

NEW SOUTH WALES SYLLABUS



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Diagnostic review 3

Diagnostic review 4

To the teacher

The *Maths Plus* NSW Syllabus/Australian Curriculum series, Kinder to Year 6, is based on the **NSW Mathematics** Syllabus for the Australian Curriculum Mathematics (ACARA). Each book after Kinder level builds upon prior knowledge and works towards an understanding of the achievement standards for the relevant year level and beyond. *Maths Plus* provides students with opportunities to sequentially develop their skills and knowledge in the three strands of the Australian Curriculum Mathematics: Number and Algebra, Measurement and Geometry, Statistics and Probability.

Student Resources

Student Books

Work towards achieving the relevant outcomes by developing skills and competency in **understanding**, **fluency**, **reasoning** and **problem solving**.

The **Dictionary** (Years 2 to 6) features clear and simple explanations of mathematical terms and language.

Assessment Books

Include short post-tests with a simple marking system to assess students' skills and understanding of the concepts in the Student Books. The Assessment Books are best used at the end of the year as summative assessment for A-E reporting.

Mentals and Homework Books

Provide concise and essential revision and consolidation activities that correspond one-onone with the concepts and units of work presented in the Student Books.

Teacher Book and Teacher Dashboard

Teacher Book

• Each lesson page features AC curriculum links, proficiency strands and general capabilities; and provides teaching instructions with links to the Teacher Dashboard and Advanced Primary Maths (Years 3 to 6).

The **Find a topic** page allows teachers the freedom to address particular topics and student needs as appropriate, providing essential revision and consolidation opportunities.

Term planners

Diagnostic term reviews

Diagnostic term reviews (Years 1 to 6) assist in pinpointing students' strengths and weaknesses, allowing intervention and re-teaching opportunities where required. Answers can be found in the Teacher Book and on the Teacher Dashboard.

Term planners and curriculum crossreference charts allow teachers to plan the year's work. Editable term planners can be found on the Teacher Dashboard.

Teaching resources

- Blackline masters, investigations and mastery tasks can be found on the Teacher Dashboard.
- Digital teaching objects (interactives) and videos that address potential difficulties can be found on the Teacher Dashboard.

Find a topic

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NSW Syllabus Outcomes

Units	1	2	3	4	5	6	7
NU	MB	ER	AN	D A	۱LG	EBF	RA
Whole Numbers Working Mathematically MA2-1WM MA2-2WM MA2-3	BWM	1					
MA2-4NA applies place value to order, read and represent numbers of up to five digits							
Addition and Subtraction Working Mathematically MA2-1WM MA2-2WM MA2-3	BWM	1					
MA2-5NA uses mental and written strategies for addition and subtraction involving two-,three-, four- and five-digit numbers							
Multiplication and Division Working Mathematically MA2-1WM MA2-2WM MA2-3	BWM	1					
MA2-6NA uses mental and informal written strategies for multiplication and division							
Fractions and Decimals Working Mathematically MA2-1WM MA2-3WM							
MA2-7NA represents, models and compares commonly used fractions and decimals							
Patterns and Algebra Working Mathematically MA2-1WM MA2-2WM MA2-3	BWM	1					
MA2-8NA generalises properties of odd and even numbers, generates number patterns, and completes simple number sentences by calculating missing values							
MEASUREMI	ENI	ΓА	ND	GE	ΟΜ	ETF	RY
Measurement Working Mathematically MA2-1WM MA2-2WM MA2-3	BWM	1					
Length Working Mathematically MA2-1WM MA2-3WM							
MA2-9MG measures, records, compares and estimates lengths, distances and perimeters in metres, centimetres and millimetres, and measures, compares and records temperatures							
Area Working Mathematically MA2-1WM MA2-2WM		`					
MA2-10MG measures, records, compares and estimates areas using square centimetres and square metres							
Volume and Capacity Working Mathematically MA2-1WM MA2-3WM							
MA2-11MG measures, records, compares and estimates volumes and capacities using litres, millilitres and cubic centimetres							
Mass Working Mathematically MA2-1WM MA2-2WM MA2-3	BWM	1					
MA2-12MG measures, records, compares and estimates the masses of objects using kilograms and grams							
Time Working Mathematically MA2-1WM				-			1
MA2-13MG reads and records time in one-minute intervals and converts between hours, minutes and seconds							
Geometry							
Three-Dimensional Space Working Mathematically MA2-1WM MA2-3WM	_						1
MA2-14MG makes, compares, sketches and names three-dimensional objects, including prisms, pyramids, cylinders, cones and spheres, and describes their features							
Two-Dimensional Space Working Mathematically MA2-1WM MA2-3WM	_						
MA2-15MG manipulates, identifies and sketches two-dimensional shapes, including special quadrilaterals, and describes their features							
Angles Working Mathematically MA2-1WM							
MA2-16MG identifies, describes, compares and classifies angles							
Position Working Mathematically MA2-1WM MA2-3WM							1
MA2-17MG uses simple maps and grids to represent position and follow routes, including using compass directions							
STATISTIC	S A) P	ROI	BAB	ILI	TY
Data Working Mathematically MA2-1WM MA2-2WM MA2-3	BWM						
MA2-18SP selects appropriate methods to collect data, and constructs, compares, interprets and evaluates data displays, including tables, picture graphs and column graphs							
Chance Working Mathematically MA2-1WM MA2-2WM MA2-3	SWM	1				1	
MA2-19SP describes and compares chance events in social and experimental contexts							

