



Mathematics

Teaching, learning and assessment exemplar
Year 3



Acknowledgement of Country

Kaya. The School Curriculum and Standards Authority (the Authority) acknowledges that our offices are on Whadjuk Noongar boodjar and that we deliver our services on the country of many traditional custodians and language groups throughout Western Australia. The Authority acknowledges the traditional custodians throughout Western Australia and their continuing connection to land, waters and community. We offer our respect to Elders past and present.

Background

This teaching, learning and assessment exemplar (the exemplar) has been developed by the School Curriculum and Standards Authority (the Authority) as part of the *School Education Act Employees (Teachers and Administrators) General Agreement 2017* (Clause 61.1–61.3).

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Disclaimer

Any resources, such as texts and websites, that may be referred to in this document are provided as examples of resources that teachers can use to support their learning programs. Their inclusion does not imply that they are mandated or that they are the only resources relevant to the course. Teachers must exercise their professional judgement as to the appropriateness of any resources they may wish to use.

This resource utilises electronic web-based resources, such as videos and image galleries. Teachers should be present while an electronic resource is in use and close links immediately after a resource, such as a video has played to prevent default ‘auto play’ of additional videos. Where resources are referred for home study, they should be uploaded through Connect, or an equivalent system, that filters advertising content.

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Contents

The Western Australian Curriculum	1
The Mathematics curriculum	1
This exemplar	2
Catering for diversity	2
Using this exemplar	3
Links to electronic resources	3
Best practice	4
Teaching and learning	4
Assessing	4
Reflecting.....	4
Year level description	5
Achievement standard	6
Term 1	7
Term 2	39
Term 3	65
Term 4	89
Appendix A	111
Appendix B	125
Appendix C	133
Appendix D	139
Acknowledgements	148



The Western Australian Curriculum

The *Western Australian Curriculum and Assessment Outline* (the *Outline* – <https://k10outline.scsa.wa.edu.au/>) sets out the mandated curriculum, guiding principles for teaching, learning and assessment, and support for teachers in their assessment and reporting of student achievement. The *Outline* recognises that all students in Australian schools, or international schools implementing the Western Australian Curriculum, are entitled to be given access to the eight learning areas described in the *Alice Springs (Mparntwe) Education Declaration*, December 2019.

The Mathematics curriculum

The mandated curriculum is presented in the year level syllabus documents.

The Mathematics curriculum delivers a sequential and age-appropriate progression of learning with the following key elements:

- a year level description that provides an overview of the context for teaching and learning in the year
- a series of content descriptions, populated through strands and sub-strands, that sets out the knowledge, understanding and skills that teachers are expected to teach and students are expected to learn
- an achievement standard that describes an expected level that the majority of students are achieving by the end of a given year of schooling. An achievement standard describes the quality of learning (e.g. the depth of conceptual understanding and the sophistication of skills) that would indicate the student is well placed to commence the learning required in the next year.



This exemplar

This Mathematics exemplar articulates the content in the *Outline* and approaches to teaching, learning and assessment reflective of the Principles of Teaching, Learning and Assessment. This exemplar presents planning for eight weeks of teaching and learning for each of the four terms, with a time allocation of five hours per week.

Catering for diversity

This exemplar provides a suggested approach for the delivery of the curriculum and reflects the rationale, aims and content structure of the learning area. When planning the learning experiences, consideration has been given to ensuring that they are inclusive and can be used in, or adapted for, individual circumstances. It is the classroom teacher who is best placed to consider and respond to (accommodate) the diversity of their students. Reflecting on the learning experiences offered in this exemplar will enable teachers to make appropriate adjustments (where applicable) to better cater for students' gender, personal interests, achievement levels, socio-economic, cultural and language backgrounds, experiences and local area contexts.



Using this exemplar

This teaching, learning and assessment exemplar provides suggestions to support the delivery of the mandated curriculum content. The exemplar provides:

- a teaching and learning sequence
- the mandated curriculum content to be taught at each point of the teaching and learning sequence, suggested resources, sample assessment tasks and marking keys
- the number of lessons to deliver the teaching and learning experiences
- learning intentions and support notes that may provide focus questions and additional information and/or examples to assist with the interpretation of curriculum content
- support notes to assist teachers to unpack the content and support teaching and learning experiences
- teaching and learning experiences that outline the structure of the lesson. These explicitly state each activity that the lesson will progress through and the key focus area for that activity.

Links to electronic resources

This sequence of lessons may utilise electronic web-based resources, such as videos and image galleries. Teachers should be present while an electronic resource is in use and close links immediately after a resource, such as a video, has played to prevent default 'auto play' of additional videos. Where resources are referred for home study, they should be uploaded through Connect, or an equivalent system, that filters advertising content.



Best practice

Teaching and learning

The teaching and learning opportunities offered in this exemplar are not exhaustive. Thus, teachers are encouraged to make professional decisions about which learning experiences, and the sequence in which they are delivered, are best suited to their classroom context, taking into account the availability of resources and student ability.

This sample may prove a useful starting point for amplifying creativity in the classroom, while presenting the embedded expectations of the Western Australian Curriculum: Mathematics.

Teachers may find opportunities to incorporate the General Capabilities and the Cross-curriculum Priorities into the teaching and learning program.

Ways of teaching – teachers can locate additional information on the Ways of teaching from the School Curriculum and Standards Authority (the Authority) website <https://k10outline.scsa.wa.edu.au/home/wa-curriculum/learning-areas/mathematics/overview/mathematics-ways-of-teaching>.

Assessing

Assessment, both formative and summative, is an integral part of teaching and learning. Assessment should arise naturally out of the learning experiences provided to students. In addition, assessment should provide regular opportunities for teachers to reflect on student achievement and progress. As part of the support it provides for teachers, this exemplar includes suggested assessment points. It is the teacher's role to consider the contexts of their classroom and students, the range of assessments required, and the sampling of content descriptions selected to allow their students the opportunity to demonstrate achievement in relation to the year level achievement standard. Teachers are best placed to make decisions about whether the suggested assessment/s are used as formative or summative assessment and/or for moderation purposes.

Ways of assessing – a range of assessment strategies that can enable teachers to understand where students are in their learning is available on the Authority website <https://k10outline.scsa.wa.edu.au/home/wa-curriculum/learning-areas/mathematics/overview/mathematics-ways-of-assessing>.

Reflecting

Reflective practice involves a cyclic process during which teachers continually review the effects of their teaching and make appropriate adjustments to their planning. The cycle involves planning, teaching, observing, reflecting and replanning.

This exemplar supports reflective practice and provides flexibility for teachers in their planning. The exemplar shows how content can be combined and revisited throughout the year. Teachers will choose to expand or contract the amount of time spent on developing the required understandings and skills according to their reflective processes and professional judgements about their students' evolving learning needs.



Year level description

In the middle to late childhood phase of schooling, students develop a sense of self, their world expands, and they begin to see themselves as members of larger communities. Learning experiences emphasise and lead to an appreciation of both the commonality and diversity of human experience and concerns.

Mathematics provides opportunities for students to develop a sound grasp of numeric conventions. Concrete materials continue to assist students to make sense of mathematical concepts as they develop the ability to think in more abstract terms.

Students engage in a range of approaches to learning through the proficiencies of understanding, fluency, problem-solving and reasoning. These reinforce the significance of working mathematically with the content and describe how the content is explored or developed.

In Year 3, students recognise the place value pattern in numbers to at least four digits, explore different ways to partition numbers and the use of 'greater than' and 'less than' symbols. This knowledge is applied to a range of calculation strategies and supports the modelling of relevant real-world situations. Students start using formal units of measurement and are introduced to the concept of angles, identifying mathematical applications in familiar contexts. They recognise the likelihood of outcomes for repeated chance experiments and explore different ways to collect and represent data.



Achievement standard

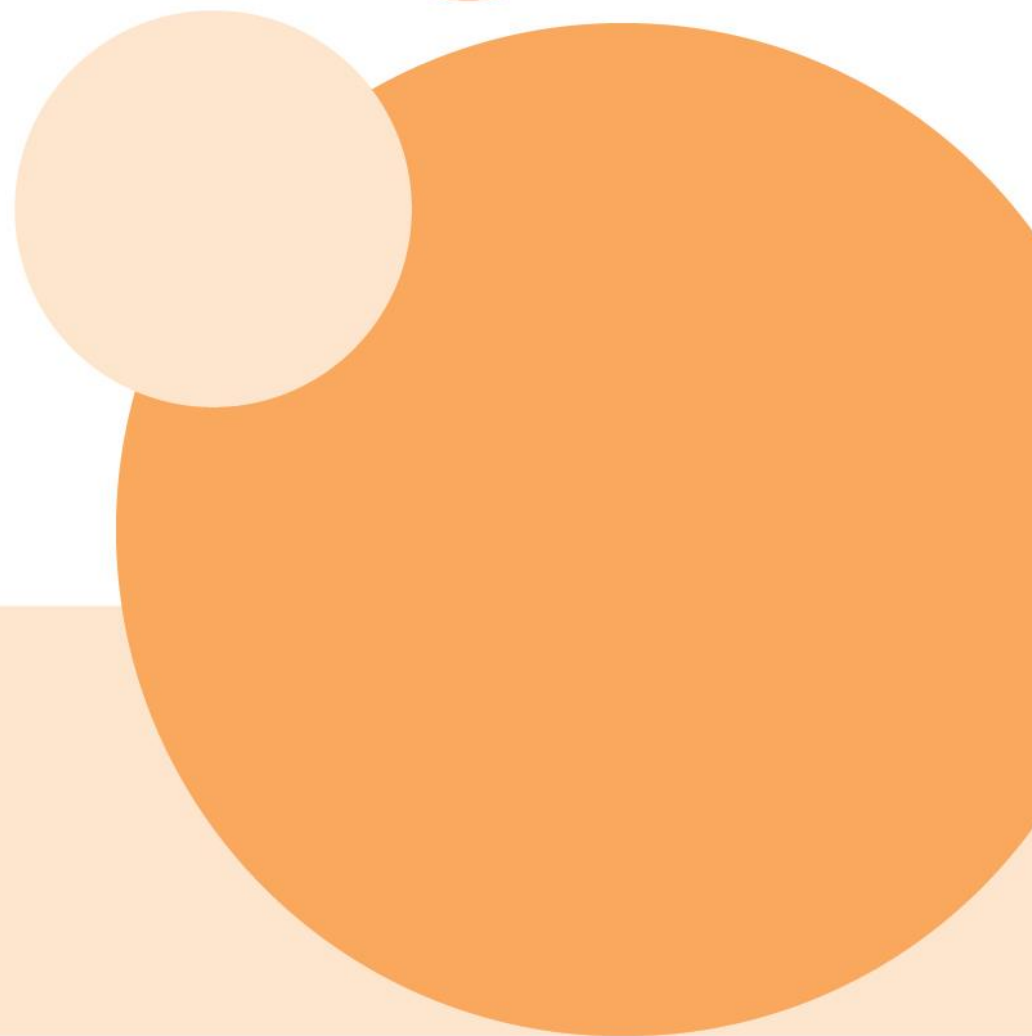
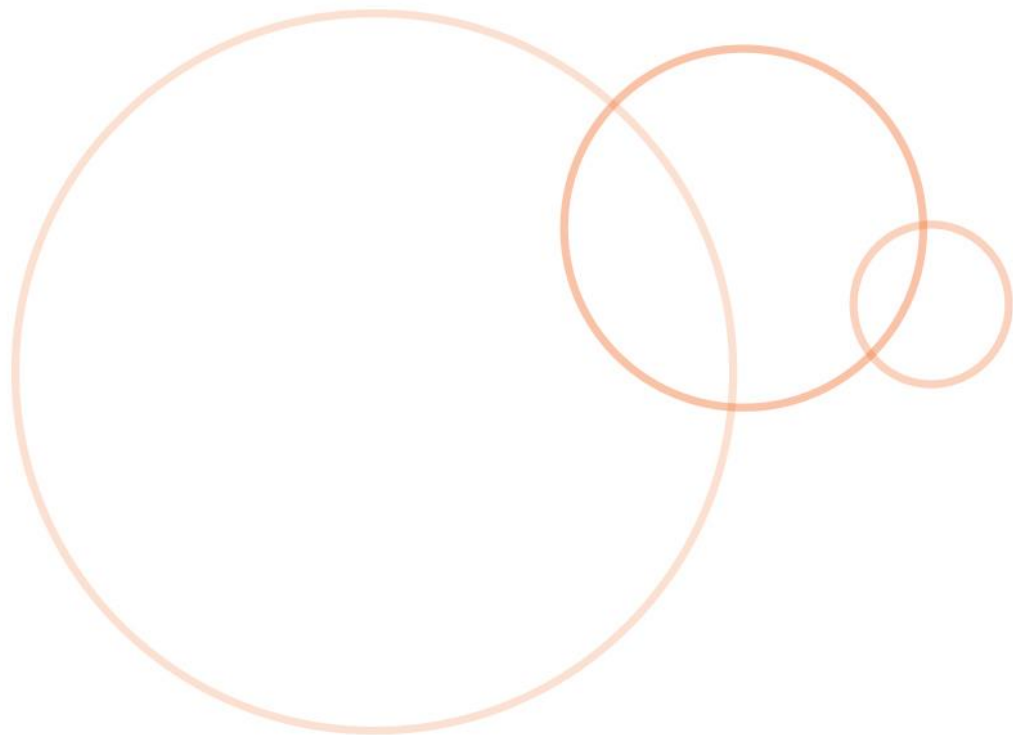
By the end of the year:

Students demonstrate the behaviours of the proficiencies of understanding, fluency, problem-solving and reasoning in conjunction with year level content in routine situations. They select from and use content and mathematically model situations to solve real-world problems in familiar contexts.

Students order numbers to at least four digits. They represent and partition numbers, recall addition and subtraction facts to 20, recognise the relationship between addition and subtraction, and use these to add and subtract two- and three-digit numbers. Students recall multiplication facts of 2, 3, 4, 5 and 10 and represent multiplication and division with arrays. They create increasing and decreasing additive patterns. Students represent the unit fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$ and recognise equivalent money values.

Students make and classify three-dimensional objects according to key features. They interpret simple maps and identify and compare angles in everyday situations. Students measure and order length and capacity in metric units and compare the mass of objects to common benchmark weights. They tell the time in minutes using analogue and digital clocks, and describe duration in hours, minutes and seconds.

Students identify possible outcomes of everyday events and repeated chance experiments. They collect categorical or discrete numerical data through observation or surveys and represent and interpret data in dot plots, tables and column graphs.



Term 1

Weeks 1–8

Term 1 Overview: Learning intentions

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Learning intention	NA UN To understand the number system to at least four digits	NA UN To explore and use the multiplicative relationship between multiplication and division	NA UN UEI To apply the equality and inequality symbols to compare numbers and equations involving addition and subtraction	NA UN CN FM To apply addition and subtraction strategies and represent the relationship between addition and subtraction	NA UN PR MN To explore, create and represent patterns and develop understanding of the rules of additive patterns	NA UN PR MN To explore, create and represent patterns and develop understanding of rules of additive patterns	NA UN To represent unit fractions using a range of materials	NA UN MG NSM To explore events that last hours, minutes and seconds To display events that last hours and minutes on a number line
Learning experiences per week	5	4	4	5	3	2	4	4
Learning intention					MG 2DSS (length) To connect the understanding of informal uniform units to formal uniform units to measure length using millimetres, centimetres and metres	MG NSM To tell the time in minutes using analogue clocks and describe duration in hours, minutes and seconds		
Learning experiences per week					2	2		

NA Number and algebra
UN Understanding number
CN Calculating with number
2DSS Two-dimensional space and structures
P Probability

MG Measurement and geometry
UEI Understanding equalities and inequalities
FM Financial mathematics
3DSS Three-dimensional space and structures
S Statistics

PS Probability and statistics
PR Patterns and relationships
MN Modelling with number
NSM Non-spatial measurement







Western Australian Curriculum content	Term 1: Daily practice activities
<p>Number and algebra</p> <p>Understanding number Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Represent and partition numbers up to four digits, including groups of 10 (tens), 10 groups of 10 (hundreds) and beyond, using concrete materials and number sentences. Recognise that the value of a digit is determined by its place in a number</p> <p>Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences</p> <p>Measurement and geometry</p> <p>Non-spatial measurement Tell the time in minutes using analogue and digital clocks. Describe duration in hours, minutes and seconds and identify the relationship between them</p>	<p>Weeks 1–4</p> <p>Facilitate learning and practising of place value by encouraging bundling. Students make and manipulate bundles and other groups of manipulatives to represent different numbers, consolidating the association between numbers and quantities.</p> <p>Provide daily practice of problems relating to addition and subtraction. Ensure students have frequent opportunities to:</p> <ul style="list-style-type: none"> • encounter movement of concrete materials associated with each operation, e.g. more biscuits being baked (movement of more biscuits into the scenario) • handle manipulatives • solve unknown quantity problems in different ways • explore and explain the relationship between addition and subtraction, e.g. $2 + 8 = 10$ and $10 - 8 = 2$ • apply mental strategies that rely on place value and partitioning to solve. <p>Ask students to tell the time to the quarter- and half-hour on analogue and digital clocks, using incidental, routine and no-routine problems.</p>
<p>Number and algebra</p> <p>Understanding number Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences</p>	<p>Weeks 5–8</p> <p>Provide authentic problems that build fluency around the number system. Ensure students have frequent opportunities to:</p> <ul style="list-style-type: none"> • work on ‘making ten’ using manipulatives • recognise patterns in the number system • combine two amounts using standard partitioning



Western Australian Curriculum content	Term 1: Daily practice activities
<p>Represent and partition numbers up to four digits, including groups of 10 (tens), 10 groups of 10 (hundreds) and beyond, using concrete materials and number sentences. Recognise that the value of a digit is determined by its place in a number</p> <p>Recall addition and subtraction facts to 20</p> <p>Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p> <p>Patterns and relationships</p> <p>Create and represent increasing or decreasing additive patterns from any starting point, using concrete materials and numbers, and describe rules to represent the pattern</p> <p>Measurement and geometry</p> <p>Two-dimensional space and structures</p> <p>Estimate, measure and order lengths in uniform units, including millimetres, centimetres and metres</p> <p>Non-spatial measurement</p> <p>Tell the time in minutes using analogue and digital clocks. Describe duration in hours, minutes and seconds and identify the relationship between them</p>	<ul style="list-style-type: none">• create number sentences involving place value change• use standard expanded notation to explore numbers to four digits• use number lines to order numbers to 999. <p>Provide authentic multiplication and division problems involving facts of 2, 3, 4, 5 and 10 that can be solved using diagrams, arrays or number sentences, with or without think boards.</p> <p>Provide a variety of word problems, number sentences, diagrams and manipulatives representing unit fractions. Ensure students have frequent opportunities to:</p> <ul style="list-style-type: none">• recognise, represent and describe unit fractions• create and identify fractions of wholes and collections• combine unit fractions with the same denominator to create a whole. <p>Ask students to estimate how long familiar objects are using mm, cm and m.</p> <p>Incidentally ask students to tell the time to the quarter-hour, and, with support, to the nearest minute, on analogue and digital clocks.</p>



Term 1 Week 1

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number</p> <p>Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Represent and partition numbers up to four digits, including groups of 10 (tens), 10 groups of 10 (hundreds) and beyond, using concrete materials and number sentences. Recognise that the value of a digit is determined by its place in a number</p>	<p>Learning intention</p> <p>To understand the number system to at least four digits</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How does a number line help you count? • When you are counting, what always happens after you count a number ending in 9? • What happens to the value of a digit as it moves from ones to tens to hundreds and so on? • Can you identify the similarities and differences between standard and non-standard notation? <p>Support notes</p> <p>Ensure students understand the relevant maths vocabulary necessary for the learning sequence, such as ones, tens, hundreds, thousands, tens of thousands, partition and place value.</p> <p>Refer to the Mathematics glossary: https://k10outline.scsa.wa.edu.au/home/wa-curriculum/learning-areas/mathematics/p-10-mat-curriculum</p> <p>Partitioning of digits into standard and non-standard ways develops the understanding that the value of the digit remains constant despite flexible representations of that digit. This flexibility allows for more sophisticated strategies to be used to calculate.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Display a 0–100 number line and model counting patterns. • Discuss number lines and ask students how they know which number comes next (when counting for numbers up to three digits), referencing the pattern of the digits 0–9. • Using a hundreds chart, review what happens when counting past the end of a decade, or when counting 9–10, 59–60 or 99–100. Relate this to the pattern in counting from 100 up to 1000. Students complete number lines with missing numbers, including decade changes up to 1000, using the constant addition function on a calculator to predict and check. • Following a class discussion, guide students to agree on Rule 1. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Review using MAB by viewing the video ‘Construct numbers to 1000’: Mathspace – <i>Construct Numbers (to 1000)</i> https://mathspace.co/textbooks/syllabuses/Syllabus-471/topics/Topic-8841/subtopics/Subtopic-117233/?activeTab=theory. • Using MAB and sets of three dice, pairs of students play the <i>Build a thousand</i> game. <p>Nominate each dice a place value, e.g. first die is the ones number, second is the tens number, third is the</p>

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences																																	
	<p>The suggested activities should be used with the Focus questions to move students towards understanding the following rules:</p> <ul style="list-style-type: none"> • Rule 1: There is a pattern in the way numbers are counted when counting forwards by one; every time the 1–9 sequence is completed, the ones place changes to a zero. • Rule 2: The value of a digit depends on its place value. • Rule 3: The way you partition numbers doesn't change the total. <p><i>Build a thousand game</i></p> <ul style="list-style-type: none"> • Materials: MAB ones, tens, hundreds and thousands; three 10-sided dice. <p>Suggested assessment point</p> <p>The bingo game in Learning experience 3 can be used as a diagnostic assessment of students' ability to identify place value to the hundreds or thousands. Learning experience 5 can be used to assess student understanding through observation, questioning and review of 'clues' about a number.</p>	<p>hundreds number. Roll all three dice and write that number in a place value table. Retrieve that many MAB blocks as per the video resource above. Continue to roll the dice, adding each new number to the previous number, until you reach 1000 (or slightly over).</p> <table border="1" data-bbox="1400 531 2033 742"> <thead> <tr> <th>Dice roll</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td></td> <td>3</td> <td>6</td> <td>2</td> <td>362</td> </tr> <tr> <td></td> <td>5</td> <td>3</td> <td>6</td> <td>898</td> </tr> </tbody> </table> <p>Graphics: Amanda, 2012</p> <ul style="list-style-type: none"> • Explicitly demonstrate that numbers in different places have different values. Demonstrate by writing a number (e.g. 8452) in the place value house (see below). Students write the number in their own copy of the place value house. Circle the 8 and ask students to use their place value house to identify the value of the 8. <div data-bbox="1458 1054 1856 1283" data-label="Table"> <table border="1"> <thead> <tr> <th colspan="3">Thousands</th> <th colspan="3">Units</th> </tr> <tr> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>8</td> <td>4</td> <td>5</td> <td>2</td> </tr> </tbody> </table> </div> <p>eight thousand, four hundred and fifty-two The value of the 8 is eight thousand.</p>	Dice roll	Hundreds	Tens	Ones	Total		3	6	2	362		5	3	6	898	Thousands			Units			Hundreds	Tens	Ones	Hundreds	Tens	Ones			8	4	5	2
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Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<ul style="list-style-type: none">Using randomly generated four-digit numbers, students place digits in place value houses and write the matching written number. In pairs, they take turns to circle a digit, then their partner writes down the value of the digit; teacher checks for understanding. <p>Learning experience 3</p> <ul style="list-style-type: none">Using blank bingo cards, students write four-digit numbers in a given range. The teacher calls out, 'Find a number with a x-digit in the y-place', e.g. 'Find a number with a 3 in the hundreds place'. Extend to tens of thousands as understanding progresses.Following a class discussion, guide students to agree on Rule 2. <p>Learning experience 4</p> <ul style="list-style-type: none">Students group large collections of objects to count using tens and hundreds. Once grouped, they make given numbers or use a random number generator. Students write numbers in digits and words to consolidate how to read and write numbers in standard partitioning.Provide students with a number expander to explore the place value of digits and written numbers. Students practise expanding numbers up to 9999 using teacher-provided numbers, randomly generated numbers, numbers located in texts or by rolling a 10-sided die, e.g. 2345 to 2 thousands, 3 hundreds, 4 tens and 5 ones.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>Learning experience 5</p> <ul style="list-style-type: none"> Explore how standard and non-standard partitioning does not change the quantity of a number, using the example of showing different ways that 795 lollies can be bought if they come in singles, packets of 10 and boxes of 10 packets (100). In pairs or groups, students use MAB to find as many ways as they can to partition the lollies. Provide students with coloured counters numbered 1, 10, 100 and 1000 to partition numbers of at least four digits. For example, <div style="text-align: center;">  <p>6 thousands, 2 hundreds, 5 tens and 7 ones = 6257</p> <p>or</p>  <p>5 thousands, 12 hundreds, 4 tens and 17 ones = 6257.</p> </div> <ul style="list-style-type: none"> Following a class discussion, guide students to agree on Rule 3. Number detectives: Students use Rules 1, 2 and 3 to write clues for a four-digit number that the number

Western Australian Curriculum content**Teaching and learning intentions****Learning experiences**

sleuth (a peer) will use to find the mystery number. The number sleuth will present the clues and solution in a place value chart.

The detective will write the clues according to the rules for a number sleuth. For example:

Clue 1: The mystery number comes after a number ending in 8.

Clue 2: The mystery number has a 3 in the hundreds place.


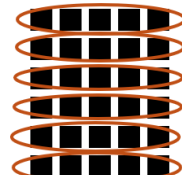

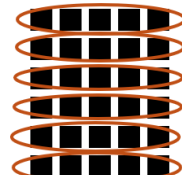

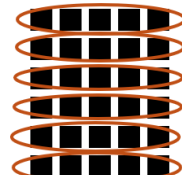
Clue 3: The mystery number has 6 thousands and 19 ones.

The number sleuth will use the clues and rules to find the mystery number.

Thousands	Hundreds	Tens	Ones
The mystery number has 6 thousands.	The mystery number has a 3 in the hundreds place.		The mystery number comes after a number ending in 8. The mystery number has 19 ones.
6	3		19
6	3	1	9

Solution: The mystery number is 6319.

Term 1 Week 2

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences								
<p>Number and algebra</p> <p>Understanding number Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences</p> <p>Explore and represent the relationship between multiplication and division using diagrams, arrays and number sentences</p> <p>Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p>	<p>Learning intention To explore and use the multiplicative relationship between multiplication and division</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How is multiplication a ‘short cut’ to solving repeated addition equations? • What is the connection between multiplication and division? Can using one of the operations help solve problems involving the other? • Can you describe how each part of the think board helps you to solve the number story? <p>Support notes When dividing numbers or quantities, students are developing the understanding of sharing into equal groups.</p> <p>Suggested assessment point The completed think boards can be used as a formative assessment to determine students’ understanding of the relationship between multiplication and division, particularly when using arrays.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Provide think boards to contextualise, investigate and solve multiplication and division word problems using concrete materials, diagrams, repeated addition or subtraction and arrays. <div data-bbox="1435 539 2027 858" style="border: 1px solid black; padding: 5px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Think board</th> </tr> </thead> <tbody> <tr> <td style="width: 50%; padding: 5px;"> Story Hannah has 6 friends coming to her birthday party. They will each get a lolly bag with 5 lollies. How many lollies will Hannah need? </td> <td style="width: 50%; padding: 5px;"> Repeated addition $5 + 5 + 5 + 5 + 5 + 5$ Repeated subtraction $30 - 5 - 5 - 5 - 5 - 5$ </td> </tr> <tr> <td style="width: 50%; padding: 5px;"> Drawings showing ‘groups of’  </td> <td style="width: 50%; padding: 5px;"> Array showing ‘sharing’  </td> </tr> <tr> <td style="width: 50%; padding: 5px;"> $6 \times 5 = 30$ </td> <td style="width: 50%; padding: 5px;"> $30 \div 6 = 5$ </td> </tr> </tbody> </table> </div> <p>Learning experience 2</p> <ul style="list-style-type: none"> • Provide students with a range of word problems that allow them to relate multiplication and division. • Students solve problems using multiplication and check using division, with the support of a think board: <ul style="list-style-type: none"> ▪ Six friends get three balloons each. How many balloons will be needed? ▪ Six friends get four toys in their party bag. How many toys should be bought? ▪ Six friends get 10 stickers each for a game. How many stickers will be needed? • Students solve problems using division and check using related multiplication facts, with the support of a think board: 	Think board		Story Hannah has 6 friends coming to her birthday party. They will each get a lolly bag with 5 lollies. How many lollies will Hannah need?	Repeated addition $5 + 5 + 5 + 5 + 5 + 5$ Repeated subtraction $30 - 5 - 5 - 5 - 5 - 5$	Drawings showing ‘groups of’ 	Array showing ‘sharing’ 	$6 \times 5 = 30$	$30 \div 6 = 5$
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Western Australian Curriculum content

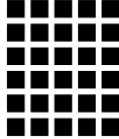

Teaching and learning intentions

Learning experiences

- Thirty-three cupcakes were ordered for the party. If there were 11 people at the party, how many cupcakes can each person have?
- Mum has 16 prizes for the games at the party. How many games can be played if there are two prizes given out for each game?
- Dad made a piñata and placed 60 lollipops inside. Help Dad check whether there are enough lollipops for each of the 11 kids to get five lollipops.

