

MATHEMATICS: REPEATING AND GROWING PATTERNS
First Grade

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Creative Learning Experiences

Without the arts, education is ineffective. Students learn more and remember it longer when they are actively involved in lessons than when they are sitting at their desks listening to lectures. There is no better way to teach a child than to involve him or her in the lesson.

MONDAY

Traditional Lesson: Repeating Patterns

First Grade

G.SR.01.03 Create and describe patterns, such as repeating patterns and growing patterns using number, shape, and size.

G.SR.01.05 Predict the next element in a simple repeating pattern.

Multiple Intelligences: *Visual, Intrapersonal, Logical*

Introduction:

(5 minutes) Draw a repeating pattern on the board (example: red square, blue circle, red square, blue circle, etc.). Then, ask students to tell you what they think comes next in the row of shapes. Have a couple students explain their thinking to the class and then tell them that the concept of repeating patterns is what you will be exploring today.

Activity:

(20 minutes) Read the book *Eight Hands Round: A Patchwork Alphabet* by A. W. Paul and illustrated by J. Winter. Stop after every few patterns to ask students if they recognize the pattern and which item would come next on that page.

(15 minutes) Hand out the worksheet on repeating patterns that is found below. Explain to them that they will be completing the repeating patterns on the page and then drawing their own repeating pattern at the bottom.

Conclusion:

(10 minutes) Ask students to share the repeating patterns they created with their group members. If time remains, have each group share one of their favorite patterns with the class. Then, collect the worksheets. Encourage students to look for repeating patterns around their homes that night.

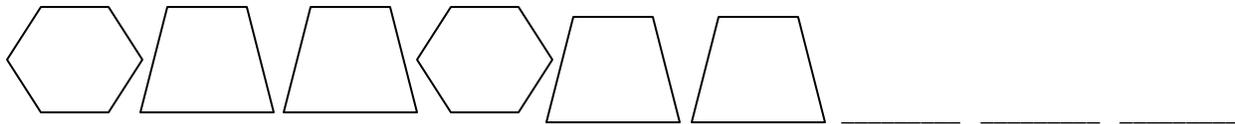
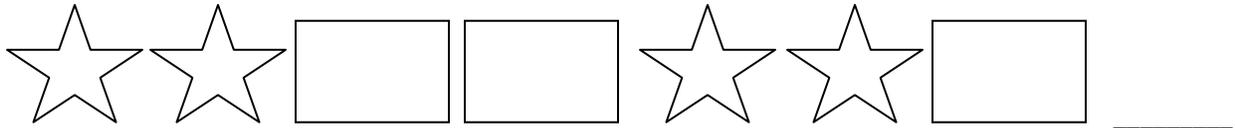
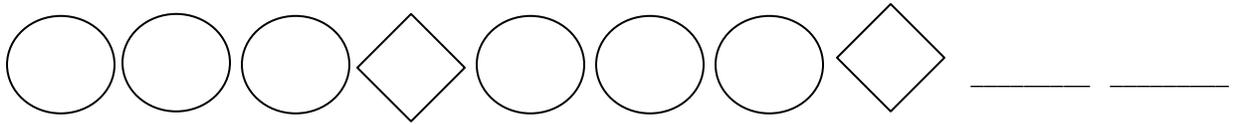
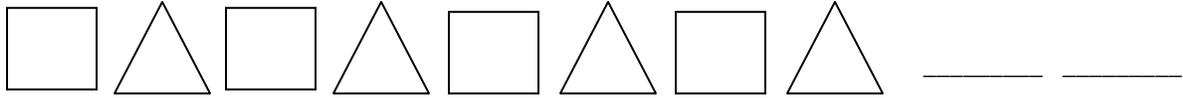
Grading Rubric:

Check the worksheets that students turn in. If all patterns are completed correctly, the worksheet should be marked as outstanding with an “S+”. If at least four of the patterns are completed correctly, it should be marked as satisfactory with an “S”. If fewer than four patterns are completed correctly, the worksheet should be marked as unsatisfactory with a “U”. The teacher should discuss the worksheet with any students who have unsatisfactory marks. They might need more explanation on what a repeating pattern is or they may have misunderstood the worksheet.

REPEATING PATTERNS WORKSHEET

NAME: _____ DATE: ____-____-____

Directions: Draw the shapes to complete the repeating patterns.



Directions: Create your own repeating pattern using shapes.



