



KINDERGARTEN SUPPLEMENT

Set B1 Algebra: Patterns

Includes

Activity 1: Folktale Patterns	B1.1
Activity 2: Clap, Tap & Snap Patterns	B1.3
Activity 3: Musical Patterns	B1.5

Skills & Concepts

- ★ identify, duplicate, extend, and create simple patterns of objects, sounds, and motions

Bridges in Mathematics Kindergarten Supplement

Set B1 Algebra: Patterns

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Bridges in Mathematics is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

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Set B1 ★ Activity 1



ACTIVITY

Folktale Patterns

Overview

After listening to a simple folk-tale, children help invent a sound and a motion for each character, and, with guidance from the teacher, create patterns with these.

Skills & Concepts

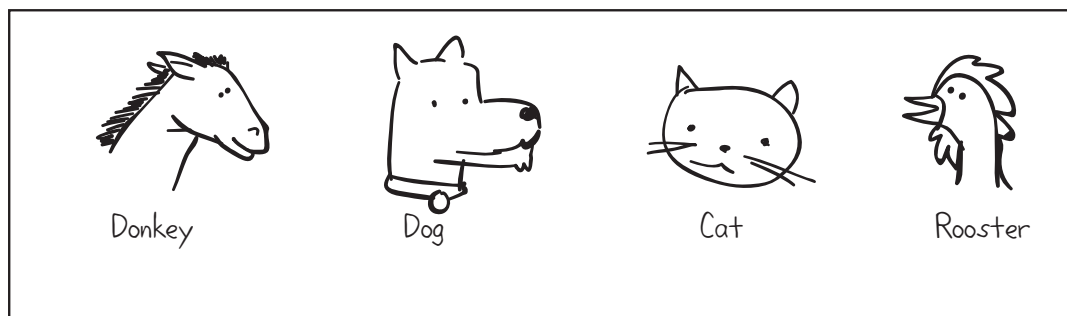
- ★ identify, duplicate, extend, and create simple patterns of objects, sounds, and motions

You'll need

- ★ The *Bremen Town Musicians* or any other folktale with several different animal characters
- ★ a yardstick or something else to use as a pointer

Instructions for Folktale Patterns

1. Gather children to your discussion circle. Read and discuss the folktale you've selected. Work with input from the children to make a list on the board of the animal characters in order of appearance. (If there were more than 3 or 4 animals in the story, choose the main characters rather than listing all of them.)



2. Work with students to develop a sound and motion for each animal (e.g., bray and foot stamp for the donkey, bark and “tail wag” for the dog, and so on).

3. Point to each animal on the board and ask the whole group to make the sound and motion for that character.

4. After you've practiced each a few times, have all the children stand up. Divide the class into two groups and assign an animal to each group. Explain that you're going to use your yardstick (or any other pointer you have on hand) as a conductor's baton and conduct the animal orchestra. Each time you point to one group, they're to make the sound and motion for their animal just once. After you've pointed to each group a couple of times, give students signals to make their sounds and motions very loudly, very softly, very quickly, very slowly, and so on.

5. Have students sit down, still arranged in their two groups. Call volunteers up to the front of the class in alternating fashion, one from the first group, then one from the second, and so on, until 6–8 children

Activity 1 Folktale Patterns (cont.)

are standing. Explain that you're going to point to each child in the line to make his or her sound and motion, one by one, while the rest of the students use their best audience manners.

6. When you've reached the end of the line, ask the rest of the class what animal should come next in the pattern.

Students *Donkey! It's going to be a donkey next.*

Donkey, dog, donkey, dog, donkey, dog, donkey, dog...donkey!

Can I come up to be the next one?

7. Invite a volunteer from the appropriate group to join the pattern line and make his or her sound and motion. Continue calling children from alternate groups to join the line, making their sounds and motions as they come up, until everyone is standing. By now, your line will probably have become a large circle.

8. Now divide the students into 3 groups and have them sit down in their groups. Assign each group an animal character and repeat steps 4–7. (You'll wind up with an ABCABC pattern instead of an ABAB pattern by the time the whole class is standing again.)

