

Grade 1 Patterning (repeating core)

1.PR.1	
<p>Demonstrate an understanding of repeating patterns (two to four elements) by:</p> <ul style="list-style-type: none"> • describing • reproducing • extending • creating patterns using manipulatives, diagrams, sounds and actions. 	<ol style="list-style-type: none"> 1. Describe a repeating pattern containing two to four elements in its core. 2. Identify errors in a repeating pattern. 3. Identify the missing element(s) in a repeating pattern. 4. Create and describe a repeating pattern using a variety of manipulatives, musical instruments, and actions. 5. Reproduce and extend a given repeating pattern using manipulatives, diagrams, sounds, and actions. 6. Identify and describe, using everyday language, a repeating pattern in the environment (e.g., classroom, outdoors). 7. Identify repeating events (e.g., days of the week, birthdays, seasons).
1.PR.2	
<p>Translate repeating patterns from one representation to another.</p>	<ol style="list-style-type: none"> 8. Represent a repeating pattern using another mode (e.g., actions to sound, colour to shape, ABC ABC to blue yellow green blue yellow green). 9. Describe a repeating pattern using a letter code (e.g., ABC ABC...).

Clarification of the outcome:

- ◆ It makes good sense to combine the two outcomes because there are significant linkages between them.
- ◆ A repeating core pattern involves a chunk of stuff repeating over and over again. For example, in abbd, abbd, abbd, . . ., the repeating core is 'abbd'. This core could be represented by letters (as is the case here), by sounds, by colours, and so on.
- ◆ Patterning is one way the human mind works. It is not a mathematics topic per se. For detail on this refer to: [Patterns - myths and not myths](#)

Required close-to-at-hand prior knowledge:

- ❖ Real counting to at least 10.
- ❖ Have experience with things that repeat.

SET SCENE stage

The problem task to present to students:

Play different kinds of music and have students do rhythmic clapping to it.

Comments:

Observe if students clap in a repeating manner that reflects the music. If not, help them do so.

DEVELOP stage

Activity 1: Revisits SET SCENE and addresses achievement indicators 1, 4, 5, and 8.

- ◆ Revisit one of the types of music and have students do rhythmic clapping to it. Discuss what stays the same as they clap. Introduce the word 'pattern' in the discussion (e. g. *Your clapping has a pattern to it.*).
- ◆ Ask students to make sounds that have a pattern. Ask them to describe what repeats. Ask them to continue the pattern. Use the term 'pattern' in response to their descriptions.
- ◆ Ask students to make movements that have a pattern. Ask them to describe what repeats. Ask them to continue the pattern. Use the term 'pattern' in response to their descriptions.

Activity 2: Addresses achievement indicators 1, 6, and 7.

- ◆ Ask students to look for things in their environment that repeat. Discuss the results.
- ◆ Present pictures for them to look at. Ask them to describe what repeats. Use the term 'pattern' in response to their descriptions.
- ◆ Discuss repeating events with students such as birthdays, days of the week, and seasons. Ask them to describe other repeating events.

Activity 3: Addresses achievement indicators 1 and 5.

- ◆ Provide students with examples of repeating core patterns that have from two to four elements in the repeating core (e. g. red blue red blue, red blue, . . . ; clap clap swish, clap, clap, swish, . . . , etc.). Have them describe what repeats. Use the term 'pattern' in response to their descriptions.

Note:

For patterning examples that involve something written/drawn on paper or concrete materials, indicate the repeating core in a visual way. For example, suppose the patterning example consists of the following shapes that have been drawn on a piece of paper: circle, circle, triangle, circle, circle, triangle, circle, circle, triangle, . . . You could visually indicate the repeating chunk by drawing a line under or circling 'circle, circle, triangle' the core.

Activity 4: Addresses achievement indicators 1, 4, 5, and practice.

- ◆ Organize students into groups. Each group invents one repeating core pattern that has from two to four elements in the core, where the core repeats at least three times. They write/draw their invention on paper. The groups exchange papers. Each group extends the pattern by one core and describes what repeats.

Activity 5: Addresses achievement indicators 1, 2, 3, 5, and practice.

- ◆ Provide students with drawings/writings of repeating core patterns where there are missing cores in between and after. [See the example below.] Have students write/draw in the missing cores. Discuss results.



- ◆ Provide students with drawings/writings of repeating core patterns where there are errors. [See the example below.] Have students identify the errors and write/draw in the correct cores. Discuss results.



Activity 6: Addresses achievement indicators 1, 4, and practice.

