Do You Want to Build a Snowman?

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Grades: K—6

Subject(s): Computer Science, Art

Pre-Reader/ESL-Friendly? No

Compatible Bot(s): Evo

Coding Method: Color Codes

Quick Summary:

This lesson allows students to create a snowman. Students will use directional color codes to code their way by different parts of a snowman and draw the snowman at the end using the objects they "collected".

Duration: 20 min

Objectives & Outcomes

1. Student will students will identify left, right, and straight.
2. Student will students will create a snowman to match objects they collected.

Preparation

Teacher Materials & Digital Resources

- Do You Want to Build a Snowman_ (1).pdf
- Do You Want to Build a Snowman_ 2.pdf
- ozobot-color-codes.XB0bw1oNSlKlcW0gxRDdBwIc.pdf

Student Materials

- 1 Evo or Bit per group

Teacher Tips

Print 1- 2 copies for each student so that they have multiple opportunities to create a snowman.

Make sure your Ozobots are charged.

Make sure each student has a color code sheet with left, right, and straight.

Make sure each student has a pencil and the 4 markers to color code.

Academic Standards

- CSTA.1B-AP-15

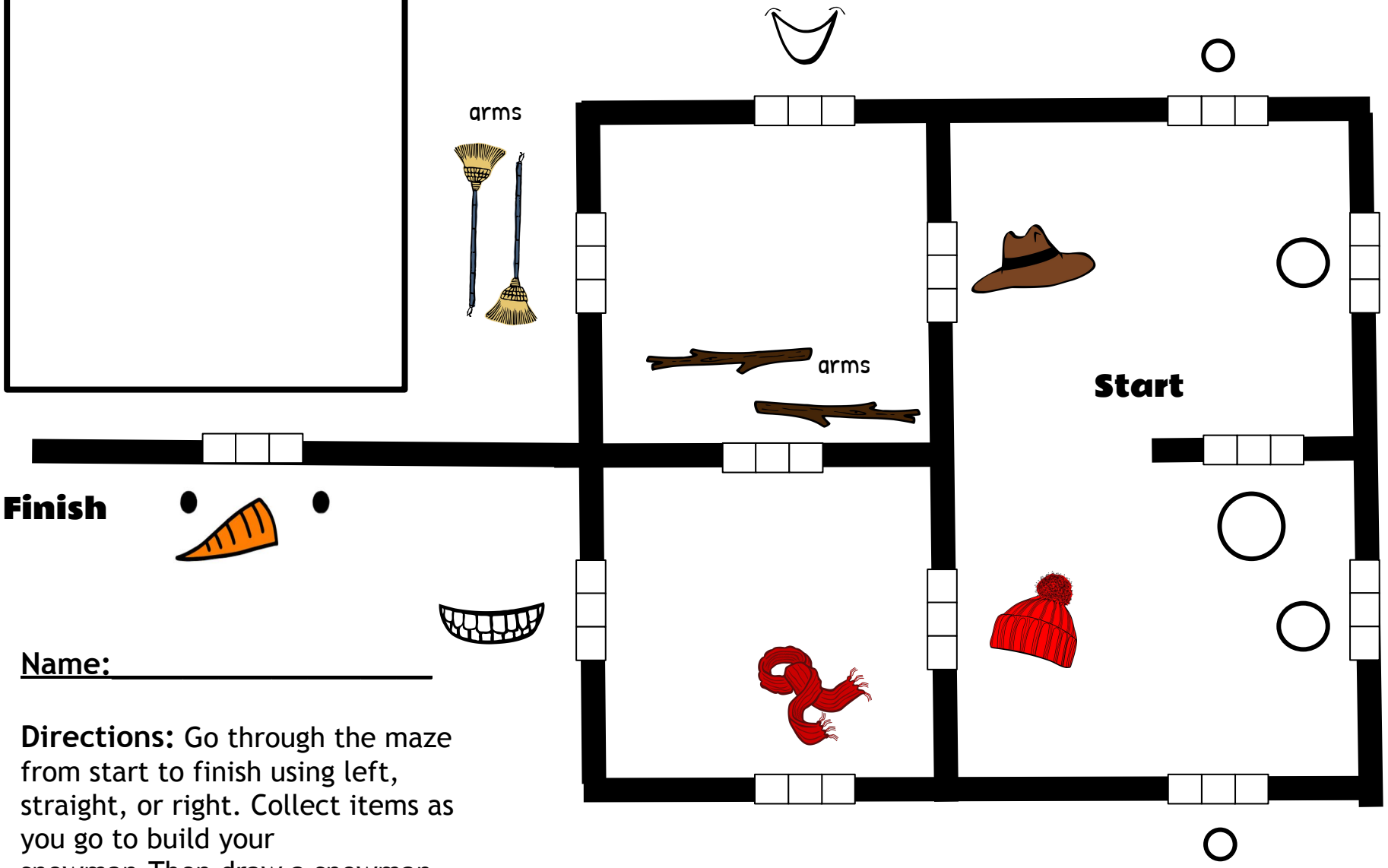
  Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.