TUESDAY

Integrated Lesson: Repeating Patterns in Music

First Grade

G.SR.01.03 Create and describe patterns, such as repeating patterns and growing patterns using number, shape, and size.

G.SR.01.05 Predict the next element in a simple repeating pattern.

G.SR.01.06 Describe ways to get to the next element in simple repeating patterns.

Multiple Intelligences: *Visual, Musical, Interpersonal, Logical*

Introduction:

(5 minutes) Review the definition of a repeating pattern. Ask students to share any repeating patterns that they found at home.

Activity:

(20 minutes) Split students into groups of three or four. Give them baggies with a variety of different shape cut-outs. (A template to cut the shapes from is found on the following page.) Instruct students to work with their groups to create a repeating pattern. Have them decide on a rhythmic sound that each shape should represent. Then, have students rehearse the sounds of their pattern with their group. If some of the groups finish early, invite them to create more repeating patterns with their shapes.

(20 minutes) Have each group perform the sounds represented by their pattern. Then, ask them which shape was represented by each sound. Invite the class to perform the sounds of the pattern with the group and then ask the class what the next sound (and shape) in the pattern should be.

Conclusion:

(5 minutes) Thank the class for participating and ask students if they have heard other sound patterns in the world around them. Encourage them to listen for repeating patterns the next time they are listening to music or playing with instruments in music class.

WEDNESDAY

Traditional Lesson: Growing Patterns

First Grade

G.SR.01.03 Create and describe patterns, such as repeating patterns and growing patterns using number, shape, and size.

G.SR.01.04 Distinguish between repeating and growing patterns.

Multiple Intelligences: *Visual, Intrapersonal, Logical*

Introduction:

(5 minutes) Draw a growing pattern on the board (example: circle, square, circle, square, square, circle, square, square, square, etc.). Ask students what they think comes next in this pattern and have a couple of them explain their thinking to the class. Then, explain what a growing pattern is and tell the class that you will be learning more about growing patterns in today's lesson.

Activity:

(20 minutes) Read either *Big Fat Hen* by K. Baker or *Ten, Nine, Eight* by M. Bang. Stop after every couple of pages to discuss the patterns being presented. Ask students to explain some of the patterns and to predict what would come next.

(5 minutes) Discuss the difference between growing patterns and repeating patterns. Create a Venn Diagram with the responses students come up with to describe similarities and differences between the two.

(15 minutes) Give each student one of the growing patterns worksheets found on the following page. Explain that they should carefully examine the patterns to decide which items come next. They should complete the patterns on the page and then create their own growing pattern at the bottom of the page.

Conclusion:

(5 minutes) Have students share the growing patterns they created with partners. Each student should predict which shape would come next in their partner's pattern and their partner should tell them whether or not they are correct. Then, collect the worksheets and encourage students to search for growing patterns at home.

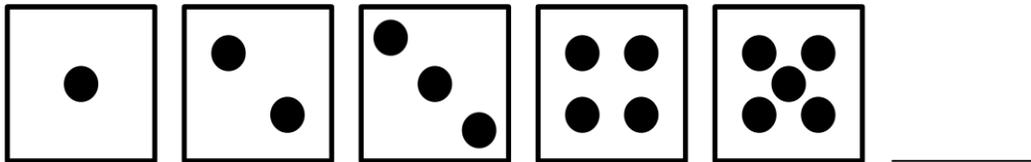
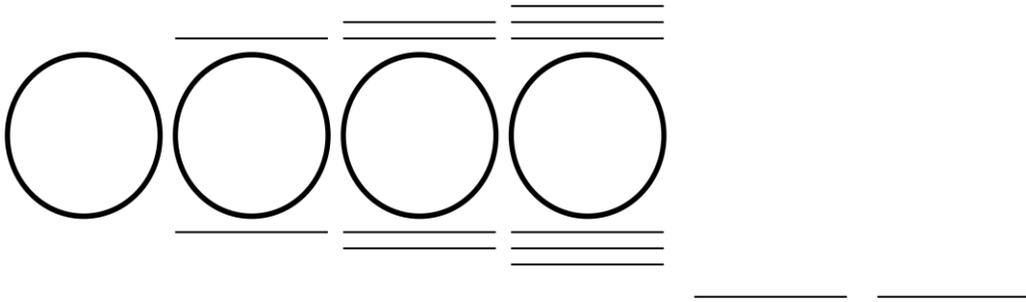
Grading Rubric:

Check the worksheets that students turn in. If all patterns are completed correctly, the worksheet should be marked as outstanding with an "S+". If at least three of the patterns are completed correctly, it should be marked as satisfactory with an "S". If fewer than three patterns are completed correctly, the worksheet should be marked as unsatisfactory with a "U". The teacher should discuss the worksheet with any students who have unsatisfactory marks. They might need more explanation on what a growing pattern is or they may have misunderstood the worksheet.

