Lesson 1

PATTERN RECOGNITION

2ND GRADE

SUMMARY AND STANDARDS

Summary:

In this lesson, students will be introduced to patterns in everyday life and in word families. They will also learn about coding blocks and how computer scientists use patterns.

English Standards:
Communication and Multimodal Literacies:

2.1 The student will use oral communication skills.
   a) Listen actively and speak using appropriate discussion rules.
   d) Share information orally with appropriate facts and relevant details.

Reading:
2.4 The student will use phonetic strategies when reading and spelling.

a)   Use knowledge of consonants, consonant blends, and consonant digraphs to decode and spell words.
b)   Use knowledge of short, long, and r-controlled vowel patterns to decode and spell words.
c)   Decode regular multisyllabic words.
d)   Apply decoding strategies to confirm or correct while reading.

CS Standards:

2.5 The student will compare and contrast a group of items based on the attributes oractions of each item, with or without a computing device.

MATERIALS AND RESOURCES NEEDED FOR THIS LESSON:

- Teacher Slides
- A class copy of "Blake the Bear" letter
- A pointer
- ScratchJr Blocks
- Word wall cards
- One copy of "Blake the Brown Bear" letter per student or partnership
- Class set of highlighters, markers, or crayons
- Student Checklist

***Hello Ruby* Resources:** In preparation for this lesson, you may wish to read aloud *Hello Ruby* chapter 1 in advance.

LESSON OBJECTIVES: I CAN...

❏ Explain or show what a pattern is (i.e. definitional or examples)

❏ Explain or show why patterns are important (i.e. justification)

❏ Identify or describe word patterns (i.e., word families)

❏ Explain what computer code is

❏ Identify and organize coding blocks into patterns

INTRODUCTION

NOTE: All slides for this lesson are scripted so that, if needed, you can see exact definitions and instructions for teaching this lesson in the notes at the bottom of the teacher slide deck.

Given that this is the first lesson in the CS for ALL sequence, there is not a formal link to a prior lesson. It would be advantageous to link prior learning and knowledge of *patterns, pattern recognition, word patterns, and/or word families* depending upon teacher preference where applicable. Or, skip to the anticipatory set.

Computer Science

Introduce Computer Science Word Wall and Patterns: show "computer science", "computer", and "pattern" word wall cards on **slide 6, 7, and 8.**
Teacher: "Welcome to **computer science** (show "computer science" word wall card) in Second Grade! **Computer science** is using the power of **computers** (show "computer" word wall card) to solve our problems and express ourselves.

Optional video:
https://www.youtube.com/watch?time_continue=1&v=HsXaVV6fFDY&feature=emb_logo

computer

Show word wall card

pattern

Today, we're going to look for **patterns** (show "pattern" word wall card). You might even see a **pattern** on this card right away! We see **patterns** everywhere -- especially in Second Grade.

We will also learn why patterns are very important for computer scientists and practice thinking like computer scientists ourselves!

PATTERNS- CLICK ON IMAGE TO PLAY VIDEO

"We are going to watch and listen to a song. I want you to think about where you see **patterns** in the classroom and where we have talked about **patterns** in reading and math."

Teacher: "We see **patterns** (draw attention to "pattern" word wall card) all around us. There was even a pattern in the song we just listened to. Can you guess what it was? *Turn and talk with a partner or brainstorm independently.*

Video Link: https://www.youtube.com/watch?v=OAnbQRGmquQ

TURN AND TALK

Discuss Patterns: guide students to turn and talk about the pattern they see in the song **with a partner or brainstorm independently**. For more discussion, ask them where else they have seen a pattern.
Discuss: There was even a pattern in the song we just listened to. Can you guess what it was?

WHERE ELSE DO WE SEE PATTERNS?

Number Patterns

+5 +5 +5 +5

5 10 15 20 25
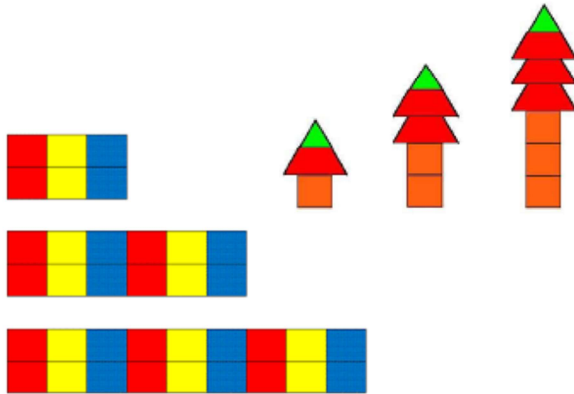
True friends are by your **side**   A
Through it **all**.   B
True friends are **there**   C
To catch you when you **fall**.   B

(Students may comment on other patterns and teachers can respond accordingly with links from prior learning - for example, hand-clapping games, musical patterns, rhyming patterns in their shared reading texts, etc.)

