

# UNIT LESSON 3

## PATTERNS AND SEQUENCES IN WRITING

5TH & 6TH GRADE



Lesson created by the GMU-ODU CSforAll Team. For more information about this lesson and our CSforAll initiative, contact Dr. Amy Hutchison at [ahutchison1@ua.edu](mailto:ahutchison1@ua.edu)

# SUMMARY AND STANDARDS

## Summary:

In this lesson, students will identify and create patterns and sequences in writing and also code a pattern and sequence.

## ELA Standards:

The student will read and demonstrate comprehension of nonfiction texts.

The student will write in a variety of forms to include narrative, descriptive, opinion, and expository.

- a) Engage in writing as a process.
- c) Use a variety of prewriting strategies.
- d) Use organizational strategies to structure writing according to type
- g) Use transition words to vary sentence structure

## CS Standards:

The student will construct sets of step-by-step instructions (algorithms), both independently and collaboratively

- a) using sequencing;
- b) using events.

## MATERIALS AND RESOURCES NEEDED FOR THIS LESSON:

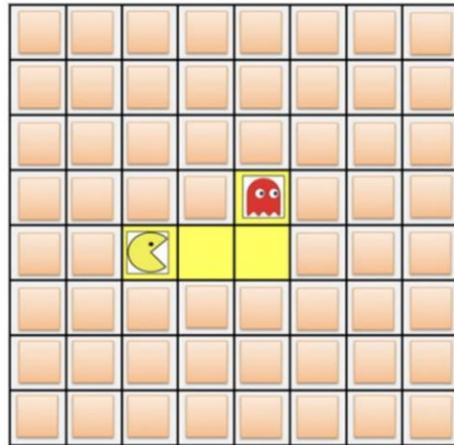
- [Teacher slides](#)
- [Student slides](#)
- [Printable Scratch blocks](#)
- Chromebook/Laptop
- Internet Access
- Drink recipe [graphic organizer](#)



**WARM UP**

## PATTERNS & SEQUENCING REVIEW ACTIVITY

1. Open your [student slides](#)
2. Click on the [link to the warm up](#)
3. Answer each question
4. Review [answers](#) as a class!

