MATHS PLUS

STUDENT BOOK

AUSTRALIAN CURRICULUM

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Contents*

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*This is the contents from your *Oxford Owl* Teacher Dashboard.

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Trace the number 1, then show it on fingers. Identify and draw groups of one. Make repeating patterns using 3D objects.	Trace and draw straight and curved lines. Find objects that are longer or shorter than given items.	
2	2	6–9	Trace the number 2, then show it on fingers. Identify and draw groups of two. Identify and compare parts of a whole.	Identify 3D objects that will roll. Match 3D objects to the correct hole in a sorting box. Draw objects that are 'shorter' and 'taller'. Draw objects that are 'closer' and 'further away'.	
3	3	10–13	Trace the number 3, then show it on fingers. Identify and draw groups of three.	Draw shapes to make groups of equal number. Use direct comparison to compare areas.	Sort objects into food groups and sports groups.
4	4	14–17	Trace the number 4, then show it on fingers. Identify and draw groups of four, and extend groups to make four. Identify groups as 'equal' or 'not equal'.	Identify, trace and draw circles. Develop an understanding of volume as the space an object occupies.	
5	5	18–21	Trace, count and make the number 5. Identify groups of five, and count to five. Use the terms 'more', 'less' and 'same as' to compare small collections.	Show location of items 'beside', 'between', 'under', 'in front', 'inside' and 'on top'. Decide the heavier item by hefting two items at once.	
6	6	22–25	Trace, count and make the number 6. Recognise different representations of the same number. Combine groups to add items. Identify, continue and create patterns with objects.	Trace around the bases of 3D objects to draw various 2D shapes.	
7	7	26–29	Trace, count and make the number 7. Complete the number sequence. Count and record the number of items in a group.	Describe and identify the features of 3D objects. Identify morning and afternoon activities, then draw one of each.	
8	8	30–33	Trace, count and make the number 8. Join the dots and complete the number sequence. Take away from a group.	Recognise and draw thick and thin objects.	Interpret a data presentation based on fruit.
9			Diagnosis and consolidation		

Term planners

Term 2 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	9	34–37	Trace and count to the number 9. Order numbers from smallest to largest. Complete the number sequence. Combine two groups to find the total number.	Identify squares from a group of shapes. Trace then draw some squares. Find items then compare areas by direct comparison.	
2	10	38–41	Trace and count to the number 10. Identify and draw groups of 10. Count backwards from 10. Add small numbers by counting on.	Identify objects from their position in an illustration. Compare the duration of two activities. Draw something that takes longer to do than having a bath.	
3	11	42–45	Count on to find the total number of objects. Make six using different counter combinations. Draw objects to make groups of six.	Identify, trace and draw triangles. Identify containers that are 'full', 'empty' and 'partly full'.	
4	12	46–49	Create numbers using five as a base. Match groups of objects to the correct numerals. Subtract small numbers by counting back.	Recognise and make models of various 3D objects. Compare the duration of two activities.	
5	13	50–53	Introduce and use zero in counting. Relate number names, numerals and groups from zero to ten.	Decide the heavier item by hefting two items at once.	Collect, display and interpret data based on weather.
6	14	54–57	Discover combinations for making seven. Find different combinations for eight. Compare and count groups to find the difference.	Compare capacity by pouring water from one container to another.	Sort and interpret data based on footwear styles.
7	15	58–61	Identify groups of 11, 12 and 13 using a 10-frame representation. Order numbers from zero to 13.	Share objects into equal groups. Follow directions to identify objects in an illustration based on position. Use direct comparison to find the longer object in a pair.	
8	16	62–65	Identify the numbers 14, 15 and 16 using a 10-frame representation. Order numbers from zero to 16. Draw shapes to make sets of equal groups.	Use direct comparison to compare areas.	Identify whether events 'always', 'sometimes' or 'never' happen. Identify 'lucky' and 'unlucky' numbers in a game.
9			Diagnosis and consolidation		

Term planners

Term 3 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	17	66–69	Model subtraction by separating, using pegs on a coathanger. Complete subtraction number sentences. Copy, continue, create and describe movement and sound patterns.	Identify and trace rectangles. Use the terms 'earlier' and 'later' when comparing and ordering activities.	
2	18	70–73	Use 10 as a base to model numbers to 16. Complete number sequences to 16. Join three groups to find the total number. Continue patterns of two and three.	Find the larger volume by counting cubes. Fill containers to find the one that holds the most.	
3	19	74–77	Identify numbers from 17 to 20. Fill in the missing numbers on flip charts to and from 20. Introduce ordinal numbers to tenth place.	Sort shapes by name. Draw rectangles to complete a pattern. Draw objects lighter and heavier than those shown.	
4	20	78–81	Order numbers to 20. Find the largest and smallest number. Find the hidden number in subtractions then record an answer.	Explore properties of 2D shapes with straight sides. Use ordinal numbers to order the days of the week. Identify weekend activities.	
5	21	82–85	Arrange nine counters in two rows to discover different addition combinations. Use ordinal numbers to describe position.	Compare lengths using direct and indirect matching.	Survey 10 students and make an eye-colour data display.
6	22	86–89	Identify rules for simple number patterns and use them to continue patterns. Use 10-frames to add numbers to 10.	Use and identify the terms 'left' and 'right'.	Collect data to answer questions.
7	23	90–93	Use a calculator to perform simple additions and subtractions. Count groups of equal number to introduce the concept of multiplication. Identify different coins.	Relate activities to days of the week. Sketch activities relating to 'yesterday' and 'tomorrow'.	
8	24	94–97	Count forwards and backwards to 20 from various starting points. Share items equally between groups. Investigate the constant addition function on a calculator.	Investigate the properties of cubes and spheres.	
9			Diagnosis and consolidation		

Term planners

Term 4 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	25	98–101	Use numbers to describe counting patterns and find missing numbers in sequences. Count backwards to complete subtraction problems. Use a number line to assist subtraction.		Sort data according to given criteria.
2	26	102–105	Complete number sentences to describe groups of objects. Use a 10-frame to calculate addition combinations for 10.	Match 3D objects to their names. Use a pan balance to compare masses.	
3	27	106–109	Model numbers to 30 using 10-frames. Count beyond 20. Solve subtraction problems with the aid of diagrams.	Use and interpret movement and positional language. Order events in the day from first to fifth.	
4	28	110–113	Share various numbers of marbles between two and three jars. Identify patterns and non-patterns.	Read and recognise o'clock times on an analogue clock.	Make a tally chart and block graph that illustrate the results of a survey.
5	29	114–117	Use bundles of 10 pencils and loose pencils to model numbers to 30. Complete counting sequences to 30. Solve word problems about sharing.	Use a balance scale to compare masses.	Interpret data to answer questions.
6	30	118–121	Complete subtraction problems. Solve addition combinations to 10. Identify coins and their values, and match money amounts with purchases.	Count cubes to measure the lengths of various objects.	
7	31	122–125	Fill in the missing numbers in a grid when counting to 30. Order numbers from smallest to largest. Use a number line to complete addition and subtraction problems.	Use a feely bag to hide then choose and describe 3D objects.	Use the terms 'will', 'will not' and 'might' to describe events.
8	32	126–128	Represent and solve addition and subtraction problems. Identify the missing shape in a repeating pattern of shapes.	Read a simple map to answer questions. Draw a path between points on a map. Follow directions to find objects on a grid.	
9			Assessment and consolidation		

MATHS PLUS Australian Curriculum Year F Teaching Notes

Australian Curriculum

ACMNA289 Compare, order and make correspondences between collections, initially to 20, and explain reasoning (Understanding) [N] [L]

Lesson focus

Compare and describe groups

Materials

- collections of items
- linking cubes
- **BLM 3** (Equal/unequal cards)
- scissors
- drawing paper
- counters

Student Book

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Digital Teaching Objects

The digital teaching object ‘Equal and unequal groups’ on the Teacher Dashboard can be used to introduce relevant key mathematical concepts.