Great! Where have you seen a **pattern**?" (Wait time.) "That's right! We see **patterns** in math! What kind of **patterns** do we see in math?" (Wait time.) "That's right, we see color **patterns**, like yellow, blue, red, yellow… Where else?" (Wait time.) "That's right! We also see growing **patterns**, especially when things get bigger and bigger!"

"Just like we have learned in math, **patterns** are very important because they can help us see what could happen next. Today, we are going to learn about **patterns** in words and how they can help us to be a better reader! These word **patterns** are called word families"

LET'S PLAY FOLLOW THE LEADER! -- CLICK ON IMAGE TO PLAY VIDEO

Alternate Opening Activity in Place of 'Banana, Banana, Meatball' Play a game of "follow the leader." Jump, hop, run in place, crawl, dance, etc. using a specific pattern and students follow your actions. See if they can guess a pattern. (Ex: 'clap, clap, stomp, clap, clap, stomp')

Video link: https://www.youtube.com/watch?v=riicsTE2TzQ

GUIDED INSTRUCTION

*For this lesson sample, we will be using and providing resources for the bl- and br- consonant blends. You are welcome to adapt materials for the word family of your choice.

LET'S READ TOGETHER!

"Blake the Black Bear's Letter"

Dear Brainy Boys and Girls,

My name is Blake and I am a Brown Bear! I so excited to visit this brilliant class.

I live in the forest with a bunch of other brown bears named Brian, Blaze, and Brad. When it snows, we hibernate so I've never seen a blizzard. Have you?

My favorite colors are black and blue because I just love to eat blackberries and blueberries.

Can you use your brains to help me with something? I need you to find all of the words that begin with the BR and BL in this note.

Bye-Bye,
Blake the Brown Bear

Introduce Blake the Bear's Letter: Display a copy of Blake's letter in a place where all students can see and hear the letter. In addition, give a copy to each student or partnership to follow along. Read the letter with students.

Teacher: "Before we learn about spelling **patterns** and consonant blends, let's warm up our reading brains. We have a tricky letter from a cute little brown bear named Blake. I'm going to read it out loud to you. While I'm reading, you can read silently along with me."

ph phantom, pharmacy, phase, **pheasant**, phone, phonics, phony, photo	**sk** skate, sketch, ski, skill, skin, skip, skirt, **skunk**	**sp** space, spark, speak, speed, spice, **spoon**, sport, spun
sl slam, sled, sleep, slice, slide, **sloth**, slow, slug	**th** thank, then, these, thing, thirty, thorn, **thumb**, thunder	**thr** **thread**, threat, three, thrill, throat, throne, through, throw

You may want to review what a "loop" is and have students also look for loops within the letter as you read.

Teacher: "Today, I wanted to teach you how to find spelling **patterns**, called consonant blends in our reading. Consonant blends are fun because they use two consonants that come together to make a new sound." Let's look at some examples of familiar consonant blends. Look at all the words we can make with our consonant blends (read some out loud). And the pattern they all share is the repeat of those two letters.

"In this letter, we see two consonant blends again and again: bl- and br-. All of the words that follow the bl- spelling **pattern** will start with bl- at the beginning, and all of the words that follow the br- spelling **pattern** will start with br- at the beginning. we have a lot to look for!"

Let's find the consonant blends!

Dear Brainy Boys and Girls,
My name is Blake and I am a Brown Bear! I so excited to visit this brilliant class.
I live in the forest with a bunch of other brown bears named Brian, Blaze, and Brad. When it snows, we hibernate so I've never seen a blizzard. Have you?
My favorite colors are black and blue because I just love to eat blackberries and blueberries.
Can you use your brains to help me with something? I need you to find all of the words that begin with the BR and BL in this note.
Bye-Bye,
Blake the Brown Bear

br-	bl-

Introduce Consonant Blends (bl- and br-): introduce bl- and br-, write br- and bl- in two separate columns on the board. You will use this later to create a list.

