factor trees?	
Does vocabulary, notation, or the use of representations need further reinforcement?	

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CHECKPOINT 2

Chapter 2: Place value and exponents


Chapter 2 Checkpoint — Part A

Place value and exponents

Instructions
- This part consists of 12 multiple-choice questions.
- Fill in only ONE CIRCLE for each question.
- Each question is worth 1 mark.
- Calculators are NOT allowed unless stated.

Time allowed: 15 minutes — Total marks: 12

Marks

1 What number is equal to 10^{5}?
(A) 100 (B) 1,000 (C) 10,000 (D) 100,000

2 What is the whole number for 8×10^{2}?
(A) 800 (B) 8,000 (C) 80,000 (D) 800,000

3 Which expanded form is equal to 5,020?
(A) $(5 \times 10^{3}) + (2 \times 10^{1})$ (B) $(5 \times 10^{3}) + (2 \times 10^{2})$
(C) $(5 \times 10^{2}) + (2 \times 10^{1})$ (D) $(5 \times 10^{3}) + (2 \times 10^{0})$

4 What is 10^{-2} equivalent to?
(A) −1,000 (B) 0.01 (C) 0.001 (D) −30

5 Which is the correct expanded form for the decimal 0.45?
(A) $(4 \times 10^{-1}) + (5 \times 10^{-2})$ (B) $(4 \times 10^{0}) + (5 \times 10^{-1})$
(C) $(4 \times 10^{-2}) + (5 \times 10^{-1})$ (D) 45×10^{-1}

6 What is the value of 7^{2}?
(A) 14 (B) 49 (C) 27 (D) 72

7 Which is equal to 4^{2}?
(A) 12 (B) 16 (C) 64 (D) 81

8 Evaluate the expression: $3^{2} + 2^{3}$
(A) 17 (B) 12 (C) 25 (D) 15

9 What is the value of $\sqrt{144}$?
(A) 12 (B) 14 (C) 72 (D) 10

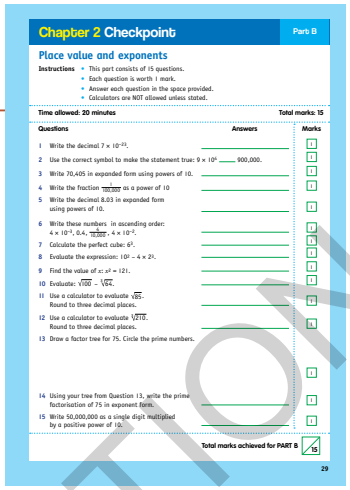
10 What is the value of the $\sqrt{25}$?
(A) 5 (B) 15 (C) 25 (D) 50

11 Using a calculator, what is $\sqrt{60}$ rounded to three decimal places?
(A) 7.746 (B) 7.745 (C) 7.750 (D) 7.700

12 What is the prime factorisation of 40?
(A) 4×10 (B) $2^{3} \times 5$ (C) $2^{2} \times 10$ (D) $2 \times 4 \times 5$

Total marks achieved for PART A /12

28


Chapter 2 Checkpoint — Part B

Place value and exponents

Instructions
- This part consists of 15 questions.
- Each question is worth 1 mark.
- Answer each question in the space provided.
- Calculators are NOT allowed unless stated.

Time allowed: 20 minutes — Total marks: 15

Questions — Answers — Marks

1 Write the decimal 7×10^{-23}. _____ /1
2 Use the correct symbol to make the statement true: 9×10^{5} ____ 900,000. /1
3 Write 70,405 in expanded form using powers of 10. _____ /1
4 Write the fraction $\frac{1}{10,000}$ as a power of 10 _____ /1
5 Write the decimal 8.03 in expanded form using powers of 10. _____ /1
6 Write these numbers in ascending order: 4×10^{-3}, 0.4, $\frac{1}{10,000}$, 4×10^{-2}. _____ /1
7 Calculate the perfect cube: 6^{3}. _____ /1
8 Evaluate the expression: $10^{1} - 4 \times 2^{3}$. _____ /1
9 Find the value of x: $x^{2} = 121$. _____ /1
10 Evaluate: $\sqrt{100} - \sqrt{64}$. _____ /1
11 Use a calculator to evaluate $\sqrt{85}$. Round to three decimal places. _____ /1
12 Use a calculator to evaluate $\sqrt{210}$. Round to three decimal places. _____ /1
13 Draw a factor tree for 75. Circle the prime numbers. /1
14 Using your tree from Question 13, write the prime factorisation of 75 in exponent form. _____ /1
15 Write 50,000,000 as a single digit multiplied by a positive power of 10. _____ /1

Total marks achieved for PART B /15

29

Purpose

This checkpoint assesses students' understanding of powers of 10, expanded notation, exponents, square and cube roots, order of operations, prime factorisation and ordering numbers expressed in different forms.

Part A: 12 marks | Part B: 15 marks | Total: 27 marks

Assessment Overview

Part / Questions	Focus	Skills Assessed
A1–A5; B1–B6, B15	Place value & powers of 10	Interprets positive and negative powers of 10, writes numbers in expanded form using powers of 10, compares and orders values in different forms
A6–A8; B7–B8	Exponents & order of operations	Evaluates powers and expressions involving exponents using the correct order of operations
A9–A11; B9–B12	Roots	Evaluates square and cube roots, solves simple equations involving squares and approximates roots using a calculator
A12; B13–B14	Prime factorisation	Identifies prime factors, constructs factor trees and expresses prime factorisations using exponent notation