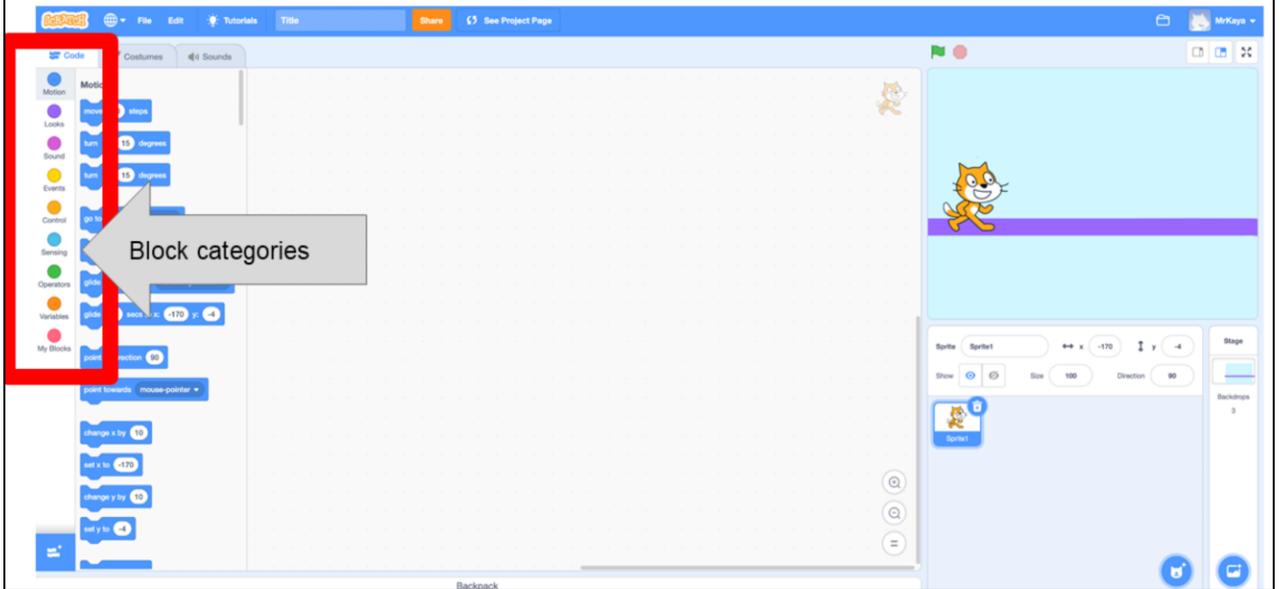


## LESSON OBJECTIVES

- Create a pattern and sequence a set of written instructions
- Identify patterns found in writing
- Participate in Pair Programming
- Identify and Operate Scratch blocks to create a sequence, using Move and Wait Blocks (Create a square)

**INTRODUCING MOVE, TURN, & WAIT BLOCKS**

# REMEMBER...



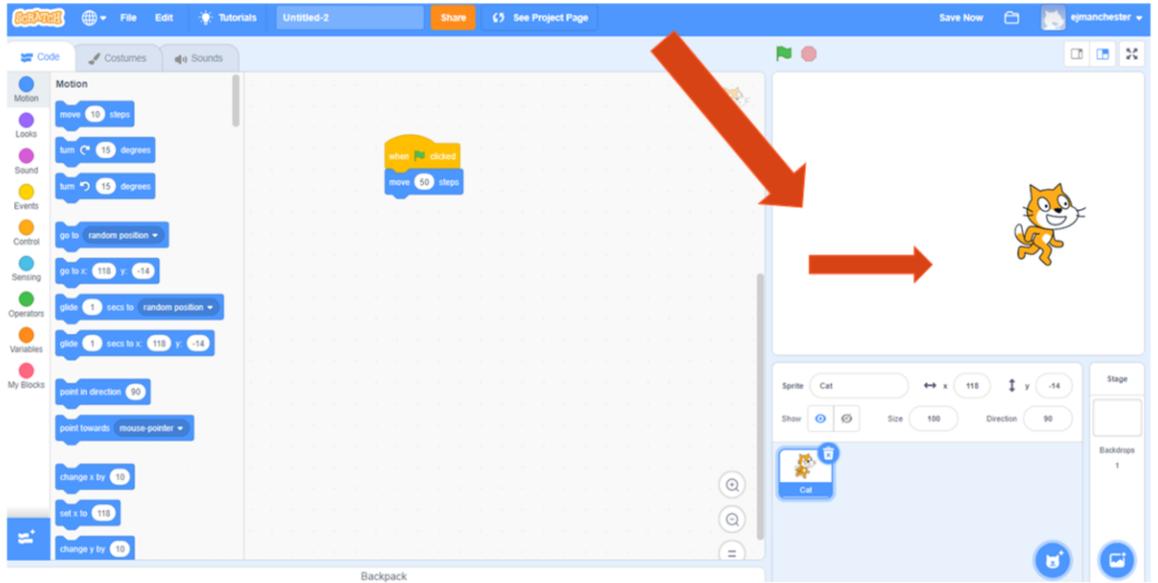
Remember that on the far lefthand side of our page, we see a color palette. Each color corresponds to a different type of block. Today, we'll focus on motion blocks, which are BLUE, and control blocks, which are YELLOW.

# MOTION BLOCKS



There are lots of motion blocks. We're going to learn about two of them today.