9. Have students sit back down in their 3 groups and ask them to work with you to create a new pattern. Together, they've made an ABAB pattern and an ABCABC pattern. What other patterns could they make using the 3 animal characters? Once the ideas start flowing, call students up from the 3 different groups to form some of the patterns suggested by their classmates. Rather than getting the whole class up to make each pattern, have 9 or 10 students perform it for their classmates. Then have them sit back down and call up another group of students to form a different pattern proposed by the class. Continue for as long as time allows or children's interest holds.

Extensions

- On another day, read a different folktale with a new cast of animal characters. List them on the board and work with students to develop a sound and a motion for each. Then have each student draw a picture of his or her favorite. Work with small groups of 8 or 9 students to choreograph animal patterns. When each group performs their pattern for the class, have them hold up their animal drawings to help them remember their parts.
- Repeat the lesson to match your instructional theme. If you're studying transportation, for instance, have students develop sounds and motions for 3 or 4 different vehicles. There are many other themes that work well: insects, zoo animals, winter weather, and so on.

Set B1 ★ Patterns Activity 2



ACTIVITY

Algebra Clap, Tap & Snap Patterns

Overview

Students work with guidance from the teacher to copy, extend, and create a variety of patterns with their hands, feet, and voices. They also identify each pattern with a letter sequence such as ABAB or ABBABB.

You'll need

- ★ whiteboard and markers

Skills & Concepts

- ★ identify, duplicate, extend, and create simple patterns of objects, sounds, and motions

Instructions for Clap, Tap & Snap Patterns

- Gather your children to the discussion circle. Begin a simple ABAB hand pattern: clap, tap your knees; clap, tap your knees; and so on. Motion for the children to join you as soon as they can until the whole class is participating.
- Once everyone is comfortable with the pattern, ask children to think of body motions to substitute for each of the hand motions.

Teacher What could we do with our bodies instead of clapping?

Megan Jump! Let's jump!

Teacher And what shall we do instead of tapping our knees?

Vincent We could bend down and touch the floor.

Teacher Okay, here we go. (Leads children in a pattern of jump, bend, jump, bend, etc.)
- Repeat Step 2 with several different sets of motions.
- Stop and repeat the very first hand pattern (clap, tap, clap, tap). Ask students to say the letter A each time you clap and the letter B each time you snap. After they've chanted ABAB a number of times, write the sequence on the board. Explain that people often refer to a pattern like clap, tap; clap, tap as an "ABAB" pattern.
- Now model a new pattern: clap, clap, tap your head; clap, clap, tap your head. Repeat steps 1–4 so that by the end, you have two different patterns recorded on the board: ABAB and AABAAB.
- Finally, model a clap, snap, tap pattern. (Children who are unable to snap their fingers can simply touch them together.) When you get to step 4, challenge students to name the pattern with letters before you guide them through the naming process.

Activity 2 Clap, Tap & Snap Patterns (cont.)

Teacher How could we use our alphabet letters to name this pattern?

Students I think it's ABAB.

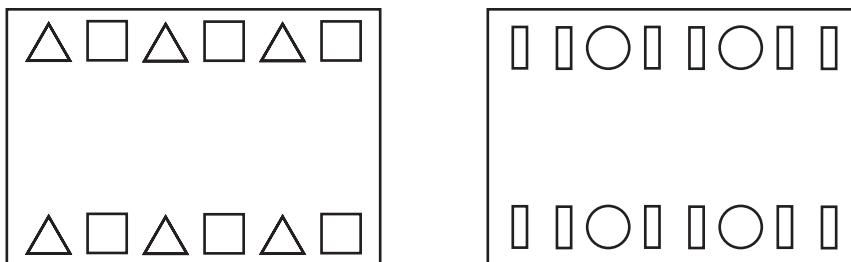
No, there are 3 things—clap, snap, and tap. I think we need another letter.

Maybe it should be ABC. Can we use C?

7. After the letter sequence for the third pattern (ABCABC) has been established, leave all three sequences (ABAB, AABAAB, and ABCABC) on the board for reference. As students build patterns at Work Places and participate in patterning activities over the next few months, these may often come in handy.

Extensions

- When students are using the Work Place materials, invite them to make one or more of the patterns with Unifix cubes, pattern blocks, or other materials.
- Ask students to each wear something patterned to school some Friday. See how many of the patterns they can name with the letter sequences you've posted on the board, and add other sequences to the collection if necessary.
- When you do arts and crafts projects, encourage students to utilize ABAB, AABAAB, ABCABC, or other patterns in their work.



