MATHS PLUS

STUDENT BOOK

NEW SOUTH WALES SYLLABUS

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Contents*

- 20+ BLMs for each year level
- Downloadable and editable term planners
- Curriculum alignment documents
- Find a topic sheet
- Diagnostic term reviews and answers
- Student book – Assessment book correlation chart
- Downloadable Assessment Book and answers
- Dictionary
- Mentals and Homework Book Answers
- Investigations worksheets

*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 numeral one. Identify and draw groups of one. Colour one-half of an object. Split shapes into one-half.	Trace and draw straight and curved lines. Directly compare two lengths.	
2	2	6–9	Trace the numeral two and count to two. Identify and draw groups of two. Copy, continue and create patterns with items.	Explore the features of 3D objects. Use comparative language to describe length.	
3	3	10–13	Trace the numeral three and count to three. Identify and draw groups of three. Draw shapes in boxes to make equal groups.	Compare the area of shapes by direct comparison.	Sort objects into two groups.
4	4	14–17	Trace the numeral four and count to four. Identify groups of four. Show different ways of making the number four using dots. Identify groups as equal or not equal groups.	Identify circles from a group of shapes. Trace and draw circles. Identify full, half full and empty containers.	
5	5	18–21	Trace the numeral five and count to five. Identify groups of five and extend groups to make five. Identify if fractions are halves or not halves. Identify shapes with two equal parts. Shade one-half of shapes.	Show position of items beside, between, under, in front, inside or on top of an object. Decide the heavier item by hefting. Use comparative language to describe mass.	
6	6	22–25	Trace the numeral six and count to six. Recognise different representations of the same number. Combine groups to add items. Identify different coins.	Trace around the bases of 3D objects to draw various 2D shapes.	
7	7	26–29	Trace the numeral seven and count to seven. Identify groups of seven. Complete a number sequence. Identify halves and not halves. Colour one-half of an object.	Sort 3D objects by finding the object that does not belong to the group. Identify and sort morning and afternoon activities.	
8	8	30–33	Trace the numeral eight and count to eight. Extend groups to eight. Model subtraction as taking away.	Join lines to make closed shapes. Differentiate between open and closed shapes.	Interpret a data presentation. Sort data into categories.
9			Diagnosis and consolidation		

Term planners

Term 2 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	9	34–37	Trace the numeral nine and count to nine. Order numbers from smallest to largest. Count on to combine groups.	Identify squares from a group of shapes. Trace then draw some squares. Compare areas using direct comparison.	
2	10	38–41	Trace the number 10 and count to 10. Identify groups of 10. Count backwards from 10. Count back to take away from a group.	Use the terms 'in front', 'on top', 'behind', 'near' and 'beside' in a position graphic. Use comparative language to describe duration.	
3	11	42–45	Add by counting the total number of items in a group. Make six using different counter combinations. Recognise the number of items in a small collection without counting.	Compare the volume of objects by the amount of space they occupy.	
4	12	46–49	Create and recognise numbers using five as a base. Identify different representations of numbers. Combine groups to add numbers. Create and continue 'two patterns' and 'three patterns'.	Sort objects by their unique attributes (points, curves, corners, etc.). Match 3D objects to their names.	
5	13	50–53	Introduce and use zero in counting. Trace the word 'zero'. Label rows to introduce the concept of multiplication.	Push or pull items to compare their masses.	Sort shoe box data by sorting footwear into shoes and boots. Suggest other ways of sorting the objects.
6	14	54–57	Discover combinations for making seven. Find different combinations for making eight. Count to find the difference between two small numbers.	Identify triangles from a group of shapes and describe their features. Identify day and night activities.	
7	15	58–61	Use a 10-frame to make numbers to 13. Count to 13. Identify the number before given numbers. Share items one at a time.	Demonstrate understanding of the position of objects arranged on an informal grid. Use direct comparison to find the longer object in a group.	
8	16	62–65	Model the numbers 14 to 16 by using a 10-frame representation. Order numbers to 16. Draw shapes to make sets of equal groups.	Compare areas by direct matching.	Interpret data displays related to weather.
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 as taking away. Complete subtraction number sentences. Draw the missing shape in a repeating pattern.	Identify rectangles from a group of shapes. Trace and draw rectangles. Order the days of the week from 1st to 7th. Identify weekend activities.	
2	18	70–73	Use 10 as a base to model numbers to 16. Complete counts to and from 16. Count to find how many more. Recognise and write ordinal numbers to 10th place.	Fill two containers to find the one that holds more.	
3	19	74–77	Identify numbers from 17 to 20. Fill in missing numbers on flip charts to and from 20. Identify 'two patterns' and 'three patterns'.	Match real objects with models made from Pattern Blocks and counters. Use playdough or plasticine to make models of objects. Heft to find the heavier of two items.	
4	20	78–81	Order numbers to 20. Find the largest and smallest number in a group. Find the hidden number using subtraction, then record an answer.	Name, describe and sort 2D shapes. Match activities to days of the week. Sketch an activity done yesterday and an activity to be done tomorrow.	
5	21	82–85	Arrange nine counters in two groups to discover different addition combinations. Share objects equally among groups.	Compare lengths using direct and indirect comparison.	Interpret a data display based on shoe styles.
6	22	86–89	Match the numeral, word and model to revise the teen numbers. Use 10-frames to add numbers to 10.	Use the terms 'left', 'right', 'above' and 'below' when describing position. Cover areas using Pattern Blocks. Discuss how students can compare areas.	
7	23	90–93	Find the missing number when given the total and one part. Model and identify equal groups. Write times in the o'clock form. Draw an activity for each time.		Use 'will', 'won't' and 'might' to describe the chance of events occurring.
8	24	94–97	Make and describe equal rows. Complete forwards and backwards counting sequences to 20. Find the number before and after given numbers.	Match shapes to their names. Identify shapes that do not belong in a group of shapes. Pour water from one container to another to compare capacities.	
9			Diagnosis and consolidation		

Term planners

Term 4 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	25	98–101	Count backwards to complete subtraction problems. Share items into groups of a given number.	Match daily activities to analog o'clock times.	Survey 10 students in the class and make an eye colour data display.
2	26	102–105	Model equal rows in arrays on a blank grid. Add circles to a 10-frame to calculate various addition combinations for 10.	Investigate and describe the properties of cubes and spheres. Compare the mass of two objects by hefting.	
3	27	106–109	Model numbers to 30 using 10-frames. Count beyond 20, up to 30. Solve subtraction word problems with the aid of diagrams.	Give and follow simple directions involving movement and positional language. Determine which of two stacks of blocks is larger. Compare the space taken by two different sized containers by filling with cubes and counting.	
4	28	110–113	Share various collections equally between two or three jars. Complete increasing or decreasing number patterns. Match money amounts with purchases.		Survey to collect data. Compare groups of data by counting.
5	29	114–117	Use bundles of 10 and loose items to model numbers to 30. Complete counting sequences to 30. Solve addition combinations to 10.	Use shapes to make pictures. Use a pan balance to compare masses. Find the item with the heaviest mass in a group of items.	
6	30	118–121	Complete subtraction word problems. Complete number sentences for equal rows and find a product. Identify keys on the calculator. Enter numbers on a calculator and perform simple calculations.	Use uniform informal units to measure the lengths of various objects. Compare lengths of objects measured with uniform informal units.	
7	31	122–125	Count and order numbers to 30. Order numbers from smallest to largest. Find the number before and after given numbers. Complete subtraction problems.	Name and describe 3D objects.	Collect data to answer questions about the characteristics of students in the classroom.
8	32	126–128	Use rows of shapes to find the answer to division problems by grouping. Use numbers to describe counting patterns. Find missing numbers in sequences.	Match digital times to their o'clock times.	
9				Assessment and consolidation	

NSW Syllabus Year K Teaching Notes

NSW Syllabus

Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond (Communicating) [L] [N]

Lesson focus

Introduce the name and symbol for the number 4 and identify a group of four

Materials

- a hoop
- linking cubes
- five sets of number cards (1–4)
- square tiles
- small chalkboards
- icy-pole sticks
- drawing paper
- PVA glue
- magazines
- scissors
- paste

Student Book

Page 14

Getting started

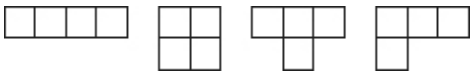
Seat students in a circle. Place a hoop in the centre. Place one cube in the hoop and ask students to say how many cubes are in the hoop. Place another cube in the hoop and ask students how many there are now. Continue until you have put down four cubes. Ask: *How many cubes? How do you know?* Point to each cube in turn as students count them out loud.