Teacher: "Let's read Blake's letter again. This time, I want you to look hard, listen closely, and find the words that have either the bl- or br- blend. Get ready to look and listen!

"I bet you noticed lots of words with either the bl- or br- consonant blend this time! Hmm… what words did you hear that began with bl- or br- (point to the lists on the board)? ***Turn and talk with a partner or brainstorm independently .”*** (Wait time) "That's right! Some of you may have noticed right away that Blake's *name* began with bl-! Let's add his name to the bl- list."

Teacher: "What else did you notice? ***Turn and talk with a partner or brainstorm independently.***" "Yes! Right at the beginning, 'brainy' begins with br-!"

TURN AND TALK

Dear Brainy Boys and Girls,

My name is Blake and I am a Brown Bear! I so excited to visit this brilliant class.

I live in the forest with a bunch of other brown bears named Brian, Blaze, and Brad. When it snows, we hibernate so I've never seen a blizzard. Have you?

My favorite colors are black and blue because I just love to eat blackberries and blueberries.

Can you use your brains to help me with something? I need you to find all of the words that begin with the BR and BL in this note.

Bye-Bye,
Blake the Brown Bear

Let's find the consonant blends!

br-	bl-
brainy	**Bl**ake
Brown	**Bl**aze
brilliant	**bl**izzard
brown	**bl**ackberries
Brian	**bl**ueberries
Brad	**Bl**ake
brains	
Brown	
"BR"	"BL"

Have students help you generate a list of bl- and br- words. Share the full list in case they missed any and point out ones that they missed.

GUIDED PRACTICE

Dear Brainy Boys and Girls,
    My name is Blake and I am a Brown Bear! I so excited to visit this brilliant class.
    I live in the forest with a bunch of other brown bears named Brian, Blaze, and Brad. When it snows, we hibernate so I've never seen a blizzard. Have you?
    My favorite colors are black and blue because I just love to eat blackberries and blueberries.
    Can you use your brains to help me with something? I need you to find all of the words that begin with the BR and BL in this note.
                    Bye-Bye,
                    Blake the Brown Bear

Highlight the br- and bl- in the last sentence of the letter!

- (Distribute individual highlighters or markers and individual copies now).
- Start by highlighting Br-, ask students to highlight the words that start with Br- (brainy)
- Other words? *Turn and talk with a partner or brainstorm independently.* Then add new words to the list.
- Use a new color to highlight Bl- words, again, let them **turn and talk** and then work out the list together.

Dear Brainy Boys and Girls,
    My name is Blake and I am a Brown Bear! I so excited to visit this brilliant class.
    I live in the forest with a bunch of other brown bears named Brian, Blaze, and Brad. When it snows, we hibernate so I've never seen a blizzard. Have you?
    My favorite colors are black and blue because I just love to eat blackberries and blueberries.
    Can you use your brains to help me with something? I need you to find all of the words that begin with the BR and BL in this note.
        Bye-Bye,
        Blake the Brown Bear

Highlight the br- and bl- in the last sentence of the letter!

- (Distribute individual highlighters or markers and individual copies now).
- Start by highlighting Br-, ask students to highlight the words that start with Br- (brainy)
- Other words? *Turn and talk with a partner or brainstorm independently.* Then add new words to the list.
- Use a new color to highlight Bl- words, again, let them **turn and talk** and then work out the list together.

Highlight all the br- consonant blends!

Dear Brainy Boys and Girls,
　　　My name is Blake and I am a Brown Bear! I so excited to visit this brilliant class.
　　　I live in the forest with a bunch of other brown bears named Brian, Blaze, and Brad. When it snows, we hibernate so I've never seen a blizzard. Have you?
　　　My favorite colors are black and blue because I just love to eat blackberries and blueberries.
　　　Can you use your brains to help me with something? I need you to find all of the words that begin with the BR and BL in this note.
　　　　　　　Bye-Bye,
　　　　　　　Blake the Brown Bear

br-

"You probably noticed that our letter has *even more* words with the bl- and br- consonant blend at the beginning that we haven't found yet! Now, let's highlight all of the words that start with Br-. We can start with the word 'brainy'. 'Brainy' begins with br-. Highlight another word that you see that begin with br.

Turn and talk with a partner or brainstorm independently. (Wait time.) "That's right! '**Brown**' begins with br-. Highlight 'brown'!

Let's highlight the br- consonant blends!