Learning experience 3

- Present students with an array. Working in pairs, students write related multiplication and division facts for the array. Teacher presents one related fact. Students suggest a party-related scenario that matches this fact and then draw a diagram to check the scenario matches the array.

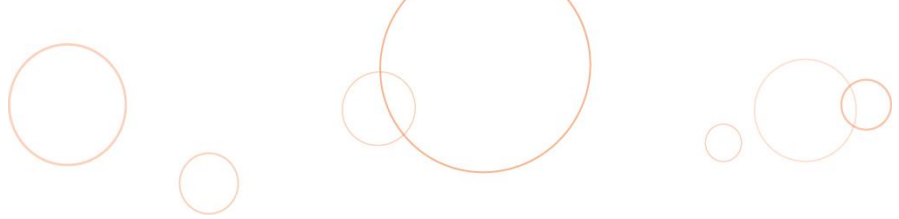
	6×5 $30 \div 6$	$30 \div 6$ There are 30 guests at a party. They can choose to play one of six games. How many even groups can be made for each game? Students draw 30 guests shared into six groups.	$30 \div 5$ There are 30 guests at a party. They need to get into groups of five to play a game. How many groups will there be? Students draw 30 guests shared into five groups.
	5×6 $30 \div 5$		



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<ul style="list-style-type: none">• Continue to present different arrays, to provide students with variety when exploring the relationship between multiplication and division using arrays, diagrams and number sentences. <p>Learning experience 4</p> <ul style="list-style-type: none">• Students design a card game to play at the party. The game should involve matching a multiplication fact to a division fact to win (multiplication facts of 2, 3, 4, 5 and 10). Students create six pairs of cards. Each pair includes a matching multiplication and division fact. Each card should include an array to match. Allocate a learning experience to play the game.

Term 1 Week 3

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences</p> <p>Understanding equalities and inequalities Explore and use the greater than, less than and equality symbols to compare two whole numbers or statements involving addition and subtraction</p>	<p>Learning intention To apply the equality and inequality symbols to compare numbers and equations involving addition and subtraction</p> <p>Focus questions</p> <ul style="list-style-type: none"> • What does the = symbol mean? • How can you make sure each side of an equation is balanced? • Does the answer always have to be after the equality symbol? • What happens when each side of an equation is not equal? How can we show which side is greater or less than the other? • How can we check that the correct symbol (< or >) has been used? (relate back to understanding of the symbol – ‘lower answer is less than’) <p>Support notes When using balance scales to investigate equality, students develop the understanding that the same value on both sides of the equation must be equal.</p> <p>Using the =, < and > symbols helps students compare the relative size of numbers and adds to their understanding that place value affects the value of the digit. When introducing the equality symbols, relate to commonly used graphics, such as a crocodile or shark mouth, or symbols with teeth and eyes (available online)</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Link understanding from Year 2 that the = (equality) symbol indicates the number sentence is balanced. Students use balance scales to explore how the same amount is needed on each side to balance the scales. Ask students, ‘If we put the same number of marbles on each side of the balance scale, is each side equal?’ ▪ Using coloured marbles, students solve problems, such as: <ul style="list-style-type: none"> ▪ 2 marbles + 7 marbles = ? marbles + 3 marbles (showing that $2 + 7 = 6 + 3$) ▪ 12 marbles – ? marbles = 7 marbles + 3 marbles (showing that $12 - 2 = 7 + 3$) ▪ Students create and solve addition and subtraction problems, using pictures, symbols and numbers to ensure they are equal and therefore balanced. <p>Learning experience 2</p> <ul style="list-style-type: none"> ▪ Introduce the vocabulary of ‘greater than’ and ‘less than’ (not the symbols) using balance scales. Students explore that unequal amounts can be compared by adding marbles to each side of the scales, experimenting with different combinations and recording their findings. ▪ Discuss that symbols can be used to record the concepts of ‘greater than’ and ‘less than’. Introduce the symbols and ask students to create a small desk poster to help them recall the symbols.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>by searching 'greater than and less than symbols'). Teach that the wide side opens facing the larger amount/number, and the small end always faces the smaller amount/number.</p> <p>For Learning experience 4, prepare cards that contain a mix of addition and subtraction equations and numbers. Ensure that the equations range over two- and three-digit numbers and that half the equations have matching number cards.</p>	<ul style="list-style-type: none"> ▪ On mini whiteboards, students draw an empty box. Using a nine-sided dice or 1–9 number generator, students create equations alternating between addition and subtraction equations, using the following format: $7 + 3 \square 6 + 8$ then $8 - 4 \square 5 - 2$. <p>Students write the correct equality or inequality symbol in the box to make the whole equation true. Students use concrete materials, MAB or calculators and their greater than/less than desk posters to peer check that the correct symbol has been used. Students explain the use of particular symbols in the context of each equation.</p> <p>Learning experience 3</p> <ul style="list-style-type: none"> ▪ To extend understanding of equality symbols to place value, students compare the same digit in two separate numbers, e.g. 2345 and 923. Discuss the value of each of the digits (300 and 3). Teacher asks, 'Which 3 is greater? Discuss why the 3 in 2345 is larger in value than the 3 in 923.' ▪ Students practise comparing digits and solving problems using the < and > symbols. <p>Learning experience 4</p> <ul style="list-style-type: none"> ▪ Distribute teacher-made cards. Students turn over two cards, one either side of a mini whiteboard, and then write either < or > or = to complete the statement. • Students create a poster about the <, > and = symbols, including three examples for addition equations and



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		three for subtraction equations. Of the six equations, they need to show two equal to, two less than and two greater than examples.

Term 1 Week 4

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences</p> <p>Calculating with number Add and subtract two- and three-digit numbers using a range of strategies</p> <p>Financial mathematics Investigate financial transactions, recognising equivalent values and change</p>	<p>Learning intention To apply addition and subtraction strategies and represent the relationship between addition and subtraction</p> <p>Focus questions</p> <ul style="list-style-type: none"> • Tell me an addition or subtraction story that you could use manipulatives to solve. • How are addition and subtraction related? • When do you use addition and subtraction in your daily life? <p>Support notes Provide opportunities for daily practice of solving problems that relate addition and subtraction using manipulatives (see Term 1's Daily practice activities). For Learning experience 2, examples of addition and subtraction problems are available in Appendix A. Model mental strategies that rely on place value and partitioning to assist with calculations, e.g. $15 - 5 \rightarrow$ no tens are being taken away.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Students use concrete materials and mini whiteboards to represent addition and subtraction questions. Encourage partitioning of two-digit numbers as an effective strategy. Beginning with standard partitioning, move through the following calculation strategies. <ul style="list-style-type: none"> ▪ Standard partitioning: $14 + 13 \rightarrow 10 + 10$ and $4 + 3 \rightarrow 20 + 7 = 27$ ▪ Compensatory strategies to make ten: $4 + 6 \rightarrow (4 + 1) + (6 - 1) \rightarrow 5 + 5 = 10$ (the one moves from the six to the four to facilitate calculating) ▪ Compensatory strategies using knowledge of ways to make 10: $8 + 7 \rightarrow 8 + 2 = 10$, with five left out of seven $\rightarrow 8 + 2 + 5 \rightarrow 10 + 5 = 15$ <p>Learning experience 2</p> <ul style="list-style-type: none"> • Provide students with different problem types (unknown variable being the total or one of the terms, for both addition and subtraction – see Appendix A). Focus on representing different problem types rather than solving them. • Provide students with the answers and guidance through word problems that place the unknown variable in different places. Discuss ways students could find the unknown variable in each place.

Use think boards such as this for Learning experience 5.

Think board					
<p>Story Twenty-four Year 3s are playing on the oval. If 16 are wearing hats, how many are not wearing hats?</p>	<p>Part-part-whole model</p> <table border="1"> <tr> <td colspan="2">24</td> </tr> <tr> <td>?</td> <td>16</td> </tr> </table>	24		?	16
24					
?	16				
<p>Drawings or symbols Students might draw 16 blue dots (hat-wearers) and the remainder in green.</p>	<p>Addition number sentence $16 + ? = 24$</p> <p>Subtraction number sentence $24 - 16 = ?$</p>				

Learning experience 3

- Provide students with word problems involving addition and subtraction that relate to financial transactions. Include the solutions. Ask students to represent them, using concrete materials, drawings or numbers to help them solve the problems. Students think of and explain strategies that could be used to determine the total. Share with the class.

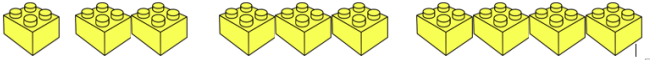
Learning experience 4

- Present stories involving addition and/or subtraction (e.g. I baked 12 cupcakes and three were chocolate flavoured. The remaining were vanilla flavoured. How many vanilla cupcakes did I bake?). Ask students to represent these stories using part-part-whole models.
- Present real-world situations involving addition and/or subtraction that students can relate to. Students use materials, think boards and part-part-whole models to solve. Situations should involve problems where the starting number or change in number are unknown, e.g. We have 123 tennis balls in the sports shed. Eighty-six of them are too old and need to be thrown away. How many are still in good condition?

Learning experience 5

- To consolidate understanding of the relationship between addition and subtraction using think boards, present students with a range of problems where the start, change or total number are unknown. Students solve problems by representing problems as diagrams, part-part-whole models and number sentences. Students explain their answer in the context of the word problem.

Term 1 Week 5

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p> <p>Patterns and relationships Create and represent increasing or decreasing additive patterns from any starting point, using concrete materials and numbers, and describe rules to represent the pattern</p> <p>Modelling with number Identify and represent a range of real-world addition and subtraction situations with part-part-whole models, and multiplication and division situations with arrays. Write number sentences to reach a solution and interpret in context</p>	<p>Learning intention To explore, create and represent patterns and develop understanding of the rules of additive patterns</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How can you tell something is a pattern? How do you identify the part that repeats? • Is the repeating part of the pattern increasing or decreasing? • Is there a rule you can use to describe this pattern? • How many studs will appear in the next part of the pattern? • How do you know what comes next? What can you use to predict a pattern? <p>Support notes Provide students with opportunities to explore patterns in a variety of media, e.g. using colours, sounds, movement and numbers. Identify patterns in a variety of contexts, paying attention to what is the same and different.</p> <p>An increasing additive pattern increases by adding the same amount each time. A decreasing additive pattern decreases by subtracting the same amount each time. A repeating unit or core of a pattern is the smallest unit or sequence that repeats over and over again to form the entire pattern, or the amount that is repeatedly added to or removed from a starting part of a pattern.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Review increasing and decreasing additive patterns. Students identify what is changing in provided increasing or decreasing additive patterns. Discuss what the change is in a pattern and how to identify a missing element in the pattern. Model creating an increasing and decreasing additive pattern from a random starting point. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Provide a range of square and rectangular studded toy bricks hidden in a container. A student randomly selects one brick and shows it to the class. This brick becomes the starting point for the pattern, with the studs on the brick determining the starting number i.e. four studs. <p>Direct students to create an additive pattern that increases by an even number rolled on a six-sided dice.</p> <p>Using a supply of toy bricks, students continue the pattern by adding more bricks, explaining how they are increasing the pattern.</p> <div style="text-align: center;">  <p>Graphics: Creazilla, n.d.</p> <p>4 8 12 16</p> </div>

Western Australian Curriculum content

Teaching and learning intentions

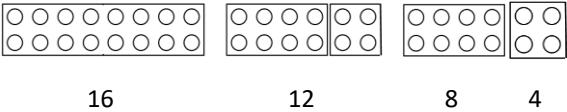
Learning experiences

This sequence of learning continues in Week 6.

- Discuss the pattern with students, explicitly connecting the pattern to the studs on the bricks and relating this to skip counting. Students check and relate the increase in the numbers to the concrete materials used.

Learning experience 3

- Model a decreasing additive pattern using the same process as the previous learning experience. Teacher to supply larger bricks (with more studs) for this activity. A student selects a random brick (e.g. 16 studs) and rolls an even number on a dice for the decrease-by amount (e.g. four). As a class, model the activity of decreasing an additive pattern.



Discuss how the pattern decreases (e.g. by four each time), counting the studs on the bricks to check and relate to the decrease in the numbers. Relate to skip counting backwards.

- In small groups, students create an increasing or decreasing pattern using the same process as modelled by the teacher.
- Explore the fact that a pattern has a rule that determines a certain sequence, which may be formed of different elements (e.g. colours, shapes, sounds, symbols and numbers).
- Provide students time to create patterns using concrete materials. Build this into daily or incidental activities

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>during the week to provide more practice. Incidental ways may include asking students to create a pattern when lining up for class (e.g. starting at one, increase by two each new line).</p>
<p>Measurement and geometry</p> <p>Two-dimensional space and structures</p> <p>Estimate, measure and order lengths in uniform units, including millimetres, centimetres and metres</p>	<p>Learning intention</p> <p>To connect the understanding of informal uniform units to formal uniform units to measure length using millimetres, centimetres and metres</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How can you use 1 cm blocks to measure the length of an object? • How can you make your measurements accurate when using 1 cm blocks? • Why are units smaller than cm cubes useful when measuring and ordering objects? • Why is it important to use the same unit when you compare length? <p>Support notes</p> <p>Students have used informal measurement units in Year 2.</p> <p>Discuss the measurement of objects that have a length between exact centimetre marks or are slightly longer than a metre, to ensure students see the need for smaller units of measurement to accurately measure items.</p>	<p>Learning experience 4</p> <ul style="list-style-type: none"> • Provide an object for students to measure the length of (e.g. book) using connecting blocks that are 1 cm³. Encourage students to form a row that is as long as the book. Discuss how long the book is and ask, 'Is that the exact length of the book? Do the blocks exactly match the length? Is there a different way to measure that is more exact?' • Students make their own rulers by placing a row of connecting blocks onto a paper strip and adding marks for each block (cm). Discuss and model how to use this ruler correctly to measure the length of objects. • Students estimate then measure the length of the same five classroom objects using their created rulers. In a table, students record the length of the five objects they measured and order them from shortest to longest. As a class, students compare how they ordered objects, using length to justify their decisions. Ask students if everyone got the same order and discuss discrepancies. Ask students if there is a more accurate way to measure, considering what object already exists that would help them measure more accurately.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Suggested assessment point</p> <p>At the conclusion of Learning experience 5, provide students with a set of objects to estimate and measure the length of as a formative assessment.</p>	<p>Learning experience 5</p> <ul style="list-style-type: none">• Discuss how metric units are the same around the world to ensure people can easily communicate measurements.• Students place their actual rulers next to a row of connecting blocks and measure (10 connecting blocks should equal 10 cm). Assist students to ensure their alignment is accurate and that they start on the zero mark.• Use a student's actual ruler and a teacher's metre ruler to compare the different markings and discuss what they are for. Draw attention to the metre mark and if there are millimetre marks, before counting the metre, centimetre and/or millimetre marks on the metre ruler. Look at the relationship between the units. Create a class chart titled 'Metric measures' that outlines that 1 cm is equal to 10 mm and 100 cm is equal to 1 m. Show students that 100 lots of 10 mm is equal to 1 m, so 1000 mm is equal to 1 m.• Students use actual rulers to measure the length of objects in the classroom. Students choose three objects to measure: one in millimetres, one in centimetres and one in metres. Record the object and its length using the abbreviations 'mm', 'cm' or 'm'. Order the measurements from shortest to longest. Focus on the usefulness of these measurement marks and how they make measuring more accurate.

Term 1 Week 6

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p> <p>Patterns and relationships Create and represent increasing or decreasing additive patterns from any starting point, using concrete materials and numbers, and describe rules to represent the pattern</p> <p>Modelling with number Identify and represent a range of real-world addition and subtraction situations with part-part-whole models, and multiplication and division situations with arrays. Write number sentences to reach a solution and interpret in context</p>	<p>Learning intention To explore, create and represent patterns and develop understanding of rules of additive patterns</p> <p>Support notes (repeated from Week 5) Provide students with opportunities to explore patterns in a variety of media, e.g. using colours, sounds, movement and numbers. Identify patterns in a variety of contexts, paying attention to what is the same and different.</p> <p>An increasing additive pattern increases by adding the same amount each time. A decreasing additive pattern decreases by subtracting the same amount each time. A repeating unit or core of a pattern is the smallest unit or sequence that repeats over and over again to form the entire pattern, or the amount that is repeatedly added to or removed from a starting part of a pattern.</p> <p>Suggested assessment point Learning experience 4 may be used to assess students' understanding of patterns and ability to describe the repeating core of the pattern. Collect and annotate students' descriptions of rules to assess understanding of rules from Learning experience 4.</p>	<p>Learning experience 3 (continues on from Week 5 Learning experience 3)</p> <ul style="list-style-type: none"> Continue the previous learning experience on patterns by displaying the patterns that were made, relating to the increase or decrease in the pattern to the repeat unit (core). Students find the next number in a provided pattern. Review that patterns have rules, relating to previously seen pattern of adding four each time. Students use diagrams to draw the pattern and extend it by adding three more repeat units, using the rule of + 4. Repeat this process for decreasing patterns, using the pattern created in previous learning experience on patterns. <p>Learning experience 4</p> <ul style="list-style-type: none"> Students use a range of concrete materials to represent written descriptions of patterns, such as 'starting at three and adding five more each time' or 'starting at 24 and taking three away each time'. Students then describe the patterns using numbers and a rule. Challenge students to describe a rule for a pattern that their partner must represent. Students check the rule by adding on three more repeating units to the pattern. Record their description of the rule, and provide times table charts or calculators to support students where skip counting is difficult.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<ul style="list-style-type: none"> Provide students with a rule and starting point for a pattern. Students represent the pattern using numbers alone. For example, if the teacher says, 'Starting at nine and adding five each time', students write 9, 14, 19, 24 ... Students predict the next three numbers in the pattern and describe how they did this. For example, 'I started at nine and added five to get 14, so I knew I needed to keep adding 5, because 14 plus five is 19 and so on.' Students might use a number line or hundreds chart for support. Provide students with the opportunity to relate pattern rules to solving a real-world problem, e.g. How many windows will be on a train if each carriage has six windows and there are five carriages? Students represent one carriage (starting number) and draw to add on the repeating unit (6) five times.
<p>Measurement and geometry</p> <p>Non-spatial measurement</p> <p>Tell the time in minutes using analogue and digital clocks. Describe duration in hours, minutes and seconds and identify the relationship between them</p>	<p>Learning intention</p> <p>To tell the time in minutes using analogue clocks and describe duration in hours, minutes and seconds</p> <p>Focus questions</p> <ul style="list-style-type: none"> Which number line on a clock face represents hours? Which number line on a clock face represents the minutes? Which set of numbers indicates the minutes? How does skip counting help you tell the time accurately? 	<p>Learning experience 1</p> <ul style="list-style-type: none"> Provide students with number lines illustrating 0–60 and 0–12 (these need to be the same length). Lay the number lines flat and demonstrate to students that made into a loop, the number lines look like the ones represented on a clock. Use the number line for minutes 0–60 to review where half and quarter of an hour would be (folding the number line in halves and quarters to demonstrate that these folds align with 15, 30 and 45 minutes). Use the number line to review counting minutes, skip counting by fives.




Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Support notes</p> <p>Start with a revision of telling time to the half- and quarter-hour and revisit the features of a clock.</p> <p>Focus on the number lines on a clock. Eliminate one of the hands at a time. Use the minute hand to focus on the 0–60 number line and the hour hand to focus on the 0–12 number line.</p> <p>Number lines can be created by the teacher or downloaded by searching online for ‘number lines for teaching time’.</p>	<p>Learning experience 2</p> <ul style="list-style-type: none">• Provide cut-out arrows to represent clock hands. Using the looped number line, students represent o’clock, half- and quarter-hour times, focusing on where both hands would be. For example, to show ‘a quarter past four’, students would place the minute hand on the three and the hour hand just past the four.• Eliminate the hour hand and engage students in manipulating the remaining hand to show a number of minutes, e.g. Can you point the minute hand to 18 minutes past the hour? Students use skip counting by fives to get near the number, then count by ones to reach the number, e.g. counting 5, 10, 15, 16, 17, 18 (or 5, 10, 15 and three more). Provide many opportunities for students to do this as a class, as pairs or independently.• Eliminate the minute hand and engage students with manipulating the remaining hand on the clock. This time, focus on what the hour hand indicates when it is between two numbers. Ask questions to guide students’ understanding, e.g. If the hour hand is right on top of the two, what time is it (even though we can’t see the minute hand)?• Lead a discussion that explains that the hour hand keeps moving towards the next hour as the minutes pass.• Once students understand that the hands move together (albeit at a different pace), they look at clocks to identify the hour and then the minutes. They do so



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>by initially counting in fives and then adding the remaining minutes. For example, for a clock set at 1.37 pm, they identify the hour (1 pm), then count in fives until 35 and add two to calculate the minutes (37 minutes).</p>

Term 1 Week 7

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number</p> <p>Represent and explain the relationship between addition and subtraction using part-part-whole and number sentences</p> <p>Recognise, represent and describe unit fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$. Combine unit fractions with the same denominator to create a complete whole</p>	<p>Learning intention</p> <p>To represent unit fractions using a range of materials</p> <p>Focus questions</p> <ul style="list-style-type: none"> • When are fractions helpful? • What is the relationship between a fraction of a shape and of a collection? • Is there more than one way to find one-third of a piece of paper? • How can you describe three-halves using fractions? • Can you explain how one-quarter of a rectangle, paper plate and collection of counters are the same and different? <p>Support notes</p> <p>Plan incidental learning experiences, such as when students are lining up in two lines point out that the whole class is represented by two halves (assuming the lines are equal), demonstrating that fractions are related to a whole and provide opportunities for students to represent fractions in different wholes and different media. Guide students to understand that fractions represent a part of something, which may be a shape or collection.</p> <p>If students are unable to represent thirds in Learning experience 1, revisit halves and quarters until students can demonstrate understanding.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Model representing known fractions using different wholes. Provide students with several manipulatives and ask them to represent the same fraction using each of them. For example, students represent $\frac{1}{3}$ using: <ul style="list-style-type: none"> ▪ a paper plate ▪ playdough ▪ counters (a collection) ▪ an A4 piece of paper ▪ a long strip of paper ▪ water (using three containers). <p>Students share their work demonstrating that $\frac{1}{3}$ of a paper plate looks different to $\frac{1}{3}$ of an A4 piece of paper, but they are both $\frac{1}{3}$. Model to students how to describe fractions using words, numerical representations or as a division number sentence. Ensure students understand that one-third is one equal part when the whole or collection is divided into three equal parts.</p> <p>Learning experience 2</p> <ul style="list-style-type: none"> • Provide students with A4 paper and ask them to find as many different ways as possible to make $\frac{1}{3}$. Students fold, cut and overlay one-third onto another to check that they are exactly the same size. Students demonstrate that they can make halves, quarters or thirds of an A4 piece of paper or a paper plate and explain why their fraction is an equal share of the

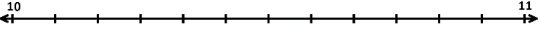


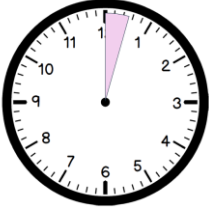
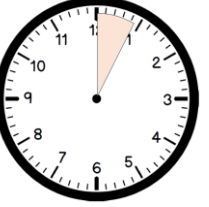
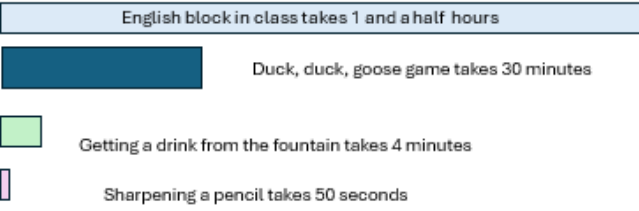
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Suggested assessment point Use observations from the practical activities of representing unit fractions as a formative assessment opportunity.</p>	<p>whole. Focus on overlaying fractional pieces of the whole to ensure they have equal parts.</p> <p>Learning experience 3</p> <ul style="list-style-type: none"> • Provide students with paper plates and prompt them to cut them in halves and quarters. Students demonstrate one-half, two-halves, one-quarter, two-quarters, three-quarters and four-quarters. Continue until they have made a whole and repeat for quarters. Students should record each step of combining their fractions by: <ul style="list-style-type: none"> ▪ drawing and labelling the fraction parts ▪ representing using fraction tiles. • Repeat the activity above with $\frac{1}{3}$, $\frac{1}{5}$ and $\frac{1}{10}$ using coloured rectangular paper strips. When students combine their fractions, the colours help them identify wholes, e.g. two green thirds plus one blue third is a whole. • Provide students with frames (e.g. ice cube trays, egg cartons, grid paper) and task them with identifying a $\frac{1}{4}$ of that whole. Ask students to identify how many units are in that fraction. Ask students to represent the same fraction in different shapes or formats as per the example below.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<div data-bbox="1406 300 2011 545"> <p>$\frac{1}{4} = 16$ units $\frac{1}{4} = 16$ units $\frac{1}{4} = 16$ units</p> </div> <p data-bbox="1429 577 2011 721">The intention is for students to understand that $\frac{1}{4}$ of a whole represents the same fraction. In this example, it is always 16 units, even if it is demonstrated in different ways.</p> <p data-bbox="1384 737 1630 769">Learning experience 4</p> <ul data-bbox="1384 778 2033 1024" style="list-style-type: none"> • Provide students with rectangular grid paper consisting of 60×1 cm squares. Students repeat the above activity for halves, thirds, quarters, fifths and tenths, using one page per fraction representation. • As a class or in groups, students create a fraction wall from rectangles, circles and a collection of 60 counters. See diagrams below for examples. <div data-bbox="1451 1040 1953 1184"> <p>whole half third quarter fifth tenth</p> </div> <div data-bbox="1393 1216 2042 1401"> </div>

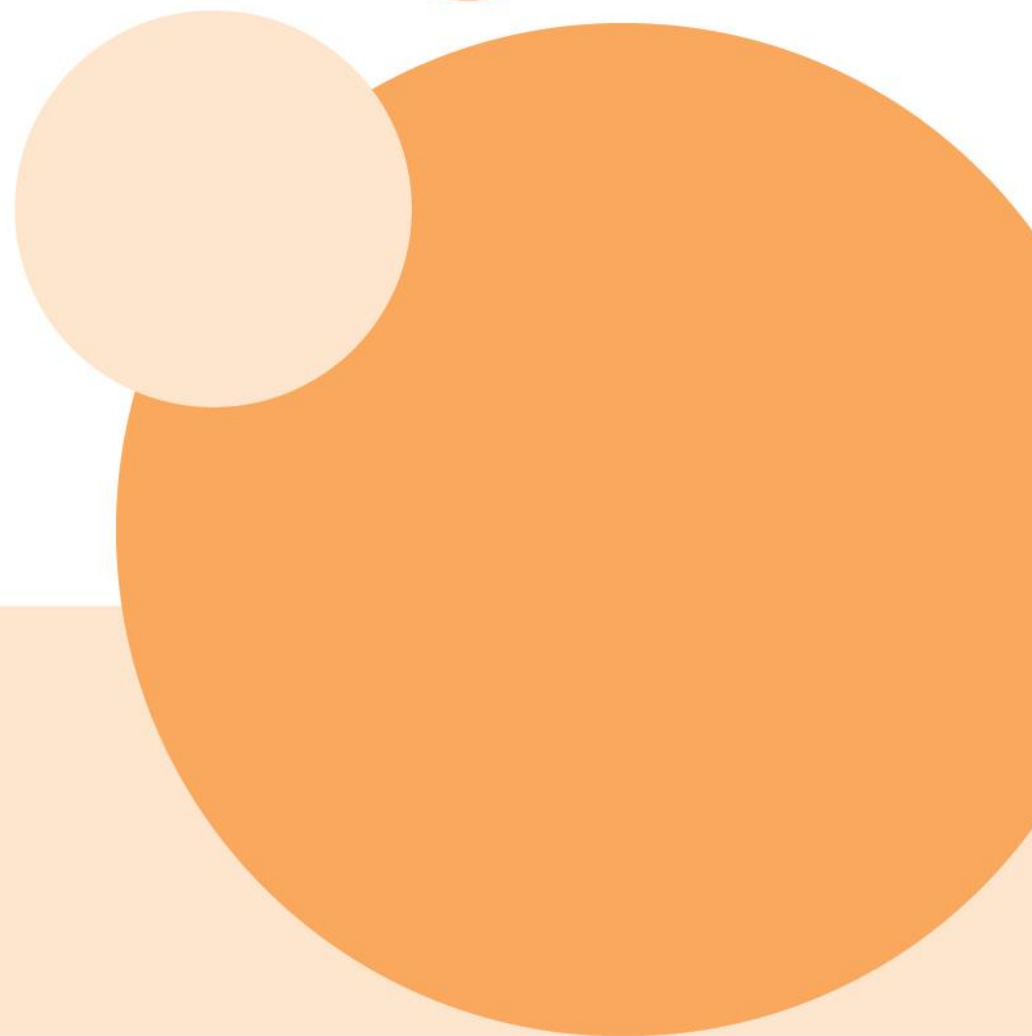
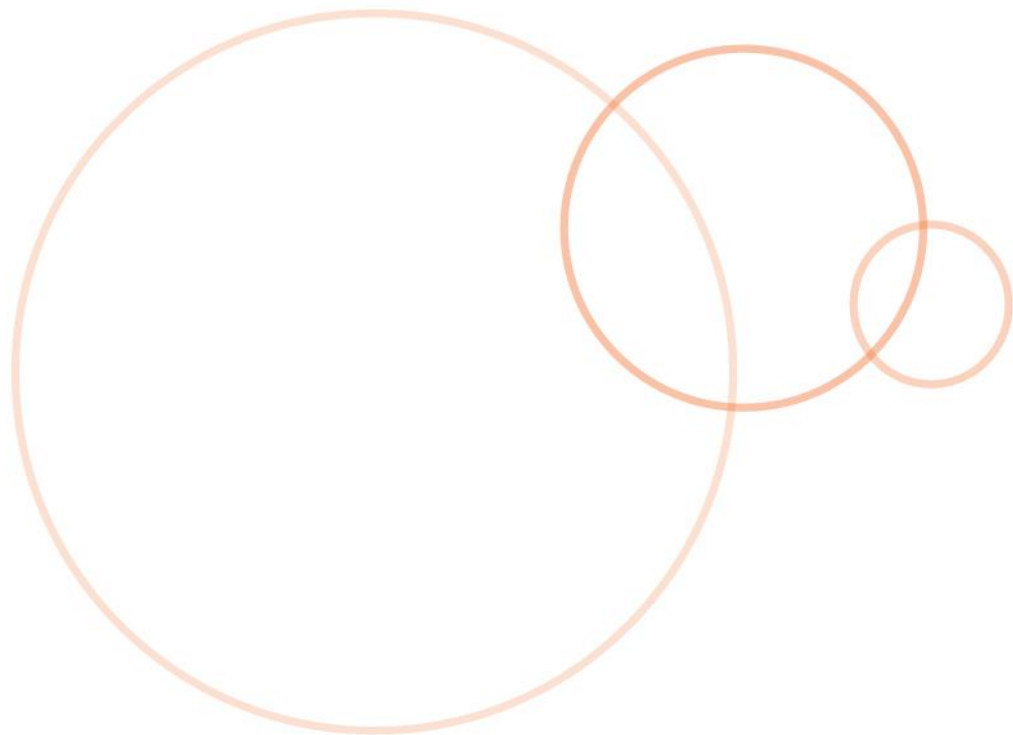
Term 1 Week 8

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Measurement and geometry</p> <p>Non-spatial measurement Tell the time in minutes using analogue and digital clocks. Describe the duration in hours, minutes and seconds and identify the relationship between them</p>	<p>Learning intentions To explore events that last hours, minutes and seconds</p> <p>To display events that last hours and minutes on a number line</p> <p>Focus questions</p> <ul style="list-style-type: none"> • Why do we need to know the duration of events? • How does a number line help to calculate duration? • If you were to measure how long something took that was more than one day, would you use minutes or hours? <p>Support notes This learning sequence can be linked to the Understanding number sub-strand.</p> <p>Provide access to stopwatches or a digital equivalent. Model to students how to use stopwatches correctly.</p> <p>Discuss with students what would happen when more than 60 seconds/minutes are counted. Relate measures of time to each other and relate back to the number line that is a clock.</p> <p>Sample number line for Learning experience 2:</p> 	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Ask students what things they have done in the day since they woke up. Write each event on a sticky note. As a class, sort the events under the headings ‘takes more than an hour’, ‘takes less than an hour’ and ‘takes less than a minute’. • Facilitate a class discussion about the events and reasons for placing them under the headings. Discuss if any of the events should be moved under a different heading. • Ask students to suggest activities that may take minutes or seconds that could be checked in the classroom. Make a list of the ideas, such as putting on shoes and socks, having a sip of water or sharpening a pencil. • Students work with a partner to time each other doing five of the items on the list. They then record these events and their duration on a sticky note to add under the headings. • Order the events and compare the differences in times for the same event, e.g. one pair may have taken two minutes to get a drink while another took one minute. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Create and display a number line showing an hour duration from 10 am to 11 am with five-minute intervals marked.