Learning activities

1. Ask students to walk/run around by themselves in a defined area. When you call out one, two, three or four, students have to form groups of this number.

Any students who cannot make a group are out. Play until most students are out.

2. Shuffle the number cards and spread them face down on the floor. Put a container of cubes near them. Ask a student to turn over a number card and take the corresponding number of cubes from the container. If more than one cube, they join them together to make a bar. Continue like this until all cards are gone. Ask students who have the same number of cubes to sit together. Ask other students to check that all students in a group have the same number of cubes. Ask students how they know.
3. Give students four square tiles. Ask them to place their tiles together to make an arrangement, for example:



Look at the different arrangements that have been made and group those that are the same together.

4. Demonstrate how to write the number 4 correctly. Ask students to use their finger to draw it on the carpet, on a partner's back, in sand, in the air and so on.

Support activities

- With small chalkboards, demonstrate how to form the numeral 4. Allow students to practise this on individual chalkboards, with your support.
- Direct students to draw groups of items on their chalkboard, such as four ducks or two circles.

Extension activities

- Students paste groups of four icy-pole sticks to drawing paper in different arrangements. For example:

- Hunt through magazines to find pictures that show four. Cut them out and paste them to a large sheet of paper.

Reflection

Choose different students to act out, show or tell something about four. For example, they could do four jumps, show a picture that contains four items or point out a group of four in the room.

Assessment

- Can students identify which collections show four?
- Can students make a group of four?
- Can students read and write the number 4?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Complete addition number sentences. Open-ended addition investigation. Find half of a shape and half of a group. Show different ways of halving a square.	Make shapes on geoboards then sketch them. Use a uniform unit to estimate and measure lengths.	
2	2	6–9	Take away a number from a group. Create own number sentence. Interpret ten strip and complete number expanders.	Sort 3D objects according to properties. Use various strategies to compare areas.	
3	3	10–13	Model multiplication using groups. Draw equal groups to match number sentences. Use models to help extend number patterns. Find missing numbers in a sequence.	Trace and name 2D shapes. Identify shapes from a group. Measure time taken to perform simple tasks using an informal time unit.	
4	4	14–17	Count on to find the total number of items. Half of a collection.	Estimate, measure and compare the capacity of containers by pouring.	Distinguish between events that might happen and events that won't happen. Draw events that will or won't happen.
5	5	18–21	Count on or back to find the difference. Count and label icy-pole sticks in bundles of 10.	Sketch the position of objects on a diagram of a room. Lift everyday objects to find the heavier item.	
6	6	22–25	Share objects into groups of two and three. Supply missing numbers on a hundreds chart. Count forwards and backwards by 1.	Identify vertical, horizontal and parallel lines. Draw parallel lines.	Interpret data on a picture graph.
7	7	26–29	Add numbers on a number line. Model numbers to 30. Model and identify odd and even numbers. Identify odd and even numbers in a series.	Match 3D objects to their correct names.	
8	8	30–33	Create number sentences from 10-frames. Find missing numbers in number sentences. Identify half of whole objects and collections of objects. Solve fraction problems.		Classify events that will, might or won't happen.
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	Complete multiplication sentences to describe equal groups. Create and label equal groups. Count by 2s and 5s up to 100.	Identify 2D shapes. Draw 2D shapes on dot paper. Cover and compare areas.	
2	10	40–43	Addition on 10-frames. Model two-digit numbers and complete number expanders. Match numbers to a number line.	Locate position using the terms left, right, above, below. Use Pattern Blocks to measure area. Make different looking shapes with the same area.	
3	11	44–47	Count back to solve subtractions. Divide shapes into quarters. Differentiate between shapes divided into quarters and those divided into four unequal sections.	Identify and explore hexagons. Build objects from cubes then count the number used.	
4	12	48–51	Skip count to find the total number. Divide groups into equal shares and complete sentences to describe them.	Interpret o'clock times on analog clocks. Draw hands to show o'clock times.	Create a picture graph from given data.
5	13	52–55	Count on to complete addition number sentences. Open-ended investigation to find additions with a total of 12. Use number lines to complete number patterns.	Count 3D objects used in a construction. Draw faces of a 3D object. Find objects greater than a mass, less than a mass or about the same as a given mass.	
6	14	56–59	Subtraction facts from addition facts. Use flip charts to count by 2s, 3s and 5s.	Count the number of sides and vertices on shapes. Draw shapes from descriptions.	Construct a column graph from supplied data.
7	15	60–63	Describe patterns and identify errors in patterns. Count by 10s on and off the decade.	Use language of position: left, right, behind, in front of. Use uniform informal area units to estimate area of items.	
8	16	64–67	Create addition patterns for 4, 5, 6 and 7. Write the value of coins. Match items to their coin value.	Use uniform informal length units to estimate the length of an object.	Identify 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	Bridge to 10 to complete additions. Find quarters of a collection. Label groups as 'quarters'/'not quarters'.	Recognise and explore quadrilaterals. Measure and compare capacity using 'cupfuls'.	
2	18	74–77	Make and describe equal groups. Find missing numbers. Identify the pattern of 5s and 10s on a hundreds grid. Observe relationship between 5s and 10s.	Classify objects by matching descriptions to the objects. Estimate and measure the mass of objects using uniform units.	
3	19	78–81	Find doubles and near doubles. Solve number sentences with doubles. Divide a collection by making equal groups.	Identify and explore pentagons. Label 'half past' times on analog clocks. Draw hands to show 'half past' times.	
4	20	82–85	Subtraction on number lines. Group into bundles of 10 and explain why grouping makes counting easier.	Name and relate months and seasons.	Interpret data presented in a picture graph.
5	21	86–89	Use addition to solve subtractions. Investigate open-ended subtractions. Investigate adding odd and even numbers.	Use a grid to describe location. Use different area units to measure the same shape. Explain the choice of the best unit.	
6	22	90–93	Record equivalent number sentences involving addition. Partition two-digit numbers into tens and ones.	Identify 2D shapes by their properties such as sides and corners.	Construct and interpret a column graph.
7	23	94–97	Count back to solve subtractions. Apply and describe the commutative property of addition.	Recognise the top, front and side views of rectangular prisms and cubes. Interpret a calendar.	
8	24	98–101	Perform repeated subtraction by taking away groups of blocks from a stack. Solve addition and subtraction word problems using 10-frames as a visual image.	Stack blocks or shapes to model 3D objects. Trace and draw 3D objects. Compare objects built from cubes. Estimate and measure the volume of boxes.	
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	Make combinations to 10 before adding a third number. Continue number patterns and write a rule to describe the operation.	Identify and explore pentagons and octagons. Measure and compare curved lengths.	
2	26	108–111	Complete subtraction number sentences. Write or draw a problem to match a subtraction number sentence. Total amounts of coins and order coins.	Construct a path on a map. Compare own path with others (longer/shorter).	Use terms 'possible, 'impossible', 'likely', 'unlikely' to describe likelihood.
3	27	112–115	Write number sentences using the equals sign to describe arrays. Select combinations of coins needed to purchase various items.	Identify and explore rhombuses. Compare objects to a single length. Identify objects longer or shorter than 1 metre.	
4	28	116–119	Add numbers using the jump strategy on a number line. Round to the nearest 10.	Find the area of shapes using a standard grid.	Gather data and display it using tally marks and a column graph.
5	29	120–123	Use a number line to model and solve repeated addition. Solve problems using addition, subtraction, multiplication or division.	Count the faces, edges and vertices on 3D objects with straight edges. Compare the mass of objects using a pan balance.	
6	30	124–127	Write three other facts from one addition. Solve subtractions using addition. Describe halves and quarters of shapes and collections.	Estimate and measure lengths in metres.	Tally and interpret coin toss data.
7	31	128–131	Complete subtractions using the jump strategy. Solve divisions using arrays and record answers in sentences using the term 'groups'.	Create tessellating patterns using Pattern Blocks. Match digital and analog time. Record time in digital form.	
8	32	132–134	Model division by sharing objects equally. Use a number line to solve word problems.	Follow directions to colour squares on a grid.	
9–10		135–136	Diagnostic Review 4 and assessment		

Year 1 Teaching Notes

NSW Syllabus

Recognise and describe one-half as one of two equal parts of a whole

Lesson focus

Find half of collections of objects

Materials

- paper plates
- counters
- drawing paper
- circle templates (lids, cylinders, etc.)
- cubes

Student Book

Page 15

Mentals Book

Page 9

Getting started

Seat students in a circle on the floor. Place eight counters and two paper plates in the centre. Choose two students to share the counters equally between them by placing half on each plate.

