Maths and Me: 1st Class – Short-Term Plan, Unit 11: Patterns (February: Week 2)

Strand(s) > Strand Unit(s)	Algebra > Pattern, Rules and Relationships.
Learning Outcome(s)	Through appropriately playful and engaging learning experiences children should be able to identify and express relationships in patterns, including growing or shrinking shape patterns and number sequences.

Lesson	Focus of Learning (with Elements)	CM	Learning Experiences	Assessment
1	**Finding Patterns:** Articulates and shares prior understanding of what constitutes a pattern (U&C); Uses available resources to create own pattern (C)		D Notice & Wonder L1, 3 D C Think-Pair-Share L1–4 D C Reason & Respond L1–4 C Creating Patterns L1, 3 C Musical Patterns L2 C Pattern Stations L4 **Print resources** Pupil's Book pages 70–73 Home/School Links Book page 26 PCM 35	**Intuitive Assessment:** responding to emerging misconceptions **Planned Interactions:** responding to insights gleaned from children's responses to learning experiences **Assessment Events:** information gathered from completion of the unit assessment in the Progress Assessment Booklet page 21
2	**Describing and Making Patterns:** Compares alternative perspectives on patterns (R); Describes or shows why a rule describes a pattern (R)			
3	**Growing or Shrinking Patterns:** Describes the structure of growing and shrinking patterns (C)			
4	**Pattern Stations:** Describes the structure of growing and shrinking patterns (C); Describes or shows why a rule describes a pattern (R)			
5	**Review and Reflect:** Reviews and reflects on learning (U&C)			

Key: Elements: (U&C) Understanding and Connecting; (C) Communicating; (R) Reasoning; (A&PS) Applying and Problem-Solving. **CM: Cuntas Míosúil:** please tick when you have completed the focus of learning. **Learning Experiences:** C concrete activity; D digital activity; P activity based on printed materials, followed by lesson numbers.

Additional information for planning

Progression Continua	See '1st Class *Maths and Me* Progression Continua Overview' for a detailed breakdown of how all progression continua are covered.
Maths Language	See '1st Class *Maths and Me* Maths Language Overview', individual lesson plans and Unit 11 Maths Language Cards.
Equipment	See '1st Class *Maths and Me* Maths Equipment Overview' and individual lesson plans.
Inclusive Practices	• See Let's Strengthen and Let's Deepen suggestions throughout lesson plans. • See Unit 11 Let's Strengthen Suggestions for Teachers. (These address the Common Misconceptions and Difficulties listed below.) • See Unit 11 Let's Strengthen PCM. • See Unit 11 Let's Deepen PCM.
Integration	See individual lesson plans.

Background and rationale

- This unit is a one-week block of content located in February.
- In this unit, number patterns are revised, including: patterns in addition and subtraction facts to at least 10; odd and even number patterns on the 100 square. Growing and shrinking number patterns of +1 and –1 covered in Senior Infants are extended in 1st Class to +2, +5 and +10, and –2, –5 and –10.
- The simple growing and shrinking patterns, e.g. in shape, colour and size, covered in Senior Infants are revisited and extended. Language to describe patterns becomes more specific and the children learn to identify the pattern core, isolate a term and the importance of position (i.e. 1st, 2nd or 3rd term).
- In 1st Class, the children work with cores of up to three elements in repeating patterns of the types ABC, AAB and ABB, and in which the core is repeated at least twice.
- Key ideas about patterns: Patterns can repeat (i.e. repeating patterns) or they can change in a consistent way (i.e. growing or shrinking patterns).
- Repeating patterns can be extended in both directions and are cyclical in nature. They should have a clearly identifiable core (i.e. the shortest unit that repeats, made up of a number of elements). Letters can be used to label the core of a pattern, for example: AB AB AB (a core of two elements); AAB AAB AAB (a core of three elements), etc. To become competent in accurately extending repeating patterns, it is vital to identify the core. Children can verbalise the pattern aloud ('red, blue, red, blue...') and use concrete materials to model the pattern, breaking it apart and laying it alongside the subsequent parts of the pattern to ensure that they match. Highlighting the numerical term positions (e.g. see page 71 of the Pupil's Book) can encourage the children to begin to see the relationship between each term and its position.
- Growing/shrinking patterns: The way in which the terms are ordered is governed by a rule. To identify the rule, prompt the children to examine each given term and identify what has happened between it and the next term (i.e. whether the numbers increased or decreased, and by how much). They then write this (e.g. +2, –10) below and between the terms. Even when extending sequences in their copy, tell the children to leave an empty line below to allow room for writing in the differences between the terms.

