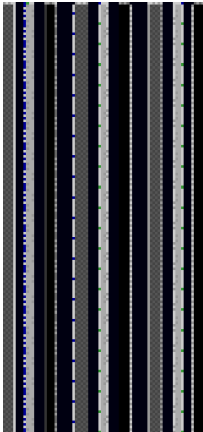
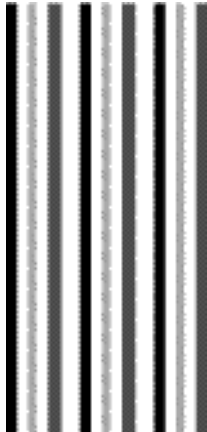




REPEAT AFTER ME



*Linear patterns are easy to find,
In weaving and beading and paper that's lined.
Even music and poems have a linear beat,
Magical units arranged to repeat.*

BACKGROUND FOR TEACHERS:

LINEAR REPETITION

Linear patterns are easy to find; they occur in art, music, and rhyme. Found in materials, sounds, and cyclical events, linear patterns repeat indefinitely in any direction along a line. By looking and listening with your students, you will discover a surprising number of linear patterns: beads on a necklace, woven materials, wallpaper borders, stripes on clothing, zippers, walking footprints, musical rhythms, the meter of poetry, the passage of a day, and the changing seasons. These examples all reflect patterns that are created or extended by the regular repetition of parts, sounds, or events. Linear patterns can be simple or complex and are part of our world's natural rhythms. As a class, look for examples of mathematical and scientific patterns as well as those in art and music.

CONVERSATION STARTERS

Use these questions along with the collection objects to guide your class in a conversation about linear repetition. In your discussion, listen for ideas that could lead to interesting classroom investigations.

What do you notice about the linear patterns of these objects? **How** are they the same and how are they different? **Create** a list of words describing what you see.

Where around the classroom do you see linear patterns? **Brainstorm** a list of things that you see, hear, and feel that repeat again and again.

Why do you think things use patterns that repeat along a line?

LINEAR REPETITION ACTIVITIES

PASTA PATTERNS ON PARADE—Use homemade beads to experiment with linear repetition.

Skills: artistic expression, creating and extending patterns, comparing and contrasting, making cultural connections, using fine motor skills, and observing objects

Many children can easily master beading—a great hands-on form of linear repetition. Use commercial beads, or try beading with pasta or noodles, cereal with holes, cut lengths of colored drinking straws, buttons, paper beads, and Styrofoam popcorn. Keep the theme going by making a linear snack! Make edible patterns by putting cut fruit on shish-kebab skewers.

AHEAD OF TIME

It is easy to make dyed pasta using food coloring. Prepare dyed pasta ahead of time. Put uncooked noodles in a plastic bag with food coloring and a teaspoon of rubbing alcohol. Seal the bag and shake it to ensure that the dye is evenly distributed. Lay the pasta on a paper towel to dry overnight. For young children, consider using one type of pasta and multiple colors. For older children, the more variety of forms and colors to choose from the better.

MATERIALS

- string or yarn
- uncooked pasta or noodles (select varieties that have holes, like ziti, penne, and rigatoni)
- food coloring and rubbing alcohol (optional)
- glue and glitter (optional)

INSTRUCTIONS

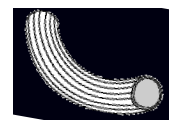
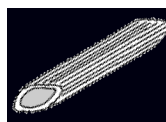
1. Begin by looking at the different types of pasta or noodles that the children will be using as beads. Invite the children to look at the “beads” carefully and describe the features and patterns they observe.

2. Give each child one bead and a piece of string or yarn. Tie the piece of pasta about five inches from the end of the string as a stop. Explain that a simple pattern can be created using two types of beads, alternating one after the other. Demonstrate a simple pattern.

3. Invite children to design their own patterns using two to five pasta beads. This short arrangement is called a motif. Explain that they will be repeating this pattern along the length of their necklace. Have the children begin threading the pasta one at a time onto the string following their motif. Have them repeat the pattern until the necklace is complete.

WRAP UP

Ask students to share how they created their patterns, how they remembered how to follow the pattern, and what they learned. Have children look at the **Maasai necklace** in the kit and discuss its pattern and origin. Discuss ways in which the neck collar and the other repeating pattern objects and images are both similar to and different from the pasta necklaces.



ADDITIONAL ACTIVITIES

RHYTHM REPETITION

Skills: creating and extending patterns, learning cooperatively, comparing and contrasting, making cultural connections, using gross motor skills, observing objects, and spatial awareness

Music is the linear repetition of sounds. Explore how repeating simple rhythms like clapping, snapping, and stomping can create music. Demonstrate a simple rhythm made by clapping (e.g., clap, clap, clap, pause, clap, clap, clap; or clap, pause, clap, pause). Have the whole group practice clapping the rhythm. Vary the pattern by inserting a foot stomp between claps. Choose a new leader and have him or her invent a rhythm for the whole group to follow. End by listening to examples of linear repetition on the music CD provided. Relate this activity to the rhythms found in different cultures the class is studying.

WEAVING WONDERS

Skills: artistic expression, creating and extending patterns, making cultural connections, using fine motor skills, and observing objects

Weave a work of art with paper and recycled material! A linear repetition in action, weaving is also a wonderful way to experiment with materials and pattern making. Provide a wide assortment of materials that can be cut into similar length strips (e.g. paper, foil, giftwrap, magazines, fabric, or ribbon) and encourage children to experiment and be creative. Examples of weaving can be found in many cultures. Share some with your students.

HANDPRINT PATTERNS

Skills: artistic expression, creating and extending patterns, learning cooperatively, comparing and contrasting, using fine motor skills, observing objects, and spatial awareness

Create a room-wrapping border of the entire class's handprints. Part of the fun of this activity is coming up with many amusing and wild variations using color, size, and arrangement, and then seeing how they look when they repeat. Have the class come up with as many handprint patterns as possible. Select one to begin with. Have the children print each new pattern on a separate piece of paper. Then hang the whole series of handprints around the room as a fresco. Invite the students to look for examples of this type of linear repetition in design and decorating magazines, on buildings, and around their homes.