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Sample clock faces for Learning experience 3:</p>  <p>Taking my shoes and socks off</p>  <p>Drawing a monster</p> <p>For Learning experience 4, prepare a set of cards that depict events of different time durations, including events that 'would last seconds', 'would last minutes' or 'would last hours'.</p> <p>Suggested assessment point</p> <p>Complete an exit ticket activity where students record three things on a sticky note:</p> <ul style="list-style-type: none"> one event that takes less than a minute one event that takes more than a minute but less than an hour one event that takes more than an hour. 	<ul style="list-style-type: none"> As a class, make a list of events that happened in school the previous day. Discuss the duration of each event (some may need to be an approximation) and record this for the students to use in the following activity. <p>Allocate each event to a pair of students. The pairs use coloured tape to represent the duration of the event. They use the number line to help with measuring the duration accurately.</p> <p>As a class, compare the durations by placing the events under each other. Teacher demonstrates the relationship between seconds, minutes and hours using the events. For example, two 30-minute duck, duck, goose games take one hour.</p>  <p>Learning experience 3</p> <ul style="list-style-type: none"> Using the previous activity, focus on the events that take seconds and minutes, identifying that seconds are smaller than minutes and that minutes are made up of lots of 60 seconds. Using an analogue clock, students count how many seconds there are in events that take less than five minutes. Structure this by giving groups of students



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>three to five tasks to complete and a stopwatch to time those events.</p> <p>Students record the time and shade in how many minutes the event took on a number line representing minutes. For each event, students describe how many minutes and/or seconds the event took. For example, 'taking my shoes and socks off' took two minutes or 'drawing a monster' took four minutes. Demonstrate what this would look like on an enlarged clock face.</p> <p>Seat the class in a circle and ask pairs of students to compare events with each other by discussing events that take more or less time than others.</p> <p>Learning experience 4</p> <ul style="list-style-type: none">• Distribute pre-made events cards (see Support notes) to students, who sort and describe the events, such as 'would last seconds', 'would last minutes' or 'would last hours'. Discuss as a class to determine a clear understanding of the time associated with events.



Term 2

Weeks 1–8

Term 2 Overview: Learning intentions

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Learning intention	NA UN To develop understanding of partitioning and place value to apply to expanded notation	MG 2DSS To recognise that translating and reflecting 2D shapes does not alter the shape's size or features	NA UN MN To extend understanding of the relationship between multiplication and division using arrays	MG 3DSS To apply knowledge of 3D objects and their features, such as faces, edges and vertices, to create a real-life object	NA UN FM MN To use word problems to extend understanding of the relationship between multiplication and division, multiplication facts and related division facts	PS P To use the language of probability to identify familiar events To conduct chance experiments to recognise variation in results	NA UN MN To use number lines to read, write and order numbers and to solve addition and subtraction situations	MG 3DSS To measure and order capacity of containers using millilitres
Learning experiences per week	4	4	5	4	4	4	4	2

NA Number and algebra

UN Understanding number

CN Calculating with number

2DSS Two-dimensional space and structures

P Probability

MG Measurement and geometry

UEI Understanding equalities and inequalities

FM Financial mathematics

3DSS Three-dimensional space and structures

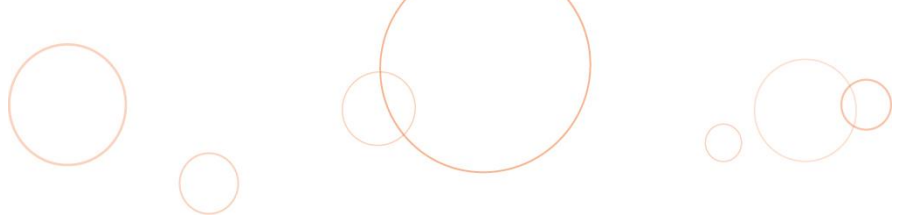
S Statistics

PS Probability and statistics

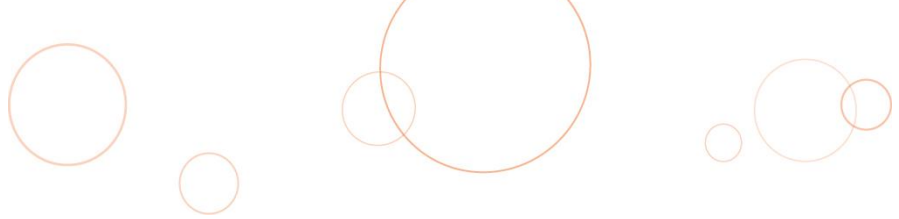
PR Patterns and relationships

MN Modelling with number

NSM Non-spatial measurement



Western Australian Curriculum content	Term 2: Daily practice activities
<p>Number and algebra</p> <p>Understanding number Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Represent and partition numbers up to four digits, including groups of 10 (tens), 10 groups of 10 (hundreds) and beyond, using concrete materials and number sentences. Recognise that the value of a digit is determined by its place in a number</p> <p>Recall addition and subtraction facts to 20</p> <p>Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p> <p>Explore and represent the relationship between multiplication and division using diagrams, arrays and number sentences</p> <p>Financial mathematics Investigate financial transactions, recognising equivalent values and change</p> <p>Measurement and geometry</p> <p>Two-dimensional space and structures Explore one-step slides (translations) and flips (reflections) of familiar two-dimensional shapes, make connections to line symmetry and describe the movement of the shape</p>	<p>Weeks 1–4</p> <p>Provide daily problems that allow for exploration and practice of flexible mental calculation strategies. Ensure students have frequent opportunities to:</p> <ul style="list-style-type: none"> • partition using manipulatives and number sentences • recall addition and subtraction facts to 20 • use array models when solving multiplication and division problems • solve unknown start, change or result problems. <p>As an extension activity, provide students with word problems involving the multiplication of time (duration).</p> <p>Provide students with ‘play’ money to investigate financial transactions, including role-playing spending, changing amounts of money for equivalent amounts and receiving change.</p> <p>Ask students to describe the movement of shapes as they use tangrams to create different animal silhouettes.</p> <p>Provide examples of shape movement, asking students to name the transformation – has it been flipped or slid?</p>



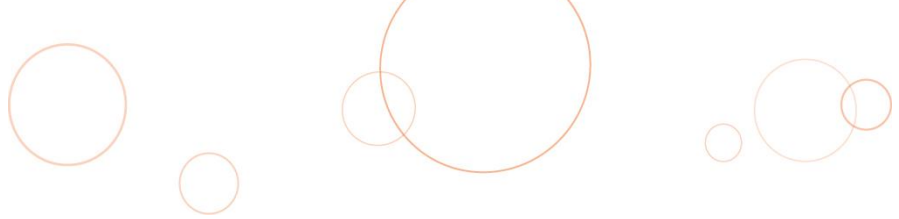
Western Australian Curriculum content	Term 2: Daily practice activities
<p>Number and algebra</p> <p>Understanding number Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p> <p>Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences</p> <p>Measurement and geometry</p> <p>Non-spatial measurement Tell the time in minutes using analogue and digital clocks. Describe duration in hours, minutes and seconds and identify the relationship between them</p>	<p>Weeks 5–8</p> <p>Provide daily practice of problems relating to addition and subtraction. Ensure students have frequent opportunities to use number lines to practise skip counting forwards and backwards by 10s and 100s.</p> <p>Provide authentic multiplication and division problems involving facts of 2, 3, 4, 5 and 10 that can be solved using diagrams, arrays or number sentences, with or without think boards.</p> <p>Incidentally ask students to tell the time to the quarter-hour, and, with support, to the nearest minute, on analogue and digital clocks.</p>

Term 2 Week 1

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number</p> <p>Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Represent and partition numbers up to four digits, including groups of 10 (tens), 10 groups of 10 (hundreds) and beyond, using concrete materials and number sentences. Recognise that the value of a digit is determined by its place in a number</p> <p>Recall addition and subtraction facts to 20</p>	<p>Learning intention</p> <p>To develop understanding of partitioning and place value to apply to expanded notation</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How does bundling help you count large quantities easier? • If the bundles are mixed up, does this change the total? • How are bundles and written numbers similar in expanded notation? <p>Support notes</p> <p>Using arrow cards to explore expanded notation can assist students in recognising how place value works when partitioning numbers. The arrow points are used to help align the cards when the smaller values are stacked on top of the higher values.</p> <p>An example of using arrow cards for expanded notation can be found at:</p> <ul style="list-style-type: none"> • NSW Education Standards Authority – <i>Mathematics K–10 Syllabus (2022)</i> https://curriculum.nsw.edu.au/learning-areas/mathematics/mathematics-k-10-2022/content/stage-2/fa1dbb9271?show=advice%2Cexample&ta_scroll=no. 	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Provide students with a graphic, such as a place value house or a labelled table, to use throughout this sequence of learning experiences. • Review place value by providing students with opportunities to count large quantities. Provide over 1000 popsticks by bundling with elastic bands and labelling the collection. Relate to the place value houses from Term 1. Using bundles, students make given amounts up to three digits, practising to consolidate the foundations of place value and the association between numbers and quantities. Increase to given amounts into the thousands to extend students’ understanding of the number system to four digits. • Invert the exercise by showing students a combination of bundles and asking them to write the number. For example, if the teacher displays five bundles of 100, three bundles of 10 and 2 ones, students should write 532. Students record the number, and say the number aloud to a peer or the teacher. • Allow time for students to practise both of the above activities, providing opportunities for students to see numbers represented as objects in place value bundles and for them to see the bundles represented by numbers.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Suggested assessment point</p> <p>Provide small groups of students with large quantities of objects that can be bundled (such as popsticks).</p> <p>Ask students to bundle them in 10s and 100s and leave some loose to represent ones.</p> <p>Ask students to:</p> <ul style="list-style-type: none">• pick up small quantities (e.g. 1–9) of the objects as quickly as they can• pick up 10 and observe if they pick up a bundle or count 10 loose ones• repeat with other decades (e.g. 20, 50)• pick up 15• pick up 100. <p>Throughout each stage, observe if and how students use the bundles to increase efficiency.</p>	<p>Learning experience 2</p> <ul style="list-style-type: none">• Create numbered bags with various amounts of bundled objects (not bundled by place value) for students to count. Label the bags and ask students to record in their notebooks the bag number and the amount of bundled objects held within. Students pass the bag to the next group. When all the bags have been counted, discuss the amount in each bag, referring to any differences in amounts recorded. Discuss strategies for counting the amounts, consolidating ways to count by standard partitioning. <p>Learning experience 3</p> <ul style="list-style-type: none">• Display bundles out of place value order to the class, e.g. ones, hundreds, then tens. Encourage students to sort them in their minds (without physically rearranging) and write the corresponding number. Explore with numbers up to four digits. After completing five of these, model expanded notation using arrow cards (see Support notes), using the bundles as a visual support. Students observe the modelled bundled amount and represent using standard expanded notation. Provide opportunities for further practice paired with discussions on how the bundles relate to the written expanded notation.• To consolidate understanding, write a number up to four digits on the whiteboard, ensuring some digits are zeros. Using expanded notation (e.g. $500 + 0 + 3$), ask students to make the number using their bundles, then determine what the number is (e.g. 503). Write



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>new numbers in non-standard place value order (e.g. $500 + 3$) for students to represent in bundles, organising according to place value. Students use expanded notation to write, read and say the numbers.</p> <p>Learning experience 4</p> <ul style="list-style-type: none">• Provide expanded notation arrow cards with addition and subtraction problems. For example, $234 + 345$ using expanded notation is $200 + 30 + 4 + 300 + 40 + 5 = 500 + 70 + 9 = 579$, and $96 - 54$ using expanded notation is $90 + 6 - 50 + 4 = 40 + 2 = 42$.• Present situations where there are too many tens, so some are transferred to hundreds. For example, $123 + 192 = 100 + 20 + 3 + 100 + 90 + 2 = 200 + 110 + 5 = 315$.



Term 2 Week 2

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Measurement and geometry</p> <p>Two-dimensional space and structures Explore one-step slides (translations) and flips (reflections) of familiar two-dimensional shapes, make connections to line symmetry and describe the movement of the shape</p>	<p>Learning intention To recognise that translating and reflecting 2D shapes does not alter the shape’s size or features</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How can you describe a shape’s movement? • Can a pattern be made using one shape by sliding or flipping it? • Which shapes look different when flipped? • Can you predict what a shape will look like when slid or flipped? <p>Support notes By manipulating and moving physical shapes, students develop the understanding that translating and reflecting 2D shapes does not alter the shape’s size or features.</p> <p>Suggested assessment point Observations during the learning experiences and responses to the Focus questions can be used to assess students’ ability to describe the patterns created, use and identify features of shapes, and use vocabulary associated with geometrical movement.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Introduce the vocabulary of ‘slide/translate’ and ‘flip/reflect’, and create a visual display to complement the following learning experience. Provide concrete representations of 2D shapes to explore manipulating them to create patterns or pictures. Students describe how they’ve moved the shapes to create a pattern or picture. Review student knowledge of tessellating patterns and discuss their features. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Students observe patterns in the environment and locate a pattern that has been created using slides or flips. • Students select a shape and create a pattern using either a one-step translation or reflection. Once students have created a pattern using concrete materials, they trace the pattern onto paper. Discuss the features of the pattern. • Students create and trace another pattern using the same movement with a different 2D shape. They discuss and label the similarities and differences in the patterns and relate these to the features of the shape. Students predict what the next shape in the pattern will look like by placing the shape to represent their prediction.

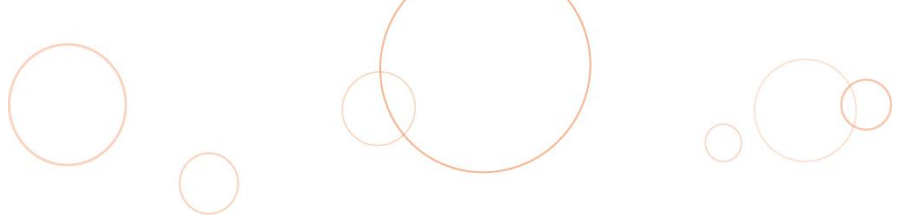


Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>Learning experience 3</p> <ul style="list-style-type: none">• Students create a pattern using a movement different from the one used in the previous learning experience. They create patterns using the same 2D shape from the previous learning experience’s final activity, repeating the process of create, trace and predict. Students compare how their patterns look similar and different based on how they’ve moved the shape each time. Discuss with students which patterns have features of tessellating patterns. <p>Learning experience 4</p> <ul style="list-style-type: none">• Students create a tessellating pattern using concrete materials. They then recreate the pattern on dot or grid paper using one-step translations or reflections, using colour to define their pattern and emphasise the translations or reflections. Students describe how they’ve created their pattern, using appropriate geometrical vocabulary. Conduct a class discussion about which features and movements of shapes make tessellating patterns, e.g. an equilateral triangle tessellates when you flip it but leaves gaps when slid.

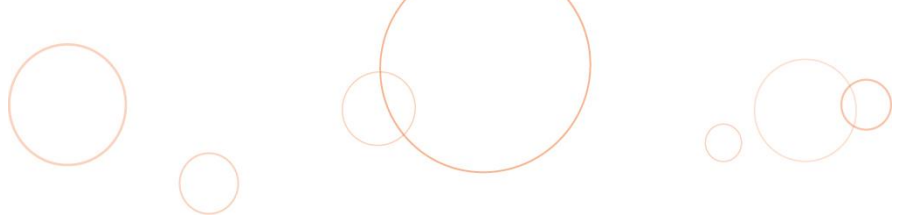
Term 2 Week 3

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Explore and represent the relationship between multiplication and division using diagrams, arrays and number sentences</p> <p>Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p> <p>Modelling with number Identify and represent a range of real-world addition and subtraction situations with part-part-whole models, and multiplication and division situations with arrays. Write number sentences to reach a solution and interpret in context</p>	<p>Learning intention To extend understanding of the relationship between multiplication and division using arrays</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How can addition be used to solve multiplication problems? • How would you describe an array? • Explain how the ‘double plus one’ strategy works (i.e. multiplying by three). • Explain how knowing the 10s times table helps solve problems involving multiplication by five. <p>Support notes In this learning sequence, students use arrays, equal groups and the part-part-whole model to represent multiplication. They extend their understanding of multiplication and division facts through using strategies for fluent mental calculation.</p> <p>See Appendix A: Word problem types</p> <p>Suggested assessment point Present the below diagnostic task at the beginning of this week, then again at the end of these learning experiences, as a possible summative measure of growth.</p> <p>Department of Education Western Australia – <i>First steps in Mathematics: Number diagnostic tasks – student</i></p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Present students with the diagnostic task <i>How many?</i> to assess strategies for solving multiplicative situations. • Review the concept of multiplication by talking about ‘groups of’ and using arrays for calculation. Provide students with frames that can be used for arrays, such as grid paper, building brick boards or large muffin trays. • Present multiplication stories to contextualise the mathematical operation. For example, to solve the problem ‘Five children went to a party. Each child brought three toys. How many toys were at the party?’, students will: <ul style="list-style-type: none"> ▪ make groups using counters to represent the toys brought by each child ▪ place those counters in arrays ▪ calculate the result ▪ write a number sentence. • Present multiplication stories, using manipulatives to calculate results. Include different problem types, such as repeated addition of equal groups, combinations and arrays. Relate to division by demonstrating how repeated subtraction of equal groups can be achieved, using arrays as support. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Introduce multiplication by threes by demonstrating that it represents three groups of a certain number. Use

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences																	
	<p><i>worksheets</i>, pp. 92–6, <i>How many?</i> https://myresources.education.wa.edu.au/docs/default-source/resources/first-steps-mathematics/number---diagnostic.pdf?sfvrsn=6209b0ed_1</p> <p>Alternatively, use the poster created at the end of the learning sequence as a formative assessment. Students' presentations should demonstrate:</p> <ul style="list-style-type: none"> • understanding of a situation and how to solve it using an array or bar model • how they represent the situation using number and word sentences, and how they interpret the solution in context. <p>See below for an example of a table for Learning experience 4, which uses the part-part-whole model to demonstrate that 4×10 is the same as 4×5 twice.</p> <table border="1" data-bbox="752 943 1189 1066"> <tr> <td colspan="2" style="text-align: center;">$4 \times 10 = 40$</td> </tr> <tr> <td style="text-align: center;">$4 \times 5 = 20$</td> <td style="text-align: center;">$4 \times 5 = 20$</td> </tr> </table>	$4 \times 10 = 40$		$4 \times 5 = 20$	$4 \times 5 = 20$	<p>manipulatives and grid paper to show that three groups is the same as two groups plus one group – in other words, double, plus one group. Represent as an array first to connect with previous learning, before introducing bar models.</p> <table border="1" data-bbox="1440 496 1803 611"> <tr> <td style="text-align: center;">Group of 3</td> <td style="text-align: center;">Group of 3</td> </tr> <tr> <td colspan="2" style="text-align: center;">Double is 6</td> </tr> </table> <p style="text-align: center;">$2 \times 3 = 6$</p> <table border="1" data-bbox="1440 726 2011 841"> <tr> <td style="text-align: center;">Group of 3</td> <td style="text-align: center;">Group of 3</td> <td style="text-align: center;">Group of 3</td> </tr> <tr> <td colspan="2" style="text-align: center;">Double is 6</td> <td style="text-align: center;">+ 3</td> </tr> <tr> <td colspan="3" style="text-align: center;">Total is 9</td> </tr> </table> <p style="text-align: center;">$3 \times 3 = 9$</p> <p>For example, these two bar models demonstrate that two groups of three, or double of three, is six; and that two groups of three plus one group of three is nine.</p> <ul style="list-style-type: none"> • Explicitly demonstrate that nine divided by three can be achieved by subtracting equal groups of three, with support of an array to remove groups and count backwards. <p>Learning experience 3</p> <ul style="list-style-type: none"> • Introduce multiplying by four using the same process as above. 	Group of 3	Group of 3	Double is 6		Group of 3	Group of 3	Group of 3	Double is 6		+ 3	Total is 9		
$4 \times 10 = 40$																			
$4 \times 5 = 20$	$4 \times 5 = 20$																		
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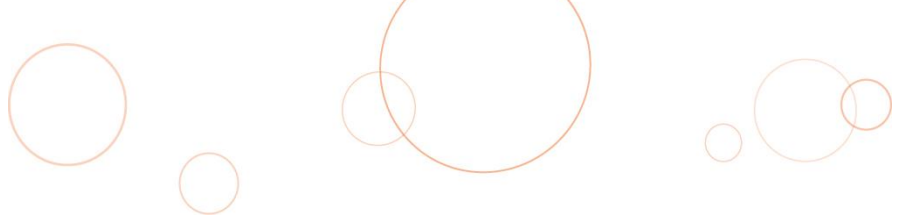
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<ul style="list-style-type: none"> When multiplying by four, teach students the strategies of double ($\times 2$) and double-double ($\times 4$), connecting multiplying by two with multiplying by four. Explicitly demonstrate that 12 divided by four can be achieved by subtracting equal groups of four, with support of an array to remove groups and count backwards. <p>Learning experience 4</p> <ul style="list-style-type: none"> Provide students with calculators to explore multiplication by 10, solving 1×10, 2×10 ... 10×10. Display answers and invite students to identify a pattern. Students calculate multiplication involving 10 using manipulatives and arrays. Provide simple number sentences or multiplication stories to build students' fluency through meaningful manipulation of materials and numbers. Introduce multiplication by five, demonstrating that it is the same as half of the result of that same number multiplied by 10. For example, $4 \times 5 = 4 \times 10$ divided by two (half). Explicitly demonstrate that 40 divided by 10 can be achieved by subtracting equal groups of 10, with support of an array to remove groups and count backwards. <p>Learning experience 5</p> <ul style="list-style-type: none"> Provide students with opportunities to solve multiplication and division problems with real-world


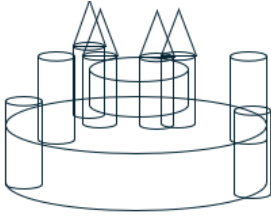


Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>situations. Provide a range of problems that involve multiplying and dividing by 3, 4, 5 and 10. Students use arrays and bar models to represent and solve problems.</p> <ul style="list-style-type: none">• Individually, students choose one real-world problem and create a poster to present to the class. The poster should include the problem and its representation as an array, bar model and number sentence that demonstrate how they solved and interpreted the problem in context. Provide students with concrete materials to represent the situation. Students present their poster to communicate their solution in context.

Term 2 Week 4

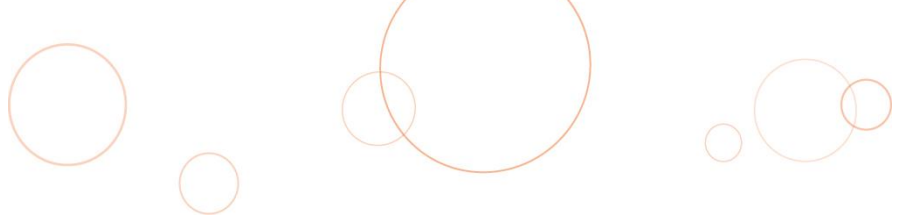
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Measurement and geometry</p> <p>Three-dimensional space and structures</p> <p>Visualise and make models of three-dimensional objects. Compare and classify objects according to the key features of faces, edges and vertices</p>	<p>Learning intention</p> <p>To apply knowledge of 3D objects and their features, such as faces, edges and vertices, to create a real-life object</p> <p>Focus questions</p> <ul style="list-style-type: none"> • What 3D objects can you see in the classroom? What 2D shapes can be seen on these objects? • What shapes can you not see but know are there? How can you be sure? • What are the vertices, faces and edges of an object? Point to each feature on a 3D object. <p>Support notes</p> <p>Through the process of exploring and making 3D objects, students build on their knowledge from Year 2 of manipulating and naming familiar 3D objects. They move to visualising and making models of objects, comparing and classifying according to their features.</p> <p>In this learning sequence, students will design and build a model of a cake to develop their understanding of how features of 3D objects affect how they can be used to build a model, e.g. a pyramid cannot be balanced on a sphere.</p> <p>Materials such as modelling clay, salt dough or card could be used.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Introduce the task of making a model of a ‘dream cake’. Ask students to think about their ideal cake. Brainstorm elements of a special cake and look at pictures of tiered cakes and cakes made from more than one 3D object. Create a chart of all the objects students observe in the cakes. Discuss the types of 3D objects observed in the cakes. • Develop understanding of 3D objects by exploring and manipulating 3D objects in the classroom. Discuss the features of 3D objects students notice, focusing on the shape of the faces, and the number of edges and vertices. Cover rectangular prisms, cylinders, spheres, cubes, square-based pyramids and cones. Students create a table that shows each 3D object and identifies its features. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Students design and draw their dream cake, using 3D objects to help visualise sides not visible. The first design of the cake should include the decorations. Students then redraw the cake, this time only drawing and labelling the 3D objects used to construct the cake. In a table, they list all faces, edges and vertices of the objects used. Students identify the faces, edges and/or vertices that are not seen in the drawing of the cake.