The theme of this unit is **In the Town**.

Supporting the learning of patterns, rules and relationships throughout the year

- Patterns are visible all around us, and especially throughout maths. Exploring, identifying and analysing patterns is a skill that should be incorporated regularly. As well as a dedicated one-week unit for Pattern in *Maths and Me*, throughout the other units, the children are frequently prompted to explore and identify the patterns and relationships evident in a rich and varied range of mathematical situations. In addition, teachers can strengthen and reinforce the children's understanding of Pattern further by utilising every opportunity throughout the school year to develop this concept, including incorporating pattern work as a regular activity (e.g. during station teaching and morning activities), and prompting the children to always look for patterns in maths and to use these to help them solve problems and complete tasks.
- Ensure that the children can explore and identify patterns and relationships across all subjects and curricular areas (not just in maths). Regularly ask the children to predict what will happen next, since to do so requires uncovering the pattern(s) of what is happening or has happened.
- In addition to the suggestions below, see also the Optional Consolidation and Extension Possibilities section in the individual lessons.

In all subjects, ask the children:

- Do you notice any pattern(s)? Describe the pattern.
- What is staying the same?
- What is changing?
- What comes next?

Enable the children to look for patterns (and to predict what comes next) in the following subjects and areas:

- Language: rhyming patterns in poems and rhymes; spelling patterns within words; sequencing events in stories and fairy tales; patrúin san fhéilire, laethanta na seachtaine, etc.
- History: continuity and change; what has stayed the same and what has changed
- Geography: patterns in weather; patterns in the both the built and natural features of the local environment
- Science: patterns in nature, flowers, leaves, minibeasts, etc.; the cyclical nature of life cycles in plants and animals
- Music: melodic, lyrical and rhythmic patterns in music; repeated sections (e.g. verse, chorus, verse); action and clapping songs
- Visual Arts: patterns in print, drawings and illustrations, fabric and fibre
- PE: games, dance and gymnastics
- SPHE: patterns of growth and development
- Classroom activities and daily routines
- Anything visible in the children's environment (e.g. clothing, textiles, materials).

Where appropriate, ask the children to represent the pattern(s) they uncovered, using concrete manipulatives and/or drawings or symbols.

In maths, enable the children to look for patterns (and to predict what comes next):

- Number: patterns on the number line, 100 square and in sequences of whole numbers and fractions (e.g. choral counting, *What patterns do you notice and what comes next?*); patterns in various regular arrangements (dot patterns, dominoes, frames and dice), and using these to subitise 'how many' without having to count; using patterns and properties to derive unknown number facts from known facts; patterns emerging from the addition and subtraction of odd/even numbers; patterns and numerical relationships in number bonds
- Shape: patterns using 2-D and 3-D shapes; tessellating patterns using pattern blocks; predicting how a shape will look when you turn/flip/slide it
- Measures: patterns on the calendar; repeating patterns in units of time (e.g. minutes, hours, days of the week, months, seasons)
- Data: analysing patterns that emerge, and predicting trends, outcomes and likely responses
- Problems and tasks: uncovering patterns, and seeing how these patterns might help with solving the task.

After Unit 11, in which the children have heard and/or have used the language 'repeating', 'core', 'growing' and 'shrinking', ask:

- Do you notice any pattern(s)?
- Is it a repeating pattern?
- (If yes) How is it repeating? What is the core?
- Is it a growing or shrinking pattern?
- How is it changing each time?

Common misconceptions and difficulties

- The children may struggle to describe patterns, or to identify the core of repeating patterns, particularly when an element is repeated within the core (e.g. ABCB pattern). (Identifying the pattern core is an important skill that enables children to not only describe the pattern, but to make generalisations and find missing terms.)
- The children may fail to look at enough of the pattern in order to determine the core (repeating part) and the missing elements.
- They may incorrectly assume that repeating patterns can be continued from only one end, whereas they can be extended in both directions.
- They may struggle to identify the rule of growing/shrinking patterns.
- They may not be secure in their understanding of other concepts that could have a knock-on effect here (e.g. names of shapes, the 100 square, odd and even numbers).