Check that there are four counters on each plate and then ask students to say how they worked this out. Repeat this for other numbers of counters and different students.

Learning activities

1. Involve students in acting out situations where collections are halved, for example: *A farmer has 12 ducks. Half the ducks were swimming in one pond and half were swimming in another pond.* Ask 12 students to act out the 'sharing' of the ducks into the ponds to identify that there were 6 ducks in each half.
   Draw the 12 ducks on the board (as simple symbols) and ask a student to draw a circle around one-half of them. Ask: *How many in each half? Are the numbers in each half the same? Do they add together to make 12? How can*

you check?
Repeat this activity with different situations and numbers (for example, sharing players into two teams, making two even lines of students or sharing blocks into two boxes).

2. Give each student a piece of drawing paper and ask them to draw 10 circles on the paper. Students can use circle templates (lids, cylinder bases, etc.) to help them do this. Now ask students to colour half of their circles. Help any students who have difficulty working out how many to colour. Display the completed work and ask students to check that five circles out of 10 are coloured each time. Ask: *Does it matter which five circles in each drawing are coloured?* Emphasise that, when colouring half of a collection, it doesn't matter which items are coloured as long as it is half of the total number. (An IWB can be used to do this activity as a class.)

Support activities

- Allow students to use cubes or counters to model the halving situations on student book page 15. They should make the total number shown in the picture, then share out the materials to make two groups the same size.

Extension activities

- Challenge students to halve other numbers to 20, using materials to perform the sharing and to draw the sharing. Ask: *Which numbers of items cannot be shared evenly?*

Reflection

Discuss the activities on student book page 15. Point out that, in each activity, there are two groups the same size. Relate this to addition 'doubles' (double 1 is 2; double 2 is 4; double 3 is 6, etc.).

Show three more halving examples on the board using the numbers 10, 14 and 18. Ask different students to circle the halves. Relate these examples to 'double 5', 'double 7', and 'double 9'.

Assessment

- Can students demonstrate an understanding of halves in relation to two groups the same size?
- Can students halve a small group of objects correctly?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Use the 'make to 10' strategy for adding two numbers. Find half of shapes and collections.	Name and classify 2D shapes. Measure length with uniform informal units.	
2	2	6–9	Write and solve subtraction number sentences. Recognise, represent, compare and order numbers to 99.	Identify and name common 3D objects. Estimate and measure areas with uniform informal units.	
3	3	10–13	Model multiplication as repeated addition. Investigate number sequences by skip counting.	Identify congruent shapes. Read and show half past times on an analog clock.	
4	4	14–17	Write and solve addition number sentences. Use the multiplication sign.	Compare and order capacity.	Classify events as certain, possible or impossible.
5	5	18–21	Subtract by counting on. Read, write and represent numbers to 1000.	Place objects in given positions and describe their position. Compare and order mass.	
6	6	22–25	Divide by making equal groups. Interpret and record number sentences using the multiplication sign.	Make and identify quarter turns in clockwise and anti-clockwise directions.	Use tally marks to represent information in a data table.
7	7	26–29	Use the bridging strategy to add two numbers. Read, write and order three-digit numbers.	Identify and describe the properties of 3D objects. Read and write digital times for half past and o'clock.	
8	8	30–33	Count on to add small numbers. Find a quarter of shapes and collections.	Estimate and measure length with uniform informal units.	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	Interpret and record number sentences using the multiplication sign. Count by 1s, 2s, 3s and 5s. Estimate and count the number of items in a group.	Estimate, measure and compare areas.	
2	10	40–43	Write and solve addition facts to 20. Use various mental strategies when adding.	Interpret and use the language of position. Measure and describe duration.	
3	11	44–47	Subtract by counting back. Divide shapes and collections into halves and quarters.	Identify, make and describe angles. Use cubes to measure and compare volume.	
4	12	48–51	Explore the commutative property of multiplication. Share a group of items equally.	Read and write quarter past and quarter to time on an analog clock.	Interpret and create picture graphs.
5	13	52–55	Use a number line to solve additions. Recognise, complete and create number patterns.	Identify 2D shapes within 3D objects. Estimate, measure and compare mass.	
6	14	56–59	Relate addition and subtraction facts. Use the jump strategy to add two numbers.	Identify and describe half and quarter turns.	Collect, display and interpret data on a column graph.
7	15	60–63	Solve multiplication by repeated addition. Count and compare numbers.	Follow and describe directions. Measure and compare areas with uniform units.	
8	16	64–67	Use addition patterns to complete number sentences. Count, make and record money amounts.	Estimate and measure in metres.	Order events from least likely to most likely.
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	Use arrays to multiply by two. Find halves, quarters and eighths of shapes and collections.	Identify and make symmetrical pictures and shapes. Estimate, measure and compare capacity with uniform informal units.	
2	18	74–77	Use arrays to multiply by 10. Count backwards by 1s, 2s, 5s and 10s.	Identify and describe the properties of 3D objects. Measure, compare and order masses.	
3	19	78–81	Use a mental strategy for addition. Use arrays to solve division.	Make and describe patterns using flip, slide and turn. Read and write quarter past and quarter to time on a digital clock.	
4	20	82–85	Use the jump strategy for subtraction. Round numbers to the nearest 10.	Estimate and measure in metres and half metres.	Collect, display, interpret and compare data.
5	21	86–89	Make equal number sentences. Identify and continue counting patterns.	Follow and give directions. Estimate area by visualising square units.	
6	22	90–93	Extend basic addition facts. Rearrange numbers to 1000.	Make and describe patterns using flip, slide and turn.	Draw and interpret tallies and picture graphs.
7	23	94–97	Extend basic subtraction facts. Use the commutative property to add and multiply.	Draw and describe objects from different viewpoints. Use and interpret a calendar.	
8	24	98–101	Use repeated subtraction to solve division problems. Choose the appropriate operation and solve problems.	Recognise and draw 2D representations of 3D objects and construct models from drawings. Observe what happens when various objects are submerged in water.	
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	Subtract by adding on from the smaller number. Determine and use rules to complete and continue counting patterns.	Make symmetrical patterns. Name and order months and seasons.	
2	26	108–111	Use the jump strategy for subtraction. Make amounts of money and give change.	Follow and give directions to get from one place to another.	Identify possible outcomes and predict likelihood.
3	27	112–115	Use arrays to multiply by five. Compare, order and record money amounts.	Identify and draw parallel lines. Estimate and measure length in centimetres.	
4	28	116–119	Round numbers to the nearest 100. Use the split strategy for addition.	Use a grid to measure and compare areas.	Pose questions and collect information to answer them.
5	29	120–123	Recognise and use the division symbol. Use various mental strategies to solve subtractions.	Describe and sketch 3D objects. Estimate, measure and compare masses.	
6	30	124–127	Link multiplication and division facts. Order numbers to 1000.	Join and separate shapes to form new shapes. Measure and compare length in centimetres.	
7	31	128–131	Use mental strategies to solve subtraction facts. Use the relationship between multiplication and division to solve number facts.	Estimate and measure volume with uniform informal units. Use a calendar to identify the date and number of days in each month.	
8	32	132–134	Multiply by five and 10 within the tables range. Explore subtraction as 'finding the difference'.	Construct a model and draw a bird's-eye view.	
9		135–136	Diagnostic review 4 and assessment		

MATHS PLUS NSW Syllabus Year 2 Teaching Notes

NSW Syllabus

Solve simple addition and subtraction problems using a range of efficient mental and written strategies [L]

Lesson focus

Write and solve addition number sentences

Materials

- dice
- **BLM 4** (Make the number)
- working boards with two circles
- counters
- five A4 coloured cards

Student Book

Page 14

Mentals Book

Page 8

Getting started

Play ‘Gotcha!’ Ask the students to draw a 3 × 3 grid in their maths books. In each square, have students write any number from 2 to 12, repeating numbers if they choose. Roll two dice and have students add the two numbers together. If the solution is a number they have written in a square, they can colour it in. If they have the number more than once, they may colour it in each time it appears. The first student to colour in a row vertically, horizontally or diagonally calls *Gotcha!* and is the winner.