- ◆ Have students make borders for artwork using different decorative stamps or stencils (e.g. for animal shapes, letters, etc.) and different colours. Ask them to make borders of repeating core patterns. Observe if students consistently make repeating core patterns. If they do not, find out why. One reason may concern boredom with making repeating core patterns.
- ◆ Ask students to show the borders and explain the patterns they made for the artwork activity. When you see two patterns of the same type (e.g. AB type) but involving different modes (animals, colour, etc.), ask students if the two patterns are the same and why it might be useful to know if the two patterns are the same. If other patterns in the artwork are the same but involve different modes, these also need to be discussed as to same pattern and why.

Activity 7: Addresses achievement indicators 1, 6, 8, and 9.

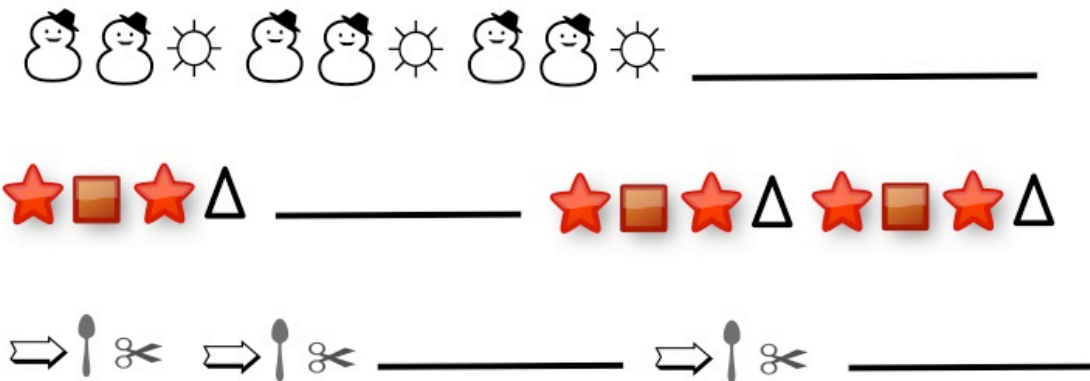
- ◆ Provide additional examples of patterns to show that are the same but that involve different modes (e. g. sound, words, colour, physical movement, etc.). Ask students to identify and discuss patterns that are the same. Discuss the repeating core in terms of AB, ABC, etc. patterns.
- ◆ Ask students to look around the room (or you first provide pictures of a variety of patterns) and identify patterns. Ask them to if any of the patterns are the same but involve different kinds of things. Discuss their responses. Discuss the repeating cores in terms of AB, ABC, etc. patterns.
- ◆ Provide examples of repeating core patterns involving a particular mode (e. g. colour) and ask students to translate the patterns using another mode (e. g. sound). Ask them to describe the pattern type: AB, ABC, etc. Repeat about three times, using different modes.

Activity 8: Addresses achievement indicators 1, 6, 8, and 9.

- ◆ Return to the SET SCENE activity. Ask students to identify the clapping rhythm (the repeating core) and to represent it by a movement other than clapping.
- ◆ Ask students to represent the rhythm in terms of AB, ABC, etc. patterns.

Activity 9: Assessment of teaching (part 1)

- ◆ Provide a brief worksheet that has repeating core patterns on it that require extension and filling in missing parts. Here is an example.



Activity 9: Assessment of teaching (part 2)

- ◆ Demonstrate a repeating chunk pattern (e. g. rhythmic clapping). Ask students to indicate the pattern by drawing shapes or by drawing colours on a piece of paper.

If all is well with the assessment of teaching, engage students in PRACTICE (the conclusion to the lesson plan).

An example of a well-designed worksheet follows.

More questions of each type are needed for a well-designed worksheet.

The MAINTAIN stage follows the sample worksheets.

Question 1.

Circle the core.



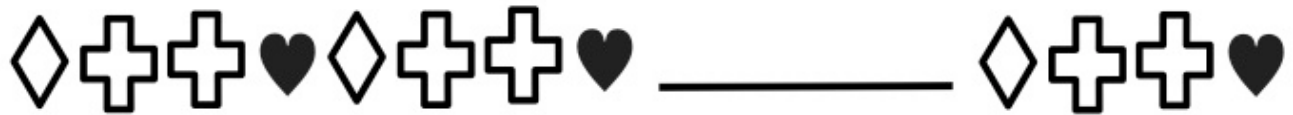
Question 2.

Draw what comes next.



Question 3.

Fill in the missing part.



Question 4.

Something is not repeating correctly. Circle it.



MAINTAIN stage

Mini-task example

At calendar time, present a repeating core pattern and ask students to describe it and extend it.

Rich-task example (integrates Shape & Space)

This activity requires more than 10 minutes. It is an example of maintaining knowledge through projects (a project definitely is a rich learning task). Have students design and make a quilt (on a large paper grid of squares) having repeating chunk patterns in it. After the quilts are made, have students explain the patterns in their quilts and have them identify patterns that are of the same type but that involve different modes. Have students indicate the pattern type (AB, ABC, etc.).