The Unit 11 Let's Strengthen Suggestions for Teachers address the common misconceptions and difficulties listed above.

Mathematical models and representations

- Representations of classroom-based resources that could be used to create various patterns
- Representations of patterns from the real world
- Number tiles

- Number paths/lines
- 100 squares
- Abacuses

Representations of patterns from the real world

Teaching tip

The following manipulative printables are available to support the unit: Number Path, Number Line 0–100, Base Ten Blocks, 100 Square, 3-D Shapes, Analogue Clock Face and Hands, and Coins. Click on the resources icon on the *Maths and Me* book cover on **edcolearning.ie**

Day 1, Lesson 1

Finding Patterns

Focus of learning (with Elements)

- Articulates and shares prior understanding of what constitutes a pattern (U&C)
- Uses available resources to create own pattern (C)

Learning experiences

- D Digital activity: The Clothes Shop *MAM* Routines: Notice & Wonder, with Think-Pair-Share; Reason & Respond
- C Concrete activity: Creating Patterns
- P Pupil's Book page 70: Finding Patterns

Equipment

- Any classroom equipment, such as interlocking cubes, shapes, counters, bears, beads, which could be used to create patterns, including 100 squares and number tiles

Maths language

- core, element, term, first, second, last, next, order, repeat, growing, shrinking, extend

Warm-up

D Digital activity: The Clothes Shop
***MAM* Routines: Notice & Wonder, with Think-Pair-Share**

Display the first slide and, using Think-Pair-Share, ask:

- What do you notice?
- What do you wonder?

Record the children's responses to both questions on the board. Allow the children the opportunity to respond to (agree/disagree with or query) others' responses, but do not confirm or reject any of the ideas. Note any 'wonderings' that could become the basis for a subsequent maths investigation.

Main event

D Digital activity: The Clothes Shop
***MAM* Routine: Reason & Respond**

Display each slide. Click to play or ask the children the questions below (if relevant and not already covered in the warm-up). Encourage the children to give reasons for their answers.

Assessment Opportunity

Provide the children with a variety of resources that are suitable for making patterns, and ask them to construct the patterns they see.

Begin by looking at the kites pattern.

- What is the core of the pattern? (You may have to remind the children of the meaning of *core* – that part of the pattern that is repeated.)
- How many elements in the core? (You may have to remind the children of the meaning of *element* – the individual units in the repeating part a pattern.)
- Use counters to copy the kite pattern.
- What season is it?
- Say the four seasons in order, starting with spring. Repeat them. Have you made a 'season' pattern?

On the next slide, look at the rail of T-shirts. Click to play or ask/say:

- Can you see any patterns?
- How can you tell if there is a pattern?
- Describe any pattern you can see.
- Use a different colour counter for each cartoon character and copy the pattern.
- Extend the pattern to your right. Extend the pattern to your left.

On the next slide, look at the necklace that Lexi is admiring. Click to play or ask/say:

- Can you see any patterns?
- How can you tell if there is a pattern?
- Describe the colour pattern. How many times does the pattern repeat?
- Use counters to copy the colour pattern.
- Extend the pattern to your right. Extend the pattern to your left.

On the final slide, look at Monty's caps. Click to play or ask/say:

- Can you see any patterns?
- How can you tell if there is a pattern?
- Describe the colour pattern. How many times does the pattern repeat?
- Use counters to copy the colour pattern.
- Extend the pattern to your right. Extend the pattern to your left.

Let's strengthen

The children may benefit from using the number line on their MWBs or a 100 square (see PCM 35: 100 Square).

Let's deepen

Some children will notice number patterns on the slideshow. Ask:

- How do you know it is a pattern?
- What is the pattern?
- Can you see a growing/shrinking pattern?

C Concrete activity: Creating Patterns

The children work in pairs or small groups to create patterns using classroom resources. As they work, conference with them, assessing for understanding of key language and concepts:

- Can you create a pattern?
- Do you understand these words: *repeat*, *growing*, *shrinking*, *term*, *core*, *pattern*?