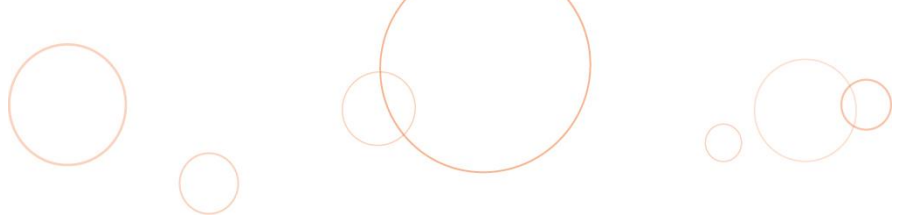
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Although the example is a birthday cake, any type of cake could be appropriate.</p> <p>Suggested assessment point</p> <p>The completed model and description from Learning experience 3 provides an opportunity to assess students' understanding of features of 3D objects.</p>	  <p>Learning experience 3</p> <ul style="list-style-type: none">Students use the labelled diagram to construct their dream cake, using modelling materials or card to create and combine each object for their cake. <p>Learning experience 4</p> <ul style="list-style-type: none">Provide time for students to decorate their cake. Students write a detailed description of their cake's components (to be displayed as a plaque next to their cake), including the correct names of the 3D objects used and the number of faces, edges and vertices of these objects. They should also include an explanation of why they chose those particular 3D objects, referencing the objects' features.

Term 2 Week 5

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Explore and represent the relationship between multiplication and division using diagrams, arrays and number sentences</p> <p>Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p> <p>Recognise, represent and describe unit fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$. Combine unit fractions with the same denominator to create a complete whole</p> <p>Financial mathematics Investigate financial transactions, recognising equivalent values and change</p> <p>Modelling with number Identify and represent a range of real-world addition and subtraction situations with part-whole models, and multiplication and division situations with arrays. Write number sentences to reach a solution and interpret in context</p>	<p>Learning intention To use word problems to extend understanding of the relationship between multiplication and division, multiplication facts and related division facts</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How does an array for division and multiplication look the same? How does it look different? • How is finding half the same as dividing by two? • What do the rows and columns in an array mean? • Does finding one fraction of a whole help us work out how much the whole is? How? <p>Support notes This learning sequence involves students moving into multiplicative thinking to solve multiplication and division rather than additive thinking.</p> <p>The focus is to understand and flexibly use the relationship between multiplication and division. Students will also explore fractions.</p> <p>Provide students access to manipulatives and materials for informal note-taking.</p> <p>Learning experience 2 may be linked to Financial mathematics by providing situations involving financial transactions, or Modelling with number by allowing students to interpret the solution in context.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Ask students to represent a multiplication story. For example, 'Five friends brought 10 toys each to the picnic. How many toys were at the picnic in total?' Students make five groups of 10 toys to demonstrate the relationship between multiplication and division. • Ask students to put all the toys together, then to 'give the toys back', one toy at a time to each friend. This will help students understand why five groups of 10 is equal to 10 groups of five. Draw attention to the fact that they are dividing the toys back in small groups, but the quantity is the same. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Students use think boards to explore and represent various multiplication and division situations, as modelled by the teacher in the previous learning experience. • Students solve problems using a think board, linking the scenario to a multiplication, division and fraction section on the think board. <p>Learning experience 3</p> <ul style="list-style-type: none"> • Demonstrate the relationship between multiplication and division by sharing a division story, such as <i>Spaghetti and Meatballs for All!</i>, by Marilyn Burns and Debbie Tilley, or <i>The Doorbell Rang</i> by Pat Hutchins. Use these storybooks to model, represent and explore



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Suggested assessment point</p> <p>Use the bingo game in Learning experience 4 to determine students' understanding of the relationships between multiplication and division by assessing how capable they are with matching facts.</p>	<p>the relationship between multiplication, division and fractions.</p> <ul style="list-style-type: none"> Model the use of manipulatives to demonstrate this relationship, e.g. by asking students to divide 32 people by eight tables. Model one of the scenarios from <i>Spaghetti and Meatballs for All!</i>, relating it to the think board activity from the previous learning experience. Students replicate this scenario on their own think boards. Present a range of scenarios from <i>Spaghetti and Meatballs for All!</i>. Students use their think boards to relate multiplication and division solutions (with no remainders), recalling multiplication and division facts, using arrays and relating to fractions. Students discuss, in pairs, groups or as a class, solutions and the relationship between multiplication, division and fractions of a collection. Explain to students that fractions are a way to demonstrate a part or a whole that has been divided. Provide each student or pair with a different-sized collection of counters or other manipulatives related to the story. For example, if Mrs Comfort needed 32 chairs for her guests, how many would one-quarter of the guests need? How many would make up the remainder of the whole? <p>Learning experience 4</p> <ul style="list-style-type: none"> Repeat the above activity using different collections and fractions. This may be done by giving each student



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>a card with a fraction on it ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$) and a card with a number on it that relates to a story. Students write a multiplication or division story to include their given fraction and number.</p> <ul style="list-style-type: none">• Organise a division bingo in which students' bingo cards show multiplication equations or visual representations, such as an array. Call out the division number sentence and students find a representation of that problem on their card.

Term 2 Week 6

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Probability and statistics</p> <p>Probability Describe familiar events using the language of chance. Identify and list possible outcomes of everyday chance events</p> <p>Identify the likelihood of outcomes for planned, equally likely, repeated chance experiments. Conduct the experiments and recognise variation in the results</p>	<p>Learning intentions</p> <p>To use the language of probability to identify familiar events</p> <p>To conduct chance experiments to recognise variation in results</p> <p>Focus questions</p> <ul style="list-style-type: none"> • What words can be used to describe the chance of something happening? • How do you know if something is more likely to happen? • How do you know when something is more likely to be drawn from a collection? • When rolling a dice, why might your results differ from another person's? How does variability affect the results of an experiment? <p>Support notes</p> <p>When discussing probability vocabulary, it is important to be accurate with the meaning of the words. Associating 'certain' with uncontrollable things, such as the sun setting, may be useful.</p> <p>Teachers should demonstrate that chance experiments are random.</p> <p>Department of Education Western Australia – <i>First steps in Mathematics: Chance and data diagnostic tasks – student worksheets</i>, pp. 22–35, <i>Chance cards</i></p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Facilitate a class brainstorm on the meaning of the words 'possible', 'impossible' and 'certain'. Place probability words on a line with 'impossible' (cannot happen) on the right end and 'certain' (will definitely happen) on the left end, with 'possible' in the middle. Ask students where 'likely' and 'unlikely' would go on the line. • Provide students with chance cards (see Support notes) and encourage them to sort these between 'likely' and 'unlikely' on the line. Ask students to organise these cards in the correct order (from most likely to most unlikely) and justify their answers. • Students brainstorm relevant and familiar events and write them on cards. Repeat the previous activity with the students' events, encouraging the language of chance when describing the likelihood of events. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Students create posters representing events that are possible, impossible, likely, unlikely and certain, including a range of events from least to most likely. <p>Learning experience 3</p> <ul style="list-style-type: none"> • Display a jar full of red beads. Ask students if it is possible to get a blue bead out of that jar. Replace half the red beads with blue beads. Repeat the question. Ask whether you are more likely to get a red or a blue bead. Continue changing the amounts, adding a third,

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>https://myresources.education.wa.edu.au/docs/default-source/resources/first-steps-mathematics/chance-and-data---diagnostic.pdf?sfvrsn=eb7e7785_1</p> <p>Suggested assessment point The poster activity from Learning experience 2, the jar activity from Learning experience 3 and classroom observation of language use can be used for formative assessment of students' ability to use the language of probability to describe familiar events.</p>	<p>fourth and fifth colour. Repeat questions and allow for discussion. At this stage, students are working on developing an accurate understanding of chance, so it is recommended to demonstrate that the quantities are equal or not equal as the activity progresses.</p> <ul style="list-style-type: none"> • Provide students with printed empty jar outlines (or real jars) and ask them to represent the contents of a jar from which you are likely to get a certain colour. Increase complexity by repeating the previous jar activity, encouraging students to fill the jar themselves to represent the probability of drawing a particular coloured bead. • Read chance word problems to students and ask them to draw an illustration to represent each situation, e.g. I am likely to get a grey sock from my drawer. <p>Learning experience 4</p> <ul style="list-style-type: none"> • Provide students with a cardboard spinner containing three coloured sections, e.g. blue covers $\frac{1}{2}$, yellow covers $\frac{1}{4}$ and green covers $\frac{1}{4}$. Ask questions about the spinner, such as: <ul style="list-style-type: none"> ▪ Which colour are you more likely to get? Why? ▪ Which colour are you less likely to get? Why? • Change the spinner to different colours and proportions, and repeat the questions. Students test the spinner and record results. • Introduce the term 'variability' and discuss its meaning in the context of the spinner task. Students consider the variability of results.

Term 2 Week 7

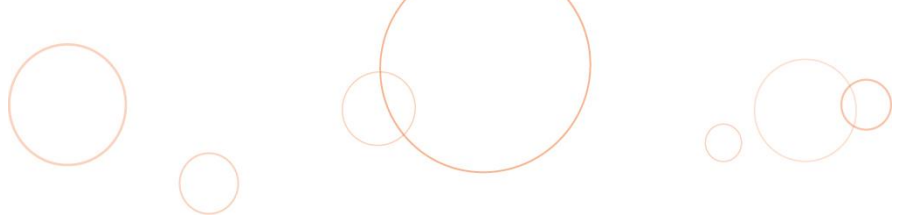
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Explore and use the greater than, less than and equality symbols to compare two whole numbers or statements involving addition and subtraction</p> <p>Modelling with numbers Identify and represent a range of real-world addition and subtraction situations with part-part-whole models, and multiplication and division situations with arrays. Write number sentences to reach a solution and interpret in context</p>	<p>Learning intention To use number lines to read, write and order numbers and to solve addition and subtraction situations</p> <p>Focus questions</p> <ul style="list-style-type: none"> • What clues in digits help you decide which number is larger or smaller? Which digit do you look at first to decide quickly? • How does position on the number line help you know the value of a digit compared to the same digit in another number? • Can you create a pattern of numbers? <p>Support notes Understanding of digit placement when comparing numbers on a number line develops understanding of the order of numbers, the 0–9 repeating pattern in numbers and the relative size of numbers.</p> <p>A resource exploring the relative sizes of numbers using number lines can be found at:</p> <ul style="list-style-type: none"> • Back-to-Front Maths – <i>Relative Size of Numbers through Number Lines</i> https://www.backtofrontmaths.com.au/relative-size-of-numbers-through-number-lines/. <p>Suggested assessment point Learning experience 1 can be used as a diagnostic assessment of students’ ability to use number lines to</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Create six-sided dice that have <, > and = written on two faces each. Provide students with these dice, a number line to 1000 and number cards with random numbers between 0 and 1000. Students choose a number, place it on the number line and then roll the die. Depending on the outcome, students write on a sticky note the number that is one less than, one greater than or equal to their number. Conduct this activity in groups or as a class and repeat until all students have taken turns rolling the die. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Students create a blank number line by folding an A3 page in half (landscape). They then place key numbers, such as 0, 100, 250, 500, 750, 999 and 1000, on the number line. • Discuss each number the students have added and its placement on the number line. Discuss with students the order and relative size of the numbers on the number line (when numbers are placed in order and when the spaces are relative to the numbers). • Students focus on ordering numbers on a number line by identifying beginning and end digits. Provide students with number lines with missing numbers to place given numbers, e.g. place 372 on a number line from 0–1000. They consider if the given number goes



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>add and subtract. This may be repeated at the end of the learning sequence as a summative assessment.</p>	<p>before or after the halfway mark of 500. Repeat for other numbers.</p> <p>Learning experience 3</p> <ul style="list-style-type: none">• Extend students' understanding by using a range of numbers (e.g. 7000–8500) for the number line. Using dice to roll numbers in this range, write these on sticky notes and place them in order on the number line. Ask students to discuss place value to justify the ordering of numbers, e.g. All the numbers with a 7 in the thousands place come before the numbers with an 8 in the thousands place.• Provide 10 number lines covering section from 0 to 9999 and randomly give to pairs of students. Students use dice to roll 10 different four-digit numbers. Write them on a whiteboard, then ask students to add any relevant randomly generated numbers to their number lines. As a class, place all the number lines together in order. Discuss the patterns that students see in the 0–9 sequence across all place values in the four-digit numbers. <p>Learning experience 4</p> <ul style="list-style-type: none">• Model the strategy of using number lines to solve addition and subtraction problems with numbers up to four digits.<ul style="list-style-type: none">▪ Addition: Students mark the starting number and 'jump' forwards the amount that is being added to land on the total.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<ul style="list-style-type: none">▪ Subtraction: Students mark the starting number and ‘jump’ backwards the amount that is being subtracted to land on the total.▪ Mixed operation: For example, John had 10 cards. He received another 15 from his friend but lost seven. How many cards did John end up with? Students perform the addition first, then the subtraction. Extend this to larger numbers.• Relate the strategy to a real-world problem of working out the distance between towns when travelled by train. For example, students will be travelling from Perth to Kalgoorlie for their school trip. Students calculate the distance between Perth and the midway stop at Merredin, then the distance from Merredin to Kalgoorlie. Round the distances to whole numbers. Provide students with a blank number line and a map showing Perth, Merredin and Kalgoorlie. Ask students to calculate the distance from Merredin to Kalgoorlie if the train stops at Merredin 283 km after leaving Perth and travels 590 km in total to Kalgoorlie. Students use the number line to solve.• Students apply their understanding of number lines, addition and subtraction strategies to solve word problems using a range of three- and four-digit numbers. Word problems should include addition, subtraction and mixed operation calculations.

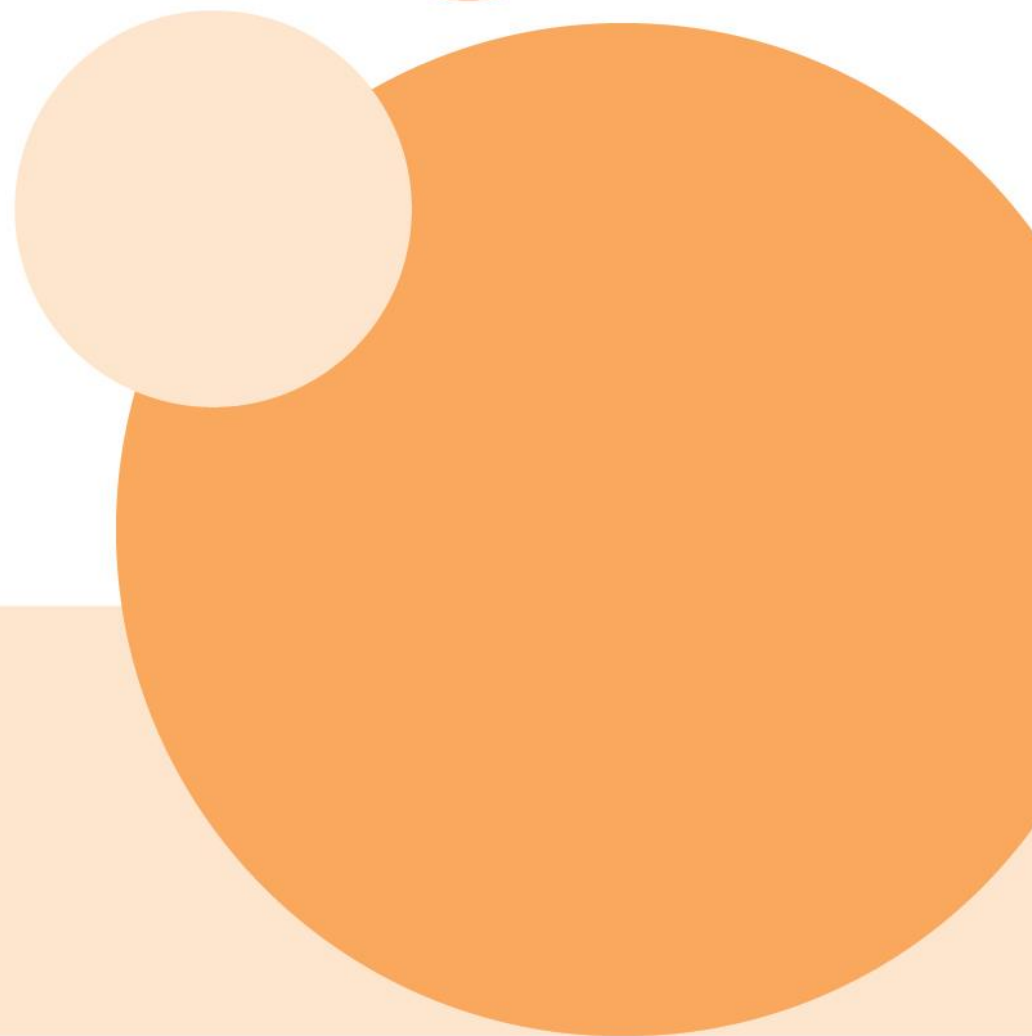
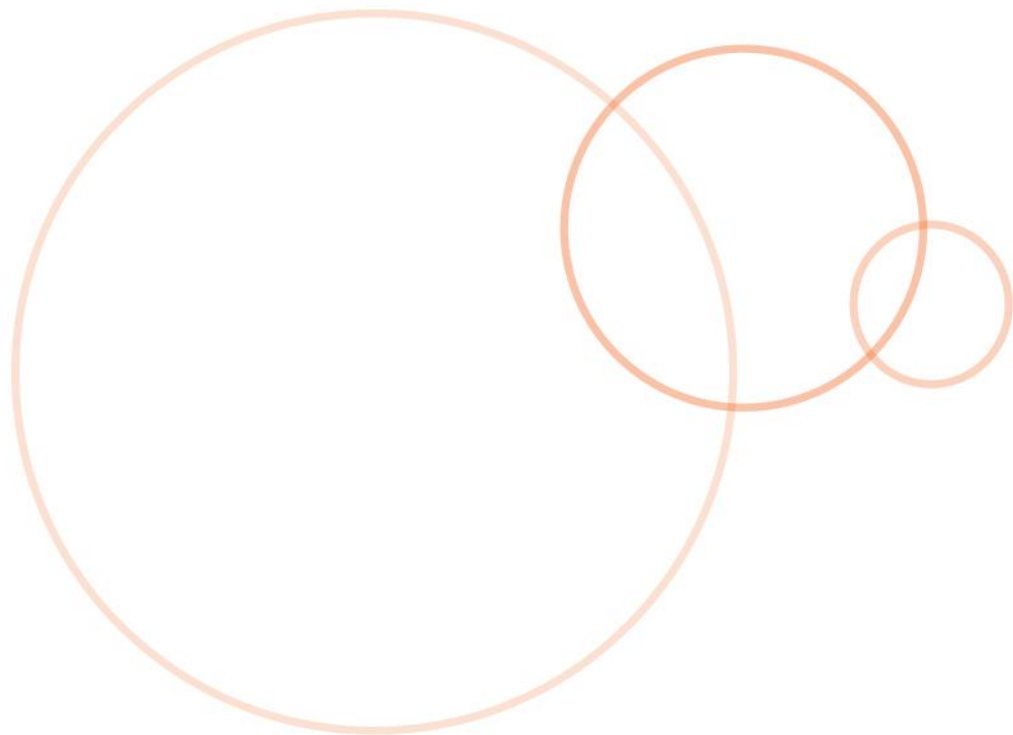


Term 2 Week 8

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Measurement and geometry</p> <p>Three-dimensional space and structures</p> <p>Measure and order capacity in uniform units, including millilitres. Estimate larger capacities using a litre container</p>	<p>Learning intention</p> <p>To measure and order capacity of containers using millilitres</p> <p>Focus questions</p> <ul style="list-style-type: none"> • Why are formal units of measurement important? • How is capacity measured? • When are measurements of capacity used? • When comparing two objects, why is it important to use the same unit of measurement for both? <p>Support notes</p> <p>It is important that students understand the concept of capacity before starting to measure it.</p> <p>Highlight the importance of using formal units of measurement that are consistent around the world so that globally, everyone has the same understanding of capacity.</p> <p>Suggested assessment point</p> <p>When measuring, observe and question students to assess their:</p> <ul style="list-style-type: none"> • ability to use metric units to create a measurement scale for capacity 	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Discuss what capacity is by displaying a large container in front of the class. Ask students to name all the ways in which they can measure that container, e.g. length of sides and mass. Pour water into the container and ask students, 'What am I trying to measure?' Clarify that capacity is a measure of how much a container can hold. • Ask students if a ruler can be used to measure capacity. Then ask if a scale (mass) can be used to measure capacity. If they say yes, propose filling the container with water and then sand, to observe the difference in weight even though the 'size' of the container has not changed. • Inform students that you want to find out how much the large container can hold. To do so, provide a number of small cups (same size) and encourage the class to brainstorm ways in which they can determine the capacity of the container using the cups. • Students use the cups to empty the container, keeping count of how many times they had to fill the cup to determine the large container fits 'x' amount of cups in it. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Guide students to make their own measuring cups. First, provide students with a clear plastic cup, a permanent marker as well as $\frac{1}{2}$ and $\frac{1}{4}$ cup measuring tools (e.g. ones used for baking). Ensure students have access to water. Students pour half a cup of water into the plastic cup, marking and labelling the water level inside the cup. Empty

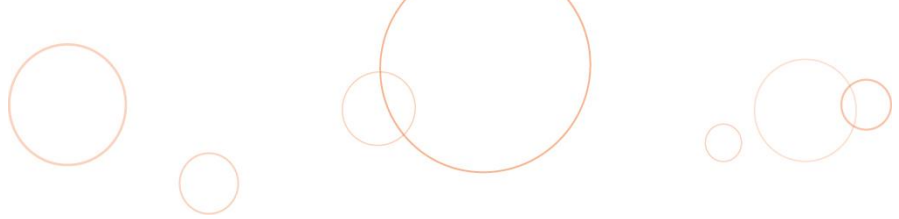


Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<ul style="list-style-type: none">ability to select and use the appropriate metric unit to measure capacity and solve problems.	<p>the cup, then repeat for $\frac{1}{4}$ cup and $\frac{3}{4}$ cup. Students may use their own self-made measuring cups for the next activities.</p> <ul style="list-style-type: none">Students pour water from their self-made measuring cups into a container with a calibrated scale in millilitres. Students mark on their self-made cups how many millilitres equate to $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$ cup measures.Students can then measure a container in millilitres and compare with other containers by capacity.



Term 3

Weeks 1–8



Term 3 Overview: Learning intentions

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Learning intention	NA UN To extend understanding of fractions and combine them to create a complete whole	MG 2DSS To explore and compare angle sizes in the environment	NA UN MN To apply strategies for addition and subtraction and use these strategies to explore the relationship between the operations	NA CN To develop the understanding of estimation to check the reasonableness of an answer	NA UEI FM MN To carry out financial transactions in the context of classroom shopping situations To make equivalent values using notes and coins and calculate change	NA UN UEI MG NSM To measure the mass of objects using grams and kilograms	MG 2DSS To identify lines of symmetry on given shapes To make connections between line symmetry and the effect of translating or reflecting a shape	PS S To interpret dot plots, understanding the features and meaning and using this information in a real-life context
Learning experiences per week	4	3	3	3	4	5	3	3
Learning intention			MG 2DSS To use uniform informal units to measure and compare the area of shapes					
Learning experiences per week			3					

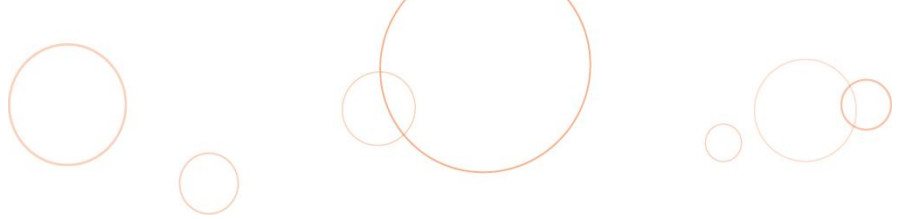
- NA** Number and algebra
- UN** Understanding number
- CN** Calculating with number
- 2DSS** Two-dimensional space and structures
- P** Probability

- MG** Measurement and geometry
- UEI** Understanding equalities and inequalities
- FM** Financial mathematics
- 3DSS** Three-dimensional space and structures
- S** Statistics

- PS** Probability and statistics
- PR** Patterns and relationships
- MN** Modelling with number
- NSM** Non-spatial measurement



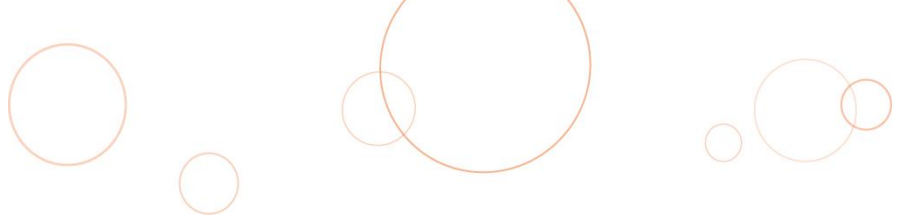
Western Australian Curriculum content	Term 3: Daily practice activities
<p>Number and algebra</p> <p>Understanding number Recall addition and subtraction facts to 20</p> <p>Explore and represent the relationship between multiplication and division using diagrams, arrays and number sentences</p> <p>Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p> <p>Measurement and geometry</p> <p>Non-spatial measurement Tell the time in minutes using analogue and digital clocks. Describe duration in hours, minutes and seconds and identify the relationship between them</p>	<p>Weeks 1–4</p> <p>Provide authentic word problems that are contextually relevant to students. Students use part-part-whole models or array models to represent problems that initially involve addition and subtraction, then later on, multiplication and division.</p> <p>Encourage students to incidentally tell the time during the day, focusing on telling the time in minutes on both analogue and digital clocks.</p>
<p>Number and algebra</p> <p>Understanding number Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p> <p>Recognise, represent and describe unit fractions $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}$ and $\frac{1}{10}$. Combine unit fractions with the same denominator to create a complete whole</p> <p>Explore and use the greater than, less than and equality symbols to compare two whole numbers or statements involving addition and subtraction</p>	<p>Weeks 5–8</p> <p>Provide authentic word problems that are contextually relevant to students. Students use models and known strategies to represent problems involving fractions and division.</p> <p>In familiar and unfamiliar situations, provide pairs of equations that students compare and order using equality and inequality symbols.</p> <p>Incidentally ask students to calculate the duration of events, such as break times, lessons or activities.</p> <p>Incidentally ask students to tell the time on analogue and digital clocks. Extend students' understanding by asking them to identify if the time is 'am' or 'pm' and explain why.</p>



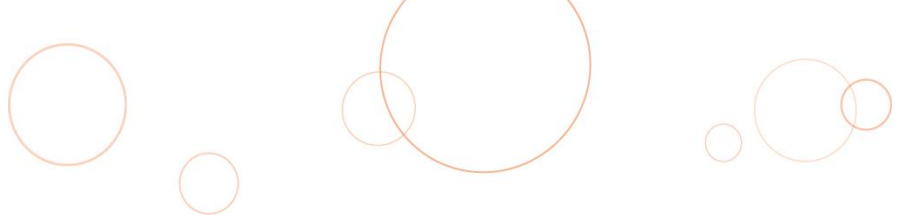
Western Australian Curriculum content	Term 3: Daily practice activities
<p>Measurement and geometry</p> <p>Non-spatial measurement</p> <p>Tell the time in minutes using analogue and digital clocks. Describe duration in hours, minutes and seconds and identify the relationship between them</p>	

Term 3 Week 1

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number</p> <p>Recognise, represent and describe unit fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$. Combine unit fractions with the same denominator to create a complete whole</p>	<p>Learning intention</p> <p>To extend understanding of fractions and combine them to create a complete whole</p> <p>Focus questions</p> <ul style="list-style-type: none"> • When is it important to share fairly? • How can you check that a whole or collection has been shared fairly? • What happens to the numerator and denominator when adding/combining fractions? <p>Support notes</p> <p>Review fractions-related content from Term 1, Week 7, returning to the fraction wall and the concepts of sharing fairly and combining fractions to create a whole.</p> <p>Ensure students know and have used the language of fractions, including ‘numerator’ and ‘denominator’.</p> <p>Suggested assessment point</p> <p>Summative assessment: Cooking a carrot cake (Appendix B)</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Connect the use of fractions to real-world situations, such as cutting a cake or pizza, sharing a collection of counters or grouping students for a game. • Students are given a small collection of paper rectangles (no smaller than an A4 page). They fold each rectangle to create different fractions: halves, thirds, quarters, fifths and tenths. • Students label each rectangle to identify the fractions of the whole, then shade the area represented by one fraction. • Students order their rectangles, showing the largest to smallest fraction. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Provide students with blank number lines and using shape fractions, model placing some of the fractions on a number line. Encourage students to use the numbers lines and their shapes from the previous learning experiences to explore where these represented fractions would be marked. Extend this activity to students marking two-thirds, three-quarters and so on. • As a class, discuss what numbers go at the beginning and end of the number line, facilitating the understanding that 0 and 1 will mark each end of the number line.

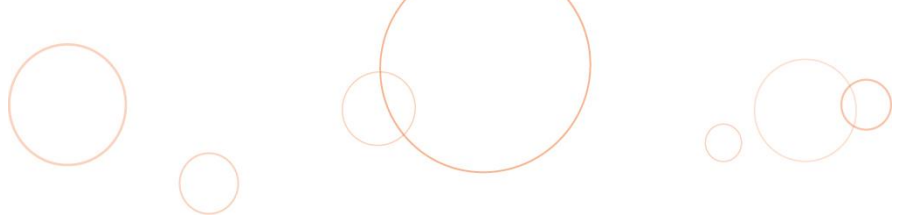


Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>Learning experience 3</p> <ul style="list-style-type: none">• Explicitly teach that when adding fractions with the same denominator, only the numerator changes. Demonstrate this by counting fractions of a whole out loud, using the language of fractions. For example, a three remains on the bottom of the fraction when combining one, two and three thirds to create a whole.• By colouring shapes or using fraction cards, students show that two halves make a whole, three thirds make a whole and so on. Students demonstrate the same concept using their number line from the previous learning experience, then as number sentences and diagrams. For example, $25 \div 5 = 5$, or $\frac{1}{5}$ of 25 lollies is five. <p>Learning experience 4</p> <ul style="list-style-type: none">• Summative assessment: Cooking a carrot cake (Appendix B)



Term 3 Week 2

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Measurement and geometry</p> <p>Two-dimensional space and structures</p> <p>Identify angles as measures of turn between two lines that intersect and directly compare angle sizes in everyday situations</p>	<p>Learning intention</p> <p>To explore and compare angle sizes in the environment</p> <p>Focus questions</p> <ul style="list-style-type: none"> • What is an 'angle'? • What do angles measure? • What fractions can you see represented on the clock when a right angle is showing? <p>Support notes</p> <p>It is important to demonstrate that angles are made with turns.</p> <p>Students are not expected to measure angles at this stage, but they are expected to directly compare different angles with a right angle.</p> <p>Suggested assessment point</p> <p>The name activity in Learning experience 3 can be used as a formative assessment by identifying if students can recognise an angle and directly compare angles to a right angle.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Draw students' attention to different angles around the classroom. Make angles with books, pencils, doors, clock hands etc. Demonstrate that angles can be changed and that they are determined by the amount of movement (turn). • Provide students with two straws connected by a pipe-cleaner (inside the straws, making a 'foldable' corner). Students make different angles using their straws. They compare with their peers and decide which angles are larger/smaller. • Ask students to go on an 'angle hunt' and spot different angles around the classroom, taking photos with a classroom device to use in the next learning experience. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Students reflect on the angles they identified in the previous learning experience. Using the photos taken, students identify if the angles have any commonalities. Introduce the concept of right angles and identify examples around the room. • Provide students with a copy of a table with the headings 'Less than right angle', 'Right angle' and 'Greater than right angle'. Using the photos from Learning experience 1 and additional photos of angles, students explore and order the angles on the table.



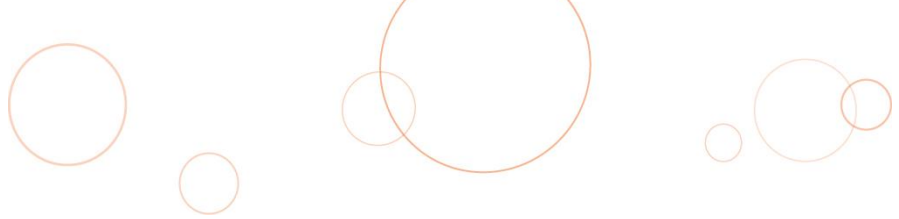
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>Learning experience 3</p> <ul style="list-style-type: none">• Provide students with enlarged copies of their names in block capitals, or guide them to create this themselves on enlarged 1 cm grid paper. Students highlight all the angles they see and classify those angles as right, greater than right or less than right, using a tally.• Students use a paper plate created clock face with an hour and minute hand to determine when they would see angles less than, greater than or equal to a right angle. Students connect the movement of the hands on the clock to the concept of turns that create different-sized angles. Identify times on a clock when the angle is the largest or smallest.

Term 3 Week 3

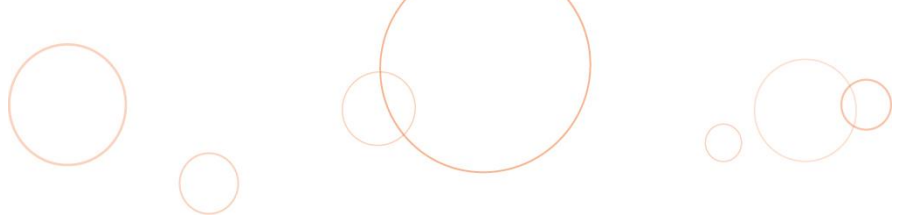
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences</p> <p>Recall addition and subtraction facts to 20</p> <p>Modelling with number Identify and represent a range of real-world addition and subtraction situations with part-part-whole models, and multiplication and division situations with arrays. Write sentences to reach a solution and interpret in context</p>	<p>Learning intention To apply strategies for addition and subtraction and use these strategies to explore the relationship between the operations</p> <p>Focus questions</p> <ul style="list-style-type: none"> • What other words can be used for addition? • What other words can be used for subtraction? • How can you use an addition number fact to solve a subtraction fact? • How are addition and subtraction facts similar and how are they different? <p>Support notes Students apply their understanding of part-part-whole models and number lines and begin to understand the inverse relationship between addition and subtraction.</p> <p>Suggested assessment point Observe and record students' ability to explain the relationship between addition and subtraction in the context of provided problems.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Using sticky notes, students write down words they associate with each mathematic operation. • Explicitly teach how knowing the solution to an addition equation such as $34 + 19 = 53$ can be used to solve $53 - 19$ or $53 - 34$, linking to the part-part-whole strategy. • Model this strategy using known facts, such as facts of 20, and then relate to numbers to 100. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Provide students with physically large number lines to model ways in which they can use number lines to solve problems, such as stepping out on a number line. Present unknown change and start problems that require students to use number lines and their knowledge of the relationship between addition and subtraction to solve. • Discuss strategies that students used to solve the problems. <p>Learning experience 3</p> <ul style="list-style-type: none"> • Read change unknown and start unknown word problems written on a chart to students. Provide students with sticky notes to indicate which operation would solve the problem.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<ul style="list-style-type: none"> • Provide students with number sentences, including the results, and encourage them to write, or draw a story that matches the sentence. • Model situations that require students to link addition and subtraction, such as ‘If one dolphin ate 18 fish and the other ate 22, how many more fish did the second dolphin eat?’ (Department of Education WA, 2013). Students show their solution in two ways using addition and subtraction, such as $22 - 18 = \square$ or $\square + 18 = 22$.
<p>Measurement and geometry</p> <p>Two-dimensional space and structures</p> <p>Compare the areas of two shapes indirectly, using uniform informal units, without gaps and overlaps</p>	<p>Learning intention</p> <p>To use uniform informal units to measure and compare the area of shapes</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How can you measure the whole area of a shape without gaps or overlaps? • Can two shapes that look similar in size have different areas? • What makes a good uniform unit for measuring area? • Why is it important that all units are uniform/the same size? <p>Support notes</p> <p>The attribute of area relates to the amount of surface that can be measured, ultimately in square units i.e. square centimetres or metres.</p> <p>Learning to measure in informal uniform units facilitates the development of key understandings,</p>	<p>Learning experience 4</p> <ul style="list-style-type: none"> • Ask students to measure the area of a shape using a range of materials, e.g. blocks, buttons, pattern blocks, centimetre cubes, grid paper, paperclips etc. Discuss strategies the students used and question if the ‘whole’ area has been covered. Were there gaps between the materials or were there any overlaps? Discuss the importance of not having gaps or overlaps. Guide students to come to a consensus on the most appropriate materials to measure area. • Students measure the area of a range of paper shapes, including circles, hearts, diamonds, parallelograms, hexagons etc. that look similar in size, using the same materials used in the previous activity. Students order the shapes based on their areas. Discuss any disagreements in order and reasons why similarly sized shapes may have different areas. Discuss if the most suitable unit used had gaps or overlaps when measuring.



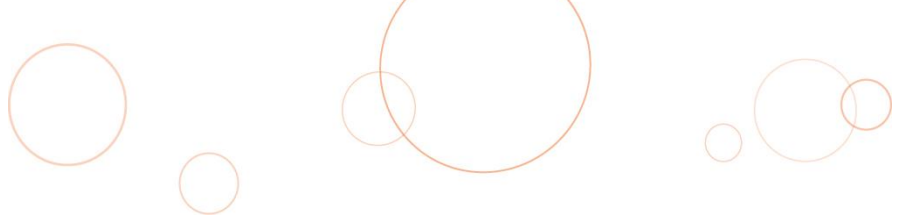
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>such as repeating equal-sized units, and avoiding gaps and overlaps.</p> <p>Suggested assessment point The photographs and written responses on sticky notes from Learning experience 6 may be used to assess the students' measuring and comparing skills.</p>	<p>Learning experience 5</p> <ul style="list-style-type: none"> Students reflect on which measurement materials proved most accurate in the previous learning experience and which techniques led to fewer gaps and overlaps. Explicitly demonstrate that the use of uniform units is the most appropriate, by modelling their use without gaps and overlaps. Repeat previous activity with all students using the same uniform informal unit to 'remeasure' or 'check' and then reorder shapes. <p>Learning experience 6</p> <ul style="list-style-type: none"> Pose the question, 'How can the area of a student's footprint be compared to another student's footprint?' Students discuss ideas and work together to identify ideas which would give the most accurate result. Model measuring to 'test' students' ideas, demonstrating effective strategies. Present students with the idea of tracing around their foot and using uniform informal units to measure the area of their footprint. Review how units can be placed to ensure no gaps or overlaps. As a class, decide on the unit that will be used to measure all footprints. Students trace around one foot, cut it out and measure the area using the unit the class selected. <p>Students compare their traced footprint with a partner and write on a sticky note two things that they noticed. This could include who has the largest/smallest area, a similarity or difference in the way they measured or a reflection on how accurate they were. As a class, work</p>



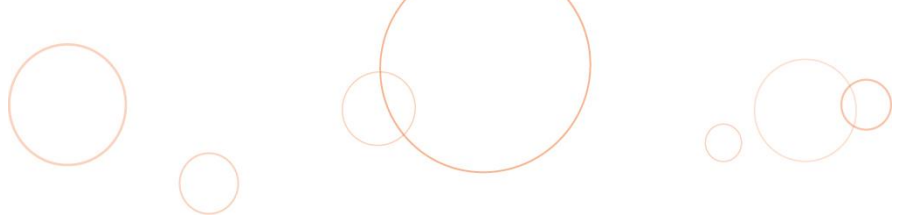
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		together to order the footprints from largest to smallest area and discuss the results. For example, identify footprints that are longer but have a smaller area than shorter ones.

Term 3 Week 4

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Calculating with number Add and subtract two- and three-digit numbers using a range of strategies</p> <p>Explore additive estimation strategies to evaluate the reasonableness of a calculation in familiar contexts</p>	<p>Learning intention To develop the understanding of estimation to check the reasonableness of an answer</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How can you estimate an amount if you can't count them one by one? • What strategies do you use to estimate larger groups of objects at a glance? • Why is it useful to round numbers up or down to calculate? • When do you use estimating or rounding? <p>Support notes Reinforce that estimating is different to guessing; it is about being 'nearly' accurate.</p> <p>Rounding relies on students' understanding that in context, the rules of rounding numbers ending in four and below to a lower whole number and rounding those ending in a five and above to a higher whole number may not always be practical.</p> <p>Understanding of place value combined with the rounding 'rules' enables students to round efficiently and in context of the situation.</p> <p>Suggested assessment point Observation of students' answers, their ability to solve problems using rounding and their performance in</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Discuss with students when it is useful to estimate before calculating. Provide students with images of groups of objects (too large to subitise), beginning with smaller, spaced objects and progressing to larger, tighter groups. Present the pictures and discuss how estimation helps you quickly say how many are in the collection. Focus on how, when we estimate groups of things, we can use estimation and addition together. • Students view pictures of groups of objects that are too large to count one-by-one in the time allocated. For each picture, discuss strategies to estimate the amount, reinforcing that estimation does not mean accuracy. • Summarise the effective strategies students used, such as subitising groups of simple numbers, like one, five and 10, and adding these together. For example, seeing four groups of about five gumnuts, students will estimate that there are 20 gumnuts in the image. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Introduce the use of partitioning and rounding to tens to estimate how many packs will be needed, if items are purchased in packs of 10. For example, if pegs come in packs of ten and each student needs a peg each, how many packs will the class need? Ask students to suggest ways to work this out mentally, while the teacher draws diagrams to expand on strategies such as partitioning into tens and ones. For example, for a class of 32



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Learning experience 3 will all contribute to assessing students' understanding of this content.</p>	<p>students, partitioning into $30 + 2 = 32$ will help when deciding how many packs will be needed. Discuss the need to round up in this situation. Students then represent their thinking using diagrams and an addition number sentence.</p> <ul style="list-style-type: none"> • Repeat this activity with other questions for students to solve in a similar way: <ul style="list-style-type: none"> ▪ The principal would like to give a chocolate frog each to the 50 students who participated in the school's talent show. How many bags of chocolate frogs will the principal need to buy, if the chocolate frogs come in packs of 12? ▪ If the class uses two boxes of tissues a week, how many boxes of tissues will the teacher need for 35 weeks? <p>For each of the above examples, student show how they used estimation and rounding to calculate the solution, representing their understanding with diagrams and addition number sentences.</p> <p>Learning experience 3</p> <ul style="list-style-type: none"> • Provide number charts or number lines to 100 for students to practice rounding numbers and deciding whether to round up or down to the nearest ten. • Have students practice and consolidate understanding of rounding using the 'calculator test'. Students use a calculator to test which way of rounding will give the more accurate estimate. For example, for solving $74 + 149$, is $100 + 100$ or $100 + 200$ more accurate? Ask students to explain why.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<ul style="list-style-type: none">• Students race a peer to answer questions using estimation (including rounding) versus using a calculator. Roll three dice to create a random number to add or subtract. As a class, discuss the advantages of rounding to estimate.


Term 3 Week 5

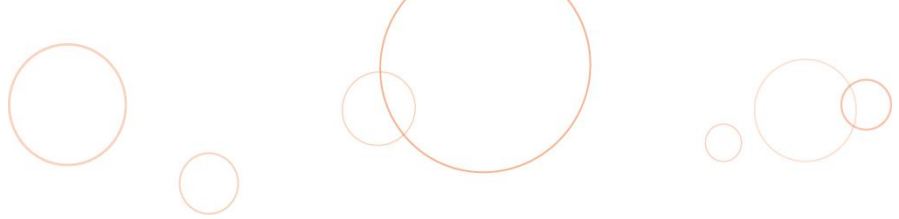
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding equalities and inequalities Explore and use the greater than, less than and equality symbols to compare two whole numbers or statements involving addition and subtraction</p> <p>Financial mathematics Investigate financial transactions, recognising equivalent values and change</p> <p>Modelling with number Identify and represent a range of real-world addition and subtraction situations with part-part-whole models, and multiplication and division situations with arrays. Write number sentences to reach a solution and interpret in context</p>	<p>Learning intentions</p> <p>To carry out financial transactions in the context of classroom shopping situations</p> <p>To make equivalent values using notes and coins and calculate change</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How many cents are in a dollar? • What is 'change' when spending money? Why do you need it? • When do you not get change? <p>Support notes</p> <p>When calculating the total cost of their purchases, it is important that students are aware of the difference between cents and dollars and can calculate accordingly.</p> <p>Many students will be familiar with payments being by card or phone; therefore, it is important to review the concept of 'change' before working on calculations. Students will need practice to consolidate this concept using play money and real-world situations.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Review Australian money and encourage students to identify products that can be bought with certain amounts. They may do this by looking at supermarket catalogues and/or relying on their own experience. For example, a student might say, 'With \$5, I can buy a litre of juice, a large bar of chocolate or a pair of socks.' • Review the relationship between dollars and cents, and use this knowledge to apply to larger amounts. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Provide students with opportunities to 'go shopping', using online grocery shops or printed catalogues to choose a determined number of items to 'purchase'. Students calculate the total cost of the items by adding amounts. Students demonstrate the amounts using play money and represent the total calculation as a number sentence. For each total cost, show various equivalent values of notes and coins that can be used to pay for the items. <p>Learning experience 3</p> <ul style="list-style-type: none"> • Introduce the concept of 'change' and demonstrate how to calculate change from a purchase using play notes and coins. Ensure students understand why change is necessary and in which situations it is needed. Students brainstorm situations when they have seen change being calculated.



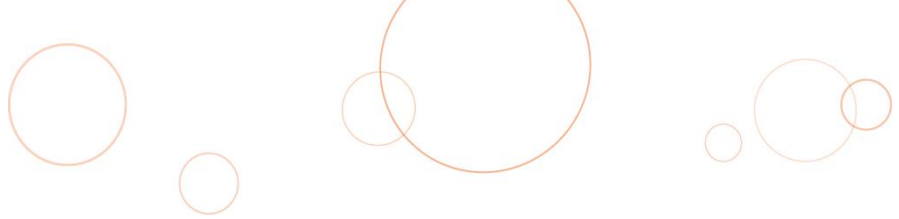
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences				
	<p>Use think boards such as this for Learning experience 3.</p> <table border="1" data-bbox="752 344 1328 675"> <tr> <td data-bbox="752 344 1032 539">I have \$50 and need to buy a shirt for \$24 and a pair of socks for \$8. How much change will I get?</td> <td data-bbox="1039 344 1328 539">Student to draw images of notes and coins here.</td> </tr> <tr> <td data-bbox="752 544 1032 675"> $20 + 2 + 2 + 5 + 2 + 1 = 32$ $50 - 32 = 50 - 20 - 10 - 2$ </td> <td data-bbox="1039 544 1328 675">I spent \$32. I paid with \$50, so I get \$18 change.</td> </tr> </table> <p>Suggested assessment point After Learning experience 4, complete the following activities to check students' understanding of the value attached to money and how to calculate change.</p> <ul style="list-style-type: none"> • Provide a certain value (monetary amount) and ask students to make the same value using different notes and coins. • Provide a financial transaction and ask students to calculate the change. 	I have \$50 and need to buy a shirt for \$24 and a pair of socks for \$8. How much change will I get?	Student to draw images of notes and coins here.	$20 + 2 + 2 + 5 + 2 + 1 = 32$ $50 - 32 = 50 - 20 - 10 - 2$	I spent \$32. I paid with \$50, so I get \$18 change.	<ul style="list-style-type: none"> • Provide opportunities for students to physically 'make change' using notes and coins. Encourage students to keep track of the 'transactions' by recording their mental strategies, such as number sentences when calculating change. <p>Learning experience 4</p> <ul style="list-style-type: none"> • Provide experiences that consolidate equivalent values and change using word problems and think boards. Introduce using inequality and equality symbols to compare amounts of money. Present students with money in different configurations to compare if one amount is less than/greater than/equal to another. • Present a problem that involves financial transactions using addition and subtraction. Represent the problem using play money and then in numbers, showing equivalent ways to pay for the items and showing the change given. • Provide opportunity for students to identify and represent real-world financial transactions, such as a class fundraising event. Using this example, daily practice could involve adding amounts of newly donated money each day and observing varied amounts collected.
I have \$50 and need to buy a shirt for \$24 and a pair of socks for \$8. How much change will I get?	Student to draw images of notes and coins here.					
$20 + 2 + 2 + 5 + 2 + 1 = 32$ $50 - 32 = 50 - 20 - 10 - 2$	I spent \$32. I paid with \$50, so I get \$18 change.					

Term 3 Week 6

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Understanding equalities and inequalities Explore and use the greater than, less than and equality symbols to compare two whole numbers or statements involving addition and subtraction</p> <p>Measurement and geometry</p> <p>Non-spatial measurement Measure mass to compare objects to everyday items using kilograms and grams</p>	<p>Learning intention To measure the mass of objects using grams and kilograms</p> <p>Focus questions</p> <ul style="list-style-type: none"> • Why do we need formal units of measurement? • How can you compare the same two objects using grams or kilograms? • When comparing two objects, why is it important to use the same unit of measurement for both? <p>Support notes Teachers should model and contextualise accurate language, such as ‘lighter than’ or ‘heavier than’.</p> <p>When using pictures of objects, make it clear to the students that they need to imagine the object in real life.</p> <p>Example of a mechanical scale:</p>  <p>Graphic: Vectorportal, 2022</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Provide students with a variety of vegetables to compare by hefting. Students order the vegetables’ weights based on hefting and record their observations using the greater than and less than symbols to show comparison of objects. For example, carrot < sweet potato. • Introduce common benchmark weights of 100 g, 250 g, $\frac{1}{2}$ kg and 1 kg. Provide these weights for students to hold. This could be actual weights or objects of that weight. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Provide students with balance scales and ask them to find a number of pencils and erasers, placing one of each item on each side of the scale, recording which is heavier. Discuss the fact that balance scales provide a comparison but do not determine specific weight. • Students find objects in the classroom that they think are equivalent in weight and use the balance scale to check. Record their findings on the whiteboard, using the equality and inequality symbols. For example, one pencil sharpener = two whiteboard markers, five felt-tip pens > three dice etc. <p>Learning experience 3</p> <ul style="list-style-type: none"> • Model how to use balance scales with standard metric weights and everyday items weighing: 100 g, 250 g, $\frac{1}{2}$ kg and 1 kg (benchmark weights). For example, place



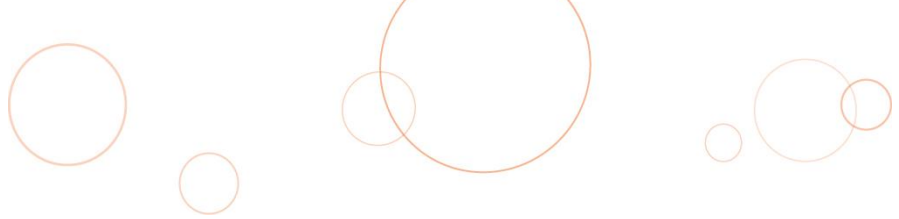
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Suggested assessment point</p> <p>Observe students hefting and using the balance scales in Learning experience 4 to assess students' ability to use the correct measurement unit (grams or kilograms) for items.</p>	<p>100 g on one side of the balance scale and place a classroom or food item on the other. Students explore using the balance scales to equate everyday items to metric weights.</p> <ul style="list-style-type: none"> • Students work in small groups and use the balance scales to find other items that weigh the same as each of the benchmarks. Record the items in a table. • Discuss how accurate the students think the balance scales are for weighing objects using metric weights. <p>Learning experience 4</p> <ul style="list-style-type: none"> • Provide students with pictures of a range of objects, which could be taken from supermarket catalogues. Ask students to sort the items under the headings 'Measured in grams' or 'Measured in kilograms'. Ask students to explain their sorting by relating back to the objects from the previous learning experience, e.g. a can of beans will be weighed in grams. • As a class, use balance scales and standard metric weights to weigh and compare the vegetables (from Learning experience 1 if appropriate) to the benchmarks recorded in previous learning experiences. <p>Learning experience 5</p> <ul style="list-style-type: none"> • Introduce students to mechanical scales. Use the vegetables from previous learning experiences to model how to use the scales. Make comparisons between the weight given on the scales and the benchmark weights. • Students use inequality symbols to record comparisons of pencil collections, using exact weights.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<ul style="list-style-type: none">• As an extension activity, students use a supermarket catalogue or website to observe products and their price per kilogram. Students discuss how they can determine which vegetable would cost the most based on its weight.

Term 3 Week 7

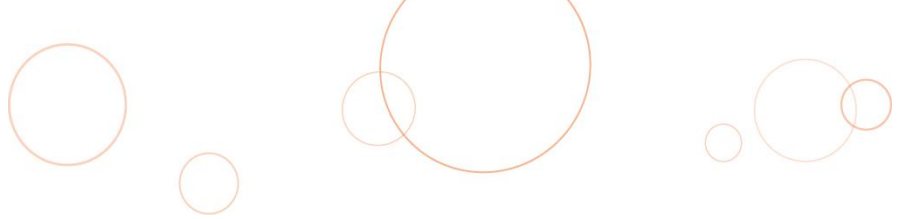
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Measurement and geometry</p> <p>Two-dimensional space and structures Explore one-step slides (translations) and flips (reflections) of familiar two-dimensional shapes, make connections to line symmetry and describe the movement of the shape</p>	<p>Learning intentions To identify lines of symmetry in given shapes To make connections between line symmetry and the effect of translating or reflecting a shape</p> <p>Focus questions</p> <ul style="list-style-type: none"> • Does flipping or sliding a shape affect its features? • Does flipping or sliding a shape affect its line/s of symmetry? • Can a shape have more than one line of symmetry? How can you test this? <p>Support notes Translating means to move a shape in a straight line. Reflecting means to move a shape as if it were seen in a mirror. Translating and/or reflecting shapes does not change the features of the 2D shape. Students need to understand what changes or stays the same when shapes are transformed.</p> <p>Suggested assessment point After Learning experience 3, complete the following activities to assess students' understanding.</p> <ul style="list-style-type: none"> • Provide a pattern that has been made from shape translations and/or reflections and ask students to label the transformation. • Provide an assortment of shapes that have been used within the week's learning experiences and ask students to draw the line/s of symmetry on each one. 	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Provide a range of familiar 2D shapes and ask the students to move the shapes by flipping and/or sliding. Students then discuss with a peer what happens to the shapes when they are flipped or slid. • In pairs, students sort a selection of shapes into ones that look different and ones that look the same once flipped or slid. As a class, share and discuss the difference in the way the shapes look after flipping or sliding. Students record findings by tracing shapes before and after movement and writing the movement type and if the shape looks the same or different. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Introduce line symmetry to students and explore line symmetry in the environment, e.g. butterflies, bodies, faces, flowers or snowflakes. • Find line symmetry in a range of objects by folding or drawing lines. Ask students, 'What makes an object or a shape symmetrical?' Guide students to discuss this and agree on a definition. • Provide paper shapes for students to explore, manipulate and fold to identify line symmetry. Students sort shapes by how many lines of symmetry they find. • Explore flipping (reflecting) and sliding (translating) these shapes to understand the effect of the movement on line symmetry. Use a small mirror and paper shapes to further explore which shapes have line symmetry.



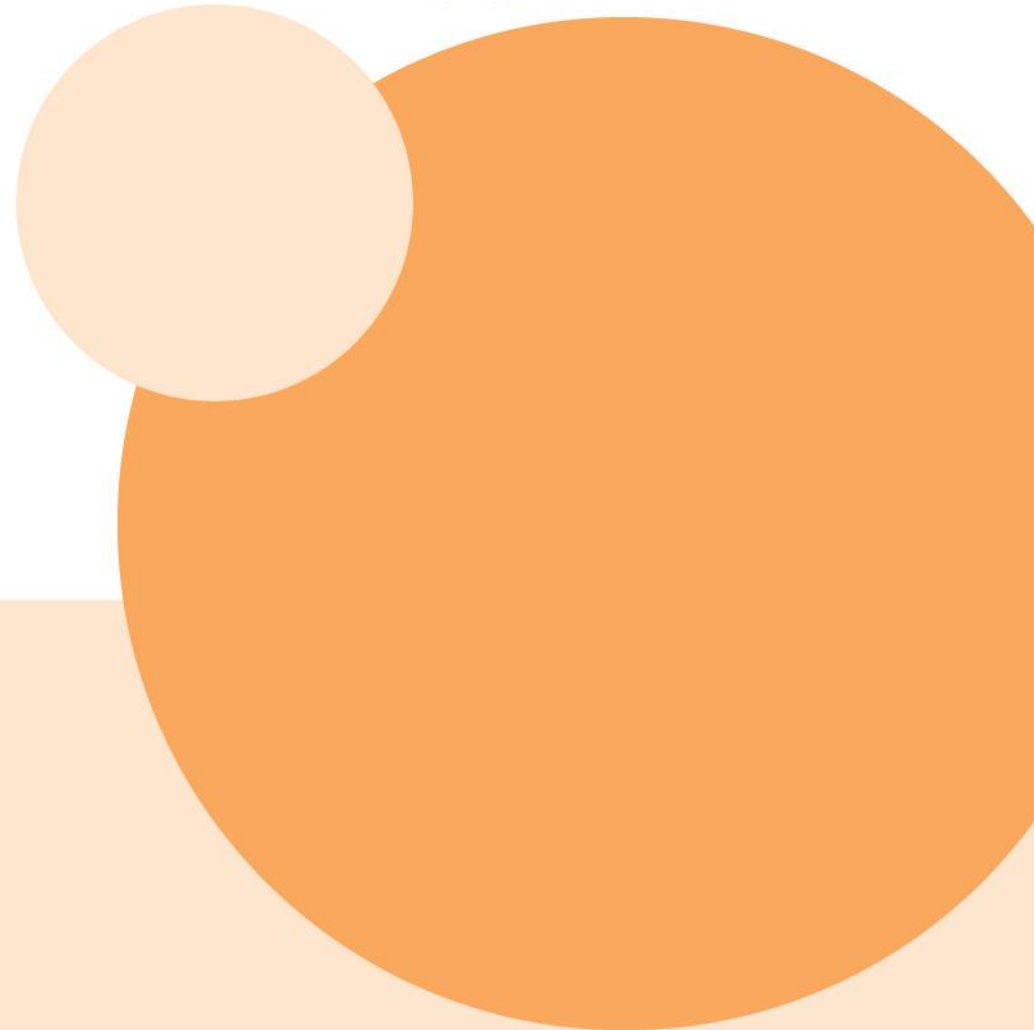
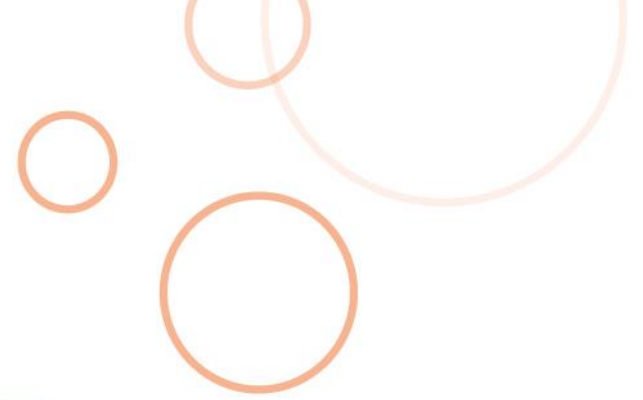
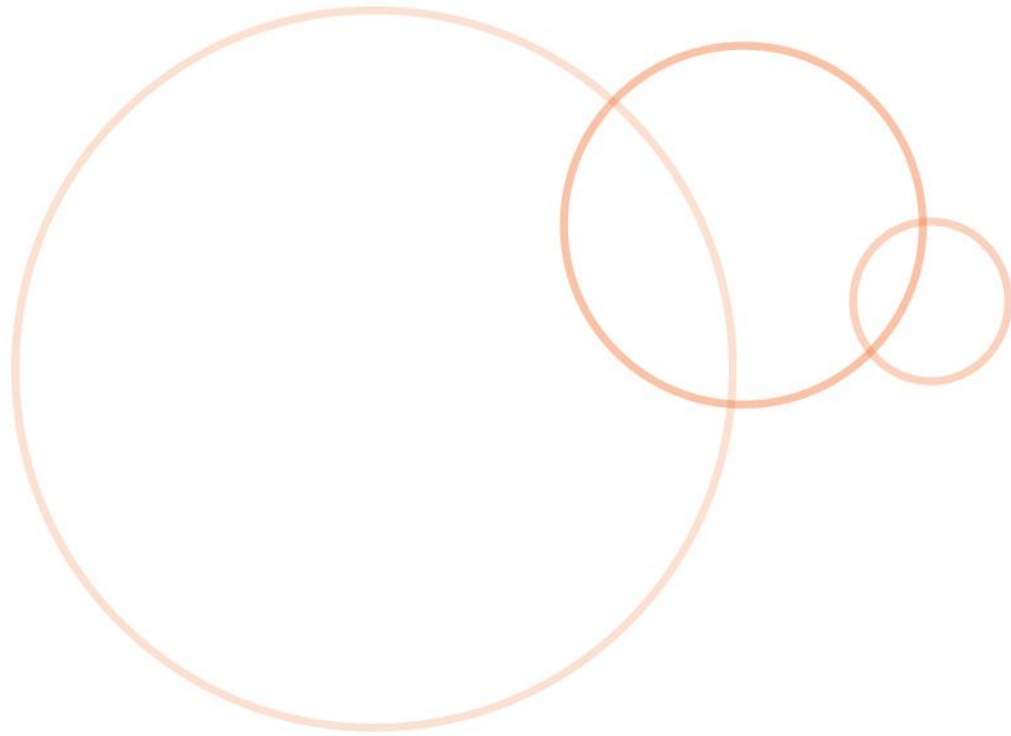
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>Learning experience 3</p> <ul style="list-style-type: none">• Provide magnetic capital letters or cut-out capital letters. Students explore and sort which letters have line symmetry, describing how many lines of symmetry they find.• Students create a poster showing the results of the line symmetry investigation and what the letters of their initials look like after they have been flipped (reflected) or slid (translated). Students choose one transformation for each letter of their initials.