Getting started

Students work in pairs. Each student takes up to five items from a collection without the other seeing. Students match their items one-to-one to compare groups. Ask various pairs to describe their groups. For example: *I have more than Tom. Kelly has the same as me. Tran’s and mine are equal. Ben has less than me.*

Learning activities

1. Choose two students to each take a handful of linking cubes and join them together. Students compare bars of cubes to see if they are the same or different/equal or not equal. Repeat for other pairs of students.
2. In pairs, students place one hand behind their back and face each other. Without discussion, students decide how many fingers to hold up and when both students are ready, they hold their hand up in front of them to show the number of fingers. Do they have the same (equal) number of fingers held up or a different (unequal) number?
3. Give pairs of students a copy of **BLM 3** (Equal/unequal cards). Pairs cut out the cards, mix them up and take six each, which they hold face down. They use the cards to play a game of 'Snap'. If two cards show the same number of items, the first student to place their hand over them and say *Snap!* takes all the cards under their hand.
4. Place all the cards from the copies of **BLM 3** in one container. Divide the class into two teams. In turn, one student from each team takes a card and then they compare them. If cards have equal numbers, teams score one point each. If they are not equal, the team with the card that has more scores one point. The winner is the team with most points when all the cards are gone.

Support activities

- Give pairs of students plenty of opportunity to compare handfuls of different items by matching one-to-one. Ask questions such as: *Do you have an equal number of items? Who has more?* Encourage students to use the language of comparison.

Extension activities

- Students work in groups of three or four to compare and order groups of items from the student who has the most to the student who has the least.
- Students make their own 'Snap' cards similar to those on **BLM 3**.

Reflection

Seat students in a circle. Choose two students to each take some counters and match them. Discuss if the groups are equal or not equal. Ask: *How do you know?* Repeat for other students.

Assessment

- Are students able to identify groups that are equal?
- Do students use the language of comparison appropriately?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Count and represent numbers to 30. Recognise and show halves of whole objects and collections of objects.	Make 2D shapes on geoboards then sketch them. Use uniform informal units to estimate and measure lengths.	
2	2	6–9	Use appropriate mental strategies for adding small numbers. Understand place value with two-digit numbers.	Sort 3D objects according to properties. Recognise and read o'clock times on an analogue clock.	
3	3	10–13	Subtract small numbers with the help of diagrams and concrete materials. Recognise and continue number patterns.	Recognise, name and draw common 2D shapes. Sequence daily activities.	
4	4	14–17	Make, count and model groups of 10. Find half of collections of objects.	Estimate capacity and use informal units to measure and compare the capacity of containers.	Classify events as 'possible' or 'impossible'. Draw 'impossible' and 'possible' events.
5	5	18–21	Count on to add small numbers. Distinguish odd and even numbers.	Use and understand the language of location. Lift everyday objects to find the heavier item.	
6	6	22–25	Model and compare two-digit numbers. Share collections of objects.	Identify and describe features of 2D shapes.	Organise, display and interpret data.
7	7	26–29	Add numbers on a number line. Count forwards and backwards by 1s between 1 and 100.	Recognise common 3D objects and identify them in familiar items. Recognise and read time to the half-hour on analogue and digital clocks.	
8	8	30–33	Explore and learn addition combinations to 10. Count and compare numbers to 100.	Use uniform informal units to estimate and measure length.	Use chance words to describe the likelihood of events.
9–10		34–35	Diagnostic review 1		

Term planners

Term 2 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	9	36–39	Skip count by 2s, 5s and 10s. Use a number line for subtraction.	Recognise and explore squares and rectangles. Use direct comparison to compare areas.	
2	10	40–43	Count forwards and backwards by 10s from any starting number. Recognise and understand the value of our coins.	Use position language to describe the location of objects in relation to other objects. Measure and compare shapes using uniform informal area units.	
3	11	44–47	Count by 2s and 5s up to 100. Use the 'make to 10' strategy when adding numbers.	Describe the relative position of objects. Count cubes to compare and measure volume.	
4	12	48–51	Create patterns and describe them with numbers. Make and describe addition number sentences.	Revise telling time to the hour and half-hour on analogue clocks.	Read, interpret and draw picture graphs.
5	13	52–55	Identify and model halves of objects and collections. Identify, describe and continue number patterns.	Name and describe 3D objects and relate them to 2D shapes. Identify congruent shapes.	
6	14	56–59	Use the constant function on a calculator to continue counting patterns. Share collections of objects equally.	Identify and draw 2D shapes.	Construct and interpret picture graphs.
7	15	60–63	Count backwards from 100 by 2s, 5s and 10s. Use ordinal numbers to identify and describe position.	Interpret and plot paths on simple maps. Use a calendar to identify days, dates and simple time intervals.	
8	16	64–67	Count on to add small numbers. Describe and make number patterns.	Use uniform informal units to measure and compare length.	Identify and describe events that 'will happen', 'won't happen' and 'might happen'.
9–10		68–69	Diagnostic review 2		

Term planners

Term 3 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	17	70–73	Count back to subtract small numbers. Find the difference between two numbers.	Identify and make symmetrical shapes. Measure and compare capacity.	
2	18	74–77	Add numbers by making to 10. Use a number line to model and solve repeated addition.	Recognise and describe 3D objects. Use uniform informal units to estimate, measure and compare masses.	
3	19	78–81	Use doubles to work out near doubles. Remove equal groups from a number and count them.	Use flips, slides and turns to move shapes and describe their movement. Name and relate months and seasons.	
4	20	82–85	Relate addition and subtraction. Describe and record groups as repeated addition.	Estimate and measure length with uniform informal units.	Interpret and compare data from graphs.
5	21	86–89	Use addition to solve subtractions. Describe number patterns and identify non-patterns.	Use a grid to locate and give positions. Model and draw 3D objects.	
6	22	90–93	Make addition combinations for numbers to 20. Compare and order two-digit numbers.	Recognise and describe 2D shapes.	Make and interpret column graphs.
7	23	94–97	Count back to subtract small numbers. Explore the commutative property of addition.	Recognise the top, front and side views of rectangular prisms and cubes. Describe, measure and compare the duration of events.	
8	24	98–101	Relate addition to subtraction. Solve addition and subtraction word problems.	Measure and compare volume.	Collect and sort data into a table.
9–10		102–103	Diagnostic review 3		

Term planners

Term 4 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	25	104–107	Use addition combinations to 10 when adding three or more numbers. Recognise and show quarters of objects. Use rules to complete tables.	Read and interpret a calendar.	
2	26	108–111	Use various strategies to find missing numbers in addition number sentences. Count coins of the same value.	Follow and give directions to find and position objects on a grid.	Describe and predict outcomes.
3	27	112–115	Use various strategies when solving subtractions. Make and record equal number sentences.	Identify and describe 2D shapes. Estimate and compare length against a 1-metre length.	
4	28	116–119	Use various strategies when adding 10 to numbers. Identify and make halves and quarters of wholes and collections.	Measure and compare areas with a grid.	Collect, organise and display data.
5	29	120–123	Interpret and solve word problems. Use a written method to represent trading in addition.	Recognise and describe 3D objects. Compare and order masses.	
6	30	124–127	Make amounts of money in different ways. Use various strategies to find the total of two groups.	Follow and describe directions.	Collect, display and interpret data from a simple chance experiment.
7	31	128–131	Make and describe arrays. Solve and compare addition and subtraction number sentences. Apply rules and check them by backtracking.	Relate digital and analogue time and record digital time.	
8	32	132–134	Find missing numbers in number sentences. Use a number line to solve word problems.	Find paths on simple maps and mazes.	
9–10		135–136	Diagnostic review 4		

Australian Curriculum Year 1 Teaching Notes

Australian Curriculum

ACMNA013 Recognise, model, read, write and order numbers to at least 100. Locate these numbers on a number line (Understanding) [N]

Lesson focus

Make, count and model groups of 10

Materials

- icy-pole sticks
- elastic bands
- **BLM 6** ($10 notes)
- place value charts
- small cards (6 cm × 6 cm)
- stickers
- toothpicks
- dice

Student Book

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Mentals Book

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Getting started

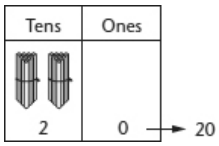
Ask students to stand in a circle and count by 10s, one at a time, around the circle (for example, the first student says *10*, the next student says *20* and so on).

The first student who says *100* sits down and the counting begins again.

Students continue counting from 0 to 100, until one student is left standing and is declared the winner.