Achievement Rubric

Score Range	Progress Descriptor	Interpretation	Suggested Follow-Up
24–27	Exceeding	Strong and consistent understanding of place value, powers of 10, exponents, roots and prime factorisation. Applies these skills accurately across different representations and expressions.	Extend with more complex exponent calculations, negative powers of 10, combined operations involving roots and exponents, and prime factorisation of larger numbers.
20–23	Proficient	Secure understanding of most assessed concepts, with only occasional errors when working with powers of 10, exponents, roots or prime factors.	Reinforce any isolated errors and provide targeted practice with expanded notation, exponent calculations, roots or prime factorisation as needed.
15–19	Consolidating	Sound understanding of several concepts, with some gaps or inconsistencies in powers of 10, exponent notation, roots or prime factorisation.	Continue guided practice using powers-of-10 representations, worked exponent examples, square and cube roots and factor trees.
8–14	Developing	Developing understanding of place value and exponent concepts but requires support to interpret notation and apply strategies accurately.	Revisit place value, positive and negative powers of 10, basic powers and roots, and identifying prime factors using scaffolded examples.
0–7	Emerging	Beginning to develop foundational understanding of powers of 10, exponents and roots and requires substantial support to interpret and solve assessment tasks.	Provide explicit reteaching using place-value representations, repeated multiplication, square and cube models, and carefully sequenced factor examples.

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CHECKPOINT 2 Class Review

Year 8 Mathematics Chapter 2: Place value and exponents

Class: **Date:**

After students complete and partner-mark the checkpoint, review each question as a class. Ask students to raise a hand for any question that they found challenging. Record the overall class response to identify skills to revisit. Use the **Notes / Actions** column to record any follow-up teaching needed.

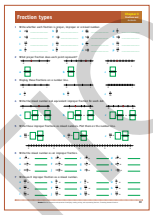
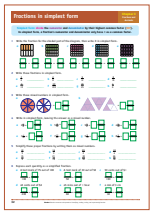
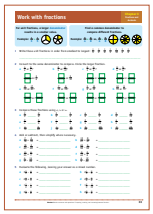
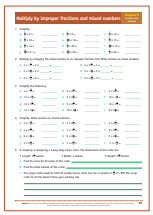
✓ **Secure** — few students need support
▲ **Review** — a group of students needs further practice
✕ **Reteach** — many students need further support

Class Check

Part	Task	Class Check	Notes / Actions
A1	Interpret a positive power of 10.		
A2	Calculate a whole number using a power of 10.		
A3	Identify expanded form using powers of 10.		
A4	Interpret a negative power of 10.		
A5	Identify decimal expanded form using negative powers of 10.		
A6	Evaluate a square number.		
A7	Evaluate a cube number.		
A8	Evaluate an expression involving powers and addition.		
A9	Evaluate a square root.		
A10	Evaluate a cube root.		
A11	Approximate a square root to three decimal places.		
A12	Identify the prime factorisation of a number.		
B1	Write a negative power of 10 as a decimal.		
B2	Compare a power of 10 with a whole number.		
B3	Write a whole number in expanded form using powers of 10.		
B4	Express a unit fraction as a power of 10.		
B5	Write a decimal in expanded form using powers of 10.		
B6	Order numbers expressed in different forms.		
B7	Calculate a cube number.		
B8	Evaluate an expression using the correct order of operations.		
B9	Solve an equation involving a square.		
B10	Evaluate an expression involving square and cube roots.		
B11	Approximate a square root to three decimal places.		
B12	Approximate a cube root to three decimal places.		
B13	Construct a factor tree and identify prime factors.		
B14	Write a prime factorisation in exponent form.		
B15	Express a whole number using a positive power of 10.		
	TOTAL:	/ 27	

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Term 1 Week 6 Overview Number: Number structures and operations
Chapter 3: Fractions and decimals: Fractions

Lesson & Topic	Learning Intention	Success Criteria	Main Activities	Student Book Practice
1 **Fraction types**	Identify, represent and convert between proper fractions, improper fractions and mixed numbers.	✓ Identify proper, improper and mixed fractions ✓ Represent fractions accurately on a number line ✓ Convert improper fractions to mixed numbers ✓ Convert mixed numbers to improper fractions	– Classify different types of fractions – Represent proper and improper fractions on number lines – Connect mixed numbers and equivalent improper fractions – Practise converting between fraction forms – **Mathletics Online Practice Activities (Courses): Fractions: Converting Mixed and Improper**	**Page 31:** Identify and represent fraction types, use number lines and convert between mixed numbers and improper fractions. 
2 **Fractions in simplest form**	Simplify fractions and mixed numbers using common factors.	✓ Identify common factors of the numerator and denominator ✓ Simplify fractions to their simplest form ✓ Simplify fractional parts of mixed numbers ✓ Express quantities as simplified fractions	– Connect visual fraction models to equivalent simplified fractions – Use the highest common factor to simplify fractions – Simplify fractions and mixed numbers – Express quantities and measures as fractions in simplest form – **Activities (Courses): Fractions: Simplify Fractions**	**Page 32:** Simplify fractions and mixed numbers and express quantities as fractions in simplest form. 
3 **Work with fractions**	Compare, order, add and subtract fractions using equivalent fractions and common denominators.	✓ Order unit fractions by size ✓ Find common denominators to compare fractions ✓ Compare fractions using <, > and = ✓ Add and subtract fractions with different denominators ✓ Simplify answers where necessary	– Explore the relationship between denominator size and unit-fraction value – Find equivalent fractions with common denominators – Compare and order fractions – Add and subtract fractions and mixed numbers – **Skill Quest: Compare & order FDP; Activities (Courses): Fractions: Comparing Fractions 2**	**Page 33:** Compare and order fractions using common denominators, then add and subtract fractions and mixed numbers. 
4 **Fractions of a whole number**	Calculate fractional amounts of whole numbers and quantities.	✓ Multiply a fraction by a whole number ✓ Simplify fraction calculations efficiently ✓ Find a fraction of a whole-number quantity ✓ Apply fractions to money, time, length and mass ✓ Solve contextual fraction problems	– Model multiplying fractions by whole numbers – Connect multiplication and division when finding fractional amounts – Calculate fractions of money, measures and time – Apply fraction strategies to contextual problems – **Skill Quest: Fraction of a whole number**	**Page 34:** Multiply fractions by whole numbers and find fractional amounts of whole-number quantities in varied contexts. 
5 **Multiply by improper fractions and mixed numbers**	Multiply whole numbers by improper fractions and mixed numbers and apply the strategy to problems.	✓ Multiply whole numbers by improper fractions ✓ Convert mixed numbers to improper fractions before multiplying ✓ Simplify products and express answers as mixed numbers ✓ Apply fraction multiplication in measurement contexts ✓ Explain and justify solutions to multi-step problems	– Review multiplication of whole numbers and fractions – Convert mixed numbers to improper fractions before multiplying – Simplify products and convert answers to mixed numbers – Apply multiplication to area and volume problems – Solve and justify a multi-step contextual problem – **Skill Quest: Multiply whole numbers & fractions**	**Page 35:** Multiply whole numbers by improper fractions and mixed numbers, including applications involving area and volume. 

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Chapter 3: Fractions and decimals: Fractions

Focus: Assess students' ability to identify, represent, simplify, compare and calculate with fractions, including converting between fraction forms, finding fractional amounts and multiplying whole numbers by fractions and mixed numbers.

Key Understandings to Assess

Area	Expected Understanding	Evidence to Look For
Fraction types and representation	Identify proper, improper and mixed fractions and convert between mixed numbers and improper fractions.	Classifies fractions, represents them on number lines and converts accurately between fraction forms.
Simplifying fractions	Simplify fractions and mixed numbers using common factors.	Identifies appropriate common factors and expresses fractions and quantities in simplest form.
Comparing and calculating with fractions	Compare, order, add and subtract fractions using equivalent fractions and common denominators.	Finds suitable common denominators, compares fractions accurately and calculates and simplifies sums and differences.
Fractions of whole numbers	Calculate fractional amounts of whole numbers and quantities.	Uses multiplication and division appropriately to find fractions of money, measures, time and other quantities.
Multiplying fractions and mixed numbers	Multiply whole numbers by improper fractions and mixed numbers and apply this to problems.	Converts mixed numbers when required, calculates accurately, simplifies answers and applies strategies in contextual problems.

Assessment Opportunities

Assessment Type	Suggested Activity	What to Observe
Observation (Formative)	Observe students representing, simplifying and calculating with fractions during lesson activities.	Are students selecting appropriate fraction strategies and explaining their mathematical reasoning clearly?
Oral Check	Ask students to explain how equivalent fractions and common denominators help when comparing or calculating with fractions.	Can students explain fraction relationships and justify the strategies they use?
Mathematical Discussion	Present equivalent, improper and mixed fractions and ask students to compare representations and explain connections between them.	Can students make connections between fraction forms and use mathematical language accurately?
Written Work	Review student book pages 31–35.	Accuracy with identifying, converting, simplifying, comparing and calculating with fractions and solving fraction problems.
Exit Ticket	Use the five-question check below at the end of the week.	Can students independently select and apply appropriate fraction strategies?

Quick Quiz / Exit Ticket (5 Questions)

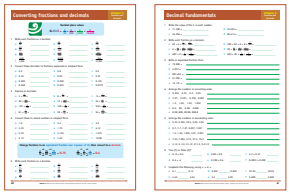
1. Convert $\frac{23}{6}$ to a mixed number.
2. Write $\frac{18}{30}$ in simplest form.
3. Insert <, > or =: $\frac{5}{6}$ ___ $\frac{7}{9}$.
4. Calculate $\frac{3}{4} + \frac{5}{8}$ and simplify the answer.
5. Calculate $6 \times 2\frac{1}{3}$.

Teaching as Inquiry: Reflection Notes

Reflection Prompts	Notes/Next Steps
Did students understand this week's key fraction concepts?	
Do students require further support, and with which specific fraction concept or strategy?	
Could students independently convert between improper fractions and mixed numbers?	
Could students use equivalent fractions and common denominators when comparing or calculating?	
What misconceptions were evident about simplifying, comparing or operating with fractions?	
Does the use of representations, models or mathematical language need further reinforcement?	

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Term 1 Week 7 Overview Number: Number structures and operations
Chapter 3: Fractions and decimals: Multiply and divide with fractions