Term 3 Week 8

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Probability and statistics</p> <p>Statistics</p> <p>Describe and interpret real-life data represented in dot plots and column graphs with scale intervals of one</p>	<p>Learning intention</p> <p>To interpret dot plots, understanding the features and meaning and using this information in a real-life context</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How do axis labels help you understand the graph? • What does each dot represent? • Can you find the most commonly occurring category using the graph? (Use this question and an example question to focus students' interpretation of parts of a graph) <p>Support notes</p> <p>A dot plot is a type of graph. It is a way of displaying data using dots. Students should be taught that there are many ways to record data on a graph.</p> <p>See Appendix B for samples of dot plots that can be used for these learning experiences.</p> <p>Equal interval scales – have an equal separation between numbers (units) everywhere on the scale.</p> <p>Prepare a series of dot plots after asking teachers in your school to survey their class on a small range of questions, e.g. favourite cereal, number of pets etc. Students will use this data in Learning experience 2 to create a picture of a 'typical' student at the school.</p> <p>A sample of dot plots are included in Appendix A to use as an alternate to creating your own.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Display a dot plot for the class to view. Relate this to picture graphs and one-to-one block graphs, which were explored in Year 2. Explicitly teach students the features of a dot plot, including: a line with scaled intervals that are labelled or numbered, and dots representing one data value, e.g. one student or one vote. Using the displayed dot plot, demonstrate to students, while thinking aloud, how to interpret the data being represented. Ask students questions to engage them in interpreting the dot plot. • Provide students with a dot plot. For example, students' ways of travelling to school. Explicitly teach that, in this instance, each dot represents one person and the labels indicate how each person got to school that day. Students interpret the dot plot by answering questions about it, such as: <ul style="list-style-type: none"> ▪ How many students rode their bike? ▪ How many students came by car? ▪ How many students walked? <p>Explain how data can be compared using the dot plot. Ask students to determine if more students rode their bike or came by car.</p> <p>Learning experience 2</p> <ul style="list-style-type: none"> • Provide students with the dot plots displaying the whole school data (see Support notes). Write questions for students to answer to review each dot plot,



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Suggested assessment point</p> <p>Students' pictures can be used as an assessment of how they have interpreted the information depicted by the dot plots.</p>	<p>determining which category of each dot plot is the most frequently occurring. Also use the dot plots to answer specific questions, such as questions about the difference between the most frequently occurring and the least frequently occurring category, or the next most frequently occurring category.</p> <p>Learning experience 3</p> <ul style="list-style-type: none">• Students design a character that includes all of the most frequent attributes as determined in the whole school data from the previous learning experience. Students write a statement about their character that explains how they've used the dot plot data to influence their character design. Students compare their images with peers and discuss any differences.



Term 4

Weeks 1–8

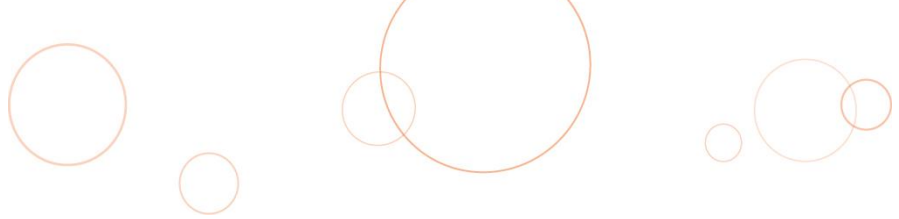
Term 4 Overview: Learning intentions

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Learning intention	PS P S To recognise the likelihood of outcomes in real-world contexts To conduct experiments and recognise variation in results To organise and interpret data to answer a question	NA MN To build on multiplication and division using strategies with arrays in real-life situations	NA PR CN To create, describe and continue patterns, including those that result from simple addition and subtraction	MG 2DSS To create simple maps and interpret them in the context of describing position and pathways	NA UN To consolidate and develop understanding of number concepts in the context of all four operations	MG 2DSS To estimate, measure and order lengths using mm, cm and m	NA UN To use mental calculation strategies that rely on knowledge of place value and partitioning	PS P S To understand and demonstrate probability by performing experiments and recording results in a graph
Learning experiences per week	2	4	4	4	4	3	4	4
Learning intention	NA UN To solve multiplication problems using arrays and the doubling strategy							
Learning experiences per week	3							

NA Number and algebra
UN Understanding number
CN Calculating with number
2DSS Two-dimensional space and structures

MG Measurement and geometry
UEI Understanding equalities and inequalities
FM Financial mathematics
3DSS Three-dimensional space and structures

PS Probability and statistics
PR Patterns and relationships
MN Modelling with number
NSM Non-spatial measurement



P Probability

S Statistics

Western Australian Curriculum content	Term 4: Daily practice activities
<p>Number and algebra</p> <p>Patterns and relationships Create and represent increasing or decreasing additive patterns from any starting point, using concrete materials and numbers, and describe rules to represent the pattern</p> <p>Measurement and geometry</p> <p>Two-dimensional space and structures Identify angles as measures of turn between two lines that intersect and directly compare angle sizes in everyday situations</p>	<p>Weeks 1–4 Encourage students to share angles they have identified in their everyday lives, keeping a tally of which are less than, equal to or greater than a right angle. Other angles-related activities include asking students to:</p> <ul style="list-style-type: none"> draw an angle on a sticky note and compare the angle with a partner, deciding who has drawn the larger angle use their arms to make angles that are smaller or larger than a right angle. <p>Encourage students to share patterns they have identified in their everyday lives. As a class, students work to identify the rule of these patterns and to continue them.</p>
<p>Number and algebra</p> <p>Understanding number Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences</p> <p>Recall addition and subtraction facts to 20</p> <p>Explore and represent the relationship between multiplication and division using diagrams, arrays and number sentences</p> <p>Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p>	<p>Weeks 5–8 Without revealing the operations needed, provide authentic word problems that are contextually relevant to students. Students should:</p> <ul style="list-style-type: none"> use learned mental and written strategies to solve problems involving all four operations solve unknown change problems for addition and subtraction using number sentences, checking with a calculator solve addition and subtraction problems using strategies such as number lines, rearranging and partitioning, compensating, and adding or subtracting a constant amount.

Term 4 Week 1

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Probability and statistics</p> <p>Probability Identify the likelihood of outcomes for planned, equally likely, repeated chance experiments. Conduct the experiments and recognise variation in the results</p> <p>Statistics Describe and interpret real-life data represented in dot plots and column graphs with scale intervals of one</p> <p>In a real-world context, explore questions of interest by collecting categorical or discrete numerical data through observation or surveys. Organise and represent data in dot plots, tables and column graphs and interpret to answer a question</p>	<p>Learning intentions</p> <p>To recognise the likelihood of outcomes in real-world contexts</p> <p>To conduct experiments and recognise variation in results</p> <p>To organise and interpret data to answer a question</p> <p>Focus questions</p> <ul style="list-style-type: none"> • Explain how you might order events from the least likely to happen to the most likely to happen. • What is 'variation' and how might it occur? • How does data help you decide how likely an event is to happen? <p>Support notes</p> <p>Students should recognise the element of chance in everyday events based on their previous knowledge. These learning experiences provide opportunity for students to refine strategies when analysing chance (probability).</p> <p>Ensure students can distinguish between 'possible' and 'impossible'.</p> <p>Model language that determines possibility and uncertainty, such as might, may etc.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Discuss the language of chance, exploring the range of language used to describe events and the meaning of these terms. Ask students if they think it's going to rain today and to explain why. Students may talk about the temperature, the appearance of the sky or the time of the year. Highlight that these factors influence the chance of rain but cannot be controlled by us. • Display a weather chart and encourage students to identify the times of the year when it rains frequently and infrequently. Ask questions based on the information students retrieve from the chart, such as: <ul style="list-style-type: none"> ▪ Is it likely or unlikely to rain in <month>? ▪ Why is it more likely to rain in the months May to September? ▪ Is it possible to rain in <month>? • Ask students to explain if the weather chart for their town/city will be the same every year. What is likely to influence change? What could cause this variation? Groups record their thoughts on a chart using pictures or words. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Discuss events that may be influenced by people's choices. Encourage students to brainstorm situations in which they can influence the chance of an event happening. For example, being prepared for a test may result in them achieving a higher score.







Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Suggested assessment point</p> <p>The <i>Lucky dip</i> diagnostic task may be presented to assess student’s prior knowledge of probability. It could be used again after a learning sequence to assess understanding or summative measure of growth:</p> <ul style="list-style-type: none"> Department of Education Western Australia, <i>First steps in Mathematics: Chance and data diagnostic tasks – student worksheets</i>, p. 39, <i>Lucky dip</i> https://myresources.education.wa.edu.au/docs/default-source/resources/first-steps-mathematics/chance-and-data---diagnostic.pdf?sfvrsn=eb7e7785_1. 	<ul style="list-style-type: none"> Ask students if they believe that rolling a six on a dice is harder than rolling any other number. Record students’ responses and provide instructions to investigate this theory. Students complete the experiment in small groups and record outcomes. Investigate the data collected and discuss variations in the results. Students graph the results using a column graph or dot plot and interpret the data by recording what the graph demonstrates about rolling a six.
<p>Number and algebra</p> <p>Understanding number</p> <p>Explore and represent the relationship between multiplication and division using diagrams, arrays and number sentences</p> <p>Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts</p>	<p>Learning intention</p> <p>To solve multiplication problems using arrays and the doubling strategy</p> <p>Focus questions</p> <ul style="list-style-type: none"> How can addition be used to solve multiplication problems? What is an array and how would you describe it? Explain how the ‘double plus one’ strategy works (e.g. multiplying by three). Describe how knowing the 10s times tables enables us find out the fives times table. <p>Support notes</p> <p>Number sentences should only be written once students have made sense of the combinations and how they are connected to multiplication.</p>	<p>Learning experience 3</p> <ul style="list-style-type: none"> Provide students with opportunities to use arrays and the doubling strategy to solve real-life problems. Suggested contexts may be: <ul style="list-style-type: none"> uniform purchases for the school, based on the number of students snack purchases for a week at school (per student, per class, per year level) the number of seats needed for an event to which each student can bring a specified number of guests (2, 3, 5, 10). Review and discuss efficient strategies, focusing on the relationship between multiplication and division, to solve problems.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>Learning experiences 4 and 5</p> <ul style="list-style-type: none">• Explore arrangements of objects to discover that $6 \times 3 = 3 \times 6$. Provide a range of scenarios to explore the relationship between these statements and represent the scenarios in arrays. For example, six rows with three seeds in each row, when turned, becomes three rows with six seeds in each row. Relate this to division by working backwards from an answer of 18 seeds. Explore how this could be represented.• Provide students with a set of elements to be combined. For example:<ul style="list-style-type: none">▪ three kinds of pasta and two different sauces▪ four flavours of ice cream and three toppings▪ five pairs of shoes and four pairs of socks.Ask students to represent each scenario by drawing the possible combinations or by using concrete materials. Guide students through representing the combinations in an array, e.g. each column is one type of pasta, and each row is a sauce.

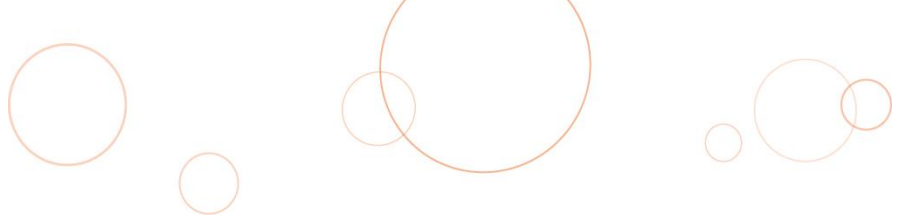
Term 4 Week 2

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Modelling with number</p> <p>Identify and represent a range of real-world addition and subtraction situations with part-whole models, and multiplication and division situations with arrays. Write number sentences to reach a solution and interpret in context</p>	<p>Learning intention</p> <p>To build on multiplication and division using strategies with arrays in real-life situations</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How does using an array help solve mathematical problems when dividing the chickens equally? • How does a multiplication number sentence tell us what an array represents? • What do the number of rows and columns tell us about the number of chickens in each pen? <p>Support notes</p> <p>In Year 3, students are learning the modelling process by identifying and representing real-world multiplication and division situations with arrays. Focus on talking through the problem to identify the relevant information to represent in an array.</p> <p>Use class discussions to ensure all students can identify what the situation is, how to represent it mathematically and the strategies required to find the solution.</p> <p>Using a think board will support students to finalise the process of modelling with numbers in Year 3, and to interpret the solution in context.</p> <p>Sample think board for Learning experience 3.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Real-world situation: Twenty-four chickens have been gifted to the school. The chickens need to be kept in multiple pens across the school grounds and divided equally, to allow for them to be looked after by all the school's students. Chickens are social animals, so they cannot be kept individually. The principal wants to know how many ways the chickens can be separated into pens, so the principal can let the gardener know where to build the chicken pens. <p>Present the situation to the students and walk around the school grounds to look for potential sites. Examine the various areas of the school and discuss how students will be able to access the chickens at each potential site.</p> <p>Discuss considerations, such as:</p> <ul style="list-style-type: none"> ▪ Will the Kindergarten and Pre-primary students be able to get to the pen if it is too far from their area? ▪ Where is there a tap for water? ▪ How close should it be to classrooms or play areas? ▪ Will the chickens be able to be out of their pens? Is there school fencing that will keep them safe? <p>Guide students to look at how many chickens there will be and how many possible areas there are for them to be kept. Keep a visual record/chart of how many sites the chickens could be kept at, remembering that the</p>

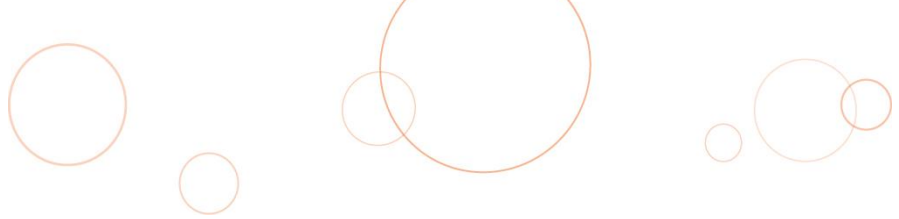
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences				
	<p>Thinkboard</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p>3 chicken pens</p> </td> <td style="width: 50%; padding: 5px;"> <p>Write a number sentence to match your array:</p> <p style="text-align: center;">$3 \times 8 = 24$</p> </td> </tr> <tr> <td style="width: 50%; padding: 5px;"> <p>Draw an array to match the story</p>  <p style="text-align: center;">8</p> </td> <td style="width: 50%; padding: 5px;"> <p>Write a word sentence and draw a picture to explain your array:</p> <p>My array has three rows which means the chicken pens, and it has 8 in each row, which means that there are 8 chickens in each pen.</p>  </td> </tr> </table> <p>Provide both chicken-shaped counters and round (generic) counters so that students who are more literal can use the chicken-shaped counters. Students who are able to 'represent' the chickens more abstractly may choose to use counters.</p> <p>Suggested assessment point</p> <p>The final posters and think boards could be used as a formative assessment, using the following success criteria:</p> <ul style="list-style-type: none"> • Can students use arrays to represent a multiplicative problem? • Can students match a number sentence to an array, and are they able to describe their number sentence in context? 	<p>3 chicken pens</p>	<p>Write a number sentence to match your array:</p> <p style="text-align: center;">$3 \times 8 = 24$</p>	<p>Draw an array to match the story</p>  <p style="text-align: center;">8</p>	<p>Write a word sentence and draw a picture to explain your array:</p> <p>My array has three rows which means the chicken pens, and it has 8 in each row, which means that there are 8 chickens in each pen.</p> 	<p>principal would like them to be separated across different areas of the school and divided equally.</p> <p>By the end of the learning experience, students identify that the 24 chickens could be separated between 2, 3, 4, 6, 8 and 12 potential sites.</p> <p>Learning experience 2</p> <ul style="list-style-type: none"> • Review student knowledge of solving multiplication and division problems using diagrams, arrays and number sentences. Ask students how diagrams or arrays can be used to represent the chicken problem from the previous learning experience. Students connect the process of solving this problem to strategies used to solve similar problems. • Model the use of concrete materials to represent a situation. Using an amount of eight, demonstrate how eight objects can be presented as an array of: one row of eight, two rows of four, four rows of two or eight rows of one. After modelling this with concrete materials, review how to draw arrays. • Provide students with large pieces of paper, markers, round disc counters and chicken-shaped counters or pictures (see Support notes regarding counter use). Groups or pairs of students explore representing the various situations of 24 chickens shared between 2, 3, 4, 6, 8 and 12 pens using arrays. <p>Either take photos or students draw how they represented the chickens in pens, to use in the next learning experience.</p>
<p>3 chicken pens</p>	<p>Write a number sentence to match your array:</p> <p style="text-align: center;">$3 \times 8 = 24$</p>					
<p>Draw an array to match the story</p>  <p style="text-align: center;">8</p>	<p>Write a word sentence and draw a picture to explain your array:</p> <p>My array has three rows which means the chicken pens, and it has 8 in each row, which means that there are 8 chickens in each pen.</p> 					



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>Learning experience 3</p> <ul style="list-style-type: none">Review students' representations of the chickens in pens from the previous learning experiences. Focus on the use of arrays to show how the 24 chickens can be separated into different numbers of pens. As a class, ask students to look at their drawings of arrays. Create labels for each group, and a description for each array. For example, 'I have two rows with 12 chickens in each row, so this will go in the two chicken pens group.'Instruct students to represent each group of arrays for 2, 3, 4, 6, 8 and 12 chicken pens on a think board. Students use the think board to write a number sentence and a word sentence with a matching picture. <p>Learning experience 4</p> <ul style="list-style-type: none">Discuss students' understanding of the relationship between drawn arrays and number sentences. Check that students have linked information in arrays with the solutions to the problems. Teacher to create a chart of all solutions:<ul style="list-style-type: none">12 chickens in two penseight chickens in three penssix chickens in four pensfour chickens in six pensthree chickens in eight penstwo chickens in 12 pens.In pairs, students choose one of the solutions and create a persuasive poster of their chosen solution to present to the principal.

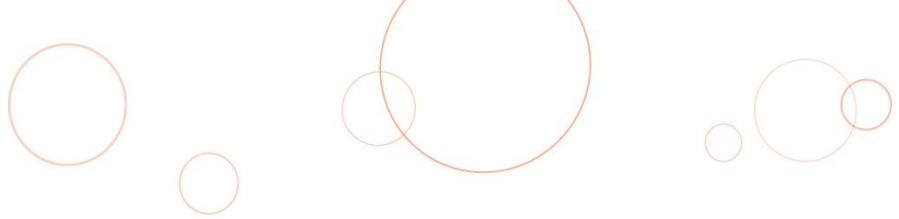


Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<ul style="list-style-type: none">• In their persuasive poster, students justify why their solution meets the brief of the real-life situation and why they believe this is the best option for the school and the chickens.



Term 4 Week 3

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Patterns and relationships Create and represent increasing or decreasing additive patterns from any starting point, using concrete materials and numbers, and describe rules to represent the pattern</p> <p>Calculating with number Add and subtract two- and three-digit numbers using a range of strategies</p>	<p>Learning intention To create, describe and continue patterns, including those that result from simple addition and subtraction</p> <p>Focus questions</p> <ul style="list-style-type: none"> • Why do patterns have rules? • How can you continue an increasing pattern? • How can you continue a decreasing pattern? <p>Support notes Start with a review of patterns, associate them with numbers and then move on to patterns that result from addition and subtraction.</p> <p>It is important for students to associate numbers in patterns with the quantity they represent; therefore, the use of manipulatives is recommended.</p> <p>Suggested assessment point Provide students with a range of additive (addition and subtraction) patterns where they are required to identify if it is increasing or decreasing and by how much, before describing the rule for the pattern.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Invite students to identify and represent patterns found in the environment. Display patterns to the class and discuss rules that apply to these patterns. • Review the repeat unit (core) of patterns and how it relates to the rule. For example, teachers may ask students to identify a pattern on a display board of flower, flower, leaf, flower, flower, leaf – with the rule being two flowers and one leaf. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Ask students to represent a given pattern in different ways. For example, display the repeating pattern a-b-a-b-b-a-b-a-b-b- and ask groups of students to represent this pattern using: colours, shapes, sounds, symbols or objects. <p>Rotate groups so all students have an opportunity to represent the same pattern using different media. Repeat this activity with different repeating patterns.</p> <ul style="list-style-type: none"> • Review that patterns have rules that determine the sequence. This may be formed with different elements, e.g. colours, shapes, sounds, symbols, objects and/or numbers. Using patterns, students identify if the pattern is repeating itself or if it is increasing/decreasing (resulting from addition or subtraction). For example, an increasing pattern could be 0, 3, 6, 9, 12 ... with the rule being + 3.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>Learning experience 3</p> <ul style="list-style-type: none">• Display an increasing pattern and ask students to represent each core unit of the pattern with manipulatives, e.g. counters, blocks or sticks. Looking at the manipulatives, students identify the rule by comparing two neighbouring core units of the pattern. <p>Encourage students to continue these patterns using manipulatives and to label each core unit with the corresponding number.</p> <p>Learning experience 4</p> <ul style="list-style-type: none">• Model associating number lines and patterns. Using a paper strip, create a number line under the labelled blocks of a pattern. Students highlight the core units of the pattern and draw the 'jumps', writing the rule.• Repeat the previous activity, using patterns that are a result of performing subtraction. For example, 24, 22, 20, 18, 16 ... with the rule being $- 2$.

Term 4 Week 4

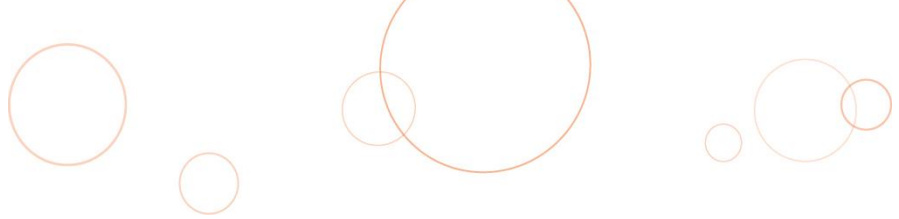
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Measurement and geometry</p> <p>Two-dimensional space and structures</p> <p>Create and interpret simple maps to show positions and pathways, considering the relative position of key features</p>	<p>Learning intention</p> <p>To create simple maps and interpret them in the context of describing position and pathways</p> <p>Focus questions</p> <ul style="list-style-type: none"> • Why do maps show a bird’s-eye view of the location? • Which features are included on maps to help you locate a position? • Which features on a map are important to use when giving directions? <p>Support notes</p> <p>Students will learn to create a simple map (not a grid map). Explicitly teach that a map is a representation of an area.</p> <p>Suggested assessment point</p> <p>The mapping activities in Learning experiences 3 and 4 can be used as a formative assessment of students’ ability to create and interpret simple maps and use them to describe pathways.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Provide simple maps of places, either by creating a ‘bird’s-eye view’ of the school or using digital maps to view the town/city or local area of the school. • Discuss the features of maps, such as shapes that represent objects or known features of an area. Explain that a bird’s-eye view map only shows shapes seen from a top view. Maps may also show borders, orientation or legends. Discuss these features while interpreting a simple map with the class. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Model how to draw a bird’s-eye view map or mud map of the classroom. Think aloud while drawing features in the classroom, explicitly teaching the particular way of drawing only the shapes that can be seen from above. Students identify items on the completed map, by describing the position of one item next to another, e.g. ‘The teacher’s desk is near the whiteboard.’ <p>Learning experience 3</p> <ul style="list-style-type: none"> • Students create a model of the classroom or a room in their house, using building bricks, including as many features as possible. For example, a bigger desk for the teacher, smaller desks for students, cupboards, shelves etc. Once created, students look down into their created room and draw a simple map or take a bird’s-eye photograph.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>Learning experience 4</p> <ul style="list-style-type: none">• Model how students can use their drawn or photographed maps from the previous learning experience to describe to a peer where objects are in relation to each other and pathways in the room, e.g. how to get from the door to the desk. Students provide their peer with instructions for pathways on their map, referencing features on their maps.

Term 4 Week 5

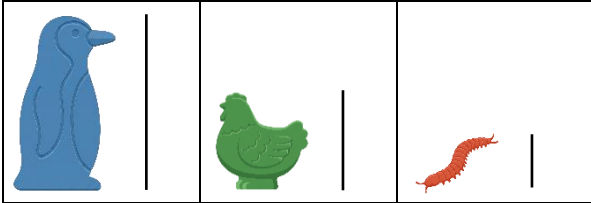
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences</p> <p>Explore and represent the relationship between multiplication and division using diagrams, arrays and number sentences</p>	<p>Learning intention To consolidate and develop understanding of number concepts in the context of all four operations</p> <p>Focus questions</p> <ul style="list-style-type: none"> • What words do you associate to addition, subtraction, division and multiplication? • Explain two of the strategies you use to solve problems. • Why can some equations be solved using a calculator? <p>Support notes Encourage approaches, such as think boards, in which students have an opportunity to visually represent their thoughts, associate these with number sentences and apply known strategies to solve problems.</p> <p>Focus on maths vocabulary in word problems, particularly when words such as ‘more’ or ‘take away’ do not always match the operation.</p> <p>Word problems should cover situations involving unknown starts, changes or answers.</p> <p>Suggested assessment point The work completed in Learning experience 4 can be used as a summative assessment once students have had time to practise these strategies with a variety of problems.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • As a class, brainstorm maths vocabulary used for all four operations and record on a chart or word wall. Discuss any unfamiliar terms. Present a range of vocabulary used in word problems to students. • Look at samples of word problems and identify which vocabulary helps decide the operation that will be used to solve the problem. This activity is not about solving the problems; in fact, providing the answer will assist students to focus on the vocabulary. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Provide students with word problems to sort into groups under the four operations required to solve them. Discuss and share strategies for sorting. Re-sort the word problems into problems that have unknown starts, changes or answers and discuss strategies used to classify using part-part-whole models. <p>Learning experience 3</p> <ul style="list-style-type: none"> • Using the word problems from the previous learning experience, students write on a sticky note the equation they would enter into a calculator, then pass it to a partner to solve. Sort and discuss which equations worked to find an answer, and which didn’t and why? • Present students with solved number sentences that cover all four operations, and encourage them to write, record or draw a story that matches the sentence using a range of vocabulary.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	Summative assessment: Number sentences, part-part-whole models and flexible calculation strategies (Appendix C)	Learning experience 4 <ul style="list-style-type: none">• Students solve a range of word problems, practising the strategies taught. Provide problems with varying degree of difficulty, problem type and vocabulary used.