Ian I put an ABAB pattern on my place mat. See? Triangle, square, triangle, square.

Jenna I did AABAAB, stripe, stripe, circle, stripe, stripe, circle. I like patterns!

Set B1 ★ Patterns Activity 3



ACTIVITY

Algebra Musical Patterns

Overview

Students use motions and manipulatives to represent simple musical patterns. Students may be invited to create their own musical patterns as well.

Skills & Concepts

- ★ identify, duplicate, extend, and create simple patterns of objects, sounds, and motions

You'll need

- ★ xylophone, keyboard, or piano (see note below)
- ★ Unifix cubes

Note If you don't have access to a musical instrument that will sound different notes, there are a variety of on-line piano web sites to be found on the Internet.

Instructions for Musical Patterns

1. Gather children to your discussion circle and ask them to close their eyes. Explain that you're going to play a musical pattern for them and they'll need to listen very carefully to hear what it is. Then slowly sound the notes middle C, E, and G.



2. Ask students to listen to the three notes several times and then share their observations. What do they notice about these 3 notes? How do the notes sound to them?

Students *They go 1, 2, 3.*

They're different.

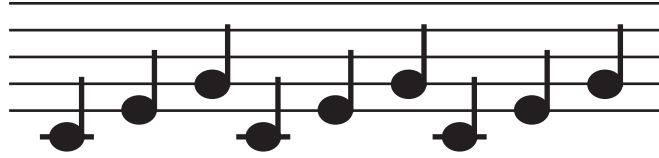
They go up and up and up.

3. Work with input from the children to develop a motion for each note. They might, for instance, curl up on the floor and pretend to be tiny seeds when you sound middle C, grow to medium height when you sound E, and stretch way up with their hands above their heads when you sound G.

4. Have students repeat the sequence of motions they've invented as you sound the 3 notes several times, and then ask them to think of some other ways to move to the pattern. Some suggestions might include crouching, standing, and jumping, or touching knees, shoulders, and heads while standing or seated. Try a few of their suggestions, or make some of your own, and repeat each several times, sounding the sequence of notes each time.

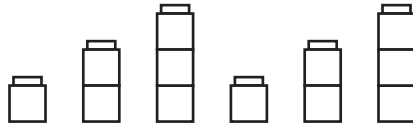
5. Ask students to sit down around the edge of the discussion circle, and give each student 20–30 Unifix cubes in a variety of colors. Sound the 3 notes again slowly, 3 times in succession. Ask students to find some way to build this pattern with their cubes.

Activity 3 Musical Patterns (cont.)



After they've had a minute or two to work, ask the children to put their hands in their laps and invite volunteers to share their ideas with the group.

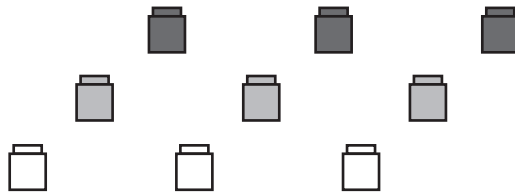
William *I made my cubes go up, up, up, like this.*



Elle *I made mine go brown, green, yellow, brown, green, yellow. I used 3 colors because there are 3 different sounds.*

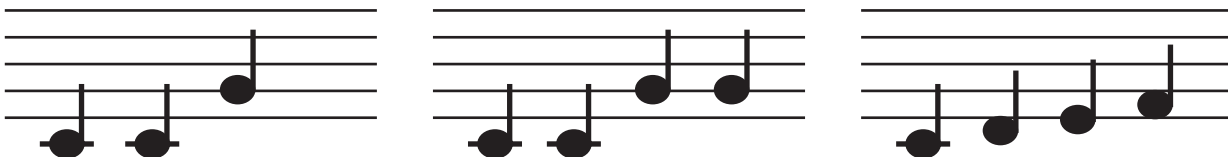


Jensen *Mine are hopping up and up, like this.*



Extensions

- Repeat the activities above with other simple sequences of notes, such as C, C, G or C, C, G, G or C, D, E, F.



- Invite students to make up their own musical patterns and record them with Unifix cubes or pattern blocks.