Lesson & Topic	Learning Intention	Success Criteria	Main Activities	Student Book Practice
1 Finding the whole amount	Find a whole amount when a fractional part is known.	✓ Identify the known fractional amount ✓ Find the value of one fractional part ✓ Use the numerator and denominator to calculate the whole ✓ Convert mixed numbers to improper fractions when required ✓ Solve problems where the known fraction is greater than one	– Connect a known fractional amount to the whole – Divide by the numerator, then multiply by the denominator – Find whole amounts from proper and improper fractions – Convert mixed numbers before calculating – Check solutions using multiplication – **Mathletics Online Practice** **Skill Quest: Find the whole given a fraction** **Quest: Finding the whole given a fraction**	**Page 36:** Find a whole amount from a known fractional part, including mixed numbers and improper fractions. 
2 Problem solving with fractions	Select and apply fraction strategies to solve problems in varied contexts.	✓ Find fractions of whole-number quantities ✓ Determine remaining fractional amounts ✓ Find the whole when a fractional amount is known ✓ Solve multi-step fraction problems ✓ Interpret and check answers in context	– Identify the fraction operation required in a problem – Calculate fractions of money, distance and quantities – Find complementary and remaining amounts – Work backwards from a fractional amount to find the whole – Solve and explain multi-step contextual problems – **Challenge: Fractions: A yarn about simple fractions**	**Page 37:** Apply fraction strategies to solve problems involving quantities, money, distance and finding whole amounts. 
3 Multiplying fractions	Multiply fractions and express products in simplest form.	✓ Multiply numerators and denominators accurately ✓ Simplify products to their simplest form ✓ Recognise opportunities to simplify efficiently ✓ Multiply fractions in contextual problems ✓ Explain the effect of multiplying by a fraction	– Model multiplication of two fractions – Multiply numerators and denominators – Simplify products using common factors – Compare strategies for efficient simplification – Apply fraction multiplication to practical problems – **Skill Quest: Multiply fractions; Activities (Courses): Fractions: Multiply Two Fractions 1**	**Page 38:** Multiply fractions, simplify products and apply fraction multiplication to contextual problems. 
4 Multiplying mixed numbers	Multiply mixed numbers by converting them to improper fractions.	✓ Convert mixed numbers to improper fractions ✓ Multiply fractions accurately ✓ Simplify products to their simplest form ✓ Express answers as improper fractions or mixed numbers as required ✓ Apply multiplication of mixed numbers to problems	– Review connections between mixed numbers and improper fractions – Convert mixed numbers before multiplying – Multiply and simplify fractional products – Convert products to the required fraction form – Apply strategies to measurement and contextual problems – **Skill Quest: Multiply fractions**	**Page 39:** Multiply mixed numbers by converting to improper fractions and solve real-world problems involving measures. 
5 Decimal fundamentals	Convert between fractions and decimals and use decimal place value to compare and order numbers.	✓ Convert fractions with denominators that are powers of 10 to decimals ✓ Convert decimals to fractions in simplest form ✓ Convert between mixed numbers and decimals ✓ Use equivalent fractions to convert other fractions to decimals ✓ Read, compare and order decimals using place value	– Connect fractional place value to decimal notation – Convert between fractions, decimals and mixed numbers – Create equivalent fractions with denominators that are powers of 10 – Represent decimals in expanded fraction form – Compare and order decimals using place value – **Skill Quest: Represent decimals: Decimal place value; Compare & order FDP: Comparing & ordering terminating decimals**	**Pages 40–41:** Convert between fractions and decimals, interpret decimal place value and compare and order decimals. 

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Chapter 3: Fractions and decimals: Multiply and divide with fractions

Focus: Assess students' ability to find whole amounts from fractional parts; solve fraction problems; multiply fractions and mixed numbers; and convert, compare and order fractions and decimals.

Key Understandings to Assess

Area	Expected Understanding	Evidence to Look For
Finding the whole amount	Find a whole amount when a fractional part is known, including when fractions are improper or mixed numbers.	Uses the numerator and denominator to work back to the whole and checks the result against the known fractional amount.
Fraction problem solving	Select and apply appropriate fraction strategies to solve problems in varied contexts.	Identifies the required operation, interprets fractional information and solves one- and multi-step problems.
Multiplying fractions	Multiply fractions and express products in simplest form.	Multiplies numerators and denominators and simplifies products using appropriate common factors.
Multiplying mixed numbers	Convert mixed numbers to improper fractions and multiply accurately.	Converts, calculates and simplifies products, and expresses answers in the required fraction form.
Fractions and decimals	Convert between fractions and decimals and use place value to compare and order decimals.	Converts between representations and uses decimal place value to compare and order numbers.

Assessment Opportunities

Assessment Type	Suggested Activity	What to Observe
Observation (Formative)	Observe students solving fraction calculations and contextual problems during lesson activities.	Are students selecting appropriate strategies and explaining the steps in their calculations clearly?
Oral Check	Ask students to explain how to find a whole from a known fraction and how to multiply two fractions.	Can students explain why each strategy works using appropriate fraction language?
Mathematical Discussion	Present a fraction, mixed number and decimal and ask students to explain relationships between the representations.	Can students make connections between fraction forms, decimals and place value and justify their reasoning?
Written Work	Review student book pages 36–41.	Accuracy with finding whole amounts, solving fraction problems, multiplying fractions and mixed numbers, and converting, comparing and ordering decimals.
Exit Ticket	Use the five-question check below at the end of the week.	Can students independently select and apply appropriate fraction and decimal strategies?

Quick Quiz / Exit Ticket (5 Questions)

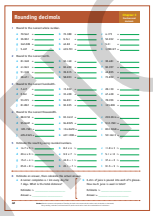
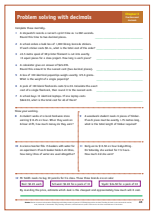
1. $\frac{3}{5}$ of an amount is 24. What is the whole amount?
2. Calculate and simplify: $\frac{3}{4} \times \frac{2}{5}$
3. Calculate and give the answer as a mixed number in simplest form: $2\frac{1}{2} \times 1\frac{1}{3}$
4. Convert $\frac{3}{4}$ to a decimal.
5. Order these decimals from smallest to largest: 0.8, 0.08, 0.808, 0.88

Teaching as Inquiry: Reflection Notes

Reflection Prompts	Notes/Next Steps
Did students understand this week's key fraction and decimal concepts?	
Do students require further support, and with which specific concept or strategy?	
Could students independently find a whole amount when a fractional part was known?	
Could students select and apply strategies when solving fraction problems?	
What misconceptions were evident when multiplying fractions or mixed numbers?	
Could students connect fractions, decimals and decimal place value?	