- CSTA.1B-AP-08

  Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

Do You Want to Build a Snowman?

Snowman Drawing:

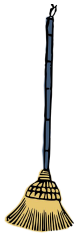


Name: _____

Directions: Go through the maze from start to finish using left, straight, or right. Collect items as you go to build your snowman.Then draw a snowman using only the items you passed.

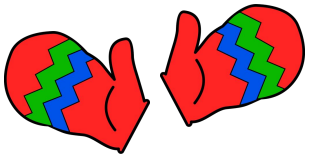
Do You Want to Build a Snowman?

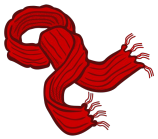
Snowman Drawing:



Start

Finish





arms

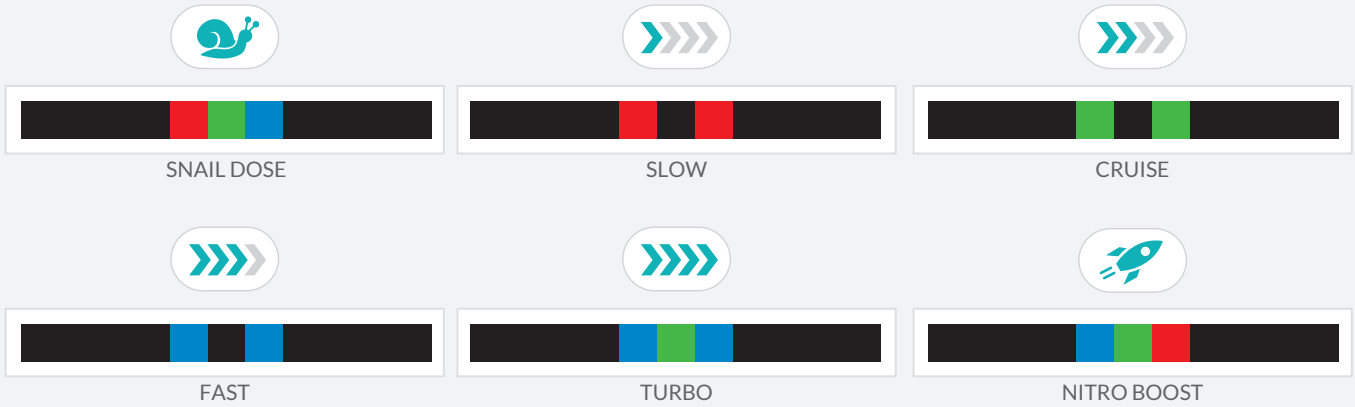
Name: _____

Directions: Go through the maze from start to finish using left, straight, or right. Collect items as you go to build your snowman.Then draw a snowman using only the items you passed.