Dear Brainy Boys and Girls,
My name is Blake and I am a Brown Bear! I so excited to visit this brilliant class.
I live in the forest with a bunch of other brown bears named Brian, Blaze, and Brad. When it snows, we hibernate so I've never seen a blizzard. Have you?
My favorite colors are black and blue because I just love to eat blackberries and blueberries.
Can you use your brains to help me with something? I need you to find all of the words that begin with the BR and BL in this note.
Bye-Bye,
Blake the Brown Bear

br-

brainy
Brown
brilliant
brown
Brian
Brad
brains
Brown
"BR"

Show all Br- highlights after students have tried to highlight them on their own paper.

Let's highlight the bl- consonant <mark>blends</mark>!

Dear Brainy Boys and Girls,
My name is Blake and I am a Brown Bear! I so excited to visit this brilliant class.
I live in the forest with a bunch of other brown bears named Brian, Blaze, and Brad. When it snows, we hibernate so I've never seen a blizzard. Have you?
My favorite colors are black and blue because I just love to eat blackberries and blueberries.
Can you use your brains to help me with something? I need you to find all of the words that begin with the BR and BL in this note.
Bye-Bye,
Blake the Brown Bear

bl-

"Let's use a different color to highlight all of the words that start with Bl-. We can start with the word 'Blake'. Blake begins with bl-. Highlight another word that you see that begin with bl.

Turn and talk with a partner or brainstorm independently." (Wait time.) "That's right! '**Blaze**' begins with bl-. Highlight 'Blaze'

Let's highlight the bl- consonant blends!

Dear Brainy Boys and Girls,

My name is Blake and I am a Brown Bear! I so excited to visit this brilliant class.

I live in the forest with a bunch of other brown bears named Brian, Blaze, and Brad. When it snows, we hibernate so I've never seen a blizzard. Have you?

My favorite colors are black and blue because I just love to eat blackberries and blueberries.

Can you use your brains to help me with something? I need you to find all of the words that begin with the BR and BL in this note.

Bye-Bye,
Blake the Brown Bear

bl-

Blake
Blaze
blizzard
blackberries
blueberries
Blake
"BL"

Show all bl- blend words after students have tried to highlight them on their own paper

Dear Brainy Boys and Girls,

My name is Blake and I am a Brown Bear! I so excited to visit this brilliant class.

I live in the forest with a bunch of other brown bears named Brian, Blaze, and Brad. When it snows, we hibernate so I've never seen a blizzard. Have you?

My favorite colors are black and blue because I just love to eat blackberries and blueberries.

Can you use your brains to help me with something? I need you to find all of the words that begin with the BR and BL in this note.

Bye-Bye,
Blake the Brown Bear

br-	**bl-**
1) brainy	1) Blake
2) Brown	2) Blaze
3) brilliant	3) blizzard
4) brown	4) blackberries
5) Brian	5) blueberries
6) Brad	6) Blake
7) brains	"BL"
8) Brown	
"BR"	

(Students may work individually or in partnerships. Circulate as students look for words. Encourage early finishers to make a list on the bottom of their paper of other br- or bl- words that they can think of while the class works.)

Why do patterns matter to computer scientists (CS)?
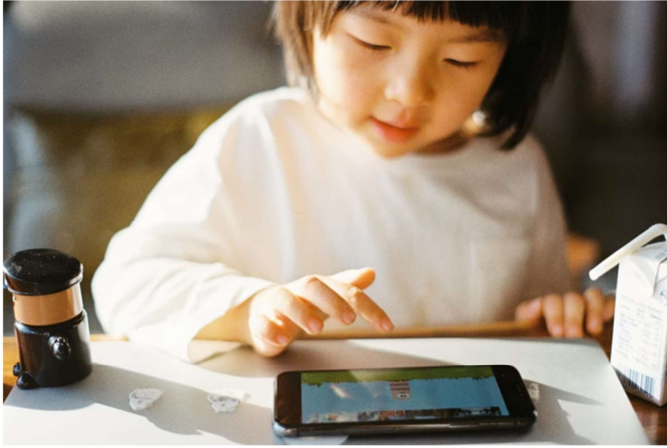
Well just like how there are patterns in the words we read and write, there are patterns in the language computer scientists use! It's called "code." Instead of communicating with humans, computer scientists write code to tell computers what to do.

CODE:
THE LANGUAGE THAT COMPUTER SCIENTISTS CREATE AND USE TO TELL A COMPUTER WHAT TO DO.