Working Mathematically Outcomes

MA2-1WMuses appropriate terminology to describe, and symbols to represent, mathematical ideasMA2-2WMselects and uses appropriate mental or written strategies, or technology, to solve problemsMA2-3WMchecks the accuracy of a statement and explains the reasoning used

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	Subtraction facts to 20. 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 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 soins 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	

unit 2

Subtraction facts

NSW Syllabus

Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation [CCT] [N]

Materials

- a large number line (0–20) drawn in chalk on the floor
- rulers
- dice
- MAB Base 10

Lesson focus Use mental strategies when subtracting

Getting started

Revise the method for using a number line to subtract. Write 15 - 6 on the board and choose a student to stand on number 15 on a large number line drawn in chalk on the floor. As the student moves back to show subtracting 6 on that number line, the other students count back 6, until the student on the number line reaches 9. Write '= 9' next to 15 - 6. Repeat this for other subtractions.

Refer to the Teacher Dashboard for resources such as videos that address potential difficulties, digital teaching objects (interactives), blackline masters and investigations.

Learning activities

- 1 Show students how they can use their rulers as number lines. Give them some subtractions to work out and choose some students to demonstrate their method.
- 2 Brainstorm all the words the class can think of related to subtraction. List these on the board or a chart. Discuss these words and their meanings. Ask students to create a problem situation using each of the words.

Discuss and solve each of the suggested problem situations. Decide whether subtraction was the best operation to use each time.

- 3 In pairs, students can play a subtraction game. Both students start with 30. In turn, they toss a dice and subtract the number thrown from 30. Play continues, with students continuing to subtract until one student reaches zero. That student is the winner. Allow students to use their ruler as a number line if they wish.
- 4 Give out Base 10 materials. Ask students to use the longs and ones to model various numbers and then subtract 10 by taking away one long. They should say what the answer is (for example, 17 10 = 7).

Support activities

→ Work with students to model subtraction with a number line. Encourage students to draw an arc on the number line to represent each number that is subtracted (for example, 15 - 7 = 8).

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																	١		-
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	51	6	17	

Extension activities

- → Students write subtraction problems using the various words for subtraction.
- → Ask students to write an explanation about how to use Base 10 in the subtraction of larger numbers.

Reflection

Tell students a subtraction problem (for example, 17 minus 8) and ask them to solve it. Make time for as many students as possible to share the mental strategy they used.

Advanced Primary Maths

Ask students to share their tips for remembering subtraction facts, such as linking subtraction with known addition facts.

- Can students solve simple subtraction situations?
- Which students require the support of Base 10 materials or number lines to solve the situations?
- → Can students associate various words with subtraction and create subtraction problems that involve those words?
- → The Assessment Book is best used for end-of-year assessment; however, appropriate questions from page 5 can be used to find out any facts that students are having difficulty with and target these with further activities.