**MOVE BLOCKS (EXPLAINER VIDEO)**

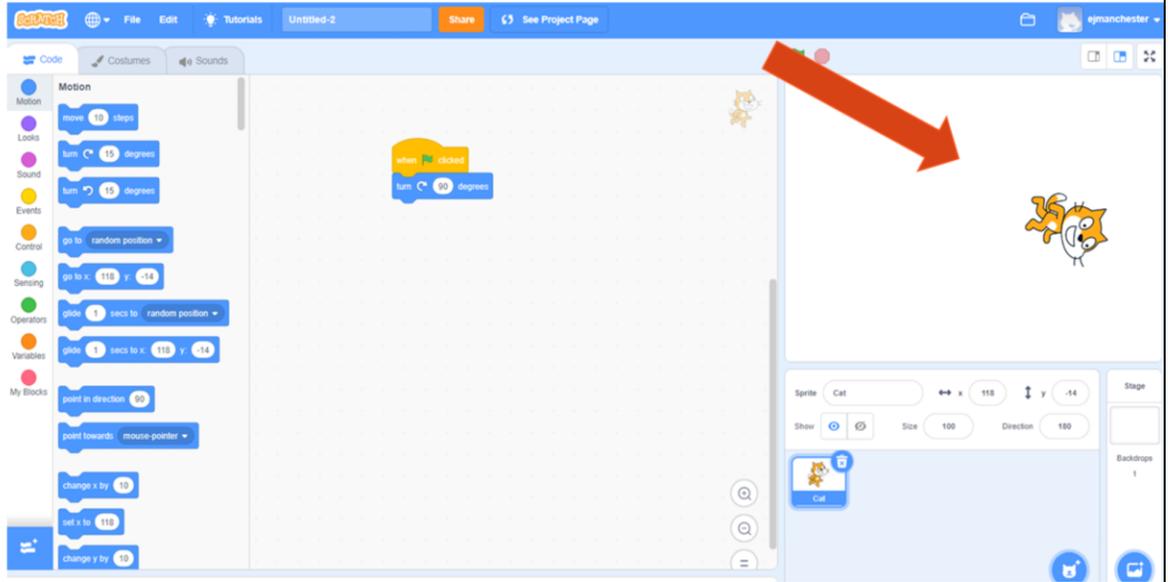


Moves your sprite a certain number of steps.

Play video and say: It may not be obvious but this cat looks different from the one automatically in scratch. This one looks like it's running.

Video link: <https://www.dropbox.com/s/phtjijtlyrkoxig/moveblock.mp4?dl=0>

## TURN BLOCKS (EXPLAINER VIDEO)



Turns your sprite right or left by a matter of degrees.

Play video and explain: The turn block allows you to turn your sprite any amount.

Video Link: <https://www.dropbox.com/s/fyehw07wxh3erxn/turnandmove.mp4?dl=0>

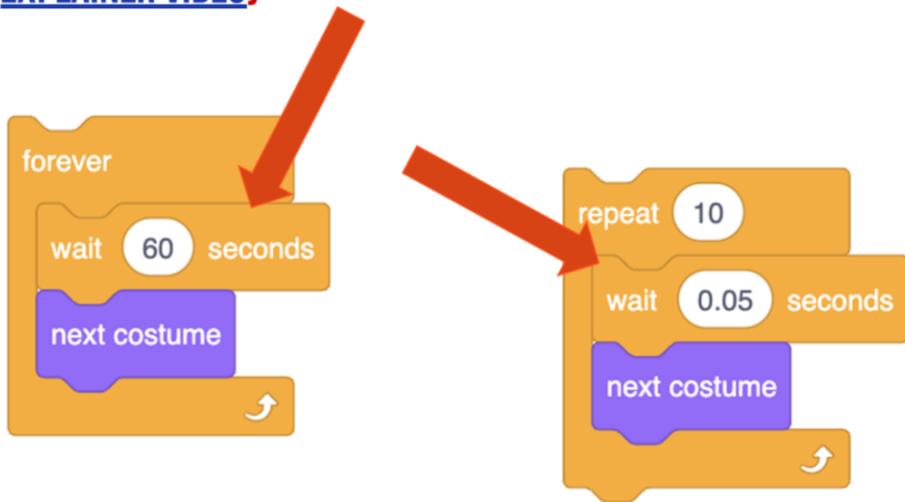
# CONTROL BLOCKS



The yellow blocks are our control blocks. You already know one of them: the start block. Today you will learn about the wait block.

The wait block simply codes the sprite to wait a set number of seconds before executing the next command.

