**Lesson created by the GMU-ODU CSforAll Team. For more information about**

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| **Unit 1 Lesson 3: Patterns and Sequences in Writing**  *5th-6th Grade* | | |
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| **Concept: Patterns and Sequencing** | | |
| **Vocabulary:**   * sequencing * Pattern * Algorithm * Commands * Code * Pair Programming * Explanatory Writing | | |
| **Summary:**  In this lesson, students will identify and create patterns and sequences in writing and also code a pattern and sequence. | | |
| **Lesson Objectives (learning targets): I can…**  • 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 to create a polygon | | |
| **Content Standard(s)** | **Computer Science Standard(s)** | |
| 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 | The student will construct sets of step-by-step instructions (algorithms), both independently and collaboratively  a. using sequencing  b. using events | |

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| **Materials** |
| **Lesson materials:**   * Teacher slide deck * Student [slide deck](https://www.dropbox.com/scl/fi/de1z03f9c70noewlruvvm/(Student-Copy)-Unit-1-slides.pptx.pptx?dl=0&rlkey=w9yoeuxwm5aojjbhw6jteslja#slide=id.g12af82f979c_0_75) * [Drink recipe graphic organizer](https://www.dropbox.com/scl/fi/j3daehldibqh9xxoeduqe/Lemonade-or-Koolaid-recipe.docx?dl=0&rlkey=tvwc214j00mrvu6ih3jl79lxc)   **Supplemental resources:**   * [Printable Scratch blocks](https://www.dropbox.com/scl/fi/jwpt8538arpsxgelgwd7v/Lesson-1-Printable-Scratch-Blocks.docx?dl=0&rlkey=n3njauv8eifdjda56kg4nssle) * Example of [Sprite coded to walk in a square](https://scratch.mit.edu/projects/575746529/) |

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| **Lesson Structure and Activities** |
| **(10 min) Warm-up & 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.**   1. (Optional) Introduce expectations and necessary resources (slides 1-3) 2. Review Patterns and Sequences Definitions (5 min) (slide 4-5)    1. Complete [unplugged pattern and sequence activity](https://www.dropbox.com/scl/fi/3vzeu9vty3vo6v5hbnu20/Student_MCQ-Formative-Assessments.docx.docx?dl=0&rlkey=pqjl03l1cb5nokshovpm15k70)    2. Review [answers](https://www.dropbox.com/scl/fi/sx2nmc5igw9km4thd2ny8/Answer-key_MCQ-Formative-Assessments.docx.docx?dl=0&rlkey=drzrb83i0hzt9af38gl5izx88) as a class 3. Introduce today’s objectives (slide 6) |
| **(15-20 min) Direct Instruction & Guided Practice:**   1. Introduce Move, Turn, and Wait Blocks (slide 7-9)    1. Move ([explainer video](https://www.dropbox.com/s/phtjijtlyrkoxig/moveblock.mp4?dl=0)) (slide 10)    2. Turn ([explainer video](https://www.dropbox.com/s/fyehw07wxh3erxn/turnandmove.mp4?dl=0)) (slide 11)    3. Wait (slide 12)    4. Go to front/back (explainer video) (slide 13) 2. Students will use the Move, Turn, and Wait blocks to create a [Polygon](https://docs.google.com/presentation/d/1ohEBaw1KHqezrxxq6oVQlmt9zJ7plfqBNlP9GaQEFDo/edit?usp=sharing) (slides 14-19)    1. In partners or alone, students should sequence the provided blocks and create an algorithm for walking in a polygon    2. Students can use their [slide decks](https://www.dropbox.com/scl/fi/de1z03f9c70noewlruvvm/(Student-Copy)-Unit-1-slides.pptx.pptx?dl=0&rlkey=w9yoeuxwm5aojjbhw6jteslja#slide=id.g12af82f979c_0_75) or [printable scratch blocks](https://www.dropbox.com/scl/fi/jwpt8538arpsxgelgwd7v/Lesson-1-Printable-Scratch-Blocks.docx?dl=0&rlkey=n3njauv8eifdjda56kg4nssle) on their desks.    3. If possible, students should try to physically walk in their polygons shape    4. Have students identify the pattern and sequence they created with a partner    5. Optional: show this example of a [Sprite that has been coded to walk in a square](https://scratch.mit.edu/projects/575746529/) in Scratch if students are feeling lost. 3. Introduce Patterns in Writing (slides 20-26)    1. Examples of Patterns in Writing    2. Model finding a pattern in a text       1. (One of the examples is in CoCo Level 1)    3. Introduce Explanatory Writing    4. Introduce transition words (Pattern) |
| **(25 min) Independent Practice:**  *Students may work independently or in pairs (pair programming).*   1. Guide students in writing a set of instructions for making a drink using the graphic organizer provided in the student slides. Share the graphic organizer either by pushing out the [link using virtual classroom technology](https://www.dropbox.com/scl/fi/j3daehldibqh9xxoeduqe/Lemonade-or-Koolaid-recipe.docx?dl=0&rlkey=tvwc214j00mrvu6ih3jl79lxc) or by sharing copies of the student slide deck with each student. (slides 27-28)    1. Instruct students to include a topic sentence at the start of their writing that introduces their reader to the topic    2. Make sure students save their work for the next lesson    3. (Optional Extension) If student finish up quickly, have them log into Scratch and try to code their sprite to walk in a polygon in Scratch. |
| **(5 min) Wrap up:**  Review today’s activities and ask students to share one “tip” they figured out for using patterns and sequences in either their writing or in writing code. Remind students that anyone can be a computer scientist! (slide 29) |
| **Assessment Strategy:**  Did the student…   * 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 to create a polygon |