


LESSON PLANS: AUSTRALIA

Year 4: Number and Place Value

Number Properties

 45 MINS

powered by

 Mathletics

Strand: Number and Algebra

Substrand: Number and Place Value

Outcome:

- Investigate and use the properties of odd and even numbers. (ACMNA071)

Introduction to Lesson

 10-15 MINS

Teacher Background:

- On the interactive whiteboard, log in to your

Teacher Console > Demonstrations.

Search for "I am Thinking of a Number". Display this activity on interactive whiteboard. You can work through all 10 questions or as many as you see fit for your students.

Ask students prompting questions:

- What function are you using to determine the number?
- Is your number increasing or decreasing?
- If we were to make a pattern, what rule could we use?

- To build on students' knowledge, display the curriculum activities Increasing Patterns or Decreasing Patterns.

Ask students:

- What rule could be given to this pattern?
- How would you describe this pattern?
- What strategies could you use to help you determine the pattern?
- Students can use number lines, charts, or tables to help them determine the pattern rule.

ITEMS NEEDED

- ✓ Mathletics teacher login
- ✓ Interactive whiteboard
- ✓ Mathletics eBook handouts
- ✓ Hundreds charts
- ✓ Counters
- ✓ Marian Small handouts

ASSESSMENTS

- ✓ Have students write out their reflections.
- ✓ Participation
- ✓ Collect and assess Marian Small handout.

ACCOMMODATIONS/ MODIFICATIONS

- ✓ Teacher can choose to use the Interactive instead of the handout.
- ✓ Change number to skip count to determine easier or harder patterns.
- ✓ Encourage students to use hundreds charts or number lines for skip counting and determining pattern rules.

EXTENSION OF LEARNING

- ✓ Curriculum activities. Suggested activities: Describing Patterns, Table of values, I am Thinking of a Number!, Increasing Patterns and Decreasing Patterns.
- ✓ Rainforest Maths, Year 4: Patterns.

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The Lesson

 30-35 MINS

eBook: Describing Patterns in a Hundreds Chart

- On the interactive whiteboard, log in to your **Teacher Console > eBooks > Year 4 > Patterns and Algebra > Patterns and Relationships > page 3**. Show students the hundreds chart. If you have a hundreds chart in the classroom, you could use this as well. **Ask students:** Can we skip count using a hundreds chart? What patterns can you see? Shade the numbers in as you skip count.
- Using the questions on page 3, skip count together using the hundreds chart. Students should look at the hundreds chart and investigate what patterns they see. Students can follow along using their own hundreds chart. **Ask students:** What patterns can you begin to see? Are the patterns increasing or decreasing? Can you see other patterns beside horizontal ones? What could be the pattern rule? What could the next numbers in the pattern be? Look at all 4 hundreds charts and discuss how the patterns are similar and how they differ.

Odd or Even Apex? Marian Small Video

- Play the Marian Small video through the Teacher Console by going to **eBooks > Year 4 > Odd or Even Apex? > Video**. Play the video once through from beginning to end, allowing students to formulate their own ideas. Play the video again, pausing to ask the prompting questions throughout the video. Allow students time to investigate in their groups and determine a pattern rule. **Ask students:** Why is it difficult to determine a pattern rule? What do we have to consider when creating a pattern rule? What happens if the 3 base numbers are changed? Discuss what strategies and reasoning students used and developed to determine their patterning rules.



Marian Small Interactive/Handout

- Print the Marian Small student handout from the same eBook as above. Have students begin to work through their own patterns and write out their patterning rules. On the interactive whiteboard, the teacher can use the interactive problem with a guided maths group while others are working on the handouts, or can do a whole-class discussion and begin generating ideas before students do work independently.

After the lesson

 5-10 MINS

- Discussions Questions:** Teacher can use their own discretion and have a whole-group or table-group discussion.
- Questions to discuss:** Where can you see number patterns in real life? Was the hundreds chart or the number pyramid an easier way to see a pattern? What did you do when you were trying to determine a pattern rule?



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LESSON PLANS: AUSTRALIA

Year 4: Number and Algebra

 45 MINS

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Strand: Number and Algebra

Substrand: Money and Financial Mathematics

Outcome:

- Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies. (ACMNA080)

Introduction to Lesson

 10 MINS

Teacher Background:

- Log in to your **Teacher Console > Demonstrations > Concept Search.** Type Money into your **Search** bar. Other suggested words are: coins, cents, equivalent, and dollar. Review these words with students and add to your Maths Word Wall or maths journals.
- Play the Marian Small "Coin Count" video found in the **Teacher Console > eBooks > Year 4 > Marian Small's Coin Count > Video.** Pause during the video to explain each monetary value. Pause at the end of the video and have students come up with as many answers as they can in their table groups. Use the Teacher Notes for questions to prompt students.

ITEMS NEEDED

- ✓ Mathletics teacher login
- ✓ Interactive whiteboard
- ✓ Mathletics eBooks
- ✓ Marian Small's Coin Count eBook
- ✓ Dice
- ✓ Coin manipulatives
- ✓ Sample of real coins

ASSESSMENTS

- ✓ Participation and group work checklist

ACCOMMODATIONS/ MODIFICATIONS

- ✓ Change monetary values to accommodate various learners.
- ✓ Use as consoles for kinesthetic learners.
- ✓ Use ability groups and modify coin count problem to calculate change with easier or more difficult values

EXTENSION OF LEARNING

- ✓ Mathletics eBook: Addition and Subtraction-Money worksheets
- ✓ Give students flyers from local grocery stores. Have students plan a meal (health) and determine how much that meal would cost. How many different ways could they pay for it?

LESSON PLANS: AUSTRALIA

Year 4: Number and Algebra

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The Lesson

 30 MINS

Coin Count Problem:

- Using the eBook Year 4: Marian Small's Coin Count. Display problem on interactive whiteboard. Sign into **Mathletics Teacher Console > Ebooks > Year 4 > Coin Count Ebook > Interactive Coin Count Problem**.
- Use printable problem with cut and paste coins for students to follow along.
- Have students work in partners or groups to solve the problem in as many ways as they can.
- Try changing the problem and have students determine a new answer. In the Teacher Notes, the Extension of Learning section has a new problem solving question to use.

High Life Mathletics Problem Solving Game:

- Open "High Life" Mathletics problem solving game. Sign in to **Mathletics Teacher Console > Demonstrations > Problem Solving > Money > High Life**.
- Work through the Problem Solving activity together, calculating money and introducing change. Explain to students that when we pay for something we have to give money of a certain value (many different ways to represent) and then we receive change in return. Ask students: What coins or bills could we use to make this change? What if we only had coins and no bills? Suppose you have 4 x 20 cent pieces, how many 10 cent pieces would you need? How many 5 cent pieces? What is this worth?



Calculate the Change:

- Use the Year 4 Mathletics eBook "Addition and Subtraction." From Problem Solving Game, click home in top left hand corner **Ebooks > Year 4 > Addition and Subtraction**. Click on **Money Section > Page 40 and 41**. Print game sheets to give to students. Each partner/group will need two dice.
- Students roll the die and using the number they roll, they need to determine how much change would be given according to the problem. Winner has the most money at the end of the game.

After the lesson

 5 MINS

Think, Pair, Share

- **Think** about how often we use money. When would we expect to receive change?
- **Pair** up with a person of the opposite sex.
- **Share** your real-life experience of using money.



