# Building School Readiness with Algebra (Patterns)

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# **Button Busters**

Children classify buttons according to different attributes.

Blackline Master 2 (page 82) A collection of buttons of different shapes, colors, size, and holes

Shallow containers for buttons



### ) Preparation

- Write related but different sorting attributes on the labels for four jar pictures (e.g. very big, big, small, very small, or 2 holes, 3 holes, 4 holes, other).
- Copy Blackline Master 2 (cut out four jars for each group of children).



### Activity

Display the buttons, drawing their attention to several different attributes (e.g. shapes, colors, and holes). Display the jars pictures and the labels indicating the sorting attributes. To start the activity, model the sorting of a few buttons. Ask, Why did I put this button in this jar?

Working in small groups, children sort buttons into their jars. When sorting is completed have the children explain how they sorted their buttons. Then have the children repeat the activity, sorting the buttons in a different way. They then describe the new sorting attributes.



#### Extension

Write labels on jars so that children have to sort according to two or more attributes.

Later in the year, allow children to choose the attributes of items in the classroom they will sort by and fill in the label themselves. Encourage children to discuss their sorting choices.



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## Monster Mix

Children compare and contrast monster pictures.

Blackline Masters 11 and 12 (pages 91–92)

#### Preparation

 Provide each group of children with a set of monster cards.



### Activity

Display some of the picture cards, drawing their attention to the similarities and differences in the monsters with respect to teeth, eyes, and horns. Ask, What do the monsters in these two pictures have that are the same? How are they different?

Ask the children to group their pictures according to an attribute or categories of their own choosing.

When all groups have sorted the cards, ask one child from each group to share their rule or rules.

Repeat the activity as time allows.



#### Extension

Have children sort a collection of the monster pictures and ask a classmate to guess their sorting rule.

Challenge small groups to see how many different categories they can find and record.



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## Necklace Colors

Children make repeating pattern necklaces and compare results.

Colored plastic straw	/S	
Shallow containers		
String and scissors		

### ) Preparation

- Cut straws of at least four different colors into short pieces. Sort the straws into shallow containers for each group of children.
- Provide each child with a length of string.



### Activity

Discuss the rules for a repeating pattern. Model a simple option with straw pieces (e.g. blue, green, green, blue, green, green). Say the pattern aloud. Ask, What do you notice? What colors appear more than once? What part repeats more than once?

Guide children to place the straw pieces on their string to make a necklace that shows a repeating pattern.

Assist children who have successfully filled their string to tie the necklace ends.

When all children have finished, have several children come to the front of the class and explain the pattern they made.

Then ask children to move around the room to try and find a classmate with the same type of pattern they made.



#### Extension

Challenge confident children to write a description of their pattern on a strip of paper and attach it to their necklace.

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# **Everybody Do This!**

Children invent and copy repeating patterns of movements.





### Preparation

• Have the children stand in a circle. Give one child the ball. *Note:* Chanting might make this an outdoor activity.



## Activity

Teach the children this chant: Everybody do this, do this, do this. Everybody do this, just like me.

As the children chant a second time, a ball is passed around the circle. The child holding the ball on the last word of the chant must then invent an action pattern for the others to learn and copy. Hold the ball while the child demonstrates a sequence of actions. If required, demonstrate an example, say, **Stamp. Clap hands twice. Touch** your head. Other actions might include: point, wave, stretch, touch your toes, fold your arms, cover your ears, two thumbs up.

Confirm the child's pattern, then tell the child to repeat their actions over and over again so that everyone figures out the repeating pattern and can join in. Repeat until all children master the action pattern.

Give the ball to another child and repeat the chant. When the chant ends have the child holding the ball demonstrate another repeating pattern to be copied. Repeat as time allows.



### Extension

Challenge the children to try:

- to demonstrate their action pattern without any talking
- longer action patterns (of four or five movements)
- to continue the game without guidance.

# **Fruit Patterns**

Children create and copy a pattern of fruit chunks.

Wooden skewers (avoid using the pointedend variety if possible)

A range of fruit and fruit chunks (e.g. apple, melon, pineapple, cherries, grapes)

**Paper plates** 

Paper napkins

### Preparation

Place 4–6 different fruits and fruit chunks on separate paper plates. Pieces should be small enough that at least 12 chunks can fit on a skewer without them starting to fall apart (avoid softer fruits like or ange and pear).



### Activity

Review repeating patterns. Ask, What makes a repeating pattern?