Learning activities

1. Write the number sentence 4 + 7 = 11 on the board. Students can use this as an example. Write 5, 6 and 11 on the board and ask students to use these to

create a number sentence in their books. Have students share and decide which number sentence was the most popular. Point out to students that both addition facts total 11 (5 + 6 and 6 + 5) and these are called turnarounds. Have them write other facts that also total 11. Record these on the board, placing the turnarounds together.

2. Give each student a gameboard from **BLM 4** (Make the number) and each small group two dice. Read through the instructions on the gameboard, making sure students understand how to play. Give groups time to play the game.
3. Divide students into pairs. Hand out to each pair a working board that has two large circles on it. (Make the boards by drawing two circles on a piece of light A4 cardboard.)

Give pairs of students 20 counters. Call out a number and have the students place that number of counters into the circles, using any combination they like. (For example, if you call out 15, students might put 10 counters in one circle and five counters in the other or nine counters in one circle and six in the other.)

Discuss the different combinations that could be made. Repeat several times using different numbers.

Support activities

- Write a number sentence such as 8 + 5 = 13 and ask students to record its turnaround.
- Tell students you have, for example, 12 counters in total, some in each hand. Ask: *What are the possibilities?* Students record them.

Extension activities

- Students write three numbers that would add together to make each of the totals in activity 2 on student book page 14.
- Students write four numbers that would add together to make the totals described above.

Reflection

Label five A4 coloured cards with one of the numbers 10, 12, 15, 18 and 20.

Brainstorm different combinations that add together to make the numbers on the cards and write these on the cards.

Have some students organise the facts in a pattern and display these cards around the room.

Assessment

- Can students recall a reasonable number of addition facts to 20?
- Do students recognise that a number might be made up of several different addition combinations?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Solve addition facts to 20. Add two-digit numbers with materials. Find a pattern in an addition grid. 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	Solve subtraction facts to 20. Find missing numbers in subtractions. Model and write three-digit numbers. Order three-digit numbers.	Draw lines of symmetry on shapes. Complete drawings of symmetrical shapes. Compare informal areas. Measure areas informally. Compare area units.	
3	3	10–13	Make combinations of 10 for addition. Solve problems by making 10s. Explore 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	Solve subtraction facts from addition. Solve problems. Write an addition problem. Use mental strategies and arrays to multiply by two.	Match sets of faces and surfaces to 3D objects. Recognise vertices and edges of 3D objects. Measure and estimate the length of objects in centimetres.	
5	5	18–21	Model odd and even numbers. Find patterns in odd and even numbers. Round numbers to 10. Round numbers to estimate answers to addition number sentences.	Investigate the properties of triangles. Recognise the minute, hour and second hands of a watch. Show the time on clock faces.	
6	6	22–25	Expand three-digit numbers. Use > or < to compare numbers. Use mental strategies and arrays to multiply by five.	Use a grid to locate and give positions.	Interpret column graphs. Construct a column graph.
7	7	26–29	Introduce and use the division symbol. Write and solve division number sentences. Use the 'jump' strategy to solve addition of two-digit numbers.	Identify parallel lines from a group of lines. List sets of parallel lines in the environment. Measure capacity using informal units. Choose appropriate measuring units.	
8	8	30–33	Extend subtraction facts. Introduce numerator and denominator. Identify and model halves, quarters and eighths.	Identify faces, edges and vertices of pyramids. Describe a pyramid. Develop strategies to calculate area.	
9	9	34–37	Use the split strategy to add two-digit numbers. Solve problems using the split strategy. Relate the two and four times tables. Use the double then double again strategy. Recognise tables patterns in the hundreds chart.	Interpret and construct picture graphs. Read, record and order digital times.	
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. Compare fractions for halves, quarters and eighths.	Recognise a right angle and angles smaller and greater than a right angle. Use a 1-m streamer to measure objects. Measure to the nearest metre using a 1-m rule.	
2	11	44–47	Count by 10s on and off the decade. Count by 10s to find a total. Identify and represent thirds of shapes and collections. Use > or < to compare fractions. Complete number patterns to describe shape patterns. Write a rule for each pattern.	Measure mass using informal units.	
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	Use the jump strategy to solve two-digit subtractions. Identify, model and order fifths and tenths of shapes and collections.	Identify perpendicular lines. Draw items that have perpendicular lines. Measure and estimate using litres.	
5	14	56–59	Solve addition number sentences by bridging to 10. Make equivalent number sentences. Use arrays to solve divisions.	Model 3D objects. Discover which nets fold to make a cube.	Interpret and record data in a table.
6	15	60–63	Find the correct number of coins to equal $2. Find various ways to pay for items. Expand four-digit numbers. Write the numbers before and after a given number.	Identify pentagons and other 2D shapes. Draw pentagons. Identify quarter to and quarter past on a clock face. Record time on clock faces.	
7	16	64–67	Complete addition grids to find addition patterns. Use arrays to revise 2, 5 and 10 times tables.	Estimate and measure the mass of items using kilograms.	Collect and interpret data to test a prediction. Conduct a survey.
8	17	68–71	Use an empty number line to solve additions and subtractions. Write multiplication and division facts to describe arrays.	Follow directions on a map. Interpret a map. Measure and record perimeter in centimetres.	
9	18	72–75	Learn to trade in two-digit addition algorithms. Complete missing digit number patterns. Use the constant function on a calculator.	Describe the features of prisms. 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	Count forwards and backwards by 10s and 100s. Use mental strategies and arrays to multiply by three. Solve multiplication facts and problems.	Reflect, translate and rotate shapes. Continue shape patterns.	Identify and describe possible outcomes.
2	20	82–85	Learn to trade in two-digit subtraction algorithms. Solve division facts from multiplication facts.	Find angles in the environment. Draw examples of angles. Measure and rule lengths in millimetres. Convert centimetres to millimetres and metres to centimetres.	
3	21	86–89	Solve three-digit addition algorithms with and without trading. Create a problem to suit a number sentence. Count on to calculate change.	Discover the cross-sections of 3D objects. Estimate and measure the capacity of containers in litres.	
4	22	90–93	Subtract three-digit numbers with trading in the ones. Solve subtraction problems. Find fractions of a collection.	Read thermometer displays. Record temperatures in degrees Celsius. Express time using digital and analog formats. Calculate elapsed time.	
5	23	94–97	Revision of multiplication facts (0s, 1s, 2s, 3s, 4s, 5s and 10s). Use the least number of coins to make different values. Round amounts to the nearest 5c.	Introduce grid references on a simple grid.	Use tally marks to represent data. Create a column graph.
6	24	98–101	Use the compensation strategy to solve two-digit additions. Complete division facts. Solve division problems.	Measure mass in kilograms.	Predict answers to questions. Conduct a survey then record data and graph results.
7	25	102–105	Solve addition problems based on map distances. Solve general addition problems. Place fractions on a number line. Represent fractions by shading bars.	Construct 2D shapes and test for rigidity. Make a square metre. Estimate and measure areas using square metres.	
8	26	106–109	Trade in three-digit subtraction. Write, order and represent four-digit numbers.	Recognise, classify and draw octagons and other 2D shapes. Identify the cubic centimetre as a standard unit for volume. Construct models and record their volume.	
9	27	110–113	Use number lines, repeated addition and place value strategies for multiplication. Represent and solve division facts. Explore division with known table facts.	Follow compass directions to plot a path. Explain why one route is shorter than another.	Order the likelihood of selecting marbles. Solve 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	Check solutions by repeating the operation, using a calculator and using an inverse operation. Explore the commutative property for addition and multiplication.	Sketch prisms, cylinders and pyramids. Estimate and measure mass in half-kilograms. Measure pieces of fruit needed to balance 1 kg.	
2	29	120–123	Solve three-digit addition with trading. Solve problems involving money. Solve division problems within the tables range.	Identify parallelograms. Identify properties of parallelograms. Draw parallelograms.	Conduct a chance experiment. Record and interpret collected data.
3	30	124–127	Solve addition to 9999 with and without trading. Count by fractions beyond one.	Measure heights and arm spans. Identify attributes of various quadrilaterals. Draw examples of quadrilaterals.	
4	31	128–131	Write, order and expand four-digit numbers. Record the place value of given digits. Identify and continue patterns on a hundreds chart.	Find and trace a net for a small box. Find packets marked in grams. Order containers according to mass.	
5	32	132–135	Complete number patterns. Explain number patterns. Record, represent and order hundredths.	Describe 2D shapes. Measure the volume of a box in cubic centimetres. Construct models and record their volume.	
6	33	136–139	Practise written method for subtraction to 9999 without trading. Use the associative property in addition and multiplication number sentences.	Interpret maps and add features to maps. Use grid references on maps. Follow compass directions. Measure capacity in millilitres.	
7	34	140–143	Record and order decimal hundredths. Use mental strategies such as doubling and skip counting for multiplication. Practise two-digit by one-digit extended multiplication.	Estimate and measure in metres and centimetres. Use decimal notation to record length.	
8	35	144–147	Use strategies to solve addition and subtraction problems. Find missing numbers in number sentences. Insert operations symbols in number sentences.	Draw a plan of objects on a desk from above. Calculate area in cm^2.	
9		148–149		Diagnostic review 4 and assessment	