GROWING PATTERNS WORKSHEET

NAME: _____ DATE: ____-____-____

Directions: Draw the shapes to complete the growing patterns.



Directions: Create your own growing pattern using shapes.



THURSDAY

Integrated Lesson: Growing Patterns in Dance

First Grade

G.SR.01.04 Distinguish between repeating and growing patterns.

Multiple Intelligences: *Visual, Interpersonal, Logical, Kinesthetic*

Introduction:

(5 minutes) Review the definition of a growing pattern. Remind students of the similarities and differences between repeating and growing patterns. Ask students for any examples of growing patterns that they may have found in the world around them.

Activity:

(20 minutes) Split students into groups of eight. Have each group number off and instruct the first person in the group to create a dance move. Then, everyone in the group should do that dance move. After the first person has gone, the next person in the group will create a new dance move and everyone will do the first two dance moves. Continue this pattern all the way around the group, so that each person has a chance to create a dance move. Everyone in the group should perform all of the dance moves that have been created after each new move is added. At the end, the group should practice their string of dance moves.

(10 minutes) Have each group perform their dance for the class. Then, ask each group why their pattern is a growing pattern and not a repeating pattern.

Conclusion:

(15 minutes) Ask each student to decide on a geometric shape that his or her dance move can represent. Then, have the group members discuss with their groups what their pattern would look like if translated to geometric shapes. Have each group draw out their growing pattern and turn in the picture that they create.

Grading Rubric:

Review the drawings that groups create to ensure that they have made a connection between the dance they created and a growing geometric pattern. Mark those pictures that correctly represent this connection as outstanding with an “S+”. For any groups that may have had problems making connections, meet with them to discuss what they thought their picture meant. If they understood the concept, but did not represent it well, mark the picture as satisfactory with an “S”. If the group cannot explain the connection represented by their picture, mark it as unsatisfactory with a “U” and continue working with that group to help them understand what growing patterns are.

FRIDAY

Integrated Lesson: Repeating and Growing Patterns in Visual Art

First Grade

G.SR.01.03 Create and describe patterns, such as repeating patterns and growing patterns using number, shape, and size.

G.SR.01.04 Distinguish between repeating and growing patterns.

Multiple Intelligences: *Visual, Interpersonal, Logical*

Introduction:

(5 minutes) Display a picture of a quilt on the board. Ask students to describe some of the patterns that they see in the quilt. Each time a pattern is mentioned, ask the students whether that pattern is a repeating pattern or a growing pattern. Review the similarities and differences between repeating patterns and growing patterns. Explain to them that they will be working together to create a quilt full of patterns in today's lesson.

Activity:

(15 minutes) Pass out square sheets of paper and have students design either a growing pattern or a repeating pattern on one side of the page. Encourage them to use different colors, shapes, sizes, and numbers to create their patterns.

(5 minutes) Have each student answer the questions on the following page and then attach those answers to their quilt squares.

(20 minutes) Each student should present his or her quilt square to the class and explain the pattern on it. Students can either read the responses to their questions or come up with their own explanations.

Conclusion:

(5 minutes) After presenting the quilt square, have each student add his or her square to a bulletin board display, so that after everyone has gone, a class quilt is complete. Thank the students for creating the display of patterns and encourage them to take a closer look at the quilt when they have free time.

Grading Rubric:

As students present their quilt squares, listen to their explanations of the patterns they have created. For students who have correctly created a pattern, labeled it as either "growing" or "repeating", and drawn the next term in the pattern, mark their paper as outstanding with an "S+". Those who have done two of those things correctly should receive a satisfactory mark, represented by an "S". Anyone who addresses one or none of those criteria correctly should receive an unsatisfactory mark, shown by a "U". Students who receive an unsatisfactory mark will need continued help with understanding repeating and growing patterns.

QUILT SQUARE PATTERNS

NAME: _____ DATE: ____-____-____

On my quilt square, I designed a _____ pattern.

This is the order of the shapes I used:

If I kept drawing my pattern, the next shape would be:

