


# LESSON PLANS: AUSTRALIA

## Year 6: Patterns and Algebra

### Patterns

 50 MINS

powered by

 Mathletics

**Strand:** Number and Algebra

**Substrand:** Patterns and Algebra

**Outcome:**

- Continue and create sequences involving whole numbers, fractions and decimals. Describe the rule used to create the sequence. (ACMNA133)

### Introduction to Lesson

 10 MINS

**Teacher Background:**

Play the Marian Small video "Pyramid Prediction." Log in to your

[Teacher Console > eBooks > Grade 6 > Marian Small's Pyramid Prediction > Videos.](#)

This video has two parts. Play part 1 of this video, stopping at each section for questioning. Play part 2 of the video and pause for students to investigate and calculate possible answers for the patterns.

**Prompting Questions:**

- What is happening in this row/section of the pyramid?
- How do you know the pattern rule?
- Can you determine what the top number would be without filling in the other rows?

### ITEMS NEEDED

- ✓ Interactive whiteboard
- ✓ Mathletics teacher login
- ✓ Computers/tablets
- ✓ Marian Small's Pyramid Prediction handout
- ✓ Maths journals (if implemented by teacher) /blank paper

### ASSESSMENTS

- ✓ Observations
- ✓ Discussion during Guided Maths Group time
- ✓ Collect and assess journal responses

### ACCOMMODATIONS/ MODIFICATIONS

- ✓ Levelled or ability groups for guided maths time
- ✓ Scaffold during guided maths

### EXTENSION OF LEARNING

- ✓ Curriculum activities
- ✓ Grade 6, Rainforest Maths
- ✓ Have students find real-life examples of when they would need to use a number pattern or have seen/used a growing/shrinking pattern in their lives.
- ✓ Write a journal response on where they have used a table of values before. When can it be used? What professions would use this type of table?
- ✓ Create your own maths game/maths brain twister using a table of values or pyramid.

# LESSON PLANS: AUSTRALIA

## Year 6: Patterns and Algebra

### Patterns

powered by

Mathletics

### The Lesson

 35 MINS

#### Shared Maths Activity

##### Pyramid Prediction Interactive

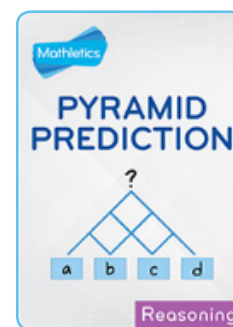
- Go to the Marian Small eBook "Pyramid Prediction. On the right side of the screen, click on Interactive. Display this problem on your interactive whiteboard. Have students choose the numbers to put in the bottom row. Click on the connector boxes.

**Ask students:** What has happened to the numbers? What rule/pattern can you come up with? Can we predict what the next row of numbers will be? Can we predict the number at the top of the pyramid? How do you know this?

#### Guided Maths Group

##### Teacher-Led Pyramid Handout

- In levelled/ability groups, teachers should designate a table or spot in the classroom to call over groups to work with them on the Pyramid Prediction handout sheet found in Marian Small's eBook "Pyramid Prediction." Work with groups to scaffold student learning and determine how your students are grasping this concept. Have students complete three different pyramids (worksheet found with Teacher Notes) and explain to you their steps in completing the question. Stop students during their work and ask them to predict what the top number would be. Guide student learning using the questions found in the Teacher Notes section of this Marian Small eBook.



#### Independent Maths Activity

##### Concept Search/Journal

- Have students log in to their **Student Console > Concept Search**. Type table of values into the Search bar. Students should investigate this concept and how it is similar to and different from the pyramid patterns.

**Prompting questions to post:** How are the pyramid and table of values similar? Can you determine a pattern rule using a table of values? Can you determine a pattern rule using a pyramid? Which method do you find easier?

Students should journal their response and show an example of both ways to describe and represent growing and shrinking patterns. If your students do not have maths journals, they can use a maths response sheet or loose-leaf paper to express their ideas.

### After the lesson

 5 MINS

#### Live Maths

- Give students time at the end of class to play Live Maths against other students in their class. Each round is 60 seconds; you can allot 5–10 minutes for this activity. Add "Top Live Mathlete of the Day" to your board for the person who received the greatest number of points.




For more information contact our friendly team...