Let's deepen

Provide the children with manipulatives of four different attributes (e.g. colour). Ask if they can make a pattern with a core of four elements. Provide the children with clocks. Ask them to make a time pattern with a core of three or four different times.

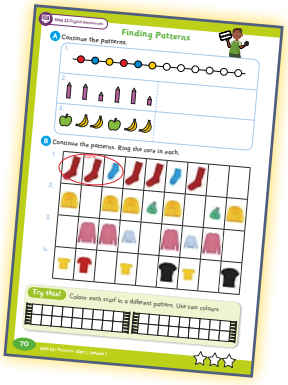
Let's strengthen

Provide the children with pre-cut digits (see PCM 43: Digit Cards) within an appropriate range (e.g. 1 to 10), and patterns to extend (see PCM 45: Colour and Shape Patterns).

Teaching tip

Take photos or videos to use in the warm-up for the Review and Reflect lesson.

P Pupil's Book page 70: Finding Patterns



Optional consolidation and extension possibilities

Story Explore a book with a pattern theme (e.g. growing quantitively, days of the week). Read *The Very Hungry Caterpillar* by Eric Carle, or listen to a reading at: edco.ie/46v5

Pattern Station Provide a non-transparent bag of manipulatives in 2/3/4 different colours/sizes. The children blind pick 2/3/4. Can they make a pattern core and extend it?

Day 2, Lesson 2

Describing and Making Patterns

Focus of learning (with Elements)

- Compares alternative perspectives on patterns (R)
- Describes or shows why a rule describes a pattern (R)

Learning experiences

- D Digital activity: Fun with Patterns
  MAM **Routines: Reason & Respond, with Think-Pair-Share**
- D Digital activity: The Music Shop
  MAM **Routines: Reason & Respond, with Think-Pair-Share**
- C Concrete activity: Musical Patterns
- P Pupil's Book page 71: Describing and Making Patterns

Equipment

- Any classroom equipment, such as interlocking cubes, base ten blocks, shapes and counters, which could be used to create patterns
- Music

Maths language

- sort, rule

Warm-up

D Digital activity: Fun with Patterns

***MAM* Routines: Reason & Respond, with Think-Pair-Share**

Explain to the children that Lexi visited the music shop in the town and bought some miniature musical instruments. Display the first slide, which shows some instruments arranged in an AB pattern. Ask the children to predict which instrument comes next. Reveal the next slide and ask:

- Can you see a pattern?
- Can you predict the next two images?
- Why are they the next two images?

Reveal the rest of the pattern on the third slide. Ask:

- Can you identify the core?
- How many times is the pattern repeated? How do you know?
- What is the pattern rule?
- How do you know?

Tell the children to draw the core of the pattern on their MWBs. Remind them that the *core* is the part of the pattern which is repeated. Ask:

- How many elements in the core?
- Using your MWB, can you extend the pattern?

Display the fourth slide, which shows a new pattern (ABC pattern). Tell the children that each time they see a drum, they stamp their feet once; each time they see a tambourine, they clap once; and each time they see a pair of maracas, they say 'boo' once. Then display the remaining slides, revealing the images in the pattern one by one. Ask:

- What is the core of this pattern?
- How many times is it repeated?
- Can you extend the sound pattern?
- Can you make the sound pattern without the help of the images?
- Can you compose your own sound pattern using all three sounds with a core of three elements?
- Can you compose your own sound pattern using only two of the sounds with a core of three elements?

Main event

D Digital activity: The Music Shop
***MAM* Routines: Reason & Respond, with Think-Pair-Share**

Remind the children that Lexi visited the music shop in the town and bought some miniature musical instruments. At home, she sorted the instruments into three piles. Display the first slide and click to play the questions. Ask the children to respond to the questions and to give reasons for their responses.

Display the next slide, which shows the instruments arranged on a shelf. Explain that Lexi arranged them in an ABC pattern by instrument type. Click to play the audio questions. Allow the children time to respond to the questions and to give reasons for their answers. You could also ask:

- Can you describe a different core you could make? Use 2/3 elements. How is it different from the core Lexi made?

Display the final slide. Explain that Lexi finished organising the pattern to repeat five times. Click to play the final set of questions, allowing the children time to respond to the questions and to justify their answers. You could also ask:

- Can you describe a different pattern you could make? How is your pattern different from the pattern Lexi made?