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Term 1 Week 8 Overview Number: Number structures and operations
Chapter 3: Fractions and decimals: Decimals

Lesson & Topic	Learning Intention	Success Criteria	Main Activities	Student Book Practice
1 **Rounding decimals**	Round decimals to a required place value and use rounding to estimate and check calculations.	✓ Round decimals to the nearest whole number ✓ Round to the nearest tenth, hundredth and thousandth ✓ Identify the digit needed to determine rounding ✓ Estimate calculations using rounded values ✓ Compare estimates with exact answers	– Review decimal place value and rounding conventions – Round decimals to specified place values – Use rounded numbers to estimate products and quotients – Estimate before calculating exact answers – Use estimation to check the reasonableness of results – **Mathletics Online Practice Skill Quest: Round whole numbers & decimals: Rounding decimals; Activities (Courses): Decimals: Estimate Decimal Operations**	**Page 42:** Round decimals to different place values and use rounding to estimate and check calculations. 
2 **Powers of 10**	Multiply and divide whole numbers and decimals by powers of 10.	✓ Multiply decimals by 10, 100 and 1,000 ✓ Divide decimals by 10, 100 and 1,000 ✓ Explain changes in digit value using place value ✓ Calculate with larger powers of 10 ✓ Interpret powers of 10 written in exponent form	– Model changes in place value when multiplying by powers of 10 – Multiply and divide decimals by 10, 100 and 1,000 – Extend strategies to larger powers of 10 – Connect repeated factors of 10 with exponent notation – Apply powers-of-10 strategies efficiently – **Skill Quest: Multiply & divide decimals, powers of 10: Multiplying decimals by powers of 10; Dividing decimals by powers of 10**	**Page 43:** Multiply and divide whole numbers and decimals by powers of 10, including powers written in exponent form. 
3 **Multiplying decimals**	Multiply decimals accurately using place value and fraction relationships.	✓ Multiply decimals by whole numbers ✓ Multiply decimals by multiples of 10 ✓ Multiply decimals by two-digit numbers ✓ Multiply a decimal by another decimal ✓ Check that decimal products are reasonable	– Connect decimal multiplication to equivalent fractions – Multiply decimals by whole numbers and multiples of 10 – Extend multiplication to two-digit factors – Multiply decimals by decimals – Use place value and estimation to check products – **Skill Quest: Multiply decimals; Activities (Courses): Decimals: Decimal by Decimal**	**Page 44:** Multiply decimals by whole numbers, multiples of 10, two-digit numbers and other decimals. 
4 **Problem solving with decimals**	Select and apply decimal strategies to solve problems in practical contexts.	✓ Round decimals to a required place value ✓ Multiply and divide decimals accurately ✓ Use powers of 10 efficiently in calculations ✓ Estimate before calculating when appropriate ✓ Interpret and justify answers in context	– Apply rounding to measurements and money – Multiply and divide decimals mentally where appropriate – Solve problems involving rates, quantities and measures – Use estimation to predict and check results – Compare options using rounded values and exact calculations – **Activities (Courses): Decimals: Multiply Decimals and Powers of 10; Challenge: Decimals: Sounds about right**	**Page 45:** Apply rounding, estimation and decimal multiplication and division to solve practical problems involving money, measurement and quantities. 

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Chapter 3: Fractions and decimals: Decimals

Focus: Assess students' ability to round and estimate with decimals, multiply and divide by powers of 10, multiply decimals accurately and apply decimal strategies to solve practical problems.

Key Understandings to Assess

Area	Expected Understanding	Evidence to Look For
Rounding and estimation	Round decimals to a required place value and use estimates to check calculations.	Rounds to whole numbers, tenths, hundredths and thousandths and uses sensible estimates to check results.
Powers of 10	Multiply and divide whole numbers and decimals by powers of 10 using place value.	Tracks changes in digit value and applies powers of 10, including exponent notation.
Multiplying decimals	Multiply decimals by whole numbers and other decimals using appropriate strategies.	Calculates products, places the decimal correctly and uses estimation to check reasonableness.
Decimal problem solving	Select and apply decimal operations to solve problems involving money, measurement and quantities.	Identifies appropriate operations, calculates and interprets answers correctly in context.

Assessment Opportunities

Assessment Type	Suggested Activity	What to Observe
Observation (Formative)	Observe students rounding, estimating and calculating with decimals during lesson activities.	Are students using decimal place value accurately and selecting efficient calculation strategies?
Oral Check	Ask students to explain what happens to digit values when a decimal is multiplied or divided by a power of 10.	Can students explain the place-value relationships rather than relying only on a procedural rule?
Mathematical Discussion	Present a decimal calculation and ask students to estimate the result before calculating and justify whether the exact answer is reasonable.	Can students use rounding, place value and estimation to justify their reasoning?
Written Work	Review student book pages 42–45.	Accuracy with rounding decimals, multiplying and dividing by powers of 10, multiplying decimals and solving decimal problems.
Exit Ticket	Use the five-question check below at the end of the week.	Can students independently select and apply appropriate decimal strategies?
Checkpoint 3	Use the fractions and decimals checkpoint to assess understanding (student book pages 46–47).	Record class responses to identify skills to revisit, then use the Notes / Actions column to record any follow-up teaching needed.

Quick Quiz / Exit Ticket (5 Questions)

1. Round 36.487 to the nearest hundredth.
2. Calculate 7.25 × 100.
3. Calculate 84.6 ÷ 1,000.
4. Calculate 0.4 × 0.7.
5. A container holds 0.65 L. What is the total volume of 8 identical containers?