MATHS PLUS NSW Syllabus Year 3 Teaching Notes

NSW Syllabus

Recognise and explain the connection between addition and subtraction (Problem solving) [CCT] [N]

Lesson focus

Use the inverse relationship between addition and subtraction

Materials

- cardboard
- scissors

Student Book

Page 14

Mentals Book

Page 8

Digital Teaching Objects

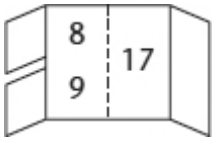
The digital teaching object ‘Written subtraction strategies’ on the Teacher Dashboard can be used to introduce relevant key mathematical concepts. Note: use Screen ‘B’ only.

Getting started

As a class, revise the number facts 1 to 20 verbally and in written form. Give the students 20 mental additions and subtractions (for example, 12 plus 4, 19 minus 7 and 6 plus 8 plus 4) for which they can write only the answer in their maths exercise books.

Learning activities

1. Show students how to make fact family cards similar to this:



By opening and closing the flaps, students can show the four number sentences that make a fact family (8 + 9 = 17, 9 + 8 = 17, 17 − 9 = 8, 17 − 8 = 9).

2. Write addition number sentences on the board: 8 + 6 = 14; 7 + 5 = 12; 11 + 8 = 19 and so on. Ask students to write two subtraction facts for each addition. For example, for 8 + 6 = 14, they would write 14 − 8 = 6 and 14 − 6 = 8.
3. Write subtraction number sentences on the board: 14 − 9 = 5; 17 − 9 = 8; 15 − 9 = 6 and so on. Ask students to write one addition fact and one other subtraction fact for each subtraction. For example, for 14 − 9 = 5, they might write 9 + 5 = 14 and 14 − 5 = 9.
4. Students check their number sentences in activity 2 on student book page 14 by doing the inverse operation.

Support activities

- Use fact family cards to practise number facts.
- Students take a fact family card and write all the related addition and subtraction number sentences.

Extension activities

- Students make number sentences for larger additions and subtractions and check that they are correct by using the inverse operation, for example: 63 − 26 = 37 so 37 + 26 = 63.

Reflection

Choose different students to demonstrate how they would use an inverse operation to check the answer to an addition or subtraction.

Assessment

- Can students use inverse operations to check additions and subtractions?
- Can students consistently use the inverse relationship between addition and subtraction to write related facts?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Answer and extend addition facts. Develop strategies to recall the 4s multiplication facts and related division facts.	Identify and describe 3D objects. Estimate and measure lengths in centimetres. Convert metres into centimetres.	
2	2	6–9	Revise two- and three-digit subtraction with and without trading. Expand four-digit numbers. Write place value of digits in numbers.	Draw lines of symmetry on common 2D shapes. Make drawings symmetrical. Find the area of shapes in square centimetres.	
3	3	10–13	Revise two- and three-digit addition with and without trading. Continue and predict terms in number patterns.	Use location language to find and give the position of objects.	Interpret and draw column graphs.
4	4	14–17	Use various mental strategies to solve subtractions. Revise multiplication facts. Use multiplication to solve and write problems.	Describe and make models of 3D objects. Describe the difference between a prism and a pyramid. Choose and use length units for estimating and measuring.	
5	5	18–21	Use the properties of odd and even numbers to check answers. Round numbers to 10 and 100. Round numbers to estimate before solving.	Identify attributes of polygons. Record number of sides and angles of various polygons. Record basic units of time. Select suitable time units. Compare and order times.	
6	6	22–25	Write numbers in a place value chart. Order and expand numbers. Use arrays to multiply by six.	Use NE, NW, SE and SW to describe directions.	Collect, organise, display and interpret data. Construct a column graph.
7	7	26–29	Use arrays and multiplication facts to solve division facts. Use jump strategies to solve addition and subtraction of two- and three-digit numbers.	Identify and draw parallelograms and trapeziums. Estimate and measure the capacity of containers in litres.	
8	8	30–33	Use arrays to multiply by seven. Find the product of pairs of numbers. Represent fifths and tenths. Label fifths and tenths on a number line.	Draw prisms, pyramids, cones and cylinders. Estimate and measure area of shapes in square centimetres. Draw shapes with the same areas and different perimeters.	
9	9	34–37	Use the split strategy for addition. Round addends to estimate before adding. Use strategies for multiplication to work out unknown facts.	Introduce am and pm notation. Read, write and record times in digital and analog form. Calculate periods of time.	Make and interpret picture graphs where one picture represents more than one data value.
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 for subtraction of three-digit numbers with trading. Compare and find equivalent fractions using materials and diagrams.	Classify angles as right angles, acute angles or obtuse angles. Draw three types of angles. Estimate, measure and rule lengths in millimetres.	
2	11	44–47	Continue forwards and backwards counting patterns by 10s and 100s. Use < and > to compare two-, three- and four-digit numbers. Represent and compare thirds and sixths. Complete and continue tables to show the relationship between two sets of numbers.	Estimate masses of less than 1 kg, about 1 kg and more than 1 kg. Measure the mass of objects in kilograms.	
3	12	48–51	Find, describe and follow rules to continue number patterns. Use mental strategies and arrays to multiply by eight.	Make and complete symmetrical patterns.	Predict and describe the likelihood of chance events. Use 'chance' language to describe particular events.
4	13	52–55	Use jump and bridging strategies for subtraction. Write and represent mixed numerals.	Combine and split common 2D shapes. Recognise the relationship between litres and millilitres. Find the capacities of containers.	
5	14	56–59	Count by halves, quarters and fifths to complete number lines. Use mental strategies for division.	Reflect, translate or rotate given shapes. Form a pattern through rotating.	Record and interpret data on two-way tables.
6	15	60–63	Model hundredths and express them in decimal notation. Represent, compare and order five-digit numbers.	Group 2D shapes according to various attributes. Draw 2D shapes. Distinguish between morning and afternoon times (am and pm).	
7	16	64–67	Use a written method for addition of three-digit numbers with trading. Use arrays to multiply by nine. Identify the pattern of the nine times table in a hundreds chart.	Measure and record mass in grams.	Make categories to organise data.
8	17	68–71	Multiply the tens before the ones in two-digit by one-digit multiplication. Round to approximate products. Use multiplication and division facts to solve divisions with remainders.	Use a legend to interpret a map. Use compass points to give directions. Measure the perimeter of shapes in centimetres. Draw shapes of specified perimeters.	
9	18	72–75	Use a written method to add four-digit numbers with and without trading. Identify and continue number patterns. Illustrate number patterns on hundreds charts.	Recognise, label and draw objects from the front, top and side viewpoints. Design shapes of given square centimetre areas. Estimate the area of given shapes.	
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	Round numbers to 10, 100 and 1000. Find factors of numbers. Use factorisation as a multiplication strategy.	Rotate shapes clockwise and anti-clockwise through specified turns.	Investigate events where the chance of one does not affect the chance of others.
2	20	82–85	Use a written method for subtraction of three-digit numbers with trading. Use the symbol $\overline{)}$ for division.	Identify angles where one arm is visible and the other invisible. Estimate, measure, rule and record length. Convert centimetres to millimetres. Use decimal notation to record in metres.	
3	21	86–89	Use a written method to add four-digit numbers with and without trading. Model, represent and record decimals.	Identify, compare and describe angles as right, obtuse, acute, reflex or straight. Estimate, measure and record capacity in millilitres.	
4	22	90–93	Use a written method for subtraction of four-digit numbers with trading. Find and represent fractions of a group.	Identify and continue tessellating patterns. Read, interpret and make timetables.	
5	23	94–97	Use the extended multiplication method to multiply two-digits by one-digit. Round amounts of money to the nearest 5c.	Use coordinates to plot points on a grid and a simple map.	Represent and compare the same data on a column graph and a picture graph.
6	24	98–101	Round up and down as part of the compensation strategy for addition. Use various strategies to solve division number sentences with and without remainders.	Estimate, measure and record masses in grams.	Conduct a survey. Tally, graph and interpret data.
7	25	102–105	Revise addition of whole numbers and decimals. Use place value to record, compare and order decimals to two places.	Describe, model and draw pentagons and octagons. Describe the differences between a cube and a square. Use square metres to estimate and measure areas.	
8	26	106–109	Use a written method for four-digit subtraction with and without trading. Recognise the value of digits in five-digit numbers.	Combine and split shapes to identify and make tessellating designs. Record the volume of prisms in cubic centimetres.	
9	27	110–113	Use the contracted method for multiplication. Use a written method to solve divisions with and without remainders.	Use a scale to calculate distances on a map. Draw a plan view.	Identify, record and describe the likelihood of outcomes.
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	Use a written method to add five-digit numbers with trading. Use the commutative property for addition and multiplication.	Read different scales and record masses.	Collect, display and interpret data.
2	29	120–123	Use a written method to add five-digit numbers with trading. Use mental and written methods to solve divisions with and without remainders.	Use and read a thermometer.	Investigate and describe the likelihood of outcomes.
3	30	124–127	Relate square numbers to multiplication. Express tenths as hundredths and as decimals. Use < and > to compare tenths and hundredths.	Read and interpret a calendar. Use a calendar to calculate time intervals.	Interpret and record data on a spreadsheet.
4	31	128–131	Use the contracted form of multiplication. Solve two-digit by one-digit multiplications mentally. Order and round decimals.	Match 3D objects with their nets. Discover and draw cross-sections of 3D objects. Use decimal notation to record length.	
5	32	132–135	Complete number patterns using addition, subtraction, multiplication and division. Continue fraction and decimal counting patterns.	Explore the use of multiplication to find the area of rectangles.	Collect data to test a prediction. Tally, graph and interpret data.
6	33	136–139	Use a written method for five-digit subtraction with and without trading. Use the associative property to complete equivalent number sentences for addition and multiplication.	Describe paths on a map. Follow directions to find a destination. Explore the relationship between millilitres and litres.	
7	34	140–143	Add and subtract decimals to two decimal places. Estimate and calculate multiplications.	Interpret isometric drawings. Draw models on isometric dot paper. Complete and compare displacement experiments.	
8	35	144–147	Write, solve and relate number sentences. Estimate and check answers to calculations.	Use coordinates and scale on maps. Read and make simple timelines.	
9		148–149		Diagnostic review 4 and assessment	