Circle the core and reinforce to the children that this is the **core** of the pattern and it has three **elements**. The first element is the drum, the second is the tambourine, and the third is the maracas. Once a core is made, it is repeated over and over. Tell the children to look at the instruments again. Ask:

- If I took away the first maracas but left the rest there, would I still have a pattern?
- If I moved the first drum to *after* the maracas, would I still have a pattern?
- Is the position of each instrument important?
- Can you think of a different core? (colour)
- Can you make a pattern using two instruments and with a core of three elements (e.g. ABB or AAB)?

C Concrete activity: Musical Patterns

This is played in a similar way to 'Musical Chairs': the children move when the music starts, and stop when the music stops.

Assign each child to a group of six, and each child within the group is in a pair. Each group is assigned to a table around which they will move when the music plays.

Ask each pair to agree a *core* and to start a pattern using counters, cubes, bears, shapes, etc. Tell them the core can have two or three elements. Once the children have created their core, play the music as they move around the group tables. When the music stops, they must move to the pattern to their right. Can they work out the core and continue the pattern?

Once the children have had time to repeat the pattern three or four times, stop the activity and ask the children:

- What patterns did you see?
- How did you work out what the core was?
- How many times has your pattern been repeated?
- How many terms are there altogether in your pattern?

Play again, and this time each pair must use a different pattern type.

Teaching tip

It may be preferable to use small trays on which to create the patterns. The *trays* move, and not the children. Where necessary, support the children by first giving them a pattern with two or three elements.

Let's deepen

- Challenge the children to create patterns with a core of four elements.
- Ask the children to make this pattern using colours: ABABAB. Ask them to extend it in both directions.
- Ask the children to make this pattern using shapes: ABB ABB. Ask them to extend it in both directions.
- Ask the children to make this pattern using size: AAB AAB. Ask them to extend it in both directions.

Let's strengthen

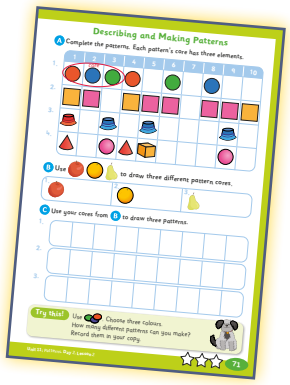
Provide the children with the Unit 11 Let's Strengthen PCM to create the pattern along with Lexi.

The children may benefit from using resources that can be identified by touch (e.g. shapes or base ten blocks).

Teaching tip

Make a recording of the children creating musical patterns to use in the warm-up for the Review and Reflect lesson.

P Pupil's Book page 71: Describing and Making Patterns



Optional consolidation and extension possibilities

Story Explore a book with a pattern theme (e.g. seasons). Read *The Seasons of Arnold's Apple Tree* by Gail Gibbons, or listen to a reading at: edco.ie/hy67

Display On the display table, provide a xylophone that has different coloured keys and some cardboard strips in colours that match the xylophone. The children use the cardboard strips to create a pattern of notes to be played on the xylophone. Alternatively, provide small musical instruments (e.g. maracas, triangles, castanets, hand bells, tambourines). Each instrument can be represented by a different colour of cardboard strip.

Maths Eyes Ask the children to use their Maths Eyes to find patterns in the classroom. Can the children recreate these patterns using classroom manipulatives?

Maths Journal Write five words you used about patterns today.

Music Teach the children a song that has a pattern of verses and a chorus.

Day 3, Lesson 3

Growing or Shrinking Patterns

Focus of learning (with Elements)

- Describes the structure of growing and shrinking patterns (C)

Learning experiences

- D Digital activity: The Fruit and Vegetable Shop
  ***MAM* Routines: Notice & Wonder, with Think-Pair-Share; Reason & Respond**
- C Concrete activity: Creating Patterns (1)
- D Image: Price List Patterns ***MAM* Routine: Reason & Respond**
- C Concrete activity: Creating Patterns (2)
- P Pupil's Book pages 72–73: Growing or Shrinking Patterns

Equipment

- Classroom resources such as interlocking cubes, shapes and counters, which could be used to create patterns
- 1c, 2c, and 5c coins
- Number lines
- PCM 35

Maths language

- There is no new maths language for this lesson.