Learning activities

1. Provide loose icy-pole sticks and elastic bands for students to make bundles of 10.
2. Follow this procedure to introduce each multiple of 10. For 10, hold up 1 bundle of sticks. Ask: *How many bundles of 10?* (1 bundle of 10) *How many tens?* (1 ten) *How many sticks altogether?* (10) For 90, hold up 9 bundles. Ask: *How many bundles of 10?* (9 bundles of 10) *How many tens?* (9 tens) *How many sticks altogether?* (90)
   Organise students into groups. Call out a multiple, such as 3 tens, and ask someone in the group to hold up 3 bundles. Ask: *How many tens? How many sticks altogether?*
   Ask one student from each group to hold between 1 and 9 bundles in their hands and come out to the front of the class. Ask them to arrange themselves in a line, in order from least to greatest, then describe their numbers to the class (for example: *3 tens, 30*). Make this into a game by timing each group to see how quickly they can order themselves correctly. Compare the time taken by different groups to find the fastest group.
3. Give pairs of students a stack of $10 notes (**BLM 6**) and a dice. Students take turns to throw the dice and the student who throws the lower number must 'pay' the other student $10. Continue until one student is out of money or you ask them to finish. Students count the $10 notes to see how much they each have. The student with the most money is the winner.
4. Use place value charts to demonstrate where the tens numbers fit. Students can place bundles of sticks on the chart and then record the number.



Support activities

- Write a tens number on the board and ask students to use icy-pole stick bundles to model it. Ask: *How many tens have you used?*
- Provide the students with small cards. Students can make tens cards by placing 10 stickers on each card. They can then use the cards for modelling and counting activities.

Extension activities

- Give students a container of toothpicks and a bag of elastic bands. Ask each student to grab one handful of toothpicks and count them by bundling them into 10s.
  Ensure students count by 10s correctly and acknowledge any toothpicks left over (for example, 50 and 7 more make 57).

Reflection

Divide the class into four groups. Place the bundles of sticks in the centre. In turn, one student from each group tosses a dice and picks up that many bundles of sticks. After four or five turns, each group can count their bundles and record the number they represent.

Assessment

- Can students use materials to represent groups of 10?
- Can students link the number name (for example, 5 tens, 50) with the matching bundles of 10?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Recognise, represent, compare and order two-digit numbers. Use mental strategies, including 'make to 10' when adding two numbers.	Identify straight and curved lines. Measure length with uniform informal units.	
2	2	6–9	Write and solve subtraction number sentences. Count on to add small numbers.	Interpret and use the language of position. Compare areas with uniform informal units.	
3	3	10–13	Write and solve addition facts to 20. Find half of shapes and collections.	Identify and explore rectangles and squares.	Classify events as certain, possible or impossible.
4	4	14–17	Use mental strategies to solve subtraction facts. Use ordinal numbers to identify and describe position.	Identify and name common 3D objects. Read and show half past times on an analogue clock.	
5	5	18–21	Investigate number sequences by skip counting. Find a quarter of shapes and collections.	Estimate and measure length with uniform informal units.	Use tally marks to represent information.
6	6	22–25	Link multiplication with addition and skip counting. Subtract by counting on.	Sort and describe 2D shapes. Compare and order capacity.	
7	7	26–29	Subtract by counting back. Divide by making equal groups.	Place objects in given positions and describe their position. Compare and order mass.	
8	8	30–33	Recognise and use the multiplication sign. Relate addition and subtraction facts.	Estimate and measure length in centimetres.	Identify and describe likelihood.
9		34–35	Diagnostic review 1		

Term planners

Term 2 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	9	36–39	Use a written method for two-digit addition without trading. Interpret and record number sentences using the multiplication sign.	Identify and explore triangles. Name and order months and seasons.	
2	10	40–43	Read, write and represent three-digit numbers. Find one-third of shapes and collections.	Identify 2D shapes within 3D objects. Estimate, measure and compare areas.	
3	11	44–47	Use mental and written strategies for addition without trading. Interpret and record number sentences using the multiplication sign.	Identify and explore kites and rhombuses.	Collect, display and interpret data.
4	12	48–51	Use a mental strategy for addition. Choose the appropriate operation and solve problems.	Identify and describe the properties of 3D objects. Estimate and measure capacity.	
5	13	52–55	Read, write and order three-digit numbers. Share a group of items equally.	Identify and explore hexagons.	Collect, display, interpret and compare data.
6	14	56–59	Use a written method for two-digit subtraction without trading. Find eighths of objects and collections.	Construct a model and draw a bird's-eye view. Read and write quarter past and quarter to time on an analogue clock.	
7	15	60–63	Use arrays and mental strategies to multiply by two. Use a written method and mental strategies for subtraction without trading.	Name and classify 2D shapes. Estimate, measure and compare mass.	
8	16	64–67	Use the jump strategy to add and subtract numbers. Divide by making equal-sized groups.	Measure and compare length in centimetres.	Interpret and create picture graphs.
9		68–69	Diagnostic review 2		

Term planners

Term 3 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	17	70–73	Explore turnaround facts for multiplication. Extend basic addition facts.	Identify and describe the properties of 3D objects. Measure and compare areas with uniform units.	
2	18	74–77	Count by 2s, 3s, 5s and 10s. Count, make and record money amounts.	Identify and describe the features of 2D shapes. Read and write digital times and match them to analogue times.	
3	19	78–81	Use various mental strategies when adding. Count backwards by 1s, 2s and 10s.	Use and interpret a calendar.	Order events from least likely to most likely.
4	20	82–85	Solve multiplication by repeated addition. Recognise, complete and create number patterns.	Identify congruent shapes. Estimate and measure capacity in litres.	
5	21	86–89	Explore subtraction as 'finding the difference'. Use non-standard ways to rearrange numbers to 1000.	Understand and draw 2D representations of 3D objects and construct models from drawings.	Draw and interpret tallies and picture graphs.
6	22	90–93	Order numbers up to 1000. Complete statements of equality.	Investigate nets of 3D objects. Use cubes to measure and compare volume.	
7	23	94–97	Investigate addition and subtraction number sentences. Use a mental strategy for addition.	Make and describe patterns using flip, slide and turn. Read and record time to five minutes.	
8	24	98–101	Recognise and use the division symbol. Use a written method for two-digit addition with trading.	Estimate and measure in metres.	Identify possible outcomes and predict likelihood.
9		102–103	Diagnostic review 3		

Term planners

Term 4 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	25	104–107	Use arrays and mental strategies to multiply by five. Use the split strategy for addition.	Identify and make symmetrical pictures and shapes. Identify flips, slides and turns and use them to create patterns.	
2	26	108–111	Multiply by five and 10 within the tables range. Round numbers to the nearest 10.	Follow and give directions. Understand and measure duration.	
3	27	112–115	Compare, order and record money amounts. Count forwards and backwards by 10 from any starting point.	Use a grid to locate and give positions.	Collect, record, display and interpret data.
4	28	116–119	Use the relationship between multiplication and division to solve number facts. Identify and use rules to complete tables and number sequences.	Draw and describe objects from different viewpoints. Use a grid to measure and compare areas.	
5	29	120–123	Identify odd and even numbers. Use a written method for two-digit subtraction with trading.	Describe and sketch 3D objects. Compare and order objects according to specified attributes.	
6	30	124–127	Use the commutative property to add and multiply. Link multiplication and division facts.	Follow and give directions to get from one place to another.	Pose questions and collect information to answer them.
7	31	128–131	Introduce the 3s multiplication facts. Determine and use rules to complete and continue number patterns.	Identify and describe half and quarter turns. Estimate and measure mass in kilograms.	
8	32	132–134	Make amounts of money and give change. Use a written method to solve addition and subtraction with and without trading.	Use a calendar to identify the date and number of days in each month.	
9		135–136		Diagnostic review 4 and assessment	

Australian Curriculum Year 2 Teaching Notes

Australian Curriculum

ACMNA030 Solve simple addition and subtraction problems using a range of efficient mental and written strategies (Problem Solving, Understanding) [CCT] [N]

Lesson focus

Use mental strategies to solve subtraction facts

Materials

- chalk
- counters
- standard dice
- **BLM 14** (Find the difference)
- 12-sided dice

Student Book

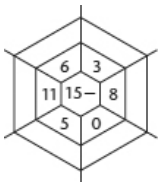
Page 14

Mentals Book

Page 8

Getting started

Draw this spider web on the board:



Explain how to complete it and then do each subtraction in turn, asking various students to say what mental strategy they used to solve each one. Ask: *Which ones are easier to solve by counting on from the smaller number?* Discuss and demonstrate. Allow students to use counters only if necessary.

