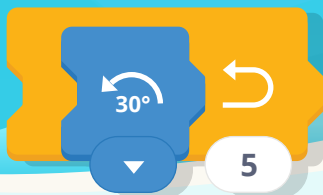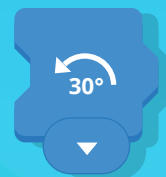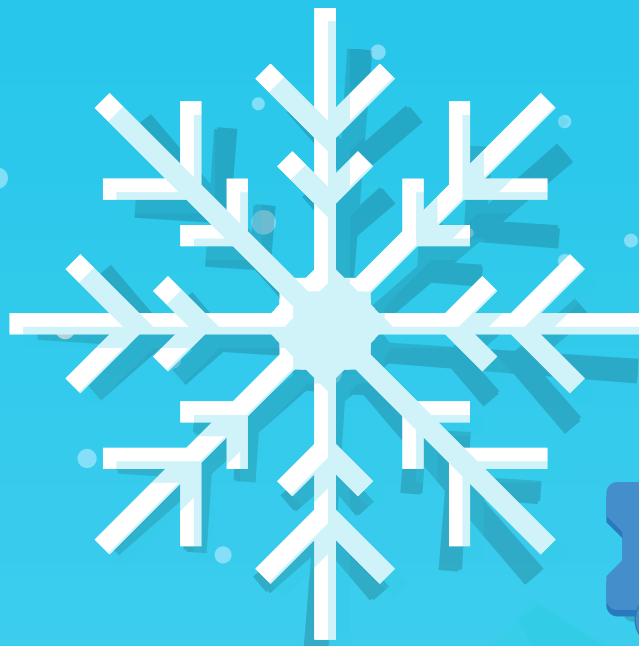Google

Santa Tracker

5-Step Lesson Plan Template

Grades 3–5

Using Code to Create a Sequence

Standards:	**ISTE 2016: 5d.** Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.
Objective:	"I will demonstrate how to use code to choreograph dance routines for Santa's elves."
Essential Question:	How is coding kind of like a dance routine?
Key Points:	1. **Coding** can be like teaching a dance routine. When you code, you tell a computer to follow a sequence of actions in a particular order. 2. In coding, you can use a **loop** to repeat directions. This can help engineers shorten long programs.

Opening:

Ask students if they've ever learned a dance routine. How did they memorize the moves?

- Invite students to share the names of any dance moves they know.
- For example, tap dancing is made up of moves like "brush," "shuffle ball change," and "heel tap."

Introduction of New Material:

- Introduce the vocabulary term **sequence**: a particular order in which related things, movements, or actions follow each other.
- Explain that, like a dance routine, a computer can follow a sequence of actions. That's what coding is: programming a computer to run different actions in a specific order.
- Explain that today, students are going to teach Santa's elves how to dance with code.

Guided Practice:

Materials needed:

— A device connected to a screen projector

— The **Code Boogie** Santa Tracker Game in **Dance freestyle** mode: https://santatracker.google.com/#codeboogie

Model how to use the Code Boogie game for students in **Dance freestyle** mode.

1. Project your computer or tablet screen for students to see.
2. Go to the Code Boogie game on the Santa Tracker website: https://santatracker.google.com/#codeboogie
3. Choose **Dance freestyle.**
4. Choose a stage for your elf to dance on.
5. Show students the purple dance moves on the left side of the screen. Ask students what they think they mean.

	Point Left		Jump
	Point Right		Split
	Step Left		Hip Shake
	Step Right		Repeat

6. Drag a purple block under the orange block named "WHEN RUN," until it locks in place. ("WHEN RUN" essentially means "when started.") Ask students to guess what'll happen when you press play at the bottom of the screen.

WHEN RUN
POINT LEFT

7. Press the orange play button. Were students right? To return, press KEEP DANCING.
8. Now drag another block under the previous one. Press play again.
9. Finally, drag the blue REPEAT loop until it locks in place. Place a purple block inside of it, and press play.