Writing and ordering numbers

NSW Syllabus

Recognise, model, represent and order numbers to at least 10 000 (Communicating, Reasoning) [CCT]

Lesson focus

Write, model and order three-digit numbers

Getting started

Materials

- MAB Base 10
- blank cards
- BLM 3 (MAB Base 10 cards), two copies per four students
- scissors
- counters

Students work in small groups to model given numbers with Base 10. For example, you can ask them to make 263, 170, 400, 308 and so on. Check each group's work.

Ask each group to use Base 10 to make a number, and choose students from other groups to say what the number is and write it on the board.

Refer to the Teacher Dashboard for resources such as videos that address potential difficulties, digital teaching objects (interactives), blackline masters and investigations.

Learning activities

- 1 Ask students to make the largest and smallest numbers they can using Base 10 longs, flats and ones. Ask them how they know they have made the largest/smallest numbers.
- 2 Give each student a blank card and ask them to write a number between 100 and 1000 on it. Write a three-digit number on the board (for example)

375) and ask any students whose number is larger to stand up and say their number. Continue in this way for numbers that are larger or smaller than a number you write on the board.

- 3 Collect the number cards, mix them up and give one to each student. Choose six students to stand at the front of the class. They must put themselves in order, from smallest to largest number. Choose other groups of six to do the same thing.
- 4 Give each group of four students two copies of BLM 3 (MAB Base 10 cards), and scissors and counters. Groups cut out, shuffle and deal six cards to each member of the group. Each student then works out what their cards are worth. Each student compares their total with the totals of the others in the group. The student with the largest number wins that round and takes a counter. The first player to win five counters wins the game.

Support activities

- → Students practise making numbers with Base 10 and recording the number.
- → Students decide which of two three-digit numbers is larger/smaller and say how they know. Discuss the place value of the digits in each number.

Extension activities

→ Groups of three or four make about 30 three-digit number cards to play a game. Shuffle and deal the cards equally to each member of the group. In turn, each student places the top card from their hand face-up in the centre. The student who has the largest number takes all the cards from the centre. Continue until all the cards are gone. The student who has collected the most cards is the winner.

Reflection

Discuss the strategies students use to help them order numbers. Write on the board: 263, 236, 623 and 238, and ask students to say how they know 623 is the largest; and 238 is larger than 236; etc.

unit

2

SB

Page 7

M&H

Page 5

APM

Page 2

Advanced Primary Maths

Discuss what you need to consider in determining whether one number is larger than another. Challenge students to put all the numbers on page 2 in order from largest to smallest.

- → Can students use place value to order three-digit numbers?
- → Can students model and recognise models of three-digit numbers?
- → Can students write numbers in words?
- → The Assessment Book is best used for end-of-year assessment. However, appropriate questions from page 3 can be used to check that students can confidently and consistently read, write and interpret three-digit numbers.

Symmetry

SB Page 8

M&H Page 4

unit 2

NSW Syllabus

Identify symmetry in the environment (Reasoning) [CCT]

Lesson focus

Identify lines of symmetry and make symmetrical shapes

Getting started

As a class, brainstorm a definition of 'symmetry'. Use the Internet to access its meaning from an online maths dictionary. Write your agreed definition on the board.

Ask: Where can we see examples of symmetry around our classroom, school or home?

- Ask students to list items on their desks which have symmetry.
- Make a class list of the things around the room which have symmetry.
- Emphasise the need for shapes to have mirror images for them to be symmetrical.

Materials

scissors

· drawing paper

internet access

• paste

coloured paper squares

• BLM 2 (1-cm dot paper and grid paper)

Refer to the Teacher Dashboard for resources such as the digital teaching object 'Symmetry', which can be used to introduce the concept of line symmetry.

Learning activities

- 1 Ask students to fold coloured paper squares to show the lines of symmetry. Ensure that students realise that 'fold lines' resulting in identical halves can be termed 'lines of symmetry'. If students find one line of symmetry, they should be encouraged to try to find others. Record the results so that generalisations can be developed (such as squares have four lines of symmetry and rectangles have only two lines of symmetry).
- 2 Ask students to cut out different shapes (for example, triangles, circles or any shape of their choice) and to draw the lines of symmetry. Ensure that students experiment with a wide range of shapes and notice, for example, that only some triangles (equilateral and isosceles) have any lines of symmetry.