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LESSON PLANS: AUSTRALIA

Year 4: Number and Algebra

Number and Place Value



45 MINS

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Strand: Number and Algebra

Substrand: Number and Place Value

Outcome:

- Recognise, represent and order numbers to at least tens of thousands. (ACMNA072)
- Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems. (ACMNA073)

Introduction to Lesson



10 MINS

Teacher Background:

- Give students base ten blocks and number lines for the activity. Students can create their own number lines for reference as well. Have students represent the number 0.5, 100, and 1000 in as many ways as possible.
- Students can use pictures, numbers, words, manipulatives, or examples of where they have seen or heard these numbers before. Students should think of real-life examples and as many ways to represent that number as they can.
- Log on to your
Teacher Console > Demonstrations > Concept Search.
- Enter thousand in **Search** bar.
- Show students the place value chart and how to place a numerical value in the proper columns.
- Students can make their own place value charts to use for reference when completing the rest of this lesson.
- Using the arrow for the next slide over, students will be able to see a visual of how base ten blocks can make up a whole number.
- In **Concept Search**, explore decimal system with students to show them how whole numbers become decimal numbers.



ITEMS NEEDED

- ✓ Interactive whiteboard
- ✓ Mathletics teacher login
- ✓ Student handouts from eBooks
- ✓ Computers/tablets
- ✓ Base ten blocks
- ✓ Place value charts
- ✓ Chart paper
- ✓ Markers
- ✓ Abacus (if used in the classroom)



ASSESSMENTS

- ✓ Observations
- ✓ Collaborative/group work
- ✓ Oral presentation
- ✓ Collect and assess place value charts



ACCOMMODATIONS/ MODIFICATIONS

- ✓ Allow students to use their own place value chart and base ten blocks to help read and represent whole numbers.
- ✓ Pair students in ability or levelled groups.



EXTENSION OF LEARNING

- ✓ Curriculum activities
- ✓ Year 6 eBook, "Reading and Understanding Whole Numbers," various sections.
- ✓ Year 6: Rainforest Maths, Numbers.
- ✓ Live Maths Level 6
- ✓ Have students look up "abacus" in the Concept Search section of their Student Console and interact with this concept.

LESSON PLANS: AUSTRALIA

Year 4: Number and Algebra

Number and Place Value

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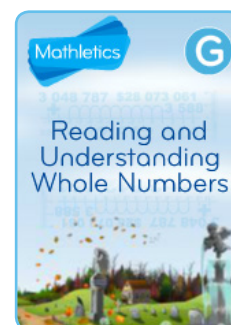
 35 MINS

Teacher Background:

Students should have created their own place value charts prior to this lesson, or they should be given a handout of a place value sheet.

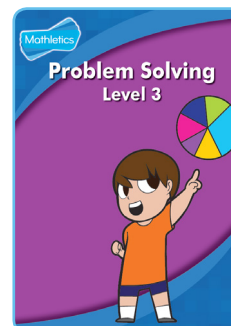
eBooks—Read and Understand Numbers (Ordering)

- For this maths game, students will each need a printed handout from [eBook > Year 6 > Reading and Understanding Whole Numbers](#), Read and understand numbers section, page 6, question 3. A copy should be made for every student. Students should be placed in or choose a group of four for this activity.
- Every student will need a set of the digit cards. Students can practice making the largest numbers they can. As an extension to this activity, have students place their numbered cards in their place value charts. Students should say the word aloud to obtain the points.



Open-Ended Problem Solving—Some Really Big Numbers

- **Option 1**—Display the problem solving questions, one at a time, on the interactive whiteboard. Log in to your [Teacher Console > eBooks > Problem Solving > Problem Solving Level 3 > Open-ended problem solving > Some really big numbers](#).
- Have students work collaboratively to determine a solution to the problems. Students should write the number in their place value charts. Students should write in words the whole number. Students can then try the real-life problem and begin determining strategies to find a solution.
- **Option 2**—Using the same activity as above, print out the handout from the Problem Solving eBook and distribute to partners. Students should work on one of the three open-ended problem solving questions. Partners should show their work for each problem, writing the whole number in both words and numerically. Have students write their responses on chart paper and share with the class.



After the lesson

 5 MINS

- 3, 2, 1

How It Works: 3 things you have learned, 2 things you have questions about, 1 thing you want the teacher to know. Students can share their 3, 2, 1 response orally, through discussion, or you can provide an exit slip (sticky note) and have students post these before the class ends.