Warm-up

D Digital activity: The Fruit and Vegetable Shop
***MAM* Routines: Notice & Wonder, with Think-Pair-Share**

Display the poster and, using Think-Pair-Share, ask:

- What do you notice?
- What do you wonder?

Record the children's responses to both questions on the board. Allow the children the opportunity to respond to (agree/disagree with or query) others' responses, but do not confirm or reject any of the ideas. Note any 'wonderings' that could become the basis for a subsequent maths investigation.

Main event

D Digital activity: The Fruit and Vegetable Shop
***MAM* Routine: Reason & Respond**

Display the poster again. Click to play or ask the following questions. Ask the children to give reasons for their responses.

- Do you see a pattern?
- How do you know it is a pattern?
- What changes from one box of apples to the next?
- Do you agree or disagree: 'The rule is add 2 more or +2'? Why?
- Would you call this a growing pattern or a shrinking pattern? Why?
- How many apples, do you think, should be in the empty boxes? Why?
- On your MWB, write the number pattern that describes what is happening with the apples.
- Look at the oranges. What is the pattern rule?
- Do you agree or disagree: 'This is a shrinking pattern'? Why?
- On your MWBs, write the number pattern that describes what is happening with the oranges.

C Concrete activity: Creating Patterns (1)

The children work in pairs or small groups to create a growing pattern of +1 and +2, and –1 and –2, using classroom resources including 1c and 2c coins, number lines and 100 squares (see PCM 35), which can be cut up to create number patterns. As the children work, conference with them, assessing for understanding of key language and concepts. For example:

- Do you understand these terms: *growing*, *shrinking*, *odd*, *even*?

D Image: Price List Patterns
***MAM* Routine: Reason & Respond**

Display the image of the price list from the Fruit and Vegetable Shop. Ask questions similar to those that follow. Ask the children to give reasons for their responses.

- Look at the prices. Do you see a pattern?
- How do you know it is a pattern?
- By how much does each price change?
- Do you agree or disagree: 'The rule is +5c more'? Why?
- Would you call this a growing pattern or a shrinking pattern? Why?
- If a banana is cheaper than a red apple and I keep the rule, what will be the price of the banana?
- If a melon is more expensive than an orange and I keep the rule, what will be the price of the melon?
- Look at the prices, starting with the orange. What do you notice?
- Do you agree that this price list shows a shrinking pattern? (It shows both types of patterns, depending on whether it is read from top to bottom or bottom to top.)

C Concrete activity: Creating Patterns (2)

Assessment Opportunity

The children work in pairs or small groups to create a growing pattern of +5 and –5, using classroom resources including 5c coins, number lines and 100 squares, which can be cut up to create number patterns. As the children work, conference with them, assessing for understanding of key language and concepts. For example:

- Do you understand these terms: *growing*, *shrinking*, *odd*, *even*?

Let's strengthen

Support the children by providing number lines and/or 100 squares, and counters during the main event. Some children will benefit from working with number shapes during the main event and creating growing and shrinking patterns of +1 and –1 only.

Let's deepen

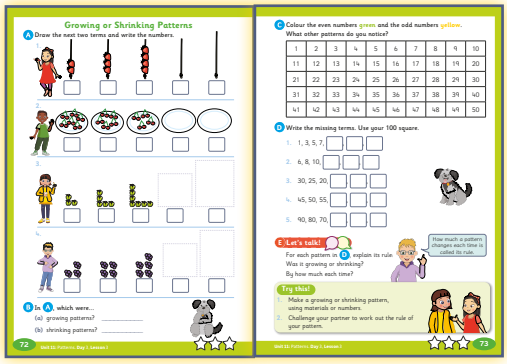
Challenge the children with additional tasks:

- Create a +3 and/or –3 pattern.
- Using 5c coins, some children may be challenged to see that two patterns are at work, i.e. the number of coins (+1) and the amount of money (+5).
- Distribute 20 counters each to the children. Ask them to make a growing pattern using all the counters. Then ask them to try to make a shrinking pattern with all 20 counters.

Teaching tip

Take photos or videos to use in the warm-up for the Review and Reflect lesson.