Email: [customerservice@3plearning.com.au](mailto:customerservice@3plearning.com.au) | Tel: 1300 850 331

# LESSON PLANS: AUSTRALIA

## Year 6: Measurement and Geometry

### Angles

 45 MINS

powered by

 Mathletics

**Strand:** Measurement and Geometry

**Substrand:** Geometric Reasoning

**Outcome:**

- Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles. (ACMMG141)

## Introduction to Lesson

 10 MINS

**Teacher Background:**

Log in to Mathletics

**Teacher Console > Demonstrations > Concept Search.**

Search Protractor in the **Search** bar. Have students interact with the protractor to measure angles. Ask students to draw a shape that has this type of angle included in it.

Have students use their arms for the sides of the angle.

**Ask students,**

- Can you make a  $90^\circ$  angle with your arms?
- Can you construct an angle greater than  $90^\circ$ ?
- What happened to your arms?
- What do we call an angle that is larger than  $90^\circ$ ?
- What about when it is less?
- How do we properly measure an angle?

## ITEMS NEEDED

- ✓ Interactive whiteboard
- ✓ Mathletics teacher login
- ✓ Mathletics Grade 6 eBook (Lines and Angles) printed for each student
- ✓ Markers
- ✓ Protractor

## ASSESSMENTS

- ✓ Have students use self and peer assessment for the "Hand it over" activity.

## ACCOMMODATIONS/ MODIFICATIONS

- ✓ Have students work with levelled groups or partners.
- ✓ Use this activity as a rotation.  
**1st station:** Measuring angles on the interactive whiteboard.  
**2nd Station:** "Hand it over" activity in eBooks  
**3rd Station:** Constructing polygons

## EXTENSION OF LEARNING

- ✓ Have students complete the paper-folding activity in the Grade 6 eBook Geometry, Lines and Angles, question 1.
- ✓ Grade curriculum activities: Shape and Space-Angles: Classifying Angles, What Type of Angle? Labelling Angles and Measuring Angles.



# LESSON PLANS: AUSTRALIA

## Year 6: Measurement and Geometry

### Angles

powered by

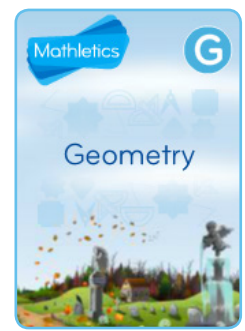
Mathletics

#### The Lesson

 30 MINS

##### "Hand it Over" Activity

- Display "Hand it over" activity on interactive whiteboard. Sign in to **Mathletics Teacher Console > eBooks > Grade 6 > Geometry**. Click on "Lines and Angles". Scroll to "Hand it over" activity on the last page.
- Have students work in partners or groups to trace their hands in different positions. Then have students estimate the size of the angles between their fingers. Have partners/groups exchange their hand with another group and measure the angles between the fingers. Label the fingers with the type of angle (e.g., acute, right, straight, obtuse).  
**Discussion Questions:** How did your hand/finger angles differ from another group's? How would the position of your fingers affect the size of the angles?
- In the designated box on the interactive whiteboard, generate a hand with the class that has one right angle one obtuse angle. How would this hand have to look? What other types of angles are in your hand? How do you know?



##### Constructing Polygons

- Search polygons in Concept Search. In **Mathletics Teacher Console > Demonstrations > Concept Search** click **Concept Search** again. Type "polygon" into **Search** bar.
- Review what makes a shape a polygon. Discuss what types of angles are present in different polygons. Review acute, obtuse, straight and right angles again.

##### Ask students:

- What polygon could you draw with one  $90^\circ$  angle?
- What polygon could you draw with one acute angle?
- What polygon could you draw with two different types of angles?

Students can draw these independently, in small groups, or collaboratively on the interactive whiteboard.



#### After the lesson

 5 MINS

- Discuss with students real-life examples of where we find angles.
- **Ask students:** What jobs/sports would require you to know how to measure an angle? (soccer, architect, designer, construction worker, fitness instructor, etc.) Where do we see angles in the classroom? at home? (clocks, desks, walls, rugs, rooms, etc.)