WHEN RUN
POINT LEFT
POINT RIGHT
REPEAT 2 TIMES
STEP LEFT

10. Ask students why the last move repeated twice. It's because of the blue loop block. (Notice the "2 times" dropdown option. If you changed it to 3, the move would repeat 3 times.)

By this point, students should be familiar with how to create and play a dance routine, and ready to try it on their own. Consider having students create a dance in **Freestyle mode** and share it with their neighbor before moving on to the next part of the lesson.

Independent Practice:

Now have students try Code Boogie in **Dance class** mode. In this mode, students will copy an elf's dance moves. The dance routines get harder with each level.

Materials needed:

— Computers or tablet devices, one for each student or pair of students

— A piece of paper for each student to take notes

— The Code Boogie Santa Tracker Game in Dance class mode: https://santatracker.google.com/#codeboogie

1. Direct students to: https://santatracker.google.com/#codeboogie
2. Choose **Dance class** mode.
3. The game will guide students through its steps.

Tips:

- **Encourage students to pay attention to the moves as they happen:** Visual learners may benefit from looking at the bottom of the screen, where the moves are pictured.
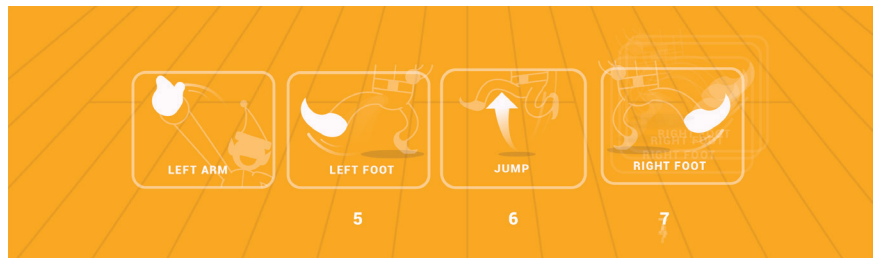
Verbal learners may benefit from the top of the screen, where the words are written out.

- Make sure the blocks are locked together under WHEN RUN at the top. They won't play otherwise.
- If students have trouble remembering the dance moves, it may help to take notes on a piece of paper. And it's okay to mess up! The game will give students hints on how to succeed.
- To remove a block, drag it back to the left where it came from. (To move just one block, it needs to be at the bottom of the stack.)
- To repeat actions, make sure they're inside the blue loop block — not underneath it.

- Students can view their moves in JavaScript at the end of each level.

Differentiated Instruction

There are lots of different learning styles. Some students may gravitate more towards Freestyle mode instead of Dance class mode. Consider having students try both, if they haven't already, and encourage them to practice whichever is more engaging.
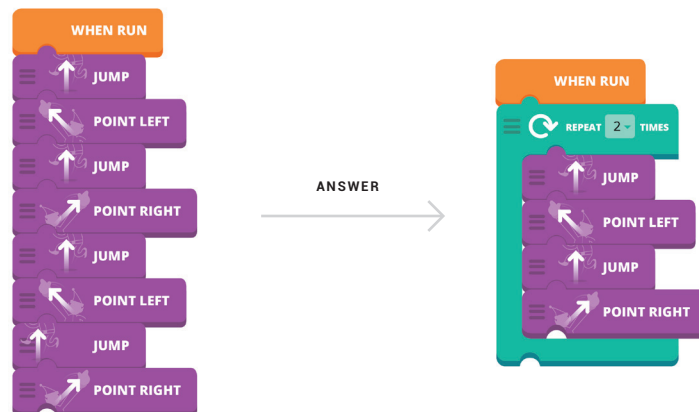
Closing:

Materials needed:

— The Code Boogie Santa Tracker Game in either mode > View code
https://santatracker.google.com/#codeboogie

Here is an anchor chart to remind you of the expectations for this time:

1. **What is a sequence, and what does it have to do with coding?**
   A sequence is a series of events or actions that happen in a certain order. You can tell a computer to follow a sequence.
2. **What is a loop, and why do programmers use it?**
   A loop is a type of action that tells the computer to do something over and over again, until you tell it to stop. Programmers use them to make their code shorter and simpler.
3. **How would you simplify this sequence using a loop?**

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