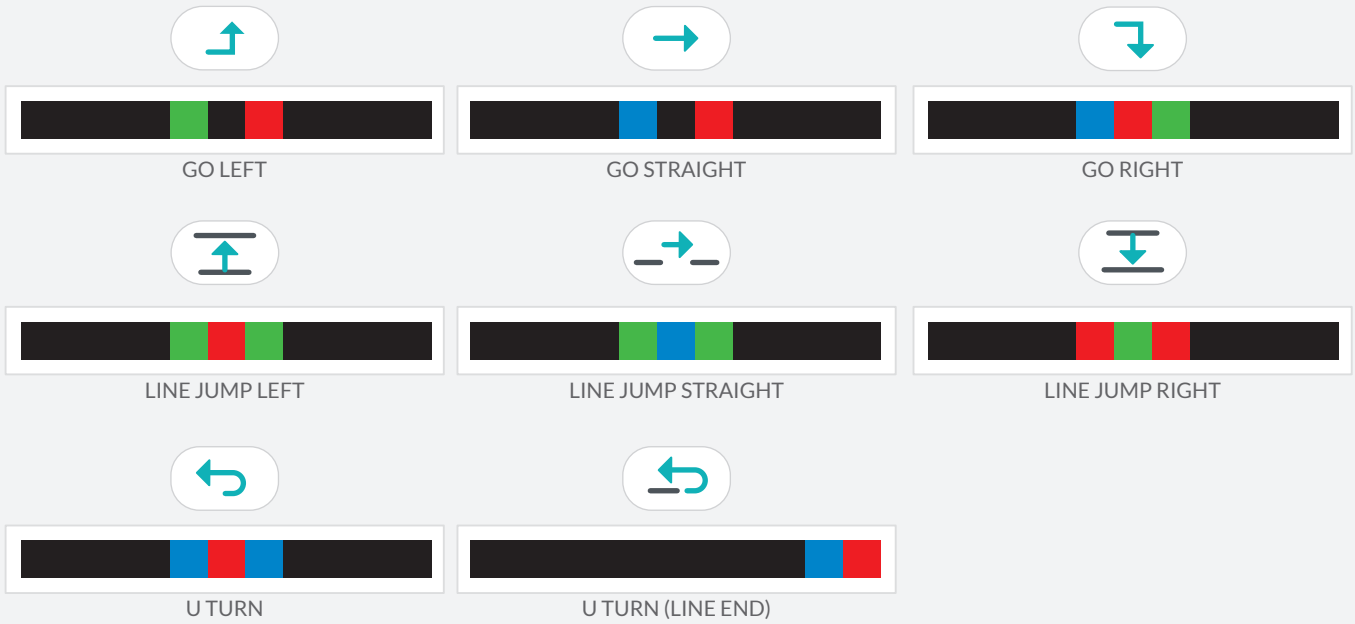
COLOR CODES BASIC

Evo | Bit

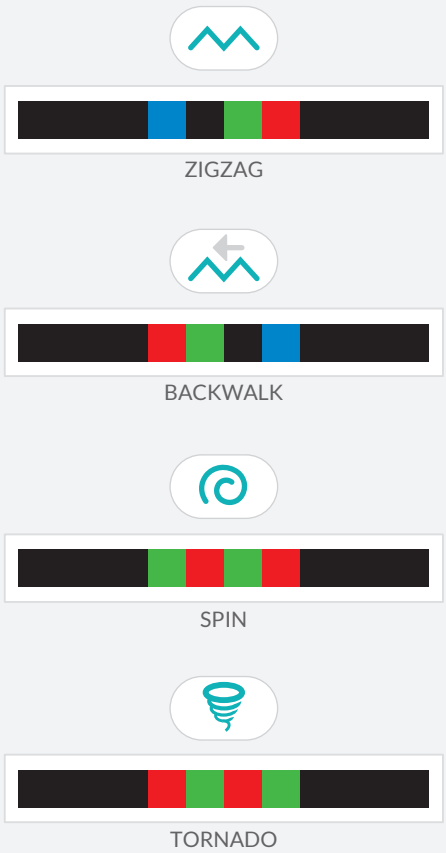
SPEED



DIRECTION



COOL MOVES



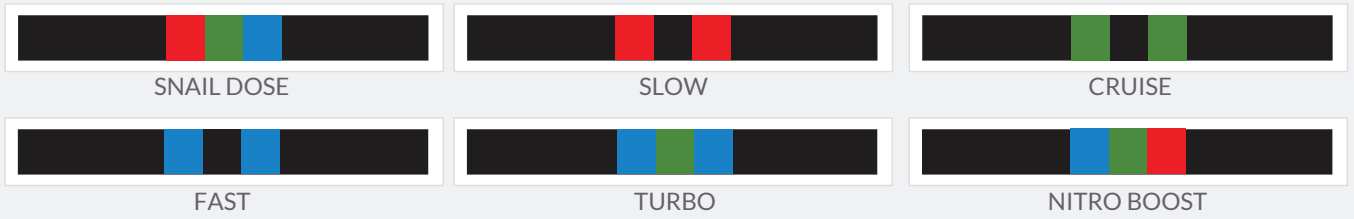
ozobot edu

For a list of all codes, see
http://files.ozobot.com/stem-education/ozobot-ozocodes-reference.pdf