Year 4 Teaching Notes

NSW Syllabus

Recall multiplication facts up to 10 × 10 and related division facts (Reasoning, Communication, Problem Solving) [L] [N] [CCT]

Lesson focus

Practise times tables

Materials

- cards with multiplication tables written on them
- counters
- **BLMs 5** and **6** (‘Five in a row’)
- dice

Student Book

Page 15

Mentals Book

Page 9

Getting started

Review the idea of turnarounds. Draw a 4 × 3 array on the board and ask students which multiplication facts this shows (4 threes and 3 fours). Ask individual students to look at the array from both directions (for example, ask them to circle the part of the array that would show 2 fours or 4 twos).

Learning activities

1. Play a game of ‘Bingo’ with the whole class. Have students rule a 5 × 5 grid in their books and write an answer to a 3×, 4× or 5× multiplication fact in each cell. Ask students to use counters to cover the answers to the number facts as they are called out. The first student to cover the board (or two diagonals, etc.) wins.
2. Divide the class into two teams, one for noughts and the other for crosses. Draw a noughts and crosses grid on the board. Put the tables cards for the table you are practising face down. Members of each team take turns to pick up the top tables card, read it aloud and give the answer. If their answer is correct, they add a nought or a cross to the grid. The first team to make a line

of three wins the game. Play until everyone has had a turn to answer a question.

3. Give groups of four students a copy of the instructions and four identical gameboards to play a game called ‘Five in a row’ (**BLMs 5** and **6**). Review the rules of the game and then give students time to play.

Support activities

- Have students complete a times table square so they can identify the tables they need to practise.
- Encourage students to write more multiplication problems based on the items pictured on student book page 15.

Extension activities

- Ask students to calculate the cost of 10 kg of potatoes and 3 kg of mushrooms, using the prices given on student book page 15. Compare the answers and check them with a calculator for accuracy.
- Encourage students to write problems of their own with at least two steps.

Reflection

Share the problems students wrote for activity 7 on student book page 15, and solve each one. Check that all problems can be solved by multiplication.

Assessment

- Are students developing recall of times table facts?
- Can students work out simple money problems involving multiplication (whole dollar amounts)?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Revise the written method for three-digit addition. Revise multiplication facts and related division facts. Create number sentences for a given product.	Recognise and name angles. Identify shapes by angles. Measure longer distances in kilometres.	
2	2	6–9	Use mental strategies for addition and subtraction. Round to estimate additions. Recognise and represent thirds, sixths and twelfths. Label fractions on a number line.	Name and describe polygons according to their properties. Calculate the area of rectangles in square centimetres.	
3	3	10–13	Revise the written method for three-digit subtraction. Revise division facts.	Calculate the volume of rectangular prisms in cubic centimetres.	Use a key where one symbol represents more than one object to interpret picture graphs.
4	4	14–17	Use mental strategies for addition and subtraction. Apply place value with numbers to and including six digits.	Interpret maps using grid references, compass points and scales. Estimate and measure the mass of objects in grams and kilograms.	
5	5	18–21	Use mental strategies for multiplication. Select, discuss and compare problem-solving strategies.	Identify, name and describe the features of prisms and pyramids.	Conduct a chance experiment and analyse the outcomes.
6	6	22–25	Revise two-digit division with and without remainders. Solve a practical division problem. Make, continue and describe number patterns.	Use am and pm notation to display times.	Interpret and make dot plots.
7	7	26–29	Use the shortened form to multiply two-digit numbers by a single digit. Recognise and make equivalent fractions.	Measure and name various angles using a protractor. Convert metres to kilometres using a decimal point. Calculate distances in kilometres.	
8	8	30–33	Use a written method for four-digit addition with trading. Use subtraction to check addition. Find missing numbers in number sentences. Use numbers to solve equations.	Draw prisms and pyramids. Add lines to show faces, edges and vertices.	Interpret a picture graph. Design a picture graph to represent data.
9	9	34–37	Use mental strategies for division. Identify mixed numerals and relate them to improper fractions.	Classify 3D objects according to the number of faces, edges and vertices.	Conduct a survey and present data as a column graph.
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 for subtraction of four-digit numbers. Identify prime and composite numbers. Investigate square and oblong numbers.	Identify the properties of equilateral, scalene and isosceles triangles. Identify right-angled triangles. Calculate area and link area with perimeter.	
2	11	44–47	Use a written method for division with and without remainders. Write division facts from multiplication facts. Record, compare and order decimals to two places.	Use a scale to calculate distances on a map.	Use a probability scale of 0 to 1 to rate the likelihood of events.
3	12	48–51	Use a written method for five-digit addition with trading. Solve open-ended problems. Identify and describe multiples of whole numbers.	Build and record the length, width and height of prisms and then calculate their volume in cubic centimetres.	Interpret and represent two sets of data on line graphs.
4	13	52–55	Use the shortened form to multiply three-digit numbers by a single digit. Supply missing numbers to make equal number sentences.	Use a protractor and ruler to construct rectangles. Convert time to 24-hour form. Express time in analog, digital and 24-hour forms.	
5	14	56–59	Use the written method for subtraction of five-digit numbers. Use a written method for division with and without remainders. Record remainders as fractions.	Match skeletal models of 3D objects to their names and description. Find perimeters in centimetres. Draw shapes of given perimeters.	
6	15	60–63	Use a written method to multiply three-digit numbers by a single digit. Solve and write multiplication problems. Locate, represent and order fractions on a number line.	Calculate area in square metres using the area formula.	Locate and interpret data from a database.
7	16	64–67	Use a written method for division. Solve and write division problems. Find factors for whole numbers. Follow rules to complete number patterns with whole numbers.	Investigate line and rotational symmetry of 2D shapes.	
8	17	68–71	Apply the rules for order of operations to answer and create number sentences. Use number lines to add and subtract fractions with like denominators.	Draw the top, front and side views of various 3D objects.	Use spinners to investigate likelihood.
9	18	72–76	Estimate and calculate the addition of five-digit numbers. Investigate Roman numerals.	Estimate and measure capacities in millilitres. Experiment to discover the relationship between cubic centimetres and millilitres.	Interpret a line graph. Complete a table and represent data on a line graph.
10		77–78	Diagnostic review 2		