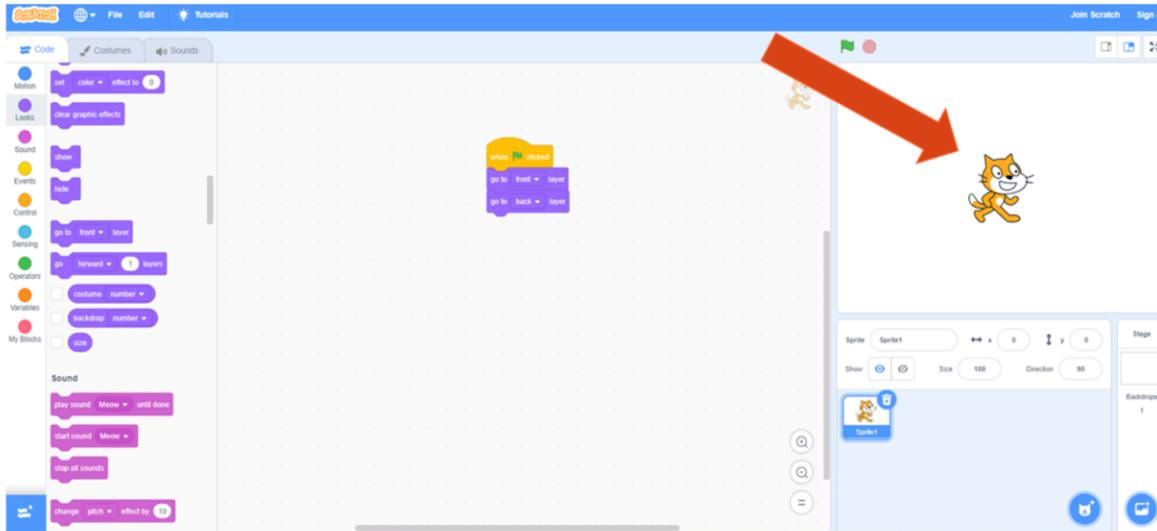
## WAIT BLOCK (EXPLAINER VIDEO)



Your Sprite will PAUSE or wait for a specified amount of time.

Play video and explain:

**EXPLAINER VIDEO: GO TO FRONT/BACK**



The screenshot shows the Scratch interface. On the left is the code editor with a script area containing several blocks, including 'when green flag clicked', 'go to front layer', and 'go to back layer'. The stage area shows a Scratch cat sprite. A red arrow points from the top right towards the cat. The bottom right shows the sprite control panel with 'Sprite 1' selected.

Go to front/back places sprite in the frontmost/backmost layer

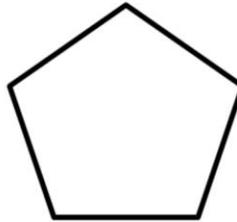
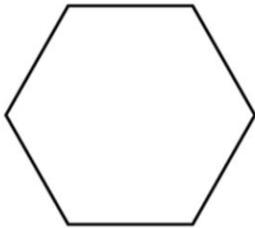
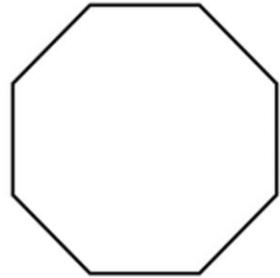
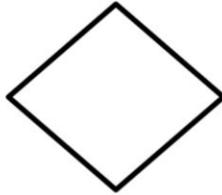
Explain: This block allows us to move our sprite to the front or back of the stage. It is like on a real stage with a curtain. Your sprite can move behind the backdrop or layer for a bit then move back to the front.

# CODE A POLYGON

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To practice using these blocks, you are going to code a polygon in your student slides.

**MY POLYGON IS \_\_\_\_\_ AND IT HAS \_\_\_\_\_  
SIDES**



First, pick a polygon. Remember, a polygon is a two-dimension plane shape that has straight sides. Polygons must have at least three sides but they can also have more! A circle would not be an example of a polygon but squares, rectangles, and pentagons all are!

The image shows a Scratch workspace divided into two main sections. On the left, there is a palette of code blocks. At the top, there are two purple 'think' blocks: one with a single circle and one with 'for' and 'secs' fields. Below these are two blue blocks: 'move' with a 'steps' field, and 'turn' with a rotation arrow icon and a 'degrees' field. In the center, there is a red instruction: 'WHAT BLOCKS WILL YOU NEED TO CREATE YOUR POLYGON? DRAG THE BLOCKS YOU WILL NEED OVER TO THE RIGHT.' Below the instruction are several other blocks: a yellow 'when clicked' block, an orange 'wait' block with a 'seconds' field, a blue 'turn' block with a rotation arrow icon and a 'degrees' field, a purple 'switch costume to' block, and another purple 'say' block with 'for' and 'secs' fields. On the right side of the workspace is a large blue area with the text 'I will need:' and a horizontal line below it, intended for students to list the blocks they have selected.