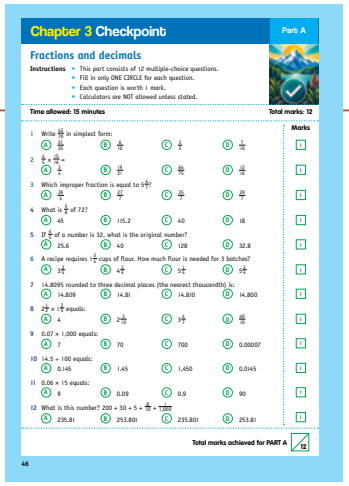
Teaching as Inquiry: Reflection Notes

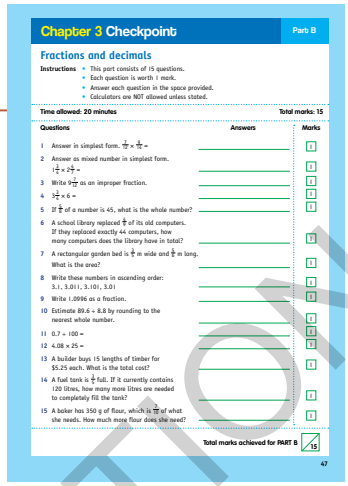
Reflection Prompts	Notes/Next Steps
Did students understand this week's key decimal concepts?	
Do students require further support, and with which specific concept or strategy?	
Could students accurately round decimals to different place values?	
Could students explain multiplication and division by powers of 10 using place value?	
Could students use estimation to predict and check decimal calculations?	
What misconceptions were apparent when multiplying decimals or positioning the decimal point?	

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CHECKPOINT 3

Chapter 3: Fractions and decimals


Chapter 3 Checkpoint Part A
Fractions and decimals
Instructions • This part consists of 12 multiple-choice questions. • Fill in only ONE CIRCLE for each question. • Each question is worth 1 mark. • Calculators are NOT allowed unless stated.
Time allowed: 15 minutes Total marks: 12
Marks
1 Write $\frac{48}{60}$ in simplest form: A $\frac{48}{60}$ B $\frac{4}{6}$ C $\frac{1}{5}$ D $\frac{2}{5}$ 1
2 $\frac{3}{4} \times \frac{2}{3} =$ A $\frac{1}{2}$ B $\frac{12}{12}$ C $\frac{6}{12}$ D $\frac{6}{7}$ 1
3 Which improper fraction is equal to $5\frac{2}{7}$? A $\frac{37}{7}$ B $\frac{52}{7}$ C $\frac{35}{7}$ D $\frac{37}{7}$ 1
4 What is $\frac{5}{9}$ of 72? A 45 B 115.2 C 40 D 18 1
5 If $\frac{2}{5}$ of a number is 32, what is the original number? A 25.6 B 40 C 128 D 32.8 1
6 A recipe requires $1\frac{1}{2}$ cups of flour. How much flour is needed for 3 batches? A $3\frac{1}{2}$ B $4\frac{1}{2}$ C $5\frac{1}{2}$ D $6\frac{1}{2}$ 1
7 (4.8095 rounded to three decimal places (the nearest thousandth) is: A 14.809 B 14.81 C 14.810 D 14.800 1
8 $2\frac{1}{2} \times 1\frac{3}{5}$ equals: A 4 B $2\frac{3}{10}$ C $3\frac{1}{2}$ D $\frac{40}{7}$ 1
9 0.07 × 1,000 equals: A 7 B 70 C 700 D 0.00007 1
10 14.5 ÷ 100 equals: A 0.145 B 1.45 C 1,450 D 0.0145 1
11 0.06 × 15 equals: A 9 B 0.09 C 0.9 D 90 1
12 What is this number? 200 + 30 + 5 + $\frac{8}{10}$ + $\frac{1}{100}$ A 235.81 B 253.801 C 235.801 D 253.81 1
Total marks achieved for PART A /12
46


Chapter 3 Checkpoint Part B
Fractions and decimals
Instructions • This part consists of 15 questions. • Each question is worth 1 mark. • Answer each question in the space provided. • Calculators are NOT allowed unless stated.
Time allowed: 20 minutes Total marks: 15
Questions Answers Marks
1 Answer in simplest form. $\frac{2}{3} \times \frac{3}{4} =$ 1
2 Answer as mixed number in simplest form. $1\frac{1}{2} \times 2\frac{1}{3} =$ 1
3 Write $3\frac{1}{10}$ as an improper fraction. 1
4 $3\frac{1}{2} \times 6 =$ 1
5 If $\frac{2}{3}$ of a number is 45, what is the whole number? 1
6 A school library replaced $\frac{3}{4}$ of its old computers. If they replaced exactly 44 computers, how many computers does the library have in total? 1
7 A rectangular garden bed is $\frac{3}{4}$ m wide and $\frac{2}{3}$ m long. What is the area? 1
8 Write these numbers in ascending order: 3.1, 3.011, 3.101, 3.01 1
9 Write 1.0096 as a fraction. 1
10 Estimate 89.6 + 8.8 by rounding to the nearest whole number. 1
11 0.7 × 100 = 1
12 4.08 × 25 = 1
13 A builder buys 15 lengths of timber for $5.25 each. What is the total cost? 1
14 A fuel tank is $\frac{3}{4}$ full. If it currently contains 120 litres, how many more litres are needed to completely fill the tank? 1
15 A baker has 350 g of flour, which is $\frac{7}{10}$ of what she needs. How much more flour does she need? 1
Total marks achieved for PART B /15
47

Purpose

This checkpoint assesses students' understanding of fractions and decimals, including simplifying and converting fractions, multiplying fractions and mixed numbers, finding fractions of quantities, decimal place value, rounding and ordering decimals, and multiplying and dividing decimals in practical contexts.