P Pupil's Book pages 72 and 73: Growing or Shrinking Patterns



Optional consolidation and extension possibilities

Story Explore a book with a pattern theme (e.g. quantitatively growing and shrinking patterns). Read *Rooster's Off to See the World* by Eric Carle, or listen to a reading at: edco.ie/6qjn

STEM Using classroom manipulatives (e.g. shapes and counters of different sizes and colours), create a pattern that will cover a defined surface (e.g. a tabletop or book cover).

PE Play skipping games incorporating growing and shrinking patterns. Skipper 1 jumps an agreed number of times; Skipper 2 jumps +/–1 (+/– 2, +/–5) times more. You (or a child) record the pattern on a MWB. What is the longest growing pattern the skippers can make?

Visual Arts Put a kaleidoscope on the display table for the children to explore pattern.

Day 4, Lesson 4

Pattern Stations

Focus of learning (with Elements)

- Describes the structure of growing and shrinking patterns (C)
- Describes or shows why a rule describes a pattern (R)

Learning experiences

- C Concrete activity: Number Line to 20 and 100 Square ***MAM* Routines: Reason & Respond, with Think-Pair-Share**
- C Concrete activity: Pattern Stations

Equipment

- Number lines
- PCM 35
- Counting resources such as number tiles, base ten blocks, number pieces, interlocking cubes, dice, dominoes, coins, playing cards, 1–6 or 0–9 spinners, abacus, 2-D and 3-D shapes in a variety of colours, sizes and thicknesses, pattern tiles, counters and other classroom manipulatives, and pegboards
- Lengths of wool, buttons, pom poms, stamps

Maths language

- lowest, highest, increase, decrease, symbol, row, column

Warm-up

C Concrete activity: Number Line to 20 and 100 Square ***MAM*** **Routines: Reason & Respond, with Think-Pair-Share**

Distribute a copy of the Number Line to 20 manipulative printable to each child. Prompt the children:

- Move your finger along the number path from the lowest to the highest number. What is happening to the numbers?
- Move your finger along the number path from the highest to the lowest number. What is happening to the numbers?

Ask the children to use the open number line on their MWBs. Ask/say:

- Can you create a growing/shrinking pattern?
- Why is it a pattern? What is the rule?
- How much is the increase/decrease?
- Write that on your MWB. What symbols will you use?

Direct the children towards the 100 square on the inside cover of the Pupil's Book. First, remind the children about the layout of the 100 square.

Using Think-Pair-Share, prompt the children:

- Trace your finger along a row from left to right. What is happening to the numbers? How could we record the rule? What symbol should we use?
- Trace your finger along a row from right to left. What is happening to the numbers? How could we record the rule? What symbol should we use?
- Trace your finger along a column from top to bottom. What is happening to the numbers? How could we record the rule? What symbol should we use?
- Trace your finger along a column from bottom to top. What is happening to the numbers? How could we record the rule? What symbol should we use?
- Do you notice any other patterns on the 100 square?
- Is a 100 square useful for skip counting? What patterns can you find?
- Start at 1 and use a growing pattern of +2. Write the first six terms on your MWB.
- Extend the pattern in the same direction for three more terms. What do you notice? (odd numbers)
- Can you say the pattern to 100?
- Start at 18 and use a shrinking pattern of –2. Write the first five terms on your MWB.
- Extend the pattern in both directions. What do you notice? (even numbers)
- Write the first five terms for a growing pattern of +5. What do you notice?
- Can you say the pattern to 100?
- Starting at 100, write six terms for a shrinking pattern of –10. What do you notice? Finish the pattern by writing the rest of the terms.
- Starting at 17, write six terms for a growing pattern of +10. What do you notice? Finish the pattern by writing the rest of the terms.

Main event

C Concrete activity: Pattern Stations

At each station, the children create repeating, growing and shrinking patterns. As the children work, Assessment Opportunity conference with them, checking for understanding of key vocabulary and concepts. The children will tend to make horizontal patterns. Where possible, model vertical patterns.

Station 1

Provide number lines, PCM 35 (for colouring patterns), number tiles, base ten blocks, number pieces and interlocking cubes. Ask the children to:

- Choose a resource and create a growing pattern.
- Create a core of a repeating pattern and ask a partner to extend the pattern (or change one term in each repeat to create a different pattern).
- Record the pattern on their MWBs.
- Tell a friend a pattern rule and ask them to choose a resource and create the pattern.