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LESSON PLANS: AUSTRALIA

Year 4: Number and Algebra

Using Pattern Blocks to Teach Fractions

 45 MINS

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 Mathletics

Strand: Number and Algebra

Substrand: Fractions and Decimals

Outcome:

- Investigate equivalent fractions used in contexts. (ACMNA077)

ITEMS NEEDED

- ✓ Interactive whiteboard
- ✓ Mathletics teacher login
- ✓ Marian Small's printed student problems
- ✓ Pattern block manipulatives
- ✓ Laptops

ASSESSMENTS

- ✓ Observation of students working together to create fractions
- ✓ Participation in interactive
- ✓ Fraction art

ACCOMMODATIONS/ MODIFICATIONS

- ✓ Can practice easier/harder activities
- ✓ Can use Rainforest Maths at a level below or above

EXTENSION OF LEARNING

- ✓ Search number lines and/or fractions in Concept Search. Show students how to use a number line to represent and compare fractional amounts.
- ✓ Students can extend their learning of fractions and practice questions for reinforcement, with the use of Rainforest Maths.

Introduction to Lesson

 10 MINS

Teacher Background:

- Play Dr. Marian Small's "Pattern Blocks" video to introduce pattern blocks and discussion around fractions.
Log in to

[Teacher Console > eBooks > Year 5 > Marian Small's Pattern Blocks #1.](#)

Click on the Pattern Blocks #1 video. Pause during the questions asked in the video. Discuss various responses.

- Hand out pattern blocks to students, as a manipulative to help them begin thinking about how they could create a shape that is one half yellow. Display pattern blocks in **Concept Search** for an added visual.
- In your Teacher Console, click on **Demonstrations > Concept Search** and enter pattern blocks in the **Search** bar. Have students begin to manipulate the blocks and create different fractional numbers.

LESSON PLANS: AUSTRALIA

Year 4: Number and Algebra

Using Pattern Blocks to Teach Fractions

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The Lesson

 30 MINS

Interactive Pattern Blocks—Marian Small's Activity

- Hand out printed Marian Small's Student Problem: Pattern Blocks. Log in to **Teacher Console > eBooks > Year 5 > Marian Small's Pattern Blocks #1 > Student Problem > Print**. Have students work together to complete the question. Students can work in partners or small groups to determine various answers. Give students enough time to explore various possibilities and use a variety of different shapes, patterns and number of blocks.
- Display Interactive problem on the Interactive Whiteboard. In your teacher console, click on **eBooks > Year 5 > Marian Small's Pattern Blocks #1 > Interactive Problem**. Students can then come to the interactive whiteboard and display their answers. Discuss with students how there are various answers to this problem. Fractions can be represented in a variety of ways.

Ask Students,

- What would happen if we could only use red and yellow blocks?
- How could we represent $\frac{1}{2}$ using the fewest blocks?
- What different colour combinations could you use?
- Did your pattern have a line of symmetry?
- Did it need to have one?
- Can you make two equivalent fractions with your pattern blocks?

NOTE: Try Extension of Learning task to introduce fractions on a number line, if students are grasping this concept well.

Reinforcement: Equivalent Fraction Activities

- Assign curriculum activities for students to complete in the student console. Year 4 Australia course, suggested activities include:
 - Model Fractions
 - Equivalent Fractions on a Number Line 1
 - Equivalent Fraction Wall 1
 - What Fraction is Shaded?
- Students can use Rainforest Maths Year 5 Fractions section for extra practice. It can also be displayed on the interactive whiteboard for students to reference while completing their assigned tasks.



Extra-time/cross-curriculum activity: Have students create fraction art. Students should represent a fractional amount and show an equivalent fraction. Students can represent their fractions using paper and glue, drawing pattern blocks, creating two real life objects, etc.