Code is the language that computer scientists create and use to tell a computer what to do. Code is how we can give instructions to a computer.

Patterns in code

Computer scientists rely on patterns to write their code correctly. If they don't, then their code will fail! They need to be very specific because a computer is just a machine and will do <u>exactly</u> what it is told.

Here's an example of some code on the screen; let's figure out what it means.

coding blocks

Just like humans speak lots of languages like English, Spanish, French, German, and Arabic so do computers! Computer scientists often learn to code in more than one language. Today, we're going to learn to code with coding blocks.

Here are the ones we're going to use. Can you guess what they might tell a computer program to do?

(optional) Explain what each block means (https://www.scratchjr.org/learn/blocks)
- Green flag means go/start
- Go home: Resets the character's location to its starting position
- Move right: Moves the character a specified number of grid squares to the right
- Move left: Moves the character a specified number of grid squares to the left
- Start on bump: Starts the script when the character is touched by another character.
- Say: Shows a specified message in a speech bubble above the character.
- Move up: Moves the character a specified number of grid squares up
- Move down: Moves the character a specified number of grid squares to the right

For now, we're not going to worry about coding ourselves. Let's focus on making visual patterns based on the blocks' icons and colors.

CODING BLOCK PATTERN #1
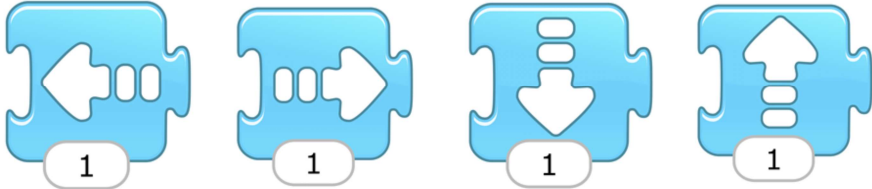
In this example, all the blocks are blue but they're arranged in a pattern based on the direction of the arrow icon. Can you identify the pattern?
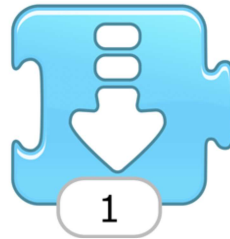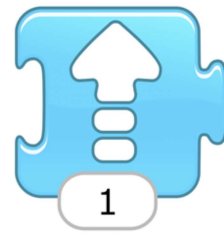
CODING BLOCK PATTERN #1
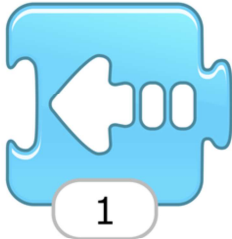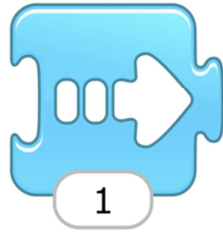
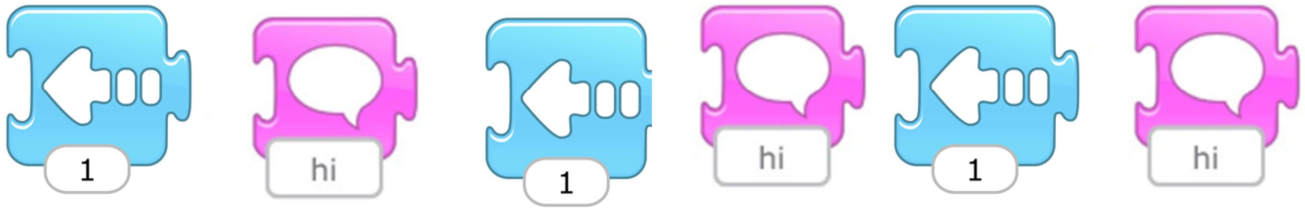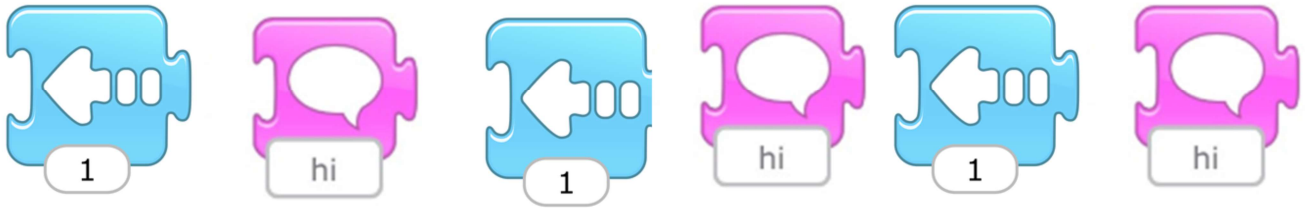| move left 1 | move right 1 | move down 1 | move up 1 |

Left, right, up, down is the pattern. If it were going to repeat, which most patterns do, we'd do it over again.