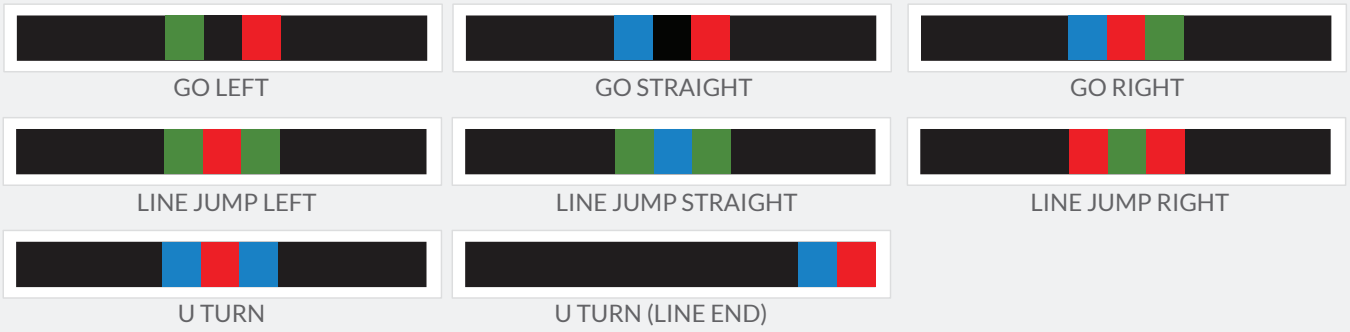
COLOR CODES

Evo | Bit

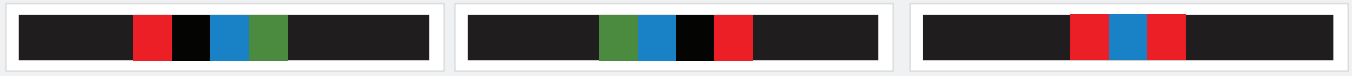
SPEED



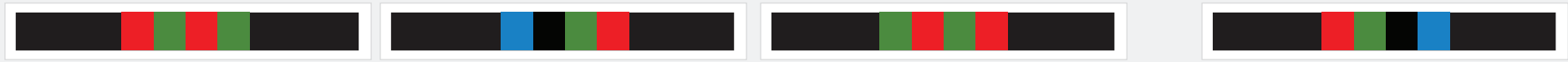
DIRECTION



TIMERS



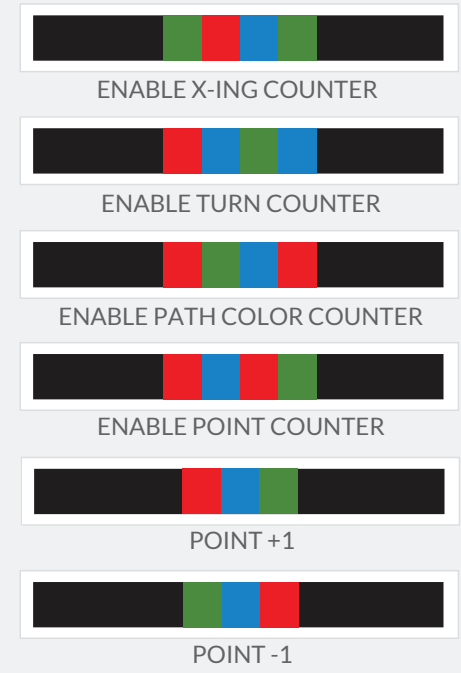
COOL MOVES



WIN/EXITS

COUNTERS

FIVE DOWN TO STOP



DEFINITIONS

Evo | Bit

SPEED

Speed codes change your Ozobot's velocity from Snail Dose (slowest) to Nitro Boost (fastest).