After the lesson

 5 MINS

- Play a game of Live Maths as a whole class. Log in to your Teacher Console and click on **Demonstrations > Live Maths > Level 6 > World > Go**. Level 6 has some fraction computation questions.
- Have students complete an "Exit Slip" card before leaving class.
- **Ask students:** What did you learn about fractions? How do you best represent fractions? Share your learning.



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LESSON PLANS: AUSTRALIA

Year 4: Measurement and Geometry

Symmetry



45-55 MINS

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Strand: Measurement and Geometry

Substrand: Location and Transformation

Outcome:

- Create symmetrical patterns, pictures and shapes with and without digital technologies. (ACMMG091)

Introduction to Lesson



10 MINS

Teacher Background:

Students should log in to their own Student Consoles on laptops or in the computer lab. Introduce the topic of symmetry to students. Have them explore Mathletics to investigate and determine what it means for a shape to be symmetrical or non-symmetrical. Then introduce the term parallel. Have students investigate this term and discuss in their table groups what it means for a shape to have parallel sides.

Ask prompting questions:

- How do you know if a shape is symmetrical?
- How could we test this?
- What would make a shape non-symmetrical?
- What shapes have parallel sides?
- What does this mean?
- How can you determine what shapes do not have parallel sides?
- Have students explore 2D shapes and 3D objects.



ITEMS NEEDED

- ✓ Mathletics teacher login
- ✓ Interactive whiteboard
- ✓ Mathletics eBooks
- ✓ Dot paper
- ✓ Rulers
- ✓ Paper for folding
- ✓ Computers/tablets



ASSESSMENTS

- ✓ View "Are you ready?" results for a pre-assessment of learning.
- ✓ Check Results section for curriculum activity marks.
- ✓ Group work and participation



ACCOMMODATIONS/ MODIFICATIONS

- ✓ Ability/levelled groups
- ✓ Encourage students to use the "Something Easier" or "Something Harder" options when completing curriculum activities.



EXTENSION OF LEARNING

- ✓ Art: Draw a picture that is symmetrical using only 2D shapes. Colour the design.
- ✓ Curriculum activities: Angles, nets, and other geometric properties.
- ✓ Year 4: Shape, Space and Position

LESSON PLANS: AUSTRALIA


Year 4: Measurement and Geometry

Symmetry

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The Lesson

 30-35 MINS

Centres

- Teachers can add more centres to the ones indicated below: for example, the main resource used in the classroom. For the eBook centre, please review which pages you would like the students to complete. Depending on how much work students can get done with each centre, rotation can occur about every 10 minutes. Groups will vary depending on class size.
- **Centre 1: Symmetry Folding**—Go to **eBooks > Year 4 > Space, Shape and Position** and print out page 8. Students should have two copies of this page. For question 1, students need to cut out the shapes and fold in half as many times as they can. They can then draw as many lines of symmetry as the shape has on their second copy of that page.
Ask students: Can we fold the shape any way we want? Why do we have to fold it in half? How do you know this is a line of symmetry? What makes it symmetrical? If there is time, have students complete the symmetrical challenges on page 9 of the same eBook.
- **Centre 2: Maths Journals/Word Wall Creation**—Have students log in to their student consoles and look up symmetry, parallel, perpendicular, 3D object, vertices, edges, transformation, tessellation, rotation, etc. in **Concept Search** and **Animated Maths Dictionary**. If using journals, students should write down their own definition of the word, an example, and a picture. If journals are not used in your classroom, students can generate a word wall of specific terms and concepts that will be covered during this unit. Each group can be responsible for 1–3 words to look up on Mathletics, and find a definition, example, and picture to add to the word wall. Students can write these on blank pieces of paper or index cards and add them to the bulletin board. **Note:** If laptops are not available for all students, have groups explore these concepts on the interactive whiteboard using the teacher login.
- **Centre 3: Rainforest Maths/Activities**—Students should log in to their Student Console and work in Rainforest Maths for review and practice. Have students work on Year 3 for review, and then try Year 4: 2D shapes. On the left-hand side, there are different sections they can try. Once they feel comfortable, students should begin completing curriculum activities in Shape and Space.
Suggested activities: Are you Ready, Symmetry or Not?, and Symmetry. This will give you a good understanding of where students are currently at and allow students to practice what has been introduced today.

