**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**  *3rd and 4th 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 (Whole group)  • Identify patterns found in writing (EXPLANATORY)  • Participate in Pair Programming  • Identify and Operate Scratch blocks to create a sequence, using Move and Wait Blocks (Create a square) | | |
| **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 | |

| **Materials** |
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| **Lesson materials:**   * Teacher [slide deck](https://www.dropbox.com/scl/fi/c2y0ds7nuc6bb8zj1q2yi/Unit-1-Lesson-3-slides-1.pptx?dl=0&rlkey=wtbrkb4uw8hzfqjat526od55z) * [Student slide deck](https://www.dropbox.com/scl/fi/6bebs9rl80ctsidtu6kez/(Student-Copy)-Unit-1-slides.pptx.pptx?dl=0&rlkey=ymvw5rdnpvm037db60xjevpfc#slide=id.g126585dc664_2_0) * Drink recipe graphic organizer: <https://www.dropbox.com/scl/fi/qf1j67ajoq6tu0gacc460/Lemonade-or-Koolaid-recipe.docx.docx?dl=0&rlkey=4vm66w2jppnter0oqmgmw8i2t>   **Supplemental resources:** |

| **Lesson Structure and Activities** |
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| **(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. Instruct students to complete the short [Pattern and Sequencing Activity](https://www.dropbox.com/scl/fi/08ek6uwe11qtwagbo9mgn/3_4-Answer-key_MCQ-Formative-Assessments.docx?dl=0&rlkey=ic1d9z25fmw44gjoe5ywm6y77) that can be found in the student slide deck (you could also print and have students work on physical copies. As a class, go over the answers linked in slide 5 (slide 4 & 5)    1. You may want to explain: In this activity you will need to identify the pattern and sequence needed to move objects around on a grid similar to this one. You will need to figure out the best and most efficient way to solve these puzzles. Model example on slide 5. 3. Introduce today’s objectives (slide 6) |
| **(15-20 min) Direct Instruction & Guided Practice:**   1. Introduce Move, Turn, and Wait Blocks (slides 8-13)    1. Move ([explainer video](https://www.dropbox.com/s/22x908z11mxstem/moveblock.mp4?dl=0)) (Slides 10-11)    2. Turn ([explainer video](https://www.dropbox.com/s/9n68i9uaof48hqs/turnandmove.mp4?dl=0)) (Slide 12)    3. Wait (Slide 13) 2. Students will use the Move, Turn, and Wait blocks to create a Square (slides 14-25)    1. In partners or alone, students should sequence the provided blocks and create an algorithm for walking in a Square    2. Students can use their slide decks or printable scratch blocks on their desks. Advanced students can work directly in Scratch.    3. If possible, students should try to physically walk in a square to test out their algorithms.    4. Have students identify the pattern and sequence they created with a partner    5. Go over the solution provided, but indicate that there could be multiple correct solutions. 3. Introduce Patterns in Writing (slides 27-32)    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 provided graphic organizer. Share the graphic organizer either by pushing out the [link using virtual classroom technology](https://www.dropbox.com/scl/fi/qf1j67ajoq6tu0gacc460/Lemonade-or-Koolaid-recipe.docx.docx?dl=0&rlkey=4vm66w2jppnter0oqmgmw8i2t) or by sharing copies of the student slide deck with each student.    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 for the next lesson    3. (Optional Extension) If students finish up quickly, have them log into Scratch and try to code their sprite to walk in a square 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 35)  (Optional) Ask any students working in Scratch to share their Scratch work to your studio. Check to make sure each student successfully logged in, shared their project, and added it to the designated Scratch studio (slides 36-38). |
| **Assessment Strategy:**  Did the student…   * Create a pattern and sequence a set of written instructions (Whole group) * 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) |