Learning activities

1. Draw a chalk number line marked from 0 to 20 on the floor. Ask a student to stand on 16 and then to step backwards four steps. Ask: *What number is the student now standing on?* (12) Demonstrate how to record this as a number sentence: 16 − 4 = 12.
   Identify 16 as the total and 4 and 12 as the parts which combine to make the total. When one part is taken away from the whole, the other part is left.
   Ask the students to identify two other parts that make 16 (such as 11 and 5), and use the number line to demonstrate the subtraction 16 − 5 = 11 (or 16 − 11 = 5).
   Identify all of the subtraction pairs that relate to 16 and record them.
   Repeat the process of identifying all of the subtraction pairs for other numbers, as necessary.
2. Put students in groups of four with two dice. One student tosses the dice and the first student to say the difference gets the next toss. For example, if the dice show 5 and 2, the difference is 3. Continue playing for five to 10 minutes.
3. Play 'Find the difference'. Students make groups of three or four. Give each student a gameboard (**BLM 14**) and each group a six-sided and a 12-sided dice. In turn, students toss the two dice and if the difference is on the gameboard, they enter the numbers thrown. The first student to complete their gameboard wins.

Support activities

- Provide plenty of opportunities for students to describe the strategies they use to solve subtractions.
- Students can create stories for subtraction number sentences.

Extension activities

- Students create their own secret code similar to the one on student book page 14.
- Ask students to record subtraction number sentences that have an answer of 7.

Reflection

Discuss different strategies that students use to solve subtractions: counting back, counting on, splitting numbers, bridging . . .

Demonstrate each strategy.

Assessment

- Can students use various strategies to solve subtractions?
- Can students write a subtraction number sentence to match a word problem?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Addition facts to 9 + 9. Find a pattern in an addition grid. Add single-digit numbers with materials. Use arrays for skip counting patterns. Skip count to find a total. Skip count to complete patterns.	Identify prisms and cylinders. Match 3D objects with their names. Measure items using centimetres. Draw lines to exact centimetres.	
2	2	6–9	Subtraction facts to 20. Missing numbers in subtractions. Model odd and even numbers. Find patterns in odd and even numbers.	Draw lines of symmetry on shapes. Complete drawings of symmetrical shapes. Compare informal areas. Make like areas. Measure areas informally. Compare area units.	
3	3	10–13	Count on or back for addition or subtraction. Addition and subtraction as inverse operations.	Describe the position of objects. Follow directions to place items in a grid.	Use tally marks to record survey results. Interpret a column graph.
4	4	14–17	Subtraction facts from addition. Write and solve word problems and number sentences. Use mental strategies and arrays to multiply by 2.	Identify faces, edges and corners of pyramids. Describe a pyramid. Measure and estimate the length of leaves and objects in centimetres.	
5	5	18–21	Extend addition facts. Complete addition grids to find addition patterns. Model and write three-digit numbers. Order three-digit numbers.	Identify vertical and horizontal lines.	
6	6	22–25	Expand three-digit numbers. Use $>$ or $<$ to compare numbers. Use mental strategies to multiply by 5.	Use a grid to locate and give positions.	Interpret column graphs. Construct a column graph.
7	7	26–29	Write and solve division number sentences. Use the 'jump' strategy to solve addition of two-digit numbers. Expand numbers to 5000.	Capacity using informal units. Choose appropriate measuring units.	
8	8	30–33	Extend subtraction facts. Introduce numerator and denominator. Identify and model unit fractions of shapes and collections.	Match sets of faces to 3D objects. Develop strategies to calculate area.	
9	9	34–37	Use the split strategy to add two-digit numbers. Solve problems using the split strategy. Learn to trade in a two-digit algorithm.	Identify quarter to and quarter past on a clock face. Add hands to illustrate various times.	Interpret and construct picture graphs.
10		38–39	Diagnostic review 1		

Term planners

Term 2 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	10	40–43	Complete subtraction number sentences using addition facts. Complete number patterns to describe shapes. Write a rule for each pattern.	Recognise the right angle and angles smaller and greater than a right angle. Use a 1-metre streamer to measure objects. Measure to the nearest metre using a 1-metre rule.	
2	11	44–47	Count forwards and backwards by whole numbers. Identify and represent thirds of shapes and collections. Use > or < to compare fractions.	Investigate the properties of triangles.	Use a key to interpret a picture graph. Create a picture graph from a tally using a key.
3	12	48–51	Use doubling and near doubling skills. Explain how a problem was solved and find alternative methods of solution. Use mental strategies and arrays to multiply by 10.	Discover the number of lines of symmetry on given 2D shapes.	Conduct a simple chance experiment and record data.
4	13	52–55	Learn to trade in a two-digit addition algorithm. Use own strategies to determine the missing numbers in subtraction algorithms. Identify and model halves, quarters and eighths.	Identify angles where only one arm is visible. Measure and estimate using litres.	
5	14	56–59	Round numbers to 10. Round numbers to estimate answers to addition number sentences. Use arrays to solve divisions. Solve division problems.	Model 3D objects. Discover which nets fold to make a cube.	Record and interpret data in a table.
6	15	60–63	Find the correct number of coins to equal $2. Find various ways to pay for items. Write, order and represent numbers to 5000.	Introduce grid references on an informal grid. Recognise the minute, hour and second hands of a watch. Show the time on clock faces.	
7	16	64–67	Add two-digit numbers mentally to 100. Solve addition puzzles. Use arrays to revise 2, 5 and 10 times tables.	Measure the mass of items in kilograms using an equal arm balance.	Use tally marks to represent data. Create a column graph.
8	17	68–71	Solve addition number sentences by bridging to 10 or 100. Write multiplication and division facts to describe arrays.	Follow directions on a map. Interpret a map. Measure the length and width of rectangles.	
9	18	72–75	Relate the 2 and 4 times tables. Use the double then double again strategy. Complete missing digit number patterns. Use the constant function on a calculator.	Recognise sides and angles on 2D shapes. Draw regular and irregular shapes. Calculate area in square centimetres. Draw shapes of given areas.	
10		76–77	Diagnostic review 2		

Term planners

Term 3 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	19	78–81	Model and expand numbers to 9999. Write the numbers before and after a given number. Revise three times table using arrays. Solve multiplication facts and problems.	Recognise, classify and draw octagons and other 2D shapes.	Identify and describe all possible outcomes.
2	20	82–85	Division facts from multiplication facts. Solve addition problems based on map distances. Write a problem based on a map. Solve general addition problems. Count on to calculate change.	Indentify angles as an amount of turn.	
3	21	86–89	Vertical two-digit subtraction algorithms. Write a story problem for a subtraction. Compare fractions for halves, quarters and eighths.	Describe the features of prisms. Measure the capacity of a box in blocks. Construct and record volume of models.	
4	22	90–93	Addition to 999 with trading in the tens and ones. Complete division facts. Solve division problems.	Follow compass directions to plot a path. Explain why one route is shorter. Read, record and order digital times.	
5	23	94–97	Subtraction to 999 with trading. Make money amounts with notes and coins.	Relate angles to turns on a clock face.	Collect and interpret data to test a prediction. Conduct a survey.
6	24	98–101	Use the compensation strategy to complete additions. Identify, model and order fifths and tenths.	Express time using digital and analogue form.	Sort data into categories. Graph and interpret data.
7	25	102–105	Complete number patterns. Explain number patterns. Find fractions of a collection.	Find and draw congruent shapes. Measure capacity in millilitres.	
8	26	106–109	Find missing numbers in number sentences. Find missing operations. Addition algorithms to 999. Adjust additions to add mentally.	Sketch prisms and cylinders. Sketch pyramids with some help. Calculate elapsed time. Express the same time in digital and analogue form.	
9	27	110–113	Strategies for multiplication. Find missing values in multiplication. Write, extend and solve multiplication facts.	Interpret maps and add features to maps. Follow compass directions.	Order the likelihood of selecting marbles. Chance problems.
10		114–115	Diagnostic review 3		