Students report to the class about their experiments with different shapes and what they discovered about lines of symmetry.

3 Ask students to draw some shapes on grid paper (BLM 2) and include the lines of symmetry. Discuss the results as a whole class.

In pairs, ask one student to draw only half a shape on grid paper, and then give the half-drawn shape to their partner to complete. Discuss the results.

4 Ask students to draw some symmetrical shapes on dot paper (BLM 2) and include the lines of symmetry. Discuss as a whole class. Students should also draw some shapes that are not symmetrical and say why they are not.

Support activities

- → Give students coloured paper for paper folding. Ask them to draw a variety of shapes, cut them out, paste them into their books and draw the lines of symmetry.
- Encourage students to draw abstract pictures and shapes. Divide the class group into pairs and ask the students to draw lines of symmetry on their partner's shapes and pictures.

Extension activities

Ask students to find shapes around the room with wo, three and four lines of symmetry. Ask students to draw the shapes in their books, showing the lines of symmetry

Reflection

As a class, analyse the shapes in activities 9 and 10 on student book page 8 to identify those with two, three and our lines of symmetry.

Ask the students to make generalisations about 2D shapes and symmetry and share these with the class.

Advanced Primary Maths

Ask students to explain in their own words what symmetry is and to give examples and non-examples of symmetrical objects.

- → Can students explain symmetry and locate examples of symmetrical 2D shapes?
- → Can students use paper folding to show lines of symmetry or to show that a shape is not symmetrical?
- ➔ The Assessment Book is best used for end-of-year assessment. However, appropriate questions from page 19 can be used to check that students can identify lines of symmetry in shapes in different orientations.

Informal areas

NSW Syllabus

Recognise and use formal units to measure and estimate the areas of rectangles (Communicating, Problem solving) [N]

Lesson focus

Measure and compare areas

Getting started

Ask: What is area? Ask students to brainstorm ideas and come up with an agreed definition.

Ensure that students link the idea of area with the covering of a surface.

Materials

envelopes

• BLM 4 (Grid paper)

· MAB Base 10 flats

· multiple copies of shapes that tessellate

(squares, rectangles, triangles)

exercise books bottle tops

Refer to the Teacher Dashboard for resources such as videos that address potential difficulties, digital teaching objects (interactives), blackline masters and investigations.

Page 5

APM

Page 41

SB

unit

Learning activities

 Ask students to draw a 3 cm by 3 cm square on grid paper (BLM 4). Ask: How many square units does the shape cover? (9) What is the area of this square? (9 square units)

Ask students to draw and then measure the area of some smaller shapes on the grid paper. They can share their findings with a partner.

2 Ask students to draw, on the grid paper, some different shapes that each cover the same number of square units. Ask: *Do all your shapes have the same area? How do you know?*

3 Provide envelopes, exercise books, Base 10 flats, bottle tops, etc. Ask students to work in small groups to measure the area of items in the room using the units provided. The students may choose the units they want to use. Make time for groups to describe the areas they measured and the units they used. Ask: *Were any of the units not suitable? Why? How close were your estimates?*

4 Discuss tessellation patterns. *Why are some shapes* better to use for measuring area than others? Make a list (or diagram) of shapes that fit together leaving gaps/ without leaving gaps.

Support activities

- → Ask students to find the area of surfaces by using simple tessellations (squares, rectangles and triangles).
- Compare the areas of two or three surfaces by covering them with the same units.

Extension activities

- → Ask students to create their own tessellation patterns and explain why they are tessellations.
- → Ask students to find some tessellation patterns in their local environment.

Reflection

Ask the Extension group students to share their experiments with tessellating patterns (especially with triangles, squares and rectangles). Discuss the links these patterns have with area, and the importance of covering a surface exactly.

Ask students to comment why some shapes are better than others to help find the area of larger shapes. Revise what area is and how it is measured.

Advanced Primary Maths

Connect students' understanding of informal area using squares with square centimetres and discuss square centimetres as a formal unit of area. Allow students to articulate strategies for estimating and measuring area.

- → Can students use grids to measure and compare the areas of shapes?
- → Do students use the same units when comparing areas?
- ➔ Do students recognise the importance of using units that tessellate when measuring areas?

Diagnostic review 4

Diagnostic review 4