Term planners

Term 3 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	19	78–81	Solve three-digit divisions. Compare and order decimals to two places.	Use scale to interpret and draw a plan. Order masses by tonnes. Convert tonnes to kilograms.	
2	20	82–85	Use estimation for addition. Estimate and calculate the average of a set of scores.	Investigate reflections, translations and rotations. Use grids to enlarge shapes and pictures.	
3	21	86–89	Explore strategies for mental multiplication. Read and write numbers to tens of millions. Explore decimals to thousandths.	Interpret a 24-hour timetable. Prepare a timetable of a day's events.	
4	22	90–93	Solve five-digit subtractions. Add and subtract fractions with like denominators. Identify and create patterns involving fractions.	Identify, model and draw 3D objects from different viewpoints.	
5	23	94–97	Use written and mental methods to solve four-digit multiplications. Use improper fractions to describe models. Identify improper fractions on number lines.	Interpret a map using coordinates, direction and scale.	Use a tree diagram to identify all possible outcomes.
6	24	98–101	Divide three-digit numbers by 10. Estimate to find reasonable answers to divisions. Find fractional parts of collections.	Measure angles in triangles. Draw a triangle using compasses. Calculate and record perimeter in mm, cm and m. Record perimeter using decimal notation.	
7	25	102–105	Use a written method for six-digit addition. Multiply numbers by 10 and multiples of 10. Identify and create patterns with fractions and decimals.	Solve problems involving gross mass and net mass.	
8	26	106–109	Calculate two- by two-digit multiplications. Represent, compare and order decimals to three places. Convert fractions to decimals.	Construct skeletal models and nets of prisms and pyramids.	Write survey questions, carry out surveys and interpret the results.
9	27	110–113	Solve divisions and record remainders as fractions. Calculate GST. Interpret a weekly budget.	Introduce the hectare. Construct an area of one hectare using suitable tools.	Read and interpret similar data presented on a sector graph, a column graph and a dot plot.
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	Estimate and solve four-digit multiplications. Use the memory function on a calculator to solve problems with money.	Use and interpret maps to locate features and describe routes and distances. Create patterns by translating, rotating and reflecting shapes.	
2	29	120–123	Multiply two- and three-digit numbers by two-digit numbers. Use a written method to add and subtract decimals.	Match nets to 3D objects.	Find all possible combinations.
3	30	124–127	Solve six-digit subtractions. Use spreadsheets as a method of calculating.	Choose suitable units and instruments to measure various lengths and distances. Convert length units.	Calculate the mean.
4	31	128–131	Make informed decisions about items in a budget. Continue and describe sequences of fractions and decimals.	Draw circles to given radii, then label the circumference, radius and diameter. Introduce square kilometres.	
5	32	132–135	Choose and use various methods to solve multiplications. Round numbers to a specified place value to assist estimations.	Add grid lines, coordinates and a scale to complete a map. Estimate and measure the duration of events.	
6	33	136–139	Solve divisions and record remainders as fractions. Identify highest common factors and lowest common multiples of number pairs.	Measure volume using cubic centimetres and cubic metres. Make a cubic metre.	Design a survey, collect data and interpret the results.
7	34	140–143	Use the memory function on a calculator to solve problems. Compare mobile phone plans.	Draw the cross-sections of 3D objects. Identify objects from given cross-sections.	Interpret and construct dot plots.
8	35	144–147	Use estimation and inverse operations to check answers to multiplication and division. Solve divisions and record remainders as decimals.	Enlarge and reduce 2D shapes and pictures. Determine and explain time differences throughout Australia.	
9		148–149		Diagnostic review 4 and assessment	

MATHS PLUS NSW Syllabus Year 5 Teaching Notes

NSW Syllabus

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

Lesson focus

Use various mental strategies for addition and subtraction

Student Book

Page 14

Mentals Book

Page 8

Digital Teaching Objects

The digital teaching objects ‘Mental addition strategies’ (use Screen ‘B’ only) and ‘Compensation strategy’ on the Teacher Dashboard can be used to introduce relevant key mathematical concepts.

Getting started

Start with all students standing. Slowly call out a list of numbers less than 15: *8, 6, 3, 2, 11, 5* . . . Keep a record of the numbers you call. Students add the numbers in their heads until they lose track of the total, then they sit down. The last student standing, with the correct total, is the winner. Repeat this activity for subtraction from a starting number of 200.

Learning activities

1. Write 4 + 7 on the board. Ask students to call out the answer. Then ask students to give you the answer to 40 + 70, 400 + 700 and 4000 + 7000. Remind students to use their knowledge of number facts to make these additions easier (for example, if 4 + 7 = 11, then 40 + 70 = 110).
   Write 12 − 5 on the board. Ask students for the answer. Then repeat the procedure for 120 − 50, 1200 − 500 and 12 000 − 5000.

2. Write 8 + 9 = 17 on the board and ask students to record other additions and subtractions that they can work out from knowing this. Make a list of their suggestions on the board (for example, 800 + 900 = 1700, 170 − 90 = 80 . . .).
3. Revise the 'jump' strategy and the 'compensation' strategy by demonstrating examples of each on the board. Emphasise that the objective in using these strategies is to simplify the problems so mental computations are quicker and easier, and that the students should not try to overcomplicate the questions.
4. Write a mix of additions and subtractions on the board and ask different students to say how they solved each one mentally. Accept all effective strategies.

Support activities

- Allow students to work with a partner to complete the activities on student book page 14.
- Students make a list of some additions and subtractions that they are able to do mentally.

Extension activities

- Students 'teach' another student how to use the 'jump' or 'compensation' strategy to add and subtract numbers.
- Provide time for students to share the mental strategies they use to add and subtract given numbers.

Reflection

Ask students to discuss the different strategies used during the lesson.

Ask them if anyone has a strategy of their own to share that helps to simplify addition and subtraction.

Assessment

- Can students select appropriate mental strategies to solve addition and subtraction?
- Can students use selected strategies to solve addition and subtraction?