Term planners

Term 4 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	28	116–119	Revision of taught multiplication facts (1s, 2s, 3s, 4s, 5s and 10s). Use the commutative and associative properties for addition and multiplication.	Identify pentagons and other shapes. Draw pentagons. Estimate and measure mass in half kilograms. Measure the quantity needed to balance 1 kg.	
2	29	120–123	Two-digit by one-digit extended multiplication. Solve multiplication problems. Compare fractions to identify equivalences.	Distinguish between am and pm times.	Conduct a chance experiment. Record and graph collected data.
3	30	124–127	Subtraction of three-digit numbers with trading in the ones. Solve subtraction problems. Use strategies to solve addition and subtraction problems. Identify patterns in a hundreds chart. Extend a pattern in a hundreds chart.		Predict outcomes to a chance experiment, then record and graph actual results.
4	31	128–131	Write, order and expand numbers to 10 000. Write the largest number with three and four digits. Find and use rules for input-output machines.	Find and trace a net for a small box. Interpret bus and TV timetables.	
5	32	132–135	Vertical algorithms for addition to 9999 with trading. Calculate the cost of items. Record and model hundredths.	Measure heights and arm spans. Use litres and millilitres to solve capacity problems.	
6	33	136–139	Written method for subtraction to 9999 without trading. Solve division problems with and without remainders. Place fractions on a number line.	Use a legend and grid references to interpret a map.	
7	34	140–143	Record and model decimal hundredths. Two-digit by three addends. Solve a number cross and magic squares.	Make symmetrical patterns. Find packets marked in grams. Order containers according to mass.	
8	35	144–147	Use the shortened method to multiply two-digit numbers by a single digit. Write and complete statements of equivalence and inequality.	Draw a plan of a classroom marking specific objects. Use decimal notation to record length.	
9		148–149		Diagnostic review 4 and assessment	

MATHS PLUS Australian Curriculum Year 3 Teaching Notes

Australian Curriculum

ACMNA056 Recall multiplication facts of two, three, five and ten and related division facts (Fluency) [N] [L]

Lesson focus

Use mental strategies and arrays to multiply by two

Materials

- dice
- counters
- drawing paper
- number cards (0–10)

Student Book

Page 15

Mentals Book

Page 9

Getting started

Ask five students to stand out the front. *How many pairs of feet are there?* (5) *How many in each pair?* (2) *How many feet altogether?* (5 × 2 = 10) Record this as a number sentence on the board. Repeat for pairs of eyes. Ask one student to sit down and repeat the procedure for four students, then three students, two students and one student.

Learning activities

1. Write '× 2' on the board. Talk about the ways this can be described including 'multiply by 2, double, groups of'. Give out counters to each student.
   Have students take it in turns to roll a dice. Whatever number is rolled (such as 3) becomes the first number in the equation on the board (such as 3 × 2 =). Ask students to make the array for the equation with their counters and put up

their hand when they have the answer. The array would be described as 3 rows of 2.
Repeat this a number of times to reinforce the concept of multiplying a number by 2.

2. Students can draw a grid (2 × 3) and place numbers in it that are multiples of 2 (such as 2, 4, 6, 8, 10, 12).

2	4	6
8	10	12

Have students roll a dice and multiply the number that comes up by 2. They can then cover up the answer in their grid with a counter.
The first student to cover all the squares in their grid wins the game. (This can be played in pairs or small groups.)

3. Shuffle the number cards and hold them up one by one. As you hold each one up, students have to double the number and record the answer. Choose three students to stand in a row and hold up a card. The first student to answer sits down and is replaced by a new student. Continue until all students have had a turn.

Support activities

- Write 2s multiplication facts on the board and ask students to make an array with counters for each one to work out the answer.
- Students make a list of all the things they know that come in pairs (such as socks, shoes, chopsticks).

Extension activities

- Ask students to repeat activity 5 on student page 15 but this time change the number 2 to 20.
  In pairs, students discuss: *What patterns can you see? What changes need to be made when multiplying by 20 instead of 2?*

Reflection

Discuss the strategies students used to find the answers to activities 5 and 6 on student page 15. Did they use skip counting, doubling, arrays, counters, counting individual objects or do they know the facts?

Assessment

- Are students able to write multiplication sentences to match given arrays?
- Can students use two times tables facts to complete multiplications?
- Do students relate multiplying by 2 to doubling?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Use the split strategy for addition. Revise the 3s multiplication facts.	Identify and describe 3D objects. Estimate and measure in centimetres. Convert metres into centimetres.	
2	2	6–9	Use various mental strategies to solve subtractions. Model halves, quarters and eighths. Label halves, quarters and eighths on a number line. Order fractions.	Estimate lengths in metres and centimetres.	Interpret and construct column graphs.
3	3	10–13	Develop strategies to recall the 4s multiplication facts and related division facts. Use the commutative property for addition and multiplication.	Combine simple shapes to make larger shapes. Measure the perimeter of shapes in centimetres. Draw shapes of specified perimeters.	
4	4	14–17	Write numbers in a place value chart. Order and expand numbers. Model fifths and tenths. Label fifths and tenths on a number line.	Use grid references to locate and give points on a grid.	Collect, organise, display and interpret data.
5	5	18–21	Use a written method for addition of three-digit numbers with trading. Solve multiplications where a multiple of 10 is involved.	Draw lines of symmetry on common 2D shapes. Make drawings symmetrical. Find the areas of shapes in square centimetres.	
6	6	22–25	Introduce and use the six times table. Use the jump strategy for addition and subtraction of two- and three-digit numbers.	Classify angles as right angles, or angles less than or greater than right angles. Draw the three types of angles. Estimate and measure the mass of objects in kilograms.	
7	7	26–29	Rearrange numbers to add or multiply mentally. Represent and compare thirds and sixths.	Use square centimetres to estimate, calculate and draw areas.	Interpret and make picture graphs that use one symbol to represent more than one object.
8	8	30–33	Use a written method for subtraction of three-digit numbers with trading. Find, describe and follow rules to continue number patterns.	Investigate horizontal, vertical and oblique lines and surfaces. Estimate and measure capacity in litres.	
9	9	34–37	Introduce and practise the seven times table facts. Represent, compare and order five-digit numbers.	Identify the basic compass directions.	Predict and describe the likelihood of chance events.
10		38–39	Diagnostic review 1		

Term planners

Term 2 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	10	40–43	Use known multiplication facts to work out unknown facts. Compare and find equivalent fractions using materials and diagrams.	Identify and continue tessellating patterns. Measure the capacity of containers in millilitres.	
2	11	44–47	Use mental strategies for division. Use various strategies for multiplying by eight.	Know the relationship between different units of time and choose appropriate time units.	Represent and compare the same data as a column graph and as a picture graph.
3	12	48–51	Multiply the tens before the ones in two-digit by one-digit multiplication. Represent and write mixed numerals.	Draw prisms, pyramids, cones and cylinders. Measure and record mass in grams.	
4	13	52–55	Use mental strategies for addition. Round numbers to 100.	Estimate and measure with metres.	Determine most and least likely.
5	14	56–59	Use a written method to add four-digit numbers with and without trading. Practise division facts.	Use a legend to interpret a map. Use major compass points to give directions. Measure area of shapes in square centimetres. Draw shapes with same area and different perimeter.	
6	15	60–63	Introduce and practise the nine times table facts. Count by fractions.	Identify shapes and describe their properties. Estimate, measure and record capacity in millilitres.	
7	16	64–67	Use a written method for subtraction of four-digit numbers with trading. Use the properties of odd and even numbers to check answers.	Estimate and measure mass in grams.	Make categories to organise data.
8	17	68–71	Identify and represent improper fractions. Complete and continue tables to show the relationship between two sets of numbers.	Make symmetrical patterns. Record time shown on analogue clock faces. Calculate time intervals in seconds, minutes and hours.	
9	18	72–75	Use a written method to add four-digit numbers and amounts of money. Complete tables to record number patterns. Illustrate patterns on a hundreds chart.	Use cubic centimetres to construct models and calculate volume.	Investigate and describe the likelihood of outcomes.
10		76–77	Diagnostic review 2		