Model the creation of a repeating fruit pattern on the skewer. For example: strawberry, melon, apple, strawberry, melon, apple. As the pattern is established ask, Which fruit will go on next? What about now?

Once children understand the process invite individuals to come to the front and make a pattern. Ask, Which fruit will go on next? What can you tell me about your pattern?

When several patterns have been made ask the first child, What fruits are in your pattern? What makes it a repeating pattern?

Ask, Who likes these fruits to eat? Tell the children to find the appropriate number of classmates with whom to eat the different fruit pieces off the skewer, in order. Have the children say the fruit name (the pattern) before each piece of fruit is eaten.

Continue the activity so that all children are involved in creating or eating one fruit pattern.

## Pin a Pattern

Children create growing patterns using clothespins.

Clothespins of different colors Washing line (use classroom painting lines or string)



#### Preparation

Attach a line in a safe place. Keep it slack and attach either end at about the children's shoulder height.



### Activity

Demonstrate how to make a simple growing pattern with the clothespins like the example shown below.



Ask, What pattern do you see? How may different colors are in each repeating part? (Three.) How many of this color are in each part? (One.) How many of this color are in each part? (One, then two, then three.) How would you describe the pattern? (Growing by one purple clothespin each time.) What color would come next?

Have the children work in pairs to make a growing pattern of clothespins. Then have pairs of children attach their pattern to the line.

Ask, How many different colors are in each repeating part? How does your pattern grow? What part would come next?

Repeat until all the patterns have been described.

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#### Extension

Challenge children at either end of the line to create a growing pattern, starting from their end. After a set time, or when one pattern reaches the middle, have them describe their pattern and how it grows.

# Scooped Up

Children draw scoops of ice cream to make growing patterns.

Color pencils or crayons Blank paper





#### Activity

Ask, Who likes ice cream? Who can draw an ice-cream cone? On the board, demonstrate how to draw a simple ice-cream cone picture with a triangle shape. Say, Draw four cones in a row at the bottom of your paper.

Then ask, What two flavors do you like? How would you color these? Demonstrate how to draw curved shapes for scoops of ice cream. Guide the children to copy and color their first cone (the one on the left as shown above).

Review growing patterns, and then say, Now draw a growing pattern of your ice-cream flavors on the other cones.

After a set time, have several children come to the front to display, describe, and discuss their growing pattern. Ask, What is the rule for your pattern?

Then ask the children to draw a new growing pattern. Say, This time draw a pattern that increases by two or three scoops each time. Again, have children display patterns and define the rule.



#### Extension

Challenge confident children to draw snack bags filled with a growing pattern of snacks.

# Jump and Bump

Children identify a rule to predict outcomes.



### Activity

Choose five children to come to the front of the class. Have them stand in a line and teach them the following song and actions.

Five noisy children jumping on the bed. One falls off and bumps their head. (All five jump up and down on the spot, then the far right child sits down, hands on head.) Mama heard the noise, "What's that?" she said, "How many children are jumping on the bed?"

Say, We started with five children and one fell off the bed. How many are left? (Four.) We are going to carry on singing the same song, this time starting with four children jumping on the bed. What will happen next? How many will be left?

Continue the song, subtracting a child each verse and each time ask the children to predict what will happen next. At the end ask, What is always happening to the number of children in the song? What is the number rule?

Have other groups of children sing and act out other songs that can be used to predict a constant rule e.g. *Ten in the Bed, Three Little Ducks,* and *Ten Green Bottles.* 



### Extension

Challenge confident children to make up a song where a rule applies each time it is repeated.

# Life Changing

Children sequence changes that happen as things grow.

Blackline Master 33 (page 113)



#### Preparation

 Provide each child with one set of the 16 cards from Blackline Master 33.



#### Activity

Say, These cards show changes that happen as different things grow. Sort your cards into the four different stories then place the cards for each story in the correct order.

Allow children time to order their cards then ask different children to explain their order for each of the four. Ask questions such as, Why did you group these four cards together? What is happening in these four cards? Why do your cards go in this order? What changes do you see? Does anyone have a different order for this story?

Review each story and have children suggest other changes that are evident.

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#### Extension

Have the children work in groups. All their cards are mixed together then shared out randomly. They then take turns to select one card at a time from the classmate to their right. Play continues until one child makes four complete sets of four, with each set laid out in the correct order.

Have children think of other growing scenarios and draw pictures to represent the changes that occur.



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