Station 2

Provide dice, dominoes, playing cards, 1c, 2c, 5c and 10c coins, spinners and an abacus. Ask the children to:

- Choose a resource and create a shrinking pattern.
- Create a core of a repeating pattern and ask a partner to extend the pattern (or change one term in each repeat to create a different pattern).
- Record the pattern on their MWBs.
- Tell a friend a pattern rule and ask them to choose a resource and create the pattern.

Let's deepen

Challenge the children to use €1 and €2 coins, and €5 and €10 notes.

Station 3

Provide 2-D and 3-D shapes (in a variety of colours, size and thickness), pattern tiles, counters and similar manipulatives, and pegboards. Ask the children to:

- Create a pattern using one attribute (e.g. size or colour).
- Create a pattern using two attributes (e.g. shape and colour).
- Create a core and ask a partner to extend the pattern.
- Create a pattern and ask a partner to change one term in each repeat to create a different pattern.
- Tell a friend a pattern rule and ask them to choose a resource to create the pattern.

Station 4

Provide lengths of wool, buttons, pom poms, stamps, etc. Ask the children to:

- Create a pattern using one attribute (e.g. colour or type).
- Create a pattern using two attributes (e.g. colour and type).
- Create a core and ask a partner to extend the pattern.
- Create a pattern and ask a partner to change one term in each repeat to create a different pattern.
- Tell a friend a pattern rule and ask them to choose a resource to create the pattern.

Let's strengthen

Some children will work with AB patterns only.

Let's deepen

Challenge the children to extend patterns created by others and to identify missing terms in patterns. Distribute the Unit 11 Let's Deepen PCM.

Optional consolidation and extension possibilities

PE Split the class in two and ask each group to come up with a 'body' pattern. For example, in an ABC pattern, the first child could have arms folded, the second, arms up and the third, arms behind their back.

Visual Art Provide mandala colouring pages for the children to create their own colour patterns.

STEM Use construction bricks to create colour or number patterns (e.g. skip counting in 2s, 3s, 4s, 6s).

Display The children bring in patterns from home (e.g. scraps of cloth, wrapping paper, wallpaper, photos of number patterns) to create a display.

Home/School Links Book Page 26 can be completed at any stage after this lesson.

Day 5, Lesson 5

Review and Reflect

Focus of learning (with Elements)
• Reviews and reflects on learning (U&C)

Warm-up

Carry out a warm-up activity of your choice from one of the lessons in this unit.

Main event

Use this menu of activity ideas to choose how best to structure this last lesson of the unit to suit your needs and the needs of your class.

Let's talk!	Let's play!
Review and Reflect Poster: Use Think-Pair-Share alongside the prompt questions to review the unit. Use the photos and videos taken during the lessons to review and reflect.	Play 'Pattern Race' from the Games Bank.
Maths language	**Maths strategies and models**
Ask the children to explain the following terms (perhaps using examples or drawings on MWBs): pattern, core, element, term, repeat, growing, shrinking, rule. Use the Unit 11 Maths Language Cards to revise the key terms. For example: If the image and text are cut apart, can the children match them? Complete the My Maths Fact File on page 123 of the Pupil's Book.	Ask the children to give examples of the strategies they used in this unit. Use classroom-based resources to create various patterns. Show representations of patterns from the real world (e.g. The Clothes Shop, number paths/lines, 100 squares).
Progress Assessment Booklet	**Maths Eyes**
Complete Questions 43–44 on page 21. Alternatively, these can be left to do as part of a bigger review during the next review week.	Take the class on a pattern trail either indoors or outdoors. When they spot a pattern, ask them to discuss it with a partner using the following vocabulary: core, element, term, repeat, growing, shrinking, rule. The children could use interlocking cubes to recreate the patterns they see.
Let's strengthen	**Let's deepen**
Identify children who might benefit from extra practice with some of the key concepts or skills in this unit. Use the Unit 11 Let's Strengthen PCM. Consult the Unit 11 Let's Strengthen Suggestions for Teachers.	Use the Unit 11 Let's Deepen PCM.

Notes