Term planners

Term 3 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	19	78–81	Use various methods to check additions and subtractions. Represent hundredths as fractions and decimals.	Use and read a thermometer. Use square metres to estimate and measure areas.	
2	20	82–85	Calculate division facts and word problems. Represent tenths as fractions and decimals.	Identify and measure attributes of objects.	Conduct a survey. Tally, graph and interpret the data.
3	21	86–89	Use a written method to solve division of two-digit numbers by a single digit. Express tenths as hundredths and as decimals. Use < and > to compare tenths and hundredths.	Explore the side and angle properties of triangles. Introduce am and pm notation.	
4	22	90–93	Use place value to record, compare and order decimals to two places. Use various strategies to solve division number sentences.	Introduce and interpret a scale on a simple map. Build models of given volumes and calculate volume.	
5	23	94–97	Identify the operation required to solve word problems, and then solve them. Add and subtract decimals to two decimal places. Solve problems involving EFTPOS transactions.	Record masses and read different scales.	
6	24	98–101	Use a written method for four-digit subtraction with and without trading. Use mental and written strategies for multiplication.	Interpret a simple map. Interpret and compare a map.	
7	25	102–105	Multiply two-digit numbers by a single digit using mental and written methods. Read and write numbers and identify the value of digits.	Explore the relationship between millilitres and litres.	Collect data to test a prediction, display it and interpret the results.
8	26	106–109	Use the contracted multiplication method to multiply two-digit numbers by a single digit. Write, solve and relate number sentences.	Identify, compare and describe angles. Distinguish between morning and afternoon.	
9	27	110–113	Complete number patterns using addition, subtraction, multiplication and division. Use place value to partition numbers in different ways.	Explore the different types of quadrilaterals.	Find all combinations for simple chance experiments.
10		114–115	Diagnostic review 3		

Term planners

Term 4 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	28	116–119	Round amounts of money to the nearest 5 cents. Use decimal notation to record length. Use multiplication and division to find missing numbers.		Investigate events where the chance of one does not affect the chance of others.
2	29	120–123	Revise multiplying multiples of 10 by single digits. Revise addition of whole numbers and decimals.	Explore the use of multiplication to find the area of rectangles.	Make and interpret picture graphs where one picture represents more than one data value.
3	30	124–127	Use mental and written methods to solve divisions with and without remainders. Use a written method for four-digit subtraction with and without trading.	Group 2D shapes according to their properties. Read and make simple timetables and convert between time units.	
4	31	128–131	Solve division problems with remainders. Use mental and written strategies to solve addition and subtraction problems.	Make a copy of 2D shapes on a computer.	Collect, display and interpret data.
5	32	132–135	Estimate and calculate multiplications. Compare and count with fractions.	Match 3D objects with their nets. Measure and rule lengths in millilitres, and convert between length units.	
6	33	136–139	Use various strategies to solve division problems. Continue and create patterns involving fractions.	Use coordinates and scale on maps. Use displacement to compare and order the volume of objects.	
7	34	140–143	Use mental and written methods to solve multiplications. Compare and complete equations.	Combine shapes to make tessellating designs.	Read and interpret spreadsheets.
8	35	144–147	Recognise the structure of the place value system. Use another currency for money calculations.	Read and interpret the scale on a thermometer.	Plan surveys to collect data for investigations.
9		148–149	Diagnostic review 4 and assessment		

Australian Curriculum Year 4 Teaching Notes

Australian Curriculum

ACMNA073 Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems (Understanding, Fluency) [N] [L]

Lesson focus

Use place value up to and including four-digit numbers

Materials

- calculators
- **BLM 5** (Montessori cards)
- scissors
- **BLM 6** (Number cards)
- blank cards

Student Book

Page 14

Mentals Book

Page 8

Digital Teaching Objects

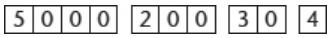
The digital teaching object ‘Place value to 10 000’ on the Teacher Dashboard can be used to introduce relevant key mathematical concepts.

Getting started

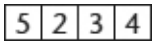
Each student needs a calculator. Ask students to enter 7 tens, then 4 hundreds, then 5 ones and lastly 2 thousands. Ask: *What number have you made?* (2475) Check and repeat the procedure, making sure students understand what to do. Do the same thing for other four-digit numbers.

Learning activities

1. Give each student a set of Montessori cards (**BLM 5**) to cut out. Demonstrate how to use the cards to make numbers, for example:



when put together look like



Ask students to show numbers such as 5032, 4700, 1306 and 580. Check that they have used the correct cards.

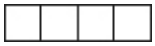
2. In groups of four, students place their Montessori cards in four piles (thousands, hundreds, tens and ones), shuffle them and place them face down. Students take turns to take a card from each of the four piles and make a number. The student with the highest (or lowest) number scores one point. The first to score five points wins.
3. Give each group of four students four sets of cards numbered 0 to 9 (**BLM 6**). One student deals out four cards to each student who must arrange their cards to make the largest (or smallest) number possible. They cannot use zero at the start of their number. First to win five rounds wins the game.
4. Students write a four-digit number on a blank card. Call out six students who must put themselves in order according to their number. Repeat for other groups of six students.

Support activities

- Students practise making numbers with Montessori cards.
- Use the four-digit numbers written on blank cards to do comparison activities. For example, choose one card and ask students to find all the larger numbers.

Extension activities

- Students draw a chart like this:



Using the sets of cards numbered 0 to 9, each student in a group picks up a card and places it in one of the spaces on their chart. It cannot be moved. After four turns, the student who has made the highest number wins. (This activity makes students think about the position of digits within a number.)

Reflection

Discuss strategies students use when putting numbers in order: looking at the largest place value first and comparing those digits. If they are different then the other digits can be ignored. If not, compare the next digits, and so on.

Assessment

- Can students identify the value of digits in numbers?
- Can students compare and order four-digit numbers?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Use addition and subtraction strategies. Round to estimate additions. Revise multiplication facts (4, 5, 6, 7, 8 and 9 times tables). Create number sentences for a given product.	Measure 1 km. Calculate distance in kilometres.	Use a numerical scale to describe probability.
2	2	6–9	Solve four-digit additions with trading in the ones and tens. Explain the correct process for addition. Recognise and represent unit fractions of shapes and collections.	Identify line symmetry and create symmetrical designs. Calculate the area of rectangles in square centimetres.	
3	3	10–13	Solve four-digit subtractions with trading in the ones and tens. Round numbers to 100 and 1000.	Reflect, translate or rotate given shapes. Form a pattern through rotating. Calculate the volume of objects in cubic centimetres.	
4	4	14–17	Solve four-digit additions with trading. Read, write in words and record six-digit numbers.	Identify attributes of polygons. Record the number of sides and angles of various polygons. Estimate and measure the mass of objects in grams and kilograms.	
5	5	18–21	Use mental strategies to multiply by multiples of 10. Solve problems using mental computations. Discuss and compare problem-solving strategies.	Recognise and name angles. Identify shapes by angles.	Calculate the chance of dice rolls and drawing marbles from a bag.
6	6	22–25	Revise two-digit division with and without remainders. Solve a practical division problem. Write rules and extend number sequences.	Identify shapes that have rotational symmetry. Continue a tessellating pattern. Read, order and write times in 24-hour format.	
7	7	26–29	Solve three-digit by one-digit multiplications. Solve an open-ended multiplication problem. Find equivalent fractions. Compare fractions with different denominators.	Convert metres to kilometres using a decimal point. Calculate distances in kilometres.	Use fractions to describe probability.
8	8	30–33	Use mental and written methods for subtraction of four-digit numbers. Follow rules to continue number patterns. Identify rules in number patterns.	Read maps using grid references, compass points and by applying a scale.	Interpret and present data on a column graph.
9	9	34–37	Use various strategies for multiplication. Find fractions of a group.	Describe a pattern that uses movement of shapes. Translate, rotate and reflect to create patterns.	Use arrow diagrams to sort data.
10		38–39	Diagnostic review 1		

