

# LESSON PLANS

## Patterns and Relationships



45 mins

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Mathletics

### General Outcome:

- Use patterns to describe the world and to solve problems.

### Specific Outcomes:

- Identify and describe patterns found in tables and charts.
- Represent, describe and extend patterns and relationships, using charts and tables, to solve problems.

## Introduction



10-15 mins

### I am Thinking of a Number...

- To encourage students to begin thinking about patterns, introduce the Mathletics activity "I am Thinking of a Number!" Display this activity on the interactive whiteboard. You can work through all 10 questions or as many as you see fit with 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
- ✓ Interactive handouts



### ASSESSMENTS

- ✓ Have students write out their reflections
- ✓ Participation
- ✓ Collect and assess handouts



### MODIFICATIONS

- ✓ Teacher can choose to use the Interactive instead of the handout.
- ✓ Change number to skip count by 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, Grade 4: Patterns.

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### 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 could we skip count by? 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? 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 that are 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.



#### Interactive/Handout

- Print the 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.

### Extension

 5-10 mins

**Discussions Questions:** Teacher can use his/her discretion and have a whole-group or table-group discussion.

**Questions to discuss:** Where can you see number patterns in real life? How do all your patterns that you did today relate? 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?



For more information contact our team...

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