Term planners

Term 1 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	1	2–5	Estimate and calculate the addition of four-digit numbers. Use various mental strategies for multiplication.	Classify and measure angles. Measure, calculate and record distances in kilometres.	
2	2	6–9	Use mental strategies to add and subtract. Link percentages, common fractions and decimal fractions.	Revise the names and properties of 2D shapes. Calculate the area of rectangles.	
3	3	10–13	Estimate and calculate the subtraction of four-digit numbers. Revise division of three-digit numbers by single digits.	Understand and use the relationship between length, width and height to calculate volume.	Interpret and display data in picture graphs.
4	4	14–17	Estimate and calculate the addition of four-digit numbers. Read, write, say and model whole numbers up to and above one million.	Identify and use compass points. Estimate and measure mass.	
5	5	18–21	Revise written multiplication and strategies for estimation. Revise the links between common fractions, decimal fractions and percentages.	Identify and classify 3D objects according to their properties.	Make and test predictions.
6	6	22–25	Use a written method for division of four-digit numbers by single digits. Identify and describe the relationship between two sets of numbers.	Revise am and pm notation.	Read, interpret and make side-by-side column graphs.
7	7	26–29	Use mental strategies for multiplication. Find fractional parts of a collection.	Construct angles with a protractor. Measure and rule lengths in millimetres and centimetres.	
8	8	30–33	Use a written method to add numbers with uneven places. Solve and construct number sentences.	Represent 3D objects through drawings.	Interpret and construct dot plots.
9	9	34–37	Express remainders in appropriate ways. Make connections between improper fractions and mixed numerals.	Use grid references to locate and plot regions on a grid.	Identify outcomes and use them to make predictions.
10				Diagnostic review 1	

Term planners

Term 2 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	10	40–43	Describe geometric patterns with numbers and words. Identify prime and composite numbers.	Explore the properties of triangles. Find the area of triangles.	
2	11	44–47	Multiply fractions by whole numbers. Interpret and express thousandths as decimals and fractions. Identify and explore square numbers.		Interpret and describe the probability of events.
3	12	48–51	Add decimals with equal and unequal numbers of places. Convert between and compare fractions, decimals and percentages.	Use a formula to calculate volume of rectangular prisms.	Read and interpret line graphs.
4	13	52–55	Estimate and solve four-digit by one-digit multiplications. Find missing numbers to complete number sentences.	Use drawing instruments to construct rectangles. Relate 12-hour and 24-hour time and interpret timetables.	
5	14	56–59	Use a written method to solve subtractions with four- and five-digit numbers. Use materials to compare and order fractions and mixed numerals.	Identify and sketch objects from their top, front and side views. Estimate and measure lengths and convert between length units.	
6	15	60–63	Estimate and solve four-digit by one-digit multiplications. Add and subtract fractions with like denominators.	Use a scale to find the area and perimeter of regular and irregular shapes.	Identify and evaluate misleading data.
7	16	64–67	Solve extended multiplication examples. Identify and describe the place value of digits in large numbers.	Investigate mass and volume relationships. Explore line and rotational symmetry.	
8	17	68–71	Explore and use the order of operations. Add and subtract fractions with like denominators.	Construct and draw objects from different viewpoints.	Use words and a numerical scale to describe likelihood.
9	18	72–75	Subtract decimals with equal and unequal numbers of places. Convert between different number systems.	Measure and explore angles around a point and opposite angles. Find the volume of solids by displacement.	
10				Diagnostic review 2	

Term planners

Term 3 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	19	78–81	Use a written method for division of five-digit numbers by single digits. Calculate simple percentage problems. Identify and explore triangular numbers.	Use the relationship between tonnes and kilograms.	
2	20	82–85	Estimate and calculate five- and six-digit subtractions. Divide by 10 and multiples of 10.	Investigate reflections, translations and rotations of 2D shapes.	Interpret and draw sector graphs.
3	21	86–89	Use written and mental strategies to solve extended multiplications. Add and subtract fractions and mixed numerals.	Read timetables and calculate elapsed time.	Interpret and create two-way tables.
4	22	90–93	Solve five- and six-digit subtractions. Identify and make equivalent fractions. Use tables and words to describe geometric patterns.		Identify and evaluate misleading data.
5	23	94–97	Estimate and use a written method when multiplying decimals. Add and subtract fractions and mixed numerals with related denominators.	Use coordinates, direction and scale to follow and plan routes.	Draw tree diagrams.
6	24	98–101	Estimate and solve divisions involving large numbers. Make equivalent fractions by multiplying and dividing.	Estimate and measure adjacent angles and vertically opposite angles. Find the perimeter of regular and irregular polygons.	
7	25	102–105	Use a written method to solve whole number and decimal additions with four-, five- and six-digit numbers. Multiply by 10 and multiples of 10.	Reflect, translate and rotate 2D shapes to create patterns.	Investigate and compare data from different size samples.
8	26	106–109	Estimate and calculate extended multiplication examples. Use a written method when dividing decimals. Use rounding strategies.		Design and conduct a survey.
9	27	110–113	Express remainders as decimals. Explore negative numbers.	Estimate, measure and compare larger areas.	Choose appropriate graphs to represent data.
10				Diagnostic review 3	

Term planners

Term 4 suggested planner

Week	Unit	Pages	Number & Algebra	Measurement & Geometry	Statistics & Probability
1	28	116–119	Multiply fractions by whole numbers and by other fractions. Use the calculator functions when multiplying and dividing. Identify prime factors.	Construct and interpret timelines.	
2	29	120–123	Estimate and calculate extended multiplication examples. Recall percentage and fraction equivalents and use them in calculations.	Draw nets for prisms and pyramids of given dimensions and designs.	Describe and predict likelihood.
3	30	124–127	Make and describe decimal number patterns. Solve number sentences that involve negative numbers.	Choose appropriate measurement units and instruments.	Explain and calculate the mean.
4	31	128–131	Multiply and divide decimals by 10, 100 and 1000. Identify rules to describe number patterns and use them to complete patterns.	Construct circles and describe their features. Compare and calculate distances in kilometres.	
5	32	132–135	Investigate Roman numerals. Find fractional parts of a quantity or group. Introduce the Cartesian number plane.	Solve problems involving mass.	
6	33	136–139	Continue and describe fraction and decimal sequences. Write and solve equations.	Investigate angles in triangles and quadrilaterals. Estimate and calculate volume in cubic metres.	
7	34	140–143	Create and apply rules to complete tables of values. Use division to find equivalent fractions and reduce fractions to their lowest form. Plot and locate points on the Cartesian plane.		Interpret side-by-side column graphs.
8	35	144–147	Complete number sentences involving whole numbers and decimals.	Explore diagonals in 2D shapes. Read and interpret timetables.	Solve problems and justify their solution.
9			Diagnostic review 4 and assessment		

MATHS PLUS NSW Syllabus Year 6 Teaching Notes

NSW Syllabus

Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving addition and subtraction with whole numbers (Problem Solving, Communicating, Reasoning) [N] [L] [CCT]

Lesson focus

Estimate and calculate the addition of four-digit numbers

Materials

- a large map of Australia
- computer access
- drawing paper

Student Book

Page 14

Mentals Book

Page 8

Getting started

Have a class discussion about plane trips that students have taken. Ask students to name other cities in Australia that they have flown to. Identify some of these places on a large map of Australia.

Learning activities

1. Direct students' attention to the chart on student book page 14. Let students spend time studying the chart and then allow them to ask any questions they want to help them understand the chart. Allow other students to answer these questions. Ensure that students realise that the chart refers to flying distances, not road distances.
   Work through several examples as a class: *How far is it from Canberra to*

Darwin? How far from Mt Isa to Townsville? How far would I travel if I went from Mackay to Rockhampton and then to Melbourne?

2. Ask students to look at the chart on student book page 14 and find two places between which the flying time would be less than one hour if the plane had an average speed of 700 km per hour. Ask students to find the same thing for a plane that averaged 500 km per hour. Students can also find the following for a plane that averages 600 km per hour:
   • a journey that is about one hour
   • a journey that is about two hours
   • a five-hour journey
   • a journey that would take more than six hours.
3. Pairs of students make up five questions about the distances in the chart on student book page 14. They swap the questions with another pair to solve.

Support activities

- Ask students to select two other flights that involve travel between three or four cities. Students should calculate the distances covered.
- Choose students to demonstrate the addition algorithm on the board as they calculate distances between places.

Extension activities

- Using the chart on student book page 14 and the map at the bottom of the same page, students design an around-Australia trip for a travel company. They calculate the distances travelled, the cost if you are charged $5 per km, and the time needed if planes travel at an average of 700 km per hour. Students should also allow time for stopovers and sightseeing in some towns. All this information can be presented in a travel brochure or a computer slideshow presentation.

Reflection

Discuss the use of distance charts when travelling. Ask: *Is the exact distance of these plane flights important for us to know? Why? Why not? What about for a pilot? A travel agent? An engineer?*

Choose some pairs to ask one of the questions they wrote about the distance chart and choose a student to demonstrate their working out on the board.

Assessment

- Can students read data from distance charts and calculate totals?
- Can students solve problems that involve addition of distances?
- Can students round to 100 to estimate answers to addition?

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