Term planners

Term 2 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	10	40–43	Use a written method to add five-digit numbers. Add five-digit numbers to solve problems. Identify and describe multiples of whole numbers.	Complete tracings to draw prisms and pyramids. Add lines to show faces, edges and vertices. Calculate area using square centimetres. Create rectangles with a given area. Link area with perimeter.	
2	11	44–47	Use mental and written methods for division of two-digit numbers by one-digit numbers, with and without remainders. Use the shortened form to multiply two-digit numbers by a single digit.	Identify, name and describe the properties of triangular and hexagonal prisms.	Conduct a survey and present data as a column graph.
3	12	48–51	Use a written method to subtract five-digit numbers. Find factors for whole numbers.	Build and record the length, width and height of prisms and then calculate their volume in cubic centimetres.	Match chance words to a scale of 0 to 1. Use a scale of 0 to 1 to rate likelihood of events.
4	13	52–55	Use a written method to multiply three-digit numbers by one-digit numbers. Solve and write multiplication problems. Apply the rules for order of operations to complete number sentences.	Make skeletal models of prisms and pyramids. Cut and fold nets to make prisms. Design a net of a box. Convert time to 24-hour form. Express time in analogue, digital and 24-hour forms.	
5	14	56–59	Use a written method for two-digit division with and without remainders. Identify mixed numerals and relate them to improper fractions.	Use scale to calculate the shortest distances between destinations. Find perimeters in centimetres. Make shapes of given perimeters.	
6	15	60–63	Solve three-digit by one-digit multiplications. Use rounding to estimate products. Use factors to assist multiplication.	Calculate area in square metres using the area formula.	Read and interpret line graphs.
7	16	64–67	Use a written method for three-digit division by a one-digit divisor. Solve and write division problems. Record, represent and compare decimals to two places.	Measure angles with a 180° protractor. Relate kilograms and tonnes. Order masses by tonnes.	
8	17	68–71	Compare and order decimals to two places. Using a written method to add and subtract decimals.	Match skeletal models to their names and description. Describe prisms in terms of similarities and differences.	Describe and investigate the likelihood of outcomes on various spinners.
9	18	72–75	Investigate rules for divisibility. Locate, represent and order fractions on a number line.	Draw the top, front and side views of various 3D objects.	Interpret and add data to a database.
10		76–77	Diagnostic review 2		

Term planners

Term 3 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	19	78–81	Use appropriate strategies to solve three-digit divisions. Introduce decimals to three places. Make informal decisions about items in a budget.	Measure angles with a 360° protractor.	
2	20	82–85	Estimate and calculate answers involving multiplication of money. Read and write large numbers.	Interpret a plan view of an apartment. Draw a plan view of a bedroom.	Read, interpret and create pie charts.
3	21	86–89	Explore three-digit by one-digit multiplication using mental strategies. Add and subtract fractions with like denominators.	Interpret a 24-hour interstate bus timetable. Prepare a timetable of a day's events.	Interpret and make dot plots.
4	22	90–93	Solve five-digit subtractions. Complete a spreadsheet using subtraction. Investigate budgets and GST.	Draw circles to given radii, then label the circumference, radius and diameter.	Interpret and represent two sets of data on line graphs.
5	23	94–97	Use written and mental methods to solve four-digit multiplications. Identify and create patterns involving fractions.	Match objects to their front, side and top views. Construct models based on their top, front and side views. Use litres and millilitres to estimate, measure and record capacity.	
6	24	98–101	Use estimation and various strategies in division. Find missing numbers to complete number sentences.	Interpret a map using grid references, compass points and a scale. Calculate and record perimeter in millimetres, centimetres and metres. Record perimeter using decimal notation.	
7	25	102–105	Multiply by 10, 100 and 1000. Identify and create patterns with fractions and decimals.	Calculate area of compound shapes made from rectangles. Use a protractor and ruler to draw rectangles.	
8	26	106–109	Estimate and calculate two-digit by two-digit multiplication. Construct and complete equivalent number sentences.	Solve problems involving grams and kilograms.	Create survey questions and then conduct the survey and record data as a column graph.
9	27	110–113	Use mental and written strategies to solve division problems. Use a calculator's memory function to solve problems with many steps.	Match events to a timeline.	Interpret and compare similar data presented on a pie chart, column graph and a divided bar graph.
10		114–115	Diagnostic review 3		

Term planners

Term 4 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	28	116–119	Represent, compare and order decimals to three places. Find missing numbers to complete number sentences.	Enlarge 2D shapes by doubling all dimensions.	Interpret a line graph. Complete a table and represent data on a line graph.
2	29	120–123	Use the memory function on a calculator to assist multiplication problems. Add and subtract fractions with the same denominator.	Use and interpret maps to locate features and describe routes and distances.	Investigate ways of telling the time.
3	30	124–127	Multiply two- and three-digit numbers by two-digit numbers. Choose and use efficient strategies to solve problems.	Match nets to 3D objects. Match the top, front and side view of a box to the same face on its net. Identify the properties of equilateral, scalene and isosceles triangles. Identify and draw parallelograms.	
4	31	128–131	Choose and use various methods to solve multiplications. Round numbers to assist estimations. Solve problems involving money.	Continue tessellating patterns. Find shapes that tessellate by themselves.	Create and conduct a survey. Report on survey responses. Reflect on validity of survey.
5	32	132–135	Divide three-digit numbers by 10. Divide by a common factor. Compare mobile phone plans.	Add grid lines and grid references to complete a map. Compare the volume in cubic centimetres of three boxes. Construct a cubic metre.	
6	33	136–139	Use diagrams to subtract unit fractions from one whole. Subtract unit fractions from whole numbers. Use number lines to subtract fractions. Write and interpret equations and word problems.	Introduce the hectare. Construct an area of 1 ha using suitable tools. Enlarge and reduce 2D shapes and pictures.	
7	34	140–143	Multiply and divide decimals by 10, 100 and 1000. Solve divisions using a calculator. Record remainders as decimals.	Investigate the properties of 3D objects.	Compare and interpret different data sets.
8	35	144–147	Revise improper fractions and their link with mixed numbers. Use a fraction wall to add fractions with related denominators. Continue and describe sequences of fractions and decimals.		Interpret and construct dot plots.
9		148–149	Diagnostic review 4 and assessment		

Australian Curriculum Year 5 Teaching Notes

Australian Curriculum

ACMNA291 Use efficient mental and written strategies and apply appropriate digital technologies to solve problems (Problem Solving, Reasoning) [CCT] [N]

Lesson focus

Use a written method for four-digit addition with trading

Materials

- blank cards
- shopping catalogues

Student Book

Page 14

Mentals Book

Page 8

Getting started

Write a four-digit addition on the board:

$$\begin{array}{r} 4624 \\ +\ 3258 \\ \hline \\ \hline \end{array}$$

Allow students time to study this example. Then ask them to write an estimate of the answer. Discuss the strategies students used. Most should involve some rounding, but all will involve place value.

Repeat with other examples. Discuss the strategies used.

Learning activities

1. Record two or three four-digit additions on the board and choose different students to demonstrate how to solve them. Ask students to explain each step as they go, paying particular attention to the trading process.
2. Give each student a card and ask them to record a four-digit number on it. Place all cards face down. Form students into two teams. Choose one student from each team to each pick up two cards, record the numbers as an addition on the board and solve it. The student whose addition has a larger answer scores one point. Keep score on the board. The next student from each team does the same thing. Continue until all students have had a turn. The team with the highest score wins.
3. Write on the board:

$$\begin{array}{r} \square\square\square\square \\ -\ 2\ 6\ 7\ 4 \\ \hline 4\ 3\ 6\ 7 \end{array}$$

Ask students to discuss with a partner the best way to find the missing number. Establish that adding 2674 and 4367 will give the missing number. Repeat for other examples.

Support activities

- Students use the map on student book page 14 to plan a number of other journeys. They should calculate the distances.
- Students choose items from shopping catalogues and find the total cost. Explain how to keep the decimal points aligned under one another.

Extension activities

- Students find the flying distances between other major Australian cities and use them to work out distances between three or four cities.
- Students find different combinations of three four-digit numbers that together total 9500.

Reflection

Discuss the addition activities and the methods students used to calculate the answers. Discuss whether other methods (such as mental methods) could also have been used.