For more information contact our friendly team...  
Email: [customerservice@3plearning.com.au](mailto:customerservice@3plearning.com.au) | Tel: 1300 850 331

# LESSON PLANS: AUSTRALIA

## Year 6: Statistics and Probability

### Creating, Understanding and Interpreting Line Graphs



50 MINS

powered by

Mathletics

**Strand:** Statistics and Probability

**Substrand:** Data representation and interpretation

**Outcome:**

- Interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables. (ACMSP147)

## Introduction to Lesson



10 MINS

**Teacher Background:**

Students should have prior knowledge of graphing from year 5. Conducting surveys, recording data in line graphs should have been taught prior to this lesson. This lesson's main focus is understanding, interpreting data, and drawing conclusions from graphs.

To introduce how to properly read and interpret data from a line graph, show students the video "Introducing Distant Time Graphs."

Log in to your

[Teacher Console > Toolkit.](#)

Type line graphs into your **Search** bar. Click **Presentations** tab on the left side. Choose "Introducing Distant Time Graphs." This video will introduce students to a line graph and how to set up a vertical and horizontal axis with a proper scale. Pause during the video to discuss what is being shown on the line graph. Ask students, Why do we use this scale for time? Is there another range we could use? Where is the highest point on the graph? Why do you think they chose this measurement? Tell a story about how this data could have been collected.

**NOTE:** There are a variety of other videos related to interpreting graphs, scatter plots, and other areas of data management you can explore with your students.



### ITEMS NEEDED

- ✓ Interactive whiteboard
- ✓ Mathletics teacher login
- ✓ Laptops
- ✓ eBook worksheet printed
- ✓ Graph paper for practice



### ASSESSMENTS

- ✓ Group work
- ✓ Oral presentation
- ✓ Review graphs



### ACCOMMODATIONS/ MODIFICATIONS

- ✓ Create ability or levelled groups.
- ✓ Data disaster problem could be done individually and assessed.
- ✓ Give students the option to submit their work or do an oral presentation.
- ✓ Have students watch the video together at the beginning of class. Allow students to formulate questions. Lead your lesson by following their inquiries.



### EXTENSION OF LEARNING

- ✓ Mathletics Year 6 eBook: "Data Representation," Collecting and analyzing data, p.30, or Types of graphs 3, p.12
- ✓ Assign curriculum activities
- ✓ Rainforest Maths, Grade 6. Data, line graph

# LESSON PLANS: AUSTRALIA

## Year 6: Statistics and Probability

### Creating, Understanding and Interpreting Line Graphs

powered by

Mathletics

#### The Lesson

 30 MINS

##### Open-Ended Problem Solving—The Story of a Graph

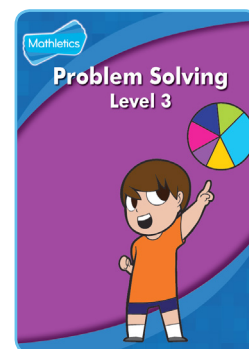
- Display open-ended problem on Interactive whiteboard.
- Log in to your **Teacher Console > eBooks > Problem Solving > Problem Solving Level 3 Book > Open Ended Problems > Worksheet 5**.
- Review the line graph with students; ask prompting questions like, Why is this an appropriate scale to measure water on? What information can you tell from this graph? Why was a line graph chosen to organise the data? How could we graph all months of the year? What would be different about that graph?
- Have students work in their table groups or with partners to brainstorm and explore various ideas for the line graph and pie graph. Ask students prompting questions like, What would be an appropriate title? How could this data have been collected? What data would not work on these graphs? Discuss various responses from different groups.

##### Line Graphs

- Students complete Year 6 worksheets about Line Graphs.  
To access, go to **Year 6 eBooks > Data Representation > Types of graphs?**  
or students complete **Line Graphs Interpretation** in student console.

##### Extra-time/cross-curriculum activity:

- Have students collect data prior to this lesson about some aspect of their community, an experiment, an issue in the school, or from another subject. Have students record their observations or measurements over time.
- Students can then use a line graph to represent the data and show a trend over time. Science experiments/growth plans would work best for this activity.



#### After the lesson

 10 MINS

##### Oral Presentation

- Give students time at the end of the lesson to prepare a one-minute class discussion.
- Have students present their stories related to the graphs. Formulate class discussion based on student responses.



For more information contact our friendly team...  
Email: [customerservice@3plearning.com.au](mailto:customerservice@3plearning.com.au) | Tel: 1300 850 331