Snail dose (slowest) → slow → cruise (default) → fast → turbo → nitro boost (fastest)

- **Snail Dose:** A three-second dose of super slow speed.
- **Slow:** A slow speed command effective until the bot reads a new speed code or is turned off.
- **Cruise:** The default speed command.
- **Fast:** A high speed command effective until the bot reads a new speed code or is turned off.
- **Turbo:** An extra high speed command effective until the bot reads a new speed code or is turned off.
- **Nitro Boost:** A three-second dose of Ozobot's highest speed.

DIRECTION

Direction codes tell your Ozobot what to do at an intersection.

Ozobot's default intersection behavior is random. If a given turn, i.e.'Go Left' is not possible, Ozobot defaults back to random behavior.

- **Go Left:** A command to turn left at the next intersection.
- **Go Straight:** A command to continue straight at the next intersection.
- **Go Right:** A command to turn right at the next intersection.
- **Line Jump Left:** A command to immediately turn 90 degrees to the left, move forward to a new line, then make a random turn to follow along the new line.
- **Line Jump Straight:** A mid-line command to continue straight after the line ends. The code will not work if Ozobot encounters an intersection before the line ends.
- **Line Jump Right:** A command to immediately turn 90 degrees to the right, move forward to a new line, then make a random turn to follow along the new line.
- **U Turn:** A mid-line command to turn around 180 degrees and follow the same line in the opposite direction.
- **U Turn (Line End):** A line-end command to turn around 180 degrees and follow the line in the opposite direction.

TIMERS

Timer codes tell your Ozobot to pause or count seconds.

- **Timer On (30 sec. to stop):** A command to make your Ozobot countdown from 30 seconds, but continue to move and read codes while counting down. Ozobot will flash its light(s) at a rate of one flash per second, flash rapidly to signify time is up, then shut off.
- **Timer Off:** A command to stop counting down seconds and return to default behavior.
- **Pause (3 sec.):** A command to stop moving for three seconds, then continue with default behavior.

COOL MOVES

Cool Move codes tell your Ozobot to bust a move!

- **Tornado:** A command to spin around twice at increasing speed, then continue following the line in the same direction.
- **Zigzag:** A command to sway right-left-right-left while moving forward, then continue moving straight.
- **Spin:** A command to spin around twice at a consistent speed, then continue following the line in the same direction.
- **Backwalk:** A command to quickly turn 180 degrees, wiggle backwards for one second, then turn 180 degrees again and continue following the line in the same direction.

COUNTERS

Counter codes tell your Ozobot to count five intersections, turns, or line color changes.

- **Enable X-ing Counter:** A command to make your Ozobot stop following lines after it crosses five intersections ('T' or '+' intersections). After the fifth intersection, Ozobot executes a "done" maneuver, stops following the line, and blinks red.
- **Enable Turn Counter:** A similar command to the Enable X-ing Counter, except that Ozobot only counts intersections where it makes a turn. It will not count intersections where it continues straight. Ozobot can randomly choose to go straight at an intersection, or be commanded to go straight with a "Go Straight" code.
- **Enable Path Color Counter:** A command to make your Ozobot stop following lines after it reads five color changes in the line. If the line Ozobot is following transitions from red to green, it counts as one color change. Transitions to and from black lines are not counted, and color segments less than two centimeters in length are not counted.
- **Enable Point Counter:** A command that tells your Ozobot to count point codes down from five. Each time Ozobot reads a "**Point -1**" code it counts down. After the fifth "**Point -1**" code Ozobot will make a "done" maneuver, stop following lines, and blink red. You can add more to the total count (not to exceed five) with "**Point +1**" codes. You can reset Ozobot by turning it off, then on.

WIN/EXITS

Win/Exit codes tell your Ozobot to celebrate its success, then either start over or stop.

- **Win/Exit (Play Again):** A command to perform a "success" animation, then continue to follow the line.
- **Win/Exit (Game Over):** A command to perform a "success" animation, then stop following the line.

Do You Want to Build a Snowman?

What We'll Cover:

1. We'll students will identify left, right, and straight.
2. We'll students will create a snowman to match objects they collected.

Materials:

- 1 Evo or Bit per group

Activity Instructions:

1. Go through the maze from start to finish using directions left, straight, or right. Circle/ collect items as you go to build your snowman. Once you get to finish, using only the items you passed, draw a snowman. Draw the snowman pieces in order that you collected them.