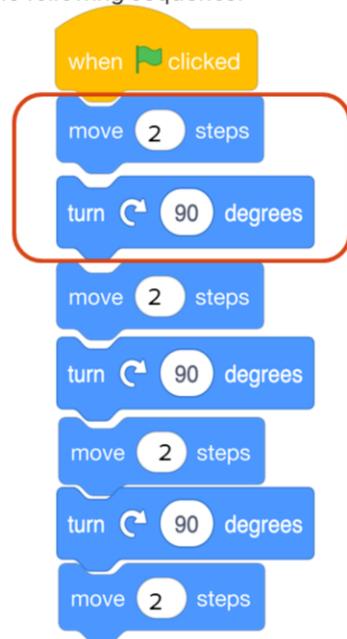
Open your student slide decks and navigate to this slide. Prepare to code in Scratch by pulling over the blocks you think you will need to code your polygon. Think especially hard about how many sides it has! That will impact how many blocks you need.

## AN EXAMPLE: HOW TO CODE A SQUARE

If you wanted to write a pattern for a square, you could use the following blocks:

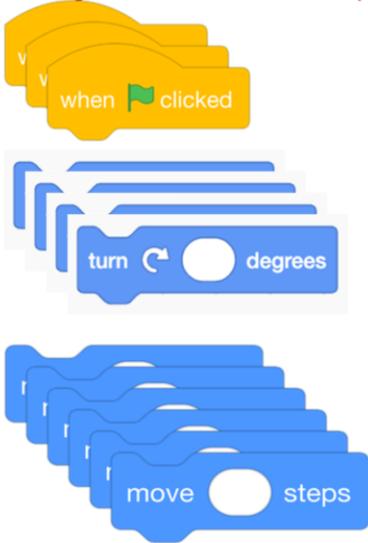


Then you would repeat this pattern in the following sequence:



Let's look an example to help. (read slide) As you prepare to code your polygon, think about how many DEGREES your sprite needs to turn to draw the shape. And think about how many times it will need to turn to complete the polygon.

**YOUR TURN!** Using the blocks here, drag them into the correct pattern and sequence to create your polygon. You and your partner should try them out to see if they make sense. Be sure to add degrees and number of steps!



(read slide)

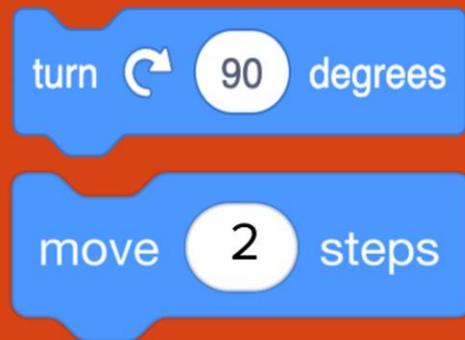
**Try out your  
polygon algorithm!**

On paper or standing up and walking, try to follow your sequence to see if you can create the entire polygon!

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Test your algorithm by reading it out loud to a partner or to yourself. Did you draw your shape successfully?