Part A: 12 marks | Part B: 15 marks | Total: 27 marks

Assessment Overview

Part / Questions	Focus	Skills Assessed
A1–A6, A8; B1–B7, B15	Fractions & mixed numbers	Simplifies, converts and multiplies fractions and mixed numbers; finds fractions of quantities and solves fraction problems involving area and wholes.
A7, A12; B8–B9	Decimal representation & place value	Reads, represents, orders and converts decimals; connects decimal notation with fractional place value.
A9–A11; B10–B12	Decimal operations & estimation	Multiplies and divides decimals by powers of 10 and whole numbers; rounds and estimates decimal calculations.
B13–B14	Decimal problem solving	Applies decimal multiplication and fraction understanding to solve money, measurement and capacity problems.

Achievement Rubric

Score Range	Progress Descriptor	Interpretation	Suggested Follow-Up
24–27	Exceeding	Strong and consistent understanding across the assessed concepts. Accurately applies fraction and decimal relationships, operations, place value, rounding and problem-solving strategies, including unfamiliar contexts.	Extend with multi-step fraction and decimal problems, more complex conversions, operations with mixed numbers, and problems requiring estimation and justification of solutions.
20–23	Proficient	Secure understanding of most assessed concepts, with only occasional errors when simplifying or operating with fractions, interpreting decimals or solving contextual problems.	Reinforce any isolated errors and provide targeted practice with fraction operations, decimal place value, rounding and decimal calculations.
15–19	Consolidating	Sound understanding of several concepts, with some gaps or inconsistencies in fraction operations, fraction–decimal relationships, decimal calculations or problem solving.	Continue guided practice using fraction representations, worked examples, place-value strategies and explicit discussion of fraction and decimal relationships.
8–14	Developing	Developing understanding of fractions and decimals but requires support to select and apply strategies accurately and independently.	Revisit simplifying fractions, equivalent forms, fractions of quantities and decimal place value; use visual representations, scaffolded examples and short targeted practice.
0–7	Emerging	Beginning to develop foundational understanding of fractions and decimals and requires substantial support to interpret and solve assessment tasks.	Provide explicit reteaching using fraction models, equivalent fractions, place-value materials and carefully sequenced one-step fraction and decimal examples.

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CHECKPOINT 3 Class Review

Year 8 Mathematics Chapter 3: Fractions and decimals

Class: **Date:**

After students complete and partner-mark the checkpoint, review each question as a class. Ask students to raise a hand for any question that they found challenging. Record the overall class response to identify skills to revisit. Use the **Notes / Actions** column to record any follow-up teaching needed.

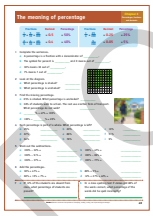
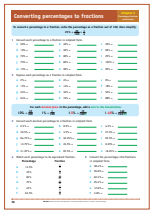
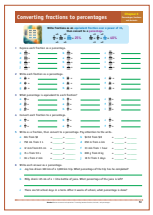
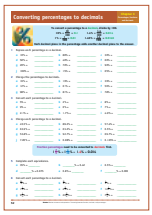
✓ **Secure** — few students need support
▲ **Review** — a group of students needs further practice
✕ **Reteach** — many students need further support

Class Check

Part	Task	Class Check	Notes / Actions
A1	Simplify a fraction to its simplest form.		
A2	Multiply two fractions and simplify the result.		
A3	Identify an improper fraction equivalent to a mixed number.		
A4	Find a fraction of a whole-number quantity.		
A5	Find the whole when a fraction of the quantity is known.		
A6	Multiply a mixed-number quantity in a practical context.		
A7	Round a decimal to three decimal places.		
A8	Multiply mixed numbers.		
A9	Multiply a decimal by 1,000.		
A10	Divide a decimal by 100.		
A11	Multiply a decimal by a whole number.		
A12	Interpret expanded decimal notation.		
B1	Multiply two fractions and give the answer in simplest form.		
B2	Multiply mixed numbers and give the answer in simplest form.		
B3	Convert a mixed number to an improper fraction.		
B4	Multiply a mixed number by a whole number.		
B5	Find the whole when a fraction of the quantity is known.		
B6	Find a total quantity from a known fractional part.		
B7	Calculate the area of a rectangle with fractional dimensions.		
B8	Order decimal numbers in ascending order.		
B9	Convert a decimal to a fraction.		
B10	Estimate a decimal quotient using rounding.		
B11	Divide a decimal by 100.		
B12	Multiply a decimal by a whole number.		
B13	Calculate total cost using decimal multiplication.		
B14	Find the whole when a fraction of the quantity is known.		
B15	Find a whole quantity from a known fractional amount.		
	TOTAL:	/ 27	

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Term 1 Week 9 Overview Number: Number structures and operations
Chapter 4: Percentages, fractions and decimals