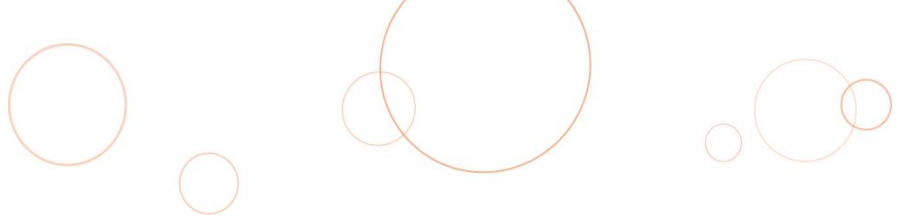
Term 4 Week 6

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Measurement and geometry</p> <p>Two-dimensional space and structures</p> <p>Estimate, measure and order lengths in uniform units, including millimetres, centimetres and metres</p>	<p>Learning intention</p> <p>To estimate, measure and order lengths using mm, cm and m</p> <p>Focus questions</p> <ul style="list-style-type: none"> • What things do you know that are about 1 m, 1 cm or 1 mm in length? • How can body parts be used as benchmarks (such as 1 m or 1 cm) for measuring other things? • Why do we need different units, like mm, cm and m, to measure things? <p>Support notes</p> <p>This learning sequence builds students' understanding of metric units by relating them to known benchmarks and by measuring body parts, then using these as benchmarks.</p> <p>Students focus on the need for mm, cm and m to measure a variety of items, coming to understand the need for smaller units to compare and order items that are similar in size.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Review students' understanding of mm, cm and m and use these measurements as common benchmarks to estimate length. • Students work with a partner to estimate and then measure in metric units the length of a number of body parts. This could include a foot, handspan, a leg/arm hair, shin, finger, fingernail and their height. Students then order these measured lengths from shortest to longest. Discuss estimates and relate these to benchmarks, such as 1 m, 30 cm, 1 cm or 5 mm. <p>Learning experience 2</p> <ul style="list-style-type: none"> • After estimating, measuring and ordering body parts, students discuss how knowing the approximate length of body parts helps estimate other items. Take students out to the school playground. Students categorise items in the playground that would equate to body parts' lengths. For example: <ul style="list-style-type: none"> ▪ my height = 1 m = the height of the slide ▪ the length of my shin = 30 cm = the length between the ladder rungs ▪ my handspan = 15 cm = the width of the boards on the bridge. <p>After estimating, students measure each item in pairs and record both the estimates and exact measurements.</p>

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>An example of novelty counters and their heights for Learning experience 3.</p>  <p>Suggested assessment point</p> <p>The task in Learning experience 3 can be used as a formative assessment. Alternatively, use <i>The broken ruler</i> activity linked below:</p> <ul style="list-style-type: none"> Department of Education Western Australia – <i>First steps in Mathematics: Measurement diagnostic tasks – student worksheets</i>, pp. 21–2, <i>The broken ruler</i> https://myresources.education.wa.edu.au/docs/default-source/resources/first-steps-mathematics/measurement---diagnostic.pdf?sfvrsn=bbd442b7_1 	<p>Learning experience 3</p> <ul style="list-style-type: none"> Provide an assortment of novelty counters that are small, but with some variance in size, for students to estimate and measure in centimetres. Students order the counters based on these measurements, and discuss the need for smaller units, such as millimetres. <p>Students use the novelty counters and rulers to represent how they measured to order. Students draw around the counter, then using a ruler, draw a line vertically next to the counter to represent the counter’s height (see Support notes). Students present the counters and their corresponding lines across the page to show the height order.</p> <p>Extend students’ understanding by asking them to demonstrate how much taller each counter is compared to its neighbour.</p>

Term 4 Week 7

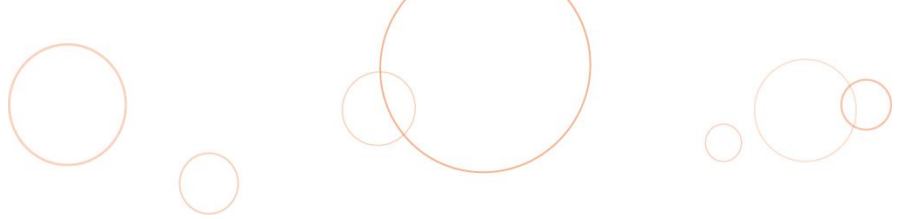
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Number and algebra</p> <p>Understanding number</p> <p>Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits</p> <p>Represent and partition numbers up to four digits, including groups of 10 (tens), 10 groups of 10 (hundreds) and beyond, using concrete materials and number sentences. Recognise that the value of a digit is determined by its place in a number</p> <p>Recall addition and subtraction facts to 20</p>	<p>Learning intention</p> <p>To use mental calculation strategies that rely on knowledge of place value and partitioning</p> <p>Focus questions</p> <ul style="list-style-type: none"> • How does bundling items help to count a total? • What is the same about bundles and the written numbers they represent? Is there a difference when we say the number? (consider the ‘and’ in ‘three hundred and fifty-six’) • Does partitioning help us to add large numbers? Is it useful to start with the largest or smallest place value when adding? • Describe the similarities and differences between standard and non-standard notation. <p>Support notes</p> <p>Create daily opportunities for students to practise the use of these strategies, building fluency.</p> <p>While the learning experiences refer to three-digit numbers, teachers should start with two-digit numbers to determine students’ readiness. Students should extend to the thousands as they gain knowledge, skill and fluency.</p> <p>Throughout these exercises, encourage students to keep a record of their working, even if this is in an informal way.</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Review place value by providing students with opportunities to count large quantities by bundling and labelling the collection. Once students have a set of bundles, encourage them to make certain numbers. For example, the teacher calls out 356 and students should select three bundles of 100, five bundles of 10 and six ones. Practice this to consolidate the association between numbers and quantities. • Invert the above activity by showing students a combination of bundles and asking them to write the number. For example, the teacher displays five bundles of 100, three bundles of 10 and 2 ones, and students should write 532. <p>Learning experience 2</p> <ul style="list-style-type: none"> • Model representing expanded notation in bundles. Write a number on the board using expanded notation (e.g. $500 + 20 + 3$) and have students make the number using their bundles, then determine what the number is. Continue by writing different numbers using a non-standard order of place value (e.g. $20 + 500 + 3$) and have students represent the number in bundles, reorganising according to place value. • Invert the above activity by displaying bundles (in and out of place value order) and asking students to write the number in expanded form before determining the number.



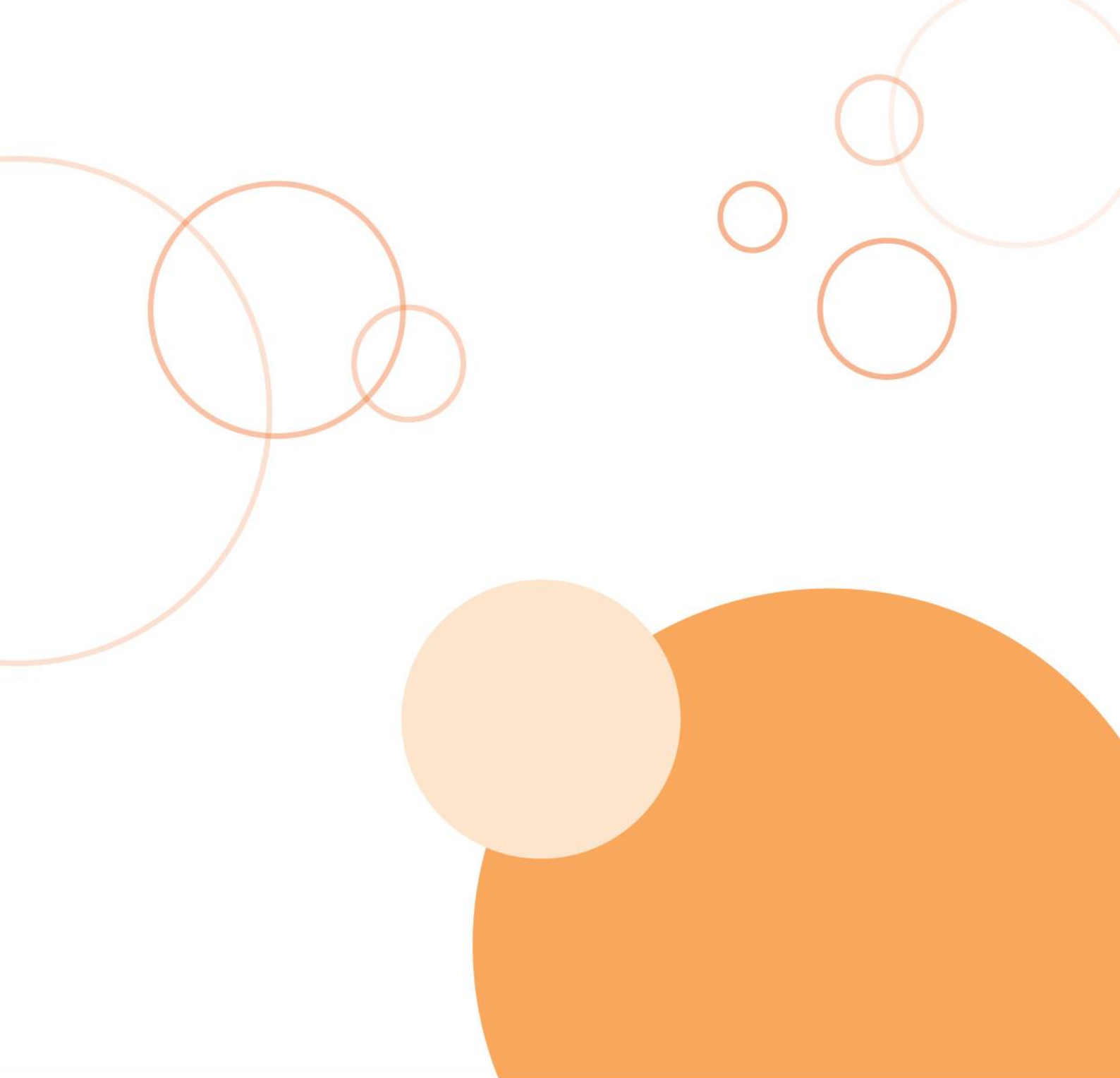
Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
	<p>Use of the term 'additive problems' implies the use of both addition and subtraction operations.</p> <p>Suggested assessment point</p> <p>Assess students' progression throughout the learning sequence. Observe fluency with mental strategies versus the reliance on counting all or not being able to use non-standard partitioning.</p>	<ul style="list-style-type: none">Extend the task to include regrouping bundles flexibly, such as 523 being made of 4 bundles of 100, 12 bundles of 10 and 3 ones. <p>Learning experience 3</p> <ul style="list-style-type: none">Model partitioning as a strategy to solve addition problems by displaying an equation on the board (e.g. $254 + 157$) and asking students to collect the bundles or MAB to form each number. Students sort their bundles by place value order, before adding the ones, tens and then hundreds. Repeat the exercise with different equations. <p>Learning experience 4</p> <ul style="list-style-type: none">Starting with two-digit numbers, model partitioning as a strategy to solve subtraction problems by displaying an equation on the board (e.g. $35 - 12$) and asking students to collect the bundles or MAB to form the first number. <p>Begin with equations that do not require unbundling and rearranging. When students are ready, model unbundling and rearranging. For example, for the problem $35 - 27$, students will need to unbundle a set of tens to provide enough ones. Spend time consolidating the concept of unbundling before moving on to three-digit numbers.</p>

Term 4 Week 8

Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
<p>Probability and statistics</p> <p>Probability Describe familiar events using the language of chance. Identify and list possible outcomes of everyday chance events</p> <p>Identify the likelihood of outcomes for planned, equally likely, repeated chance experiments. Conduct the experiments and recognise variation in the results</p> <p>Statistics Describe and interpret real-life data represented in dot plots and column graphs with scale intervals of one</p> <p>In a real-world context, explore questions of interest by collecting categorical or discrete numerical data through observation or surveys. Organise and represent data in dot plots, tables and column graphs and interpret to answer a question</p>	<p>Learning intention To understand and demonstrate probability by performing experiments and recording results in a graph</p> <p>Focus questions</p> <ul style="list-style-type: none"> • Why would you predict that a particular colour counter might be drawn from the jar? • When would you be more likely to draw one colour or another? • When would you be certain of drawing out one particular colour? <p>Support notes Teachers will need to source jars required for these learning experiences.</p> <p>Suggested assessment point Summative assessment: The lucky winner (Appendix D)</p>	<p>Learning experience 1</p> <ul style="list-style-type: none"> • Explain to students that they will conduct an experiment requiring them to decide on the composition of counters in a jar, e.g. 50 blue, 30 yellow and 20 green counters. <p>Allow time for students to ‘make up’ their jars, reinforcing that skip counting, bundling and subitising are strategies that may assist with the counting. Model if necessary.</p> <p>Using a large poster, record students’ predictions about which colour they are more likely to get. Record their thoughts on the second most likely and the least likely colour. Extend to include a colour that is ‘impossible’ to get (because it is not in the jar) to reinforce the meaning of the word.</p> <p>Learning experience 2</p> <ul style="list-style-type: none"> • Students draw a counter out of the jar, recording the result on grid paper before replacing the counter. Repeat ten times. Students will create one column for each colour on the grid paper by colouring in one square each time that colour is picked. <p>Model making statements about probability, and ask students to contribute sentences, such as:</p> <ul style="list-style-type: none"> ▪ From my jar, you are more likely to get blue than red. ▪ I got fewer red counters than other colours.



Western Australian Curriculum content	Teaching and learning intentions	Learning experiences
		<p>Combining students' results, to simulate a larger trial, ask each student to cut out their columns and glue them together in one large class graph, e.g. all the red columns will be glued in sequence, forming a much taller column.</p> <p>Learning experience 3</p> <ul style="list-style-type: none"> • Using the large graph, ask students to observe relationships within the results and formulate sentences about them. For example: <ul style="list-style-type: none"> ▪ We all got more blues than reds. ▪ The combined results of the class look similar to my individual results. • Students create new jar contents by following statements, such as: <ul style="list-style-type: none"> ▪ The new jar has 15 more blue counters than the original. ▪ The new jar has nine less counters than the original. ▪ The new jar has double the original amount of red counters. ▪ The new jar has half the original amount of red counters. <p>Students use strategies to solve and record their findings, sharing which strategy they chose to employ and why.</p> <p>Learning experience 4</p> <ul style="list-style-type: none"> • Summative assessment: The lucky winner (Appendix D)



Appendix A

Resources

Overview of Mathematics Year 3 curriculum content

The following table identifies the terms and weeks where each Year 3 content description is included in this exemplar. 'D' refers to the Daily practice activities.

Year 3 content description		Term			
		1	2	3	4
Number and algebra					
Understanding number	Read, write and order numbers to at least four digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits	D,1,2,3,8	D,1,3,7	6	5,7
	Represent and partition numbers up to four digits, including groups of 10 (tens), 10 groups of 10 (hundreds) and beyond, using concrete materials and number sentences. Recognise that the value of a digit is determined by its place in a number	D,1	D,1		7
	Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences	D,2,3,4,7		3	D,5
	Recall addition and subtraction facts to 20		D,1	D,3	D,7
	Explore and represent the relationship between multiplication and division using diagrams, arrays and number sentences	2	3,5	D	D,1,5
	Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts	2,5,6	D,3,5	D	D,1
	Recognise, represent and describe unit fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$. Combine unit fractions with the same denominator to create a complete whole	7	5	D, 1	

Year 3 content description		Term			
		1	2	3	4
Understanding equalities and inequalities	Explore and use the greater than, less than and equality symbols to compare two whole numbers or statements involving addition and subtraction	3	7	D,5,6	
Patterns and relationships	Create and represent increasing or decreasing additive patterns from any starting point, using concrete materials and numbers, and describe rules to represent the pattern	D,5,6			D,3
Calculating with number	Add and subtract two- and three-digit numbers using a range of strategies	4		4	3
	Explore additive estimation strategies to evaluate the reasonableness of a calculation in familiar contexts			4	
Financial mathematics	Investigate financial transactions, recognising equivalent values and change	4	D,5	5	
Modelling with number	Identify and represent a range of real-world addition and subtraction situations with part-part-whole models, and multiplication and division situations with arrays. Write number sentences to reach a solution and interpret in context	5, 6	3,5,7	3,5	2

Year 3 content description		Term			
		1	2	3	4
Measurement and geometry					
Two-dimensional space and structures	Explore one-step slides (translations) and flips (reflections) of familiar two-dimensional shapes, make connections to line symmetry and describe the movement of the shape		D,2	7	
	Estimate, measure and order lengths in uniform units, including millimetres, centimetres and metres	D,5			6
	Compare the areas of two shapes indirectly, using uniform informal units, without gaps and overlaps			3	
	Identify angles as measures of turn between two lines that intersect and directly compare angle sizes in everyday situations			2	D
	Create and interpret simple maps to show positions and pathways, considering the relative position of key features				4
Three-dimensional space and structures	Visualise and make models of three-dimensional objects. Compare and classify objects according to the key features of faces, edges and vertices		4		
	Measure and order capacity in uniform units, including millilitres. Estimate larger capacities using a litre container		8		
Non-spatial measurement	Measure mass to compare objects to everyday items using kilograms and grams			6	
	Tell the time in minutes using analogue and digital clocks. Describe duration in hours, minutes and seconds and identify the relationship between them	D,6,8	D	D	





Year 3 content description		Term			
		1	2	3	4
Probability and statistics					
Probability	Describe familiar events using the language of chance. Identify and list possible outcomes of everyday chance events		6		8
	Identify the likelihood of outcomes for planned, equally likely, repeated chance experiments. Conduct the experiments and recognise variation in the results		6		1,8
Statistics	Describe and interpret real-life data represented in dot plots and column graphs with scale intervals of one			8	1,8
	In a real-world context, explore questions of interest by collecting categorical or discrete numerical data through observation or surveys. Organise and represent data in dot plots, tables and column graphs and interpret to answer a question				1,8

Resources

Week	Resource
Term 1 Week 1 Term 1 Week 3	Math Goodies. <i>Official Random Number Generator</i> . https://www.mathgoodies.com/calculators/random_no_custom
Term 2 Week 1	NSW Education Standards Authority. <i>Mathematics K–10 Syllabus (2022)</i> . https://curriculum.nsw.edu.au/learning-areas/mathematics/mathematics-k-10-2022/content/stage-2/fa1dbb9271?show=advice%2Cexample&ta_scroll=no
Term 2 Week 3	Department of Education Western Australia. <i>First steps in Mathematics: Number diagnostic tasks – student worksheets</i> , pp. 92–6, <i>How many?</i> https://myresources.education.wa.edu.au/docs/default-source/resources/first-steps-mathematics/number---diagnostic.pdf?sfvrsn=6209b0ed_1
Term 2 Week 5	Burns, M. & Tilley, D. (2008). <i>Spaghetti and Meatballs for All!</i> Scholastic Paperbacks, New York.
Term 2 Week 5	Hutchins, P. (1989). <i>The Doorbell Rang</i> . Greenwillow Books, New York.
Term 2 Week 6	Department of Education Western Australia. <i>First steps in Mathematics: Chance and data diagnostic tasks – student worksheets</i> , pp. 22–24, <i>Chance cards</i> . https://myresources.education.wa.edu.au/docs/default-source/resources/first-steps-mathematics/chance-and-data---diagnostic.pdf?sfvrsn=eb7e7785_1
Term 2 Week 7	Back-to-Front Maths. <i>Relative Size of Numbers through Number Lines</i> . https://www.backtofrontmaths.com.au/relative-size-of-numbers-through-number-lines/
Term 4 Week 1	Department of Education Western Australia. <i>First steps in Mathematics: Chance and data diagnostic tasks – student worksheets</i> , p. 39, <i>Lucky dip</i> . https://myresources.education.wa.edu.au/docs/default-source/resources/first-steps-mathematics/chance-and-data---diagnostic.pdf?sfvrsn=eb7e7785_1
Term 4 Week 6	Department of Education Western Australia. <i>First steps in Mathematics: Measurement diagnostic tasks – student worksheets</i> , pp. 21–2, <i>The broken ruler</i> . https://myresources.education.wa.edu.au/docs/default-source/resources/first-steps-mathematics/measurement---diagnostic.pdf?sfvrsn=bbd442b7_1



Sample think board

Think board		
		

Examples of addition and subtraction word problems

Term 1 Week 4; Term 2 Weeks 1 and 7; Term 3 Weeks 3, 5 and 6; Term 4 Weeks 2, 3, 5 and 7

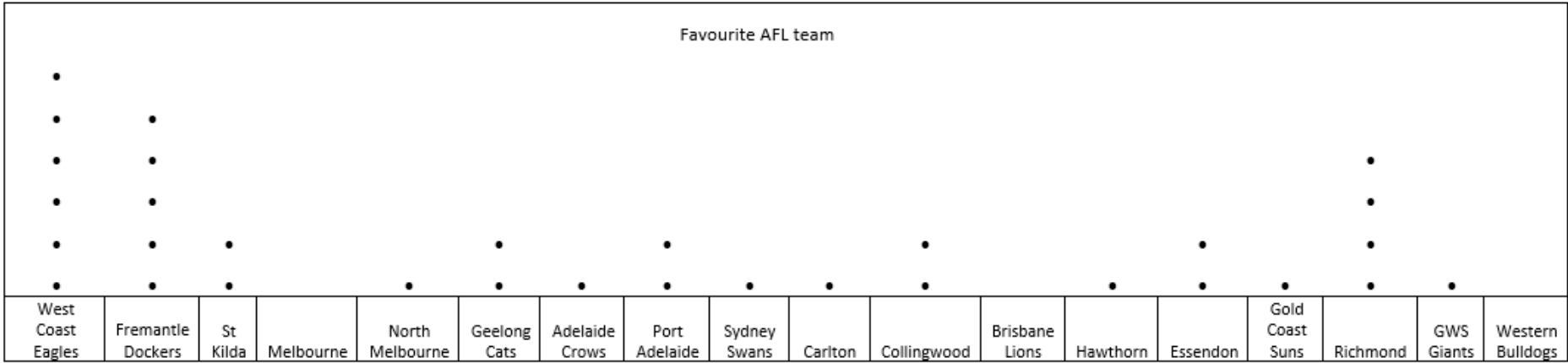
These examples are provided as ideas. Teachers are encouraged to provide students with a variety of examples and scenarios as well as replace values to suit the group's needs.

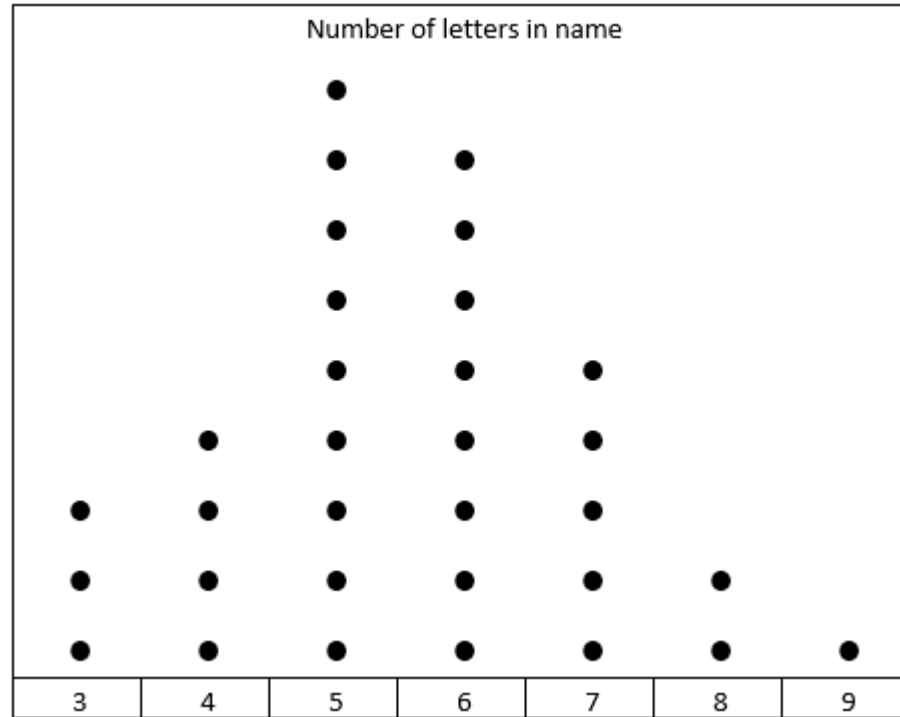
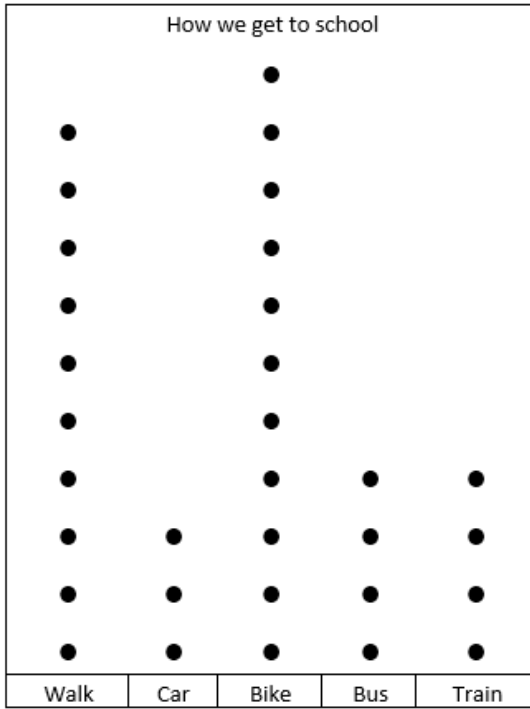
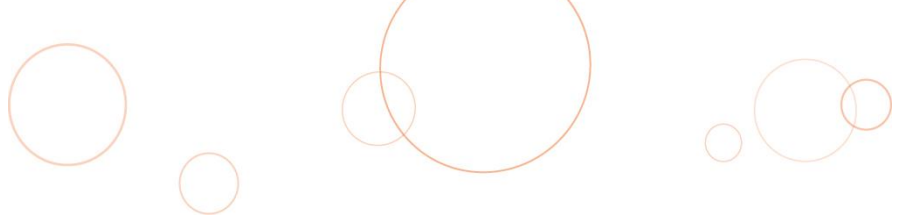
I went to the shop and bought 15 bars of chocolate for the birthday party. When I got home, my brother had also bought 22 bars. How many did we have in total?	$15 + 22 =$
There were 37 bars of chocolate at the birthday party. I brought 15 and the rest were brought by my brother. How many did he bring?	$15 + \underline{\quad} = 37$ $37 - 15 =$
My brother and I put all the chocolate bars we bought into a bowl. My brother placed 22 bars in the bowl and there were 37 in total. How many did I place in the bowl?	$\underline{\quad} + 22 = 37$ $37 - 22 =$
There were 365 children watching the game and 472 adults. How many people were watching the game?	$365 + 472 =$
There were 837 people at the game. All the children left at the same time and there were 472 people left. How many children were at the game?	$837 - \underline{\quad} = 472$
There were 472 adults at the game, but 837 seats were filled. How many children were at the game?	$472 + \underline{\quad} = 837$
1000 adults and 850 children visited the zoo today. How many people were at the zoo?	$1000 + 850 =$
There were only 850 children at the zoo today, but there were 1850 people going through the gates. How many adults would have been at the zoo today?	$850 + \underline{\quad} = 1850$
1000 adults took children to the zoo today. The tickets office sold 1850 tickets for the day. How many children visited the zoo today?	$1850 - 1000 =$

Word problem types

Term 2 Week 3

Concept	Problem types	Explanation
Additive	Change problems (join)	One quantity is physically increased when another quantity is added to it
	Change problems (separate)	One quantity is physically decreased when part of the quantity is removed or taken away
	Combine problems	The total of two static quantities is required – there is no physical movement of quantities
	Compare/equalise problems	Two quantities are compared or matched additively – how much more or how much less
Multiplicative	Repeat equal quantities problems	A number of equal-sized groups of items
	Array problems	Items are arranged in equal-length rows and equal-length columns
	Combination problems	Two or more sets of items are arranged in every possible combination of items