# PATTERNS

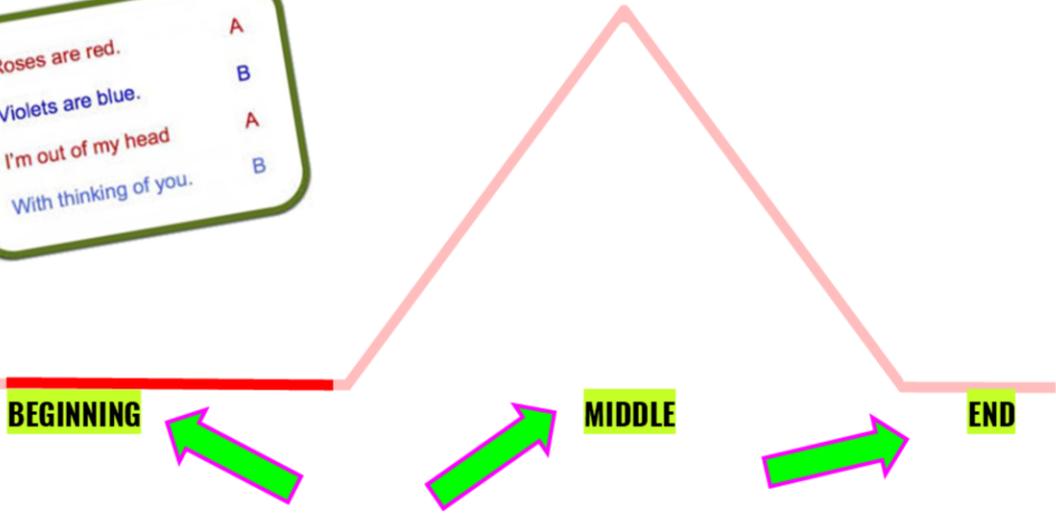
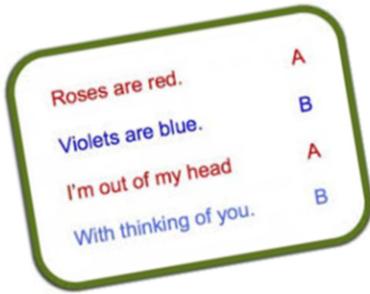


You may have noticed walking forward and turning left are the two repeating commands; move, turn, move, turn...This is a pattern. We can use patterns to make our work easier, especially when we code.

# PATTERNS IN WRITING

We also use patterns when we write.

## EXAMPLES OF PATTERNS IN OUR WRITING



1. Ask students if they can think of any patterns they see in books or stories they read (if needed, prompt students with patterns such as beginning, middle, and end; characters, setting, and plot; etc.)

## GUIDED PRACTICE: EXAMPLE A

Daquan was watching TV and saw a commercial for pizza and that gave him a great idea! "I'll just make my own pizza here at the house!", he thought. He found his mom's recipe, which said:

**“First**, roll out the squishy pizza dough with the rolling pin. **Then**, use a spoon to spread on the red pizza sauce on top of the dough. **Next**, add shredded cheese all over the top. **Last**, top it with pepperoni slices, covering the whole pizza. **Finally**, put the pizza in the oven at 425 degrees.”

After about 15 minutes in the oven, his homemade pizza was ready to eat!

### DO YOU NOTICE A PATTERN?

Read slide and ask students if they can identify a pattern. Point out that each instruction used a sequencing word to indicate that the next instruction was being given: First, Then, Next, Last, Finally

## WHAT IS EXPLANATORY WRITING?

Explanatory writing:

- **Explains** something to someone or helps them understand how to do something. So it is important to provide many details!
- Is written in a specific order or **sequence**
  - A sequence is a set of things that follow each other in a particular order, where order matters!
- Often uses sequencing words such as **first, next, then** and **last** to communicate the correct order of steps, also known as their sequence

These transition words are especially important when we're giving instructions to someone. We call this type of writing, explanatory writing. Explanatory writing....[read slide]

**FIRST**  
**THEN**  
**NEXT**  
**LAST**  
**FINALLY**

We will use this sequence of transition words to help us create our explanatory texts.

## FOR BOTH WRITING & COMPUTER SCIENCE, SEQUENCE IS VERY IMPORTANT!



Transition words help us to put our *writing* in the correct sequence—it's just as important for human readers as it is for computers!

# INDEPENDENT PRACTICE

## INDEPENDENT PRACTICE

Open your student slides.

Use the graphic organizer in your slides to write a recipe for making a drink.

You may choose to write about lemonade, Koolaid, or another drink of your choice!

[Graphic organizer link](#)



In a moment, you will navigate to your student slide deck. In the deck is an outline for you. You will choose whether you want to write instructions for making lemonade or tea. Then you will type your instructions into the graphic organizer provided in your slides. Note: You can also give students the option to hand write their instructions.

## WRAP UP

Can anyone share at least one “tip” for finding and using patterns in our writing or our code?

And remember: anyone can be a computer scientist!