Assessment

- Can students make reasonable estimates of additions involving four-digit numbers?
- Can students use written procedures to add four-digit numbers?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Read, write, say and model whole numbers up to and above one million. Use mental strategies to add and subtract.	Classify and measure angles.	Interpret and display data in picture graphs.
2	2	6–9	Use various mental strategies for multiplication. Estimate and solve decimal additions.	Revise the names and properties of regular and irregular polygons. Calculate the area of rectangles and compound shapes made from rectangles.	
3	3	10–13	Find factors for whole numbers. Link percentages, common fractions and decimal fractions. Identify and explore properties of square numbers.	Identify and classify 3D shapes according to their properties.	
4	4	14–17	Revise division of three-digit numbers by single digits. Make and describe patterns with whole numbers.	Measure and explore angles around a point and opposite angles. Understand and use the relationship between length, width and height to calculate volume.	
5	5	18–21	Use mental strategies for multiplication. Solve decimal subtractions.	Explore line and rotational symmetry.	Interpret and describe the probability of events.
6	6	22–25	Use a written method to solve subtractions of large whole numbers. Understand the relationship between improper fractions and mixed numbers.	Relate 12- and 24-hour time and interpret timetables.	Compare data displays.
7	7	26–29	Add and subtract fractions with like denominators. Use place value to compare and order decimal fractions to three places.	Represent 3D objects through drawings. Find the perimeter of regular and irregular polygons.	
8	8	30–33	Estimate and solve four-digit by one-digit multiplications. Add and subtract large numbers. Identify and explore properties of triangular numbers.		Read and interpret line graphs.
9	9	34–37	Use a written method for division of four-digit numbers by single digits. Identify prime and composite numbers.		Investigate frequency of outcomes. Interpret side-by-side column graphs.
10		38–39	Diagnostic review 1		

Term planners

Term 2 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	10	40–43	Use estimation strategies for large additions and subtractions. Add and subtract fractions with like denominators.	Compare and calculate distances in kilometres. Construct angles with a protractor.	
2	11	44–47	Use a written method to add and subtract decimals. Find unit fractions of a quantity or group.	Understand and use the relationship between tonnes and kilograms.	Construct and interpret line graphs.
3	12	48–51	Explore and use the order of operations. Convert between fractions, decimals and percentages.	Identify and describe the properties of parallelograms.	Identify outcomes and use them to make predictions.
4	13	52–55	Add and subtract decimals with equal and unequal numbers of places. Identify and describe the place value of digits in large numbers.	Estimate and record distances in kilometres.	Identify and evaluate misleading data.
5	14	56–59	Estimate and solve four-digit by one-digit multiplications. Identify and make equivalent fractions. Identify prime and composite numbers.	Investigate reflections, translations and rotations.	
6	15	60–63	Use materials to compare and order fractions and mixed numbers. Use rounding strategies. Solve simple rate problems.		Use words and a numerical scale to describe likelihood.
7	16	64–67	Express remainders in appropriate ways. Add and subtract fractions with related denominators.	Describe geometric patterns with numbers and words. Use a formula to calculate volume of rectangular prisms.	
8	17	68–71	Solve extended multiplication examples. Identify and describe the relationship between two sets of numbers.	Use drawing instruments to construct rectangles. Solve problems involving mass.	
9	18	72–75	Find fractional parts of a quantity or group. Estimate and calculate the addition of four-digit numbers.	Create patterns by translating, rotating and reflecting shapes. Explore the relationship between millilitres and cubic centimetres.	
10		76–77	Diagnostic review 2		

Term planners

Term 3 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	19	78–81	Estimate and calculate five- and six-digit subtractions. Estimate and calculate multiplication of decimals by single-digit numbers.	Use ordered pairs to locate and give points on a grid. Read and interpret timetables.	
2	20	82–85	Use the commutative property for multiplication. Investigate and calculate costs and discounts. Investigate Roman numerals.		Read, interpret and make side-by-side column graphs.
3	21	86–89	Use written and mental strategies to solve extended multiplications. Make equivalent fractions by multiplying and dividing.	Construct and describe triangles. Estimate and measure lengths and convert between length units.	
4	22	90–93	Estimate and solve divisions. Calculate simple percentage problems.	Use tables and words to describe geometric patterns. Measure and rule lengths in millimetres and centimetres.	
5	23	94–97	Multiply by 10 and multiples of 10. Use the calculator functions when multiplying and dividing. Use a calculator to solve problems involving decimals in the metric system.		Interpret and construct dot plots.
6	24	98–101	Estimate and use a written method when multiplying decimals. Create and apply rules to complete tables of values. Explore negative numbers.	Read and make timetables and calculate elapsed time.	
7	25	102–105	Make and describe decimal number patterns.	Use grid references, direction and scale to follow and plan routes.	Interpret and construct dot plots where each dot represents multiple items.
8	26	106–109	Solve five- and six-digit additions and subtractions. Estimate and solve divisions involving large numbers.	Draw nets for pyramids of given dimensions and designs.	Use spreadsheets as a method of calculating.
9	27	110–113	Multiply and divide decimals by 10, 100 and 1000. Estimate and calculate division of decimals by single-digit numbers.	Estimate and measure angles.	Complete tables of values and draw graphs to describe the relationships.
10		114–115	Diagnostic review 3		

Term planners

Term 4 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	28	116–119	Solve number sentences that involve negative numbers. Use a written method when dividing decimals.	Introduce the Cartesian number plane.	Make and interpret frequency tables.
2	29	120–123	Express remainders as decimals. Write and solve equations using the order of operations.	Use a scale to find the area and perimeter of regular and irregular shapes.	Make and test predictions.
3	30	124–127	Estimate and calculate extended multiplication examples. Identify prime factors. Recognise and order negative numbers.	Use a scale to draw and construct nets.	
4	31	128–131	Use a written method to solve whole number and decimal additions with four-, five- and six-digit numbers. Identify rules to describe number patterns and use them to complete patterns.	Convert between metric units of capacity.	Interpret and draw pie charts.
5	32	132–135	Estimate and calculate extended multiplication examples. Solve and construct number sentences.	Plot and locate points on the Cartesian plane.	Identify and evaluate misleading data.
6	33	136–139	Multiply and divide decimals by 10, 100 and 1000. Continue and describe sequences of fractions and decimals.		Choose appropriate graphs to represent data. Investigate and compare data from different size samples.
7	34	140–143	Recall percentage and fraction equivalents and use them in calculations. Use a calculator to multiply and divide when working out exchange rates.	Use mapping conventions to make a map. Estimate and calculate volume in cubic metres.	
8	35	144–147	Explore recurring decimals when converting fractions to decimals. Write and solve equations.	Investigate mass and volume relationships.	Organise and interpret data.
9		148–149	Diagnostic review 4 and assessment		

Australian Curriculum Year 6 Teaching Notes

Australian Curriculum

ACMNA123 Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers (Reasoning, Problem Solving) [CCT] [N]

Lesson focus

Revise division of three-digit numbers by single digits

Materials

- MAB Base 10
- **BLM 6** (Number cross)
- calculators
- a dice

Student Book

Page 14

Mentals Book

Page 8

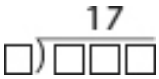
Getting started

Play ‘Today’s number’. Write a number for the □□□ day (for example, 3) on the board. Ask students to write down as many division number sentences as they can that will give this answer in one minute.

List these on the board. Discuss any patterns found. Ask: *How do these number sentences relate to multiplication?*

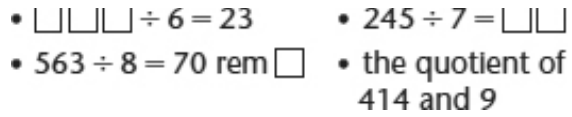
Learning activities

1. Tell students that you divided a three-digit number by a single digit and got an answer of 17. Ask students to find the possibilities. Some students may find it easier to record it like this:



Choose students to record the divisions they find on the board: there are four possibilities (6 × 17 = 102, 7 × 17 = 119, 8 × 17 = 136 and 9 × 17 = 153). Share the methods students used to find the divisions.

2. Read through the information at the top of student book page 14 and, if necessary, use MAB materials to demonstrate. Make sure to link the materials to the written algorithm. Do more divisions in the same way if needed.
3. Give each student a copy of the blank number cross (**BLM 6**). Students have to design clues based around the numbers in division problems. Possible clues could be of the following type:



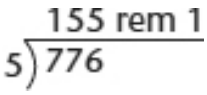
Allow students to work with a partner if they prefer. When the number crosses are finished, students swap with other students and solve them.

Support activities

- Revise the meaning of the term ‘average’ or ‘mean’ and how it is calculated. Roll a dice five times and record the rolls on the board. Use these numbers to calculate the average. Repeat as necessary.
- Tell students that the answer to a division question is 5 rem 2. Ask them to work out some possible questions.

Extension activities

- Students use calculators to explore remainders in division. For example:



is the same as 155.2. Ask students to explain the relationship.

- Ask students to work out a way of calculating 432 ÷ 6 on their calculator if the 3 button was broken.

Reflection

As a class, share the divisions that students created for activity 3 on student book page 14. Record as many as possible on the board. Choose students to explain how they created their divisions.

Assessment

- Can students use written procedures to solve division situations?
- Can students use the relationship between division and multiplication to solve and check answers to division problems?

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