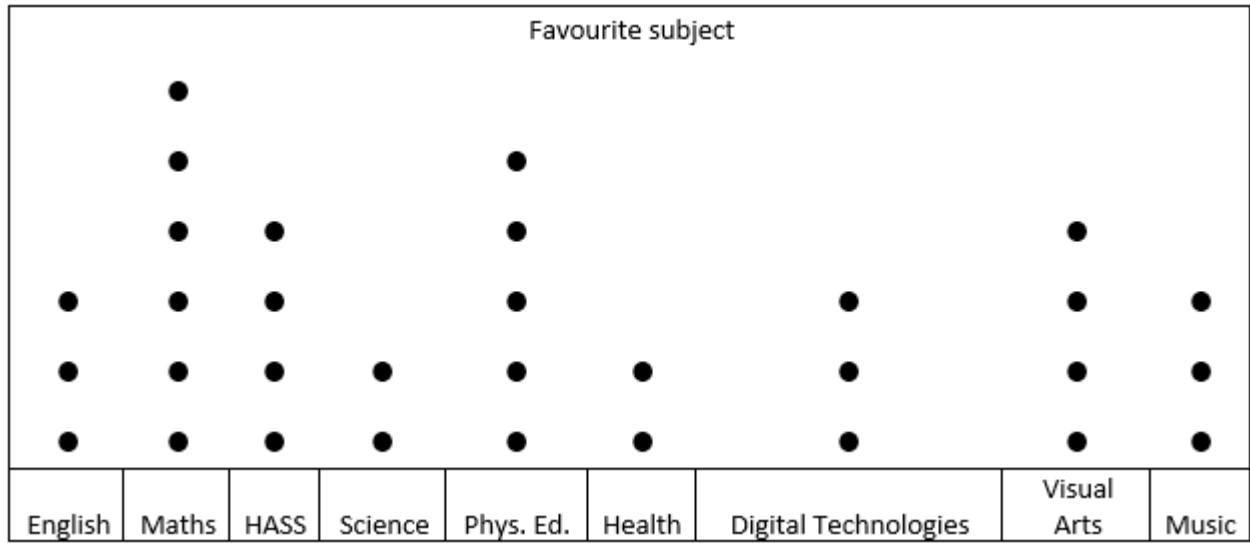
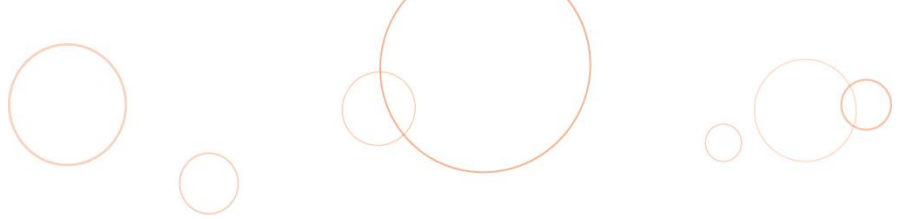


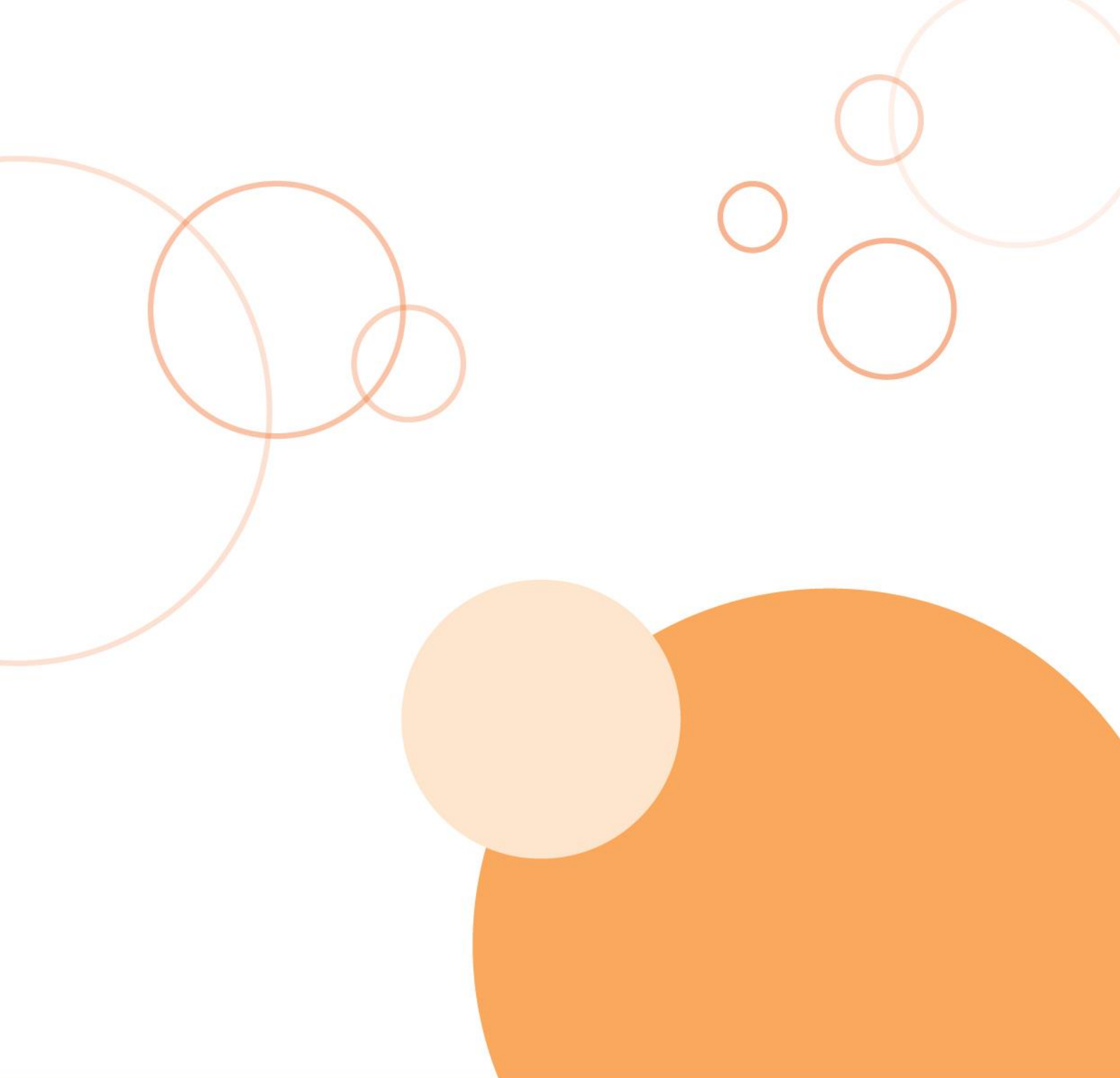




Hair colour			
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Eye colour			
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The page features a decorative design with several orange circles and shapes. In the upper left, there are several overlapping circles of varying sizes, some solid and some outlined. In the upper right, there are more circles, some solid and some outlined. A large, solid orange shape, resembling a semi-circle or a large circle partially cut off, is positioned in the lower right quadrant. The bottom of the page is a solid orange horizontal band.

Appendix B

Assessment task 1

Cooking a carrot cake



Task details

Title	Cooking a carrot cake
Description	<p>Students engage in a fractional modelling activity, similar to the one worked on in Term 3 Week 1. Students calculate the fractional amounts required to cook a carrot cake, using only a one-quarter measure.</p> <p>The first part of the task is group based and should be completed collaboratively to engage students in the context of the strategies they will be asked to work on. The second part of the task consists of individual work in which students identify and explain the strategies used to combine unit fractions with the same denominator.</p>
Ways of assessing	Written work
Evidence to be collected	Task sheet and working out sheets containing questions and answers
Suggested time	One hour
Differentiation	Teachers should differentiate their teaching and assessment to meet the specific learning needs of their students, based on their level of readiness to learn and their need to be challenged. Where appropriate, teachers may either scaffold or extend the scope of the assessment tasks.

Content descriptions

Number and algebra

Understanding number

- Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts
- Recognise, represent and describe unit fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$. Combine unit fractions with the same denominator to create a complete whole

Modelling with number

- Identify and represent a range of real-world addition and subtraction situations with part-part-whole models, and multiplication and division situations with arrays. Write number sentences to reach a solution and interpret in context

Task preparation

Prior learning

Term 1, Weeks 7; Term 2, Weeks 5; Term 3, Week 1



Instructions for teacher

Distribute the task sheet *Instructions to students* with the questions. Read each question in the booklet to the students. Ensure the students understand that they can use the answer boxes to show their thinking, or 'working out'. The worded problem could be worked through in groups or pairs, then students answer all questions independently.

Instructions to students

You would like to cook a cake for your family. You have found a recipe for a yummy carrot cake. The list of ingredients to make the carrot cake is below.

Carrot cake ingredients

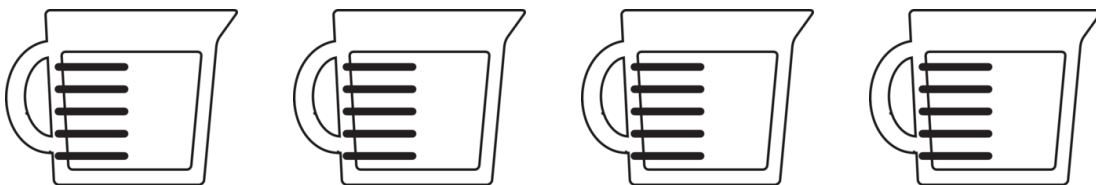
- 1 cup self-raising flour
- $\frac{1}{2}$ cup wholemeal flour
- $\frac{1}{2}$ cup grated carrot
- $\frac{1}{4}$ cup brown sugar
- $\frac{1}{4}$ cup oil
- 2 eggs, lightly beaten

Problem: You only have a one-quarter cup measuring cup. How will you work out the correct fraction for all the ingredients you need in your cake?

There are different methods you can use to help you. Choose one or a combination of the methods below to help you work out the correct amounts of the fraction you need to make the cake. To work out how many quarter cups you'll need of each ingredient, you can choose from the methods below. You can use as few or many methods as you like.

Methods for measuring

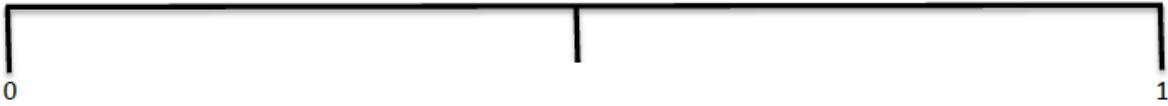
1. Blank cups (if you need it for your working out)



Graphics: Kitty Fairy, 2016



2. Number line with whole numbers (if you need it for your working out)



3. Blank number line (if you need it for your working out)



4. Space for diagrams and calculations (if you need it for your working out)

A large, empty rectangular box with a black border, intended for students to draw diagrams or show calculations.



Questions

Use one or more of the methods explored on the previous pages to answer the following questions. Use your working out on the previous pages to help. Show your working out for each question in the boxes provided.

1. How did you find the measurement for one cup? (Hint: How many quarters of a cup makes one whole cup?) Use fractions and an equation to show how you calculated the answer.

2. How did you find the measurement for $\frac{1}{2}$ cup? Use fractions and an equation to show how you calculated the answer.

3. How many $\frac{1}{3}$ cup measurements make up one cup? Use fractions and an equation to show how you calculated the answer.

4. Place the following fractions in order on the number line below: $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$ and $\frac{1}{5}$.



Explain how you ordered the fractions.

Marking key

Description	✓
Question 1	✓
Uses evidence of repeated doubling and/or other effective mental strategies to find the correct answer. Writes fractions as symbols and uses additive and/or multiplicative thinking with the correct operation in working out	
Uses assistive diagrams and shows evidence of a range of mental strategies used to find the answer	
Uses assistive diagrams and some mental strategies to find the answer	
Question 2	✓
Uses evidence of repeated doubling and/or other effective mental strategies to find the correct answer. Writes fractions as symbols and uses additive and/or multiplicative thinking with the correct operation in working out	
Uses assistive diagrams and shows evidence of a range of mental strategies used to find the answer	
Uses assistive diagrams and some mental strategies to find answer	
Question 3	✓
Uses evidence of effective mental strategies to find the correct answer. Writes fractions as symbols and uses additive and/or multiplicative thinking with the correct operation in working out	
Uses assistive diagrams and shows evidence of a range of mental strategies used to find the answer	
Uses assistive diagrams and some mental strategies to find the answer	
Question 4	✓
Places unit fractions in order, using denominators. Explains use of denominators and/or size of the parts of the whole to order fractions	
Places unit fractions in order, using diagrams and/or other strategies	
Uses some diagrams to assist in determining the order of the unit fractions.	



Appendix C

Assessment task 2

Number sentences, part-part-whole models and
flexible calculation strategies



Task details

Title	Number sentences, part-part-whole models and flexible calculation strategies
Description	<p>Students solve addition and subtraction stories using part-part-whole models. Students solve number sentences for addition, subtraction and multiplication.</p> <p>This task consists of individual work in which students solve addition, subtraction and multiplication problems presented as worded problems and equations.</p>
Ways of assessing	Written work
Evidence to be collected	Task sheet and student working out sheets containing questions and answers
Suggested time	One hour
Differentiation	Teachers should differentiate their teaching and assessment to meet the specific learning needs of their students, based on their level of readiness to learn and their need to be challenged. Where appropriate, teachers may either scaffold or extend the scope of the assessment tasks.

Content descriptions

Number and algebra

Understanding number

- Represent and explain the relationship between addition and subtraction using part-part-whole models and number sentences
- Recall addition and subtraction facts to 20
- Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts

Calculating with number

- Add and subtract two- and three-digit numbers using a range of strategies

Task preparation

Prior learning

Term 1, Week 4; Term 2, Week 1; Term 3, Week 3; Term 4, Weeks 5 and 7



Instructions for teacher

Distribute the Student record sheet to each student, this includes Parts I–III. Read each question in the booklet to the students if necessary. Ensure the students understand that they can use the answer boxes to show their thinking, or ‘working out’.

Note: ensure grid paper is available for students who wish to use it for their part-part-whole models.



Instructions to students

Part 1

Read the following addition and subtraction stories to students and ask them to draw part-part-whole models to represent them. Students write a number sentence to go with each model. Allow enough time between each story.

Part 2

Explain to students that they will read number sentences and then represent them as stories to solve them. They may draw and/or write.

Part 3

Ask students to explain in writing the strategies used to solve the following problems.



Student record sheet

Name: _____

Part 1: Part-part-whole models and number sentences

- a. There were 63 lollipops at the party. John brought 25 of the lollipops and Ping brought 38 of the lollipops.

Part-part-whole model:

Number sentence:

- b. There were 92 cupcakes at the party. 18 were chocolate-flavoured and 74 were vanilla-flavoured.

Part-part-whole model:

Number sentence:

- c. My brother has 23 toys and I have 31 toys. Together, we have 54 toys.

Part-part-whole model:

Number sentence:

**Part 2: Number stories**

$15 + 28 = \square$

$45 - 15 = \square$

$\square + 12 = 38$

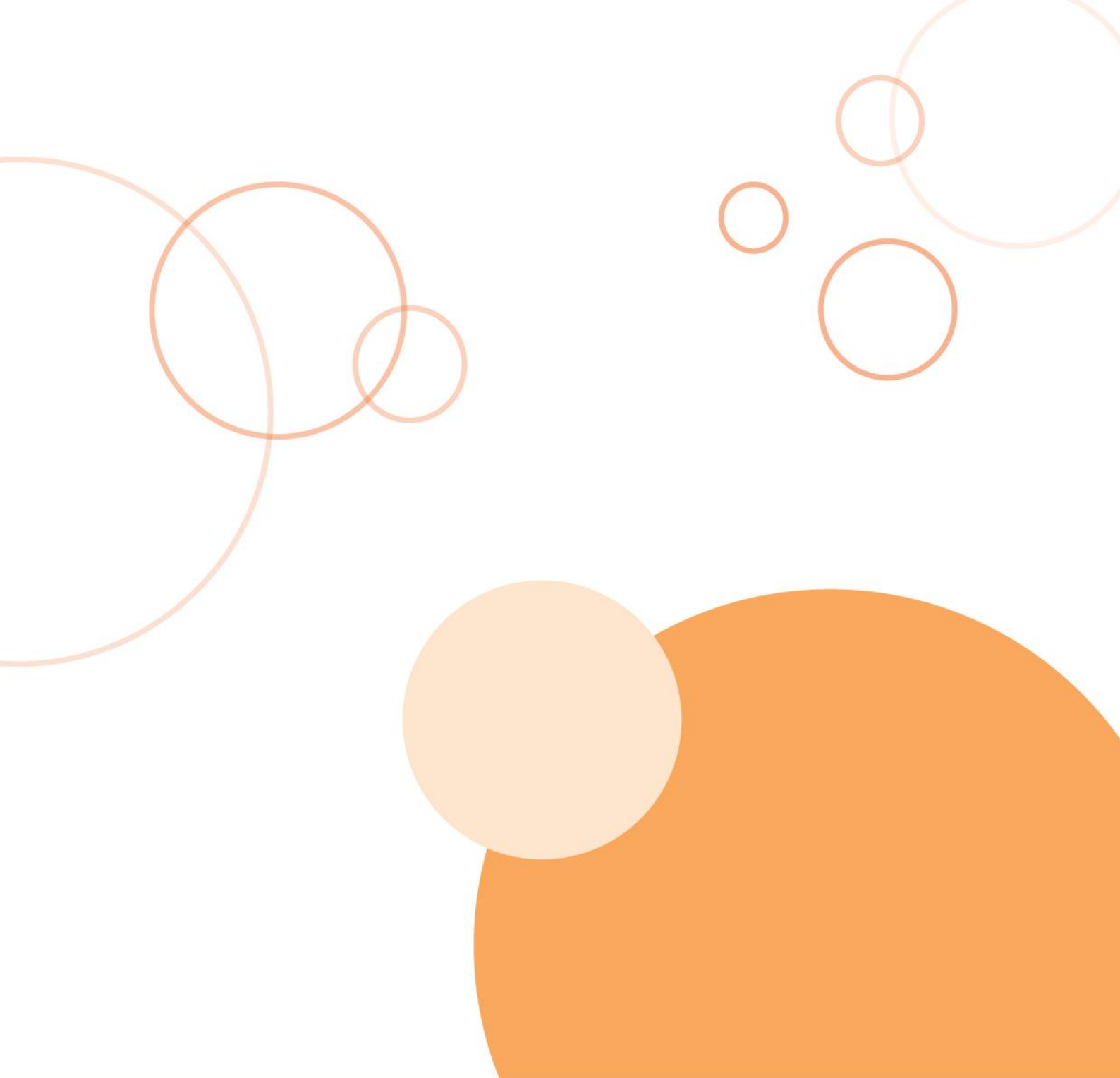
Part 3: Mental strategies

$8 \times 5 =$

$12 \times 3 =$

$24 \times 2 =$

$87 \times 10 =$



Appendix D

Assessment task 3

The lucky winner



Task details

Title	The lucky winner
Description	Students engage in a chance activity, similar to those worked on in class in Term 4 Week 8. After running their trials, listing, recognising and explaining variations, students create new chance scenarios by employing strategies to solve addition, subtraction, multiplication and division word problems.
Ways of assessing	This summative assessment provides opportunity for students to demonstrate their knowledge and skills of Understanding number, Calculating with number and Probability concepts taught.
Evidence to be collected	Working out/answer page
Suggested time	Two one-hour lessons.
Differentiation	Teachers should differentiate their teaching and assessment to meet the specific learning needs of their students, based on their level of readiness to learn and their need to be challenged. Where appropriate, teachers may either scaffold or extend the scope of the assessment tasks.

Content descriptions

Number and algebra

Understanding number

- Recall addition and subtraction facts to 20
- Explore and represent the relationship between multiplication and division using diagrams, arrays and number sentences
- Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts

Calculating with number

- Add and subtract two- and three-digit numbers using a range of strategies

Probability and statistics

Probability

- Identify the likelihood of outcomes for planned, equally likely, repeated chance experiments. Conduct the experiments and recognise variation in the results

Task preparation

Prior learning

Term 1, Weeks 2, 5, 6; Term 2, Weeks 1, 3, 5, 6; Term 3, Week 3; Term 4, Weeks 1, 5, 7, 8



Instructions for teacher

The lucky winner

The first part of the task is group-based and should be completed collaboratively to engage students in the context of calculations they will be asked to work on. The second part of the task consists of individual work in which students identify and explain the strategies used to solve number problems.

Resources

You will need cards and blank paper.

Part 1: Group work assessment

Hand out student worksheets and allow student time to read the instructions. If appropriate read through the instructions with the whole class/small groups.

Ensure that you point out to students that they are in charge of the dinner's lottery.

Divide the students into groups. Give the following set of cards to each group:

- nine cards representing basketball players at the dinner
- seven cards representing volleyball players at the dinner
- 10 cards representing football players at the dinner
- four cards representing tennis players at the dinner.

Students use the cards to conduct an experiment to determine which sporting club will win the most prizes this year. Students will draw 10 cards and may complete a similar chart to the above.

Students make comparisons between last year's and this year's results, recording their findings both numerically and in word sentences.

Part 2: Individual assessment

Explain to students that at next year's dinner, the number of players representing each sport is going to change.

Students determine how many players of each sport will be present at next year's dinner. While solving, students identify, apply and explain the strategies used in their calculations.

Part 3 (extension):

Explain that the following year, students repeat the lottery with the different number of players (using the information gathered in Part 2). Ask students to identify and/or explain the differences between this year's results and next year's results.



Instructions to students

The lucky winner

Part 1: Group work assessment

Each year, the local council runs a dinner for sporting club players to raise money for their local sporting clubs.

At the end of the dinner, the organisers draw 10 names out of a hat (lottery). The players whose names are picked win a money prize for their sporting club.

The same players attended the dinner last year and this year. The table on the next page shows the lottery results from last year.

Last year, the football sporting club received the most prizes.

This year, your group is in charge of the dinner's lottery.

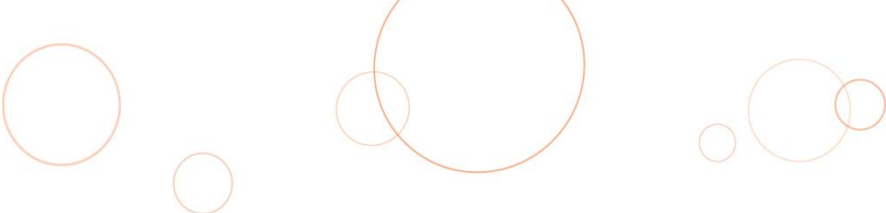
Your group will be given the following:

- nine cards representing basketball players at the dinner
- seven cards representing volleyball players at the dinner
- 10 cards representing football players at the dinner
- four cards representing tennis players at the dinner.

Use the cards to conduct an experiment to find out which sporting club will win the most prizes this year.

Draw 10 cards and record the results in the chart on the next page.

Show the difference between 'Last year's prizes' and 'This year's prizes' using a number sentence and a word sentence. You can work on this with your group.



Sporting club	Last year's prizes	This year's prizes	Differences between years
Basketball	<p style="text-align: center;">3 players were picked</p>		<p style="text-align: center;">Number sentence</p> <p style="text-align: center;">Word sentence</p>
Volleyball	<p style="text-align: center;">2 players were picked</p>		<p style="text-align: center;">Number sentence</p> <p style="text-align: center;">Word sentence</p>
Football	<p style="text-align: center;">4 players were picked</p>		<p style="text-align: center;">Number sentence</p> <p style="text-align: center;">Word sentence</p>
Tennis	<p style="text-align: center;">1 player was picked</p>		<p style="text-align: center;">Number sentence</p> <p style="text-align: center;">Word sentence</p>

Can you explain why there might be variation between the numbers of last year's prize winners and this year's prize winners?

Part 2: Individual assessment

At next year's dinner, the number of players representing each sport is going to change.

Use the following statements to adjust your cards.

- In comparison to this year's dinner, at the dinner next year, there will be:
 - seven **more** basketball players
 - **an additional** eight volleyball players
 - seven **less** football players
 - three **times as many** tennis players.
- Using next year's totals, calculate the number of players attending for these new sporting clubs, including:
 - ice hockey, which will have **twice as many** players as basketball
 - rugby, which will have **three times as many** players as volleyball
 - tennis, which will have **half** the number of basketball players.

Calculate how many players of each sport will be present at next year's dinner. Remember to explain the strategy you used to work out how many players will be at the dinner next year.

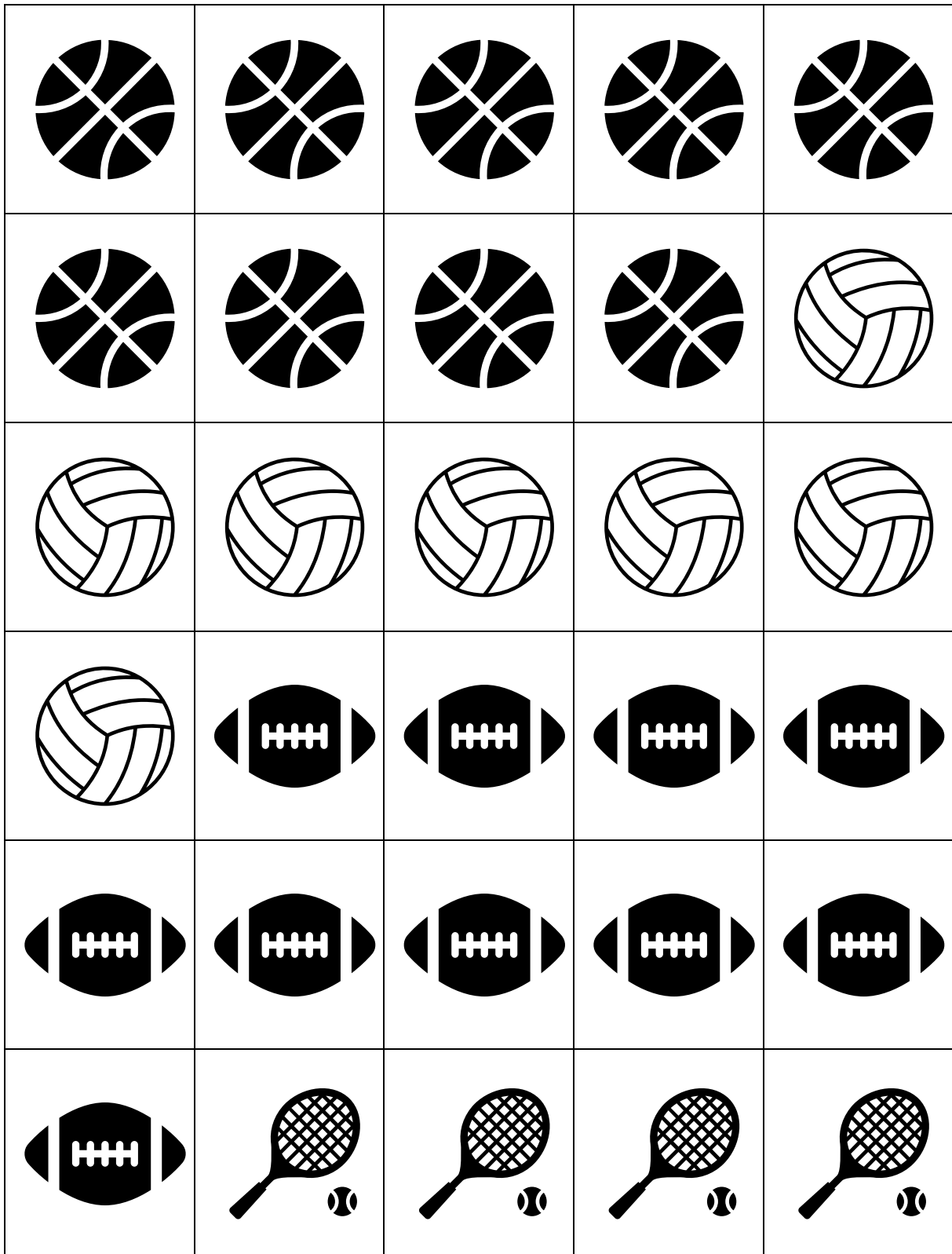
Sporting Club	Number of players this year	Number sentence to explain how what strategies you used to solve the problem	Number of players next year
Basketball			
Volleyball			
Football			
Tennis			
Hockey			
Rugby			
Cricket			



Part 3 (extension):

Repeat the lottery with the different number of players (using the information gathered in Part 2). Identify any differences between this year's results and next year's results, and explain why.

Cards for Part 1



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Marking key

Description	✓
Conducting an experiment	✓
Conducts an experiment	
Attempts to conduct an experiment	
Explaining outcomes of experiments	✓
Recognises and explains variation in results using mathematical language	
Recognises variation in results	
Needs support to recognise variation in results	
Using strategies to solve addition and subtraction problems	✓
Applies and explains strategies used to solve problems	
Applies strategies to solve problems	
Identifies the strategy required	
Using strategies to solve multiplication and division problems	✓
Applies one or more strategies to solve problems, including those involving division, and explains the strategies used	
Applies one or more strategies to solve problems, including those involving division	
Identifies the strategy required	



Acknowledgements

Term 1

Week 1

Amanda. (2012). *Dice 3 Clip art*. Retrieved February, 2026, from <http://www.clker.com/clipart-dice-3-3.html>

Amanda. (2012). *Dice 6 Clip art*. Retrieved February, 2026, from <http://www.clker.com/clipart-dice-6-1.html>

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Week 5

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Term 3

Week 3

Learning experience 3, dot point 3 adapted from: Department of Education WA. (2013). *First Steps in Mathematics: Number - Book 2* (2nd ed.), p. 24. Retrieved January, 2026, from <https://myresources.education.wa.edu.au/programs/first-steps-mathematics/number>

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Week 6

Vectorportal. (2022). *Stock Kitchen Weighing Scale Vector and Icon*. Retrieved February, 2026, from <https://vectorportal.com/vector/kitchen-weighing-scale/35256>

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Appendix B

Instructions for students

Kitty Fairy. (2016). *Liquid Measuring Cup Clip art*. Retrieved January, 2026, from <https://www.clker.com/clipart-liquid-measuring-cup-3.html>