After the lesson

 5-10 MINS

- Students should find objects in the classroom that have lines of symmetry.
- Have them trace with their hands where the line of symmetry could be.
- Challenge students by asking them: Can you find an item that has more than 1 line of symmetry? What shape could it be? Can you find an irregular polygon? Do you think this shape/object will have a line of symmetry? Where can you find symmetry on your body? Is it perfect symmetry?



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LESSON PLANS: AUSTRALIA

Year 4: Measurement and Geometry

Area

 50 MINS

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Strand: Measurement and Geometry

Substrand: Using units of measurement/Shape

Outcome:

- Compare objects using familiar metric units of area and volume. (ACMMG290)
- Compare the area of regular and irregular shapes by informal means. (ACMMG087)

ITEMS NEEDED

- ✓ Mathletics teacher login
- ✓ Interactive whiteboard
- ✓ Mathletics eBooks
- ✓ Ruler
- ✓ Geoboards
- ✓ 1cm grid paper

ASSESSMENTS

- ✓ Collect and assess "Claim Your Path" group handouts.
- ✓ Check Results section for curriculum activity marks

ACCOMMODATIONS/ MODIFICATIONS

- ✓ Ability/levelled groups.
- ✓ Encourage students to use the "Something Easier" or "Something Harder" options when completing curriculum activities.

EXTENSION OF LEARNING

- ✓ Have students draw a room with its dimensions. Students should include pictures, rugs, windows and other objects where the perimeter and area can be determined.
- ✓ Rainforest Maths: additional area and perimeter practice. Encourage students to try a year level above or below based on their ability.

Introduction to Lesson

 10 MINS

Teacher Background:

Log in to

[Teacher Console](#) > [Demonstrations](#) > [Concept Search](#).

Type **Area** into your **Search** bar.

Ask students:

- When would we need to measure area?
- How could you measure the area of the classroom?
- What units of measurement would work best?
- Estimate the area of your desk.
- What unit of measurement did you use?

Students should determine a definition of area in their maths journals or add to a Maths Word Wall.

LESSON PLANS: AUSTRALIA

Year 4: Measurement and Geometry

Area

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The Lesson

 30 MINS

Area—Square Centimetres

- Hand out grid paper to students. Students can use their pencils to shade in irregular polygons or use blocks to fill in the shape. Use page 16 of the Length, Perimeter and Area eBook. Display the questions on the board and have students create as many different shapes as they can with the proposed area.
- **Prompt students by asking:** How many different polygons can have an area of 8 square centimetres? What if all sides had to be equal in length? Can you make an irregular polygon? How could we determine the area and perimeter of one of your polygons?

Problem Solving: Claim Your Patch

- Students need to be in groups of 4 for this Problem Solving activity. You will need to go to **eBooks > Problem Solving > Level 2 > Logical Reasoning > Worksheet Four**.
- Print one worksheet per group. The aim in this game is to create polygons with an area greater than 1 but less than 13 with a perimeter of 20 cm. Students will need to use their Problem Solving skills to determine what different shapes could be made. Each person in the group should use a different colour to draw their shapes.
- The teacher can click on **Demonstrations > Rainforest Maths > Year 4 > Area**. Draw your own shapes and display them on the interactive whiteboard. Students who are having difficulty can work one-on-one with the teacher to determine different polygons. Students are able to draw the shapes on graph paper and interactively determine area and perimeter.



After the lesson

 10 MINS

- Students can play the Problem Solving Game "Making Tracks."
- Access this through **Teacher Console > Demonstrations > Problem Solving > Perimeter > Making Tracks**.

Fact of the Day

- Have students write down one fact they learned about Area. This can be added to a maths bulletin board or written in maths journals.



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