Lesson & Topic	Learning Intention	Success Criteria	Main Activities	Student Book Practice
1 **The meaning of percentage**	Understand percentage as a part of a whole and use percentages to describe quantities.	✓ Explain percentage as a fraction out of 100 ✓ Interpret the % symbol and percentage notation ✓ Identify shaded and unshaded percentages ✓ Find the percentage remaining from 100% ✓ Add and subtract percentages in simple contexts	– Connect fractions, decimals and percentages using hundred grids – Identify percentages represented as parts of 100 – Find complementary percentages to 100% – Add and subtract percentages – Apply percentages to simple real-world situations	**Page 49:** Interpret percentages as parts of 100, find complementary percentages and solve simple percentage problems. 
2 **Converting percentages to fractions**	Convert percentages, including decimal percentages, to fractions in simplest form.	✓ Write a percentage as a fraction over 100 ✓ Simplify percentage fractions to lowest terms ✓ Convert decimal percentages to fractions ✓ Recognise equivalent percentages and fractions ✓ Apply conversion strategies accurately	– Represent percentages as fractions with denominator 100 – Simplify fractions using common factors – Extend conversion to decimal percentages – Match percentages with equivalent fractions – Convert more complex percentages to simplest fractions – **Mathletics Online Practice Activities (Courses): Percentages: Percentage to Fraction**	**Page 50:** Convert whole-number and decimal percentages to fractions and simplify to lowest terms. 
3 **Converting fractions to percentages**	Convert fractions to equivalent percentages and apply conversions in practical contexts.	✓ Convert fractions with denominator 100 directly to percentages ✓ Create equivalent fractions with denominators that are powers of 10 ✓ Convert common fractions to percentages ✓ Account for units before finding a percentage ✓ Solve contextual fraction-to-percentage problems	– Connect fractions over 100 to percentages – Create equivalent fractions using multiplication and division – Convert common fractions to percentages – Convert quantities to common units before comparing – Apply fraction-percentage equivalence in problems – **Skill Quest: Convert between FDP; Activities (Courses): Percentages: Fractions to Percentages (Non-Calculator)**	**Page 51:** Convert fractions to percentages using equivalent fractions and apply conversions to quantities and contextual problems. 
4 **Converting percentages and decimals**	Convert accurately between percentages and decimals, including decimal and fractional percentages.	✓ Convert percentages to decimals by dividing by 100 ✓ Convert decimals to percentages by multiplying by 100 ✓ Convert decimal percentages accurately ✓ Convert fractional percentages to decimals ✓ Identify and correct conversion errors	– Relate percentage notation to decimal place value – Divide percentages by 100 to form decimals – Multiply decimals by 100 to form percentages – Work with values less than 1% and greater than 100% – Analyse and correct common conversion errors – **Activities (Courses): Percentages: Decimals to percentages; Percentages to Decimals**	**Pages 52–53:** Convert percentages to decimals and decimals to percentages, including fractional percentages, small decimals and values greater than 100%.  
5 **Comparing and ordering**	Compare and order fractions, decimals and percentages by recognising and using equivalent values.	✓ Represent fractions, decimals and percentages on a number line ✓ Compare values using >, < and = ✓ Convert between forms to support comparison ✓ Arrange mixed representations in ascending and descending order ✓ Apply comparisons to practical situations	– Plot fractions, decimals and percentages on number lines – Compare mixed representations using equivalence – Use >, < and = accurately – Order positive and negative rational numbers – Compare discounts and quantities in practical contexts – **Skill Quest: Compare & order FDP; Compare & order rational numbers**	**Page 54:** Compare, order and represent fractions, decimals and percentages, including positive and negative values, and apply comparisons in context. 

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Chapter 4: Percentages, fractions and decimals

Focus: Assess students' ability to interpret percentages, convert between fractions, decimals and percentages, compare and order equivalent values, and apply these relationships accurately in mathematical and practical contexts.

Key Understandings to Assess

Area	Expected Understanding	Evidence to Look For
Meaning of percentage	Understand percentages as parts of 100 and identify complementary percentages.	Interprets percentage notation, connects percentages to parts of a whole and finds percentages remaining from 100%.
Percentages and fractions	Convert between percentages and fractions using equivalent fractions and simplification.	Writes percentages as fractions, simplifies and converts fractions to equivalent percentages.
Percentages and decimals	Convert accurately between percentages and decimals, including values below 1% and above 100%.	Uses place value when dividing or multiplying by 100 and recognises equivalent decimal and percentage values.
Comparing and ordering	Compare and order fractions, decimals and percentages using equivalent representations.	Converts between forms when needed, uses >, < and = and positions values accurately on number lines.
Application and reasoning	Apply fraction, decimal and percentage relationships to solve contextual problems.	Selects appropriate conversions, accounts for units and explains comparisons and solutions clearly.

Assessment Opportunities

Assessment Type	Suggested Activity	What to Observe
Observation (Formative)	Observe students converting and comparing fractions, decimals and percentages during lesson activities.	Are students selecting efficient conversion strategies and recognising equivalent representations accurately?
Oral Check	Ask students to explain why a fraction, decimal and percentage can represent the same value.	Can students explain equivalence using appropriate mathematical language and examples?
Mathematical Discussion	Present mixed fractions, decimals and percentages and ask students to explain how they would compare and order them.	Can students choose a useful common representation and justify the resulting order?
Written Work	Review student book pages 49–54.	Accuracy with interpreting percentages, converting between fractions, decimals and percentages, and comparing and ordering equivalent values.
Exit Ticket	Use the five-question check below at the end of the week.	Can students independently convert, compare and apply fractions, decimals and percentages accurately?

Quick Quiz / Exit Ticket (5 Questions)

1. Write 35% as a fraction in simplest form.
2. Convert $\frac{3}{8}$ to a percentage. Show how you worked it out.
3. Convert 0.065 to a percentage.
4. Arrange 0.72, $\frac{3}{4}$ and 68% in ascending order.
5. A jacket is discounted by $\frac{1}{5}$ at one shop and 18% at another. Which discount is larger? Explain how you know.

Teaching as Inquiry: Reflection Notes

Reflection Prompts	Notes/Next Steps
Did students understand the relationships between fractions, decimals and percentages?	
Do students require further support, and with which specific conversions or concepts?	
Could students independently select and apply appropriate conversion strategies?	
Can students explain and justify comparisons using mathematical language?	
What misconceptions were evident about percentage, place value, equivalence or values greater than 100%?	
Do representations, vocabulary or conversion strategies need further reinforcement?	

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