CODING BLOCK PATTERN #2

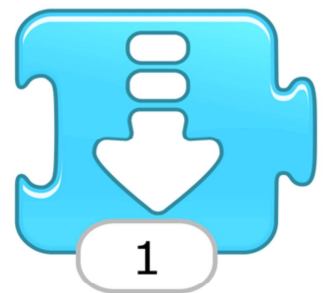But we could also arrange a coding pattern by color.

CODING BLOCK PATTERN #2

In this case, we'd be coding the computer to move an object left one step, say hi, left one step, say hi, left one step, say hi. That's a pretty silly thing to do but the computer doesn't care! It knows how to interpret these commands.
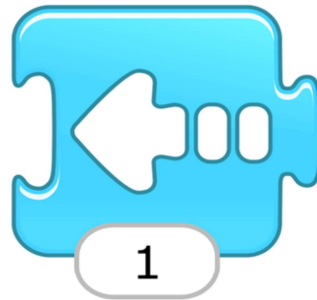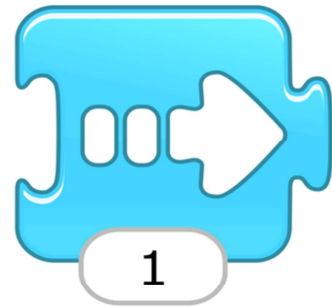
MOTION BLOCKS

UP <u>1</u> space

DOWN <u>1</u> space

LEFT <u>1</u> space

RIGHT <u>1</u> space

The blue blocks are called <u>**motion blocks**</u> because they tell a computer where to move an object.

WHAT DO WE THINK THESE COMMANDS MEAN?

Sample pattern

WHAT DO WE THINK THESE COMMANDS MEAN?

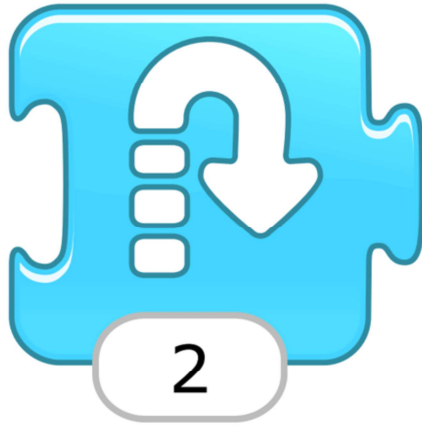**Turn LEFT 1 time**   **Turn RIGHT 1 time**

Sample pattern

WHAT DO WE THINK THESE COMMANDS MEAN?

Sample pattern

WHAT DO WE THINK THESE COMMANDS MEAN?

HOP **2** times

Go "home" (back to where you started)

Sample pattern

WRAP UP

LET'S REVIEW!

patterns

br-   bl-

My favorite colors are black and blue because I just love to eat blackberries and blueberries.

Computer science

computers

Review spelling pattern-consonant blend br- and bl-, code, patterns in code.
"Today, we learned about a new type of spelling **pattern** (point to word wall card), called a consonant blend. The consonant blends we learned about were br- and bl-. *And* we saw that these spelling **patterns** can be everywhere.

We were just like computer scientists (point to kids in the "computer science" word wall card picture) and used **patterns** to help us guess what will happen next. Today and every day, I want you to think about where you see other **patterns**. They'll help us when we start to use **computers** (point to "computer" word wall card), too!"

LET'S REVIEW!

- ❏ I watched "Banana, Banana, Meatball" (or played "Follow the Leader") and talked about the patterns in that song.
- ❏ I talked with my teacher about where we see patterns all around us.
- ❏ I read a letter from Blake the Brown Bear.
  - ❏ I found the bl- and br- consonant blends in the letter.
- ❏ I looked at the coding blocks that computer scientists use.
  - ❏ I talked with my teacher and classmates about the patterns we could make with the coding blocks.

Optional: Hand out a copy of the student checklist to each student OR display it on the board.