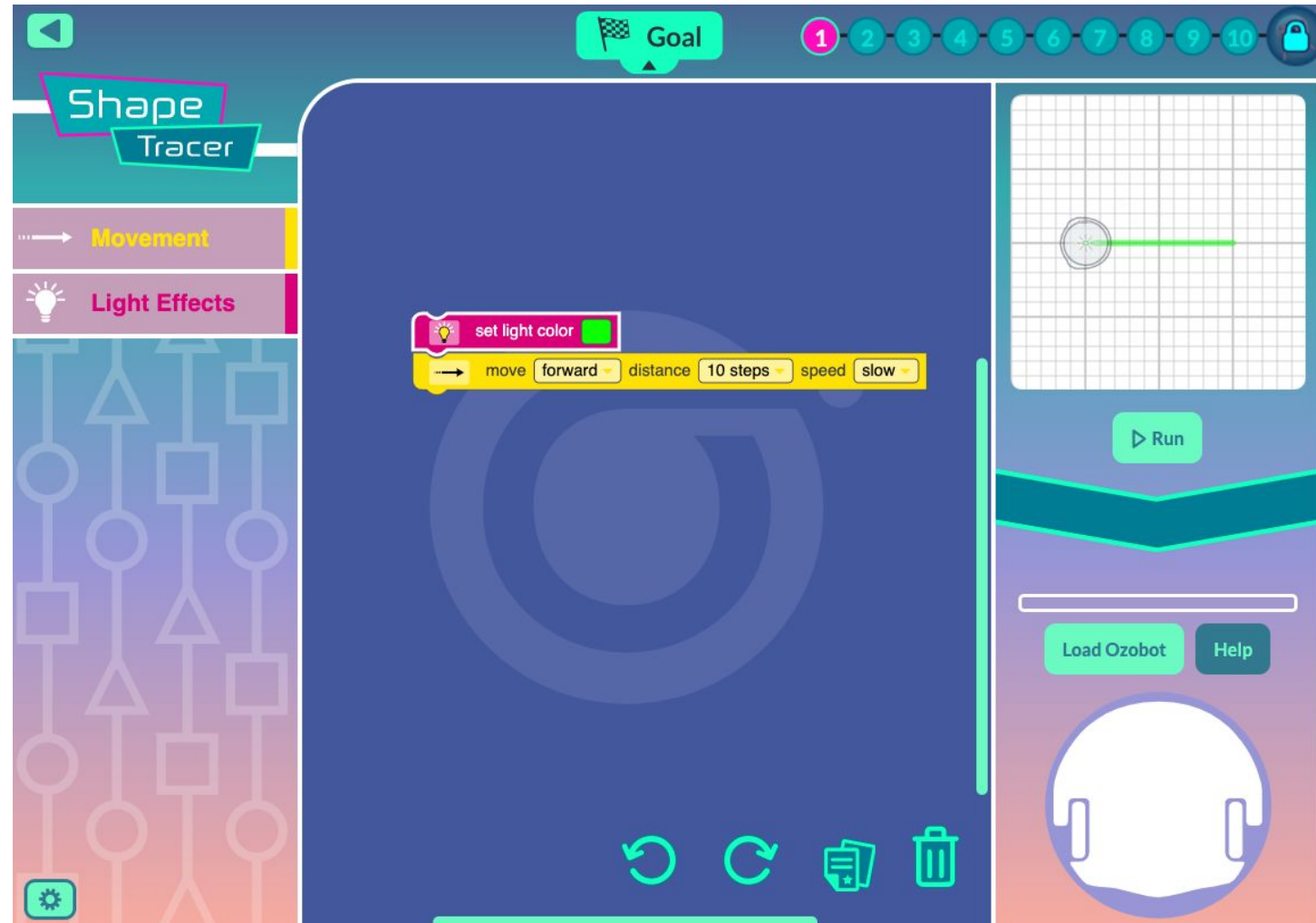


Level 1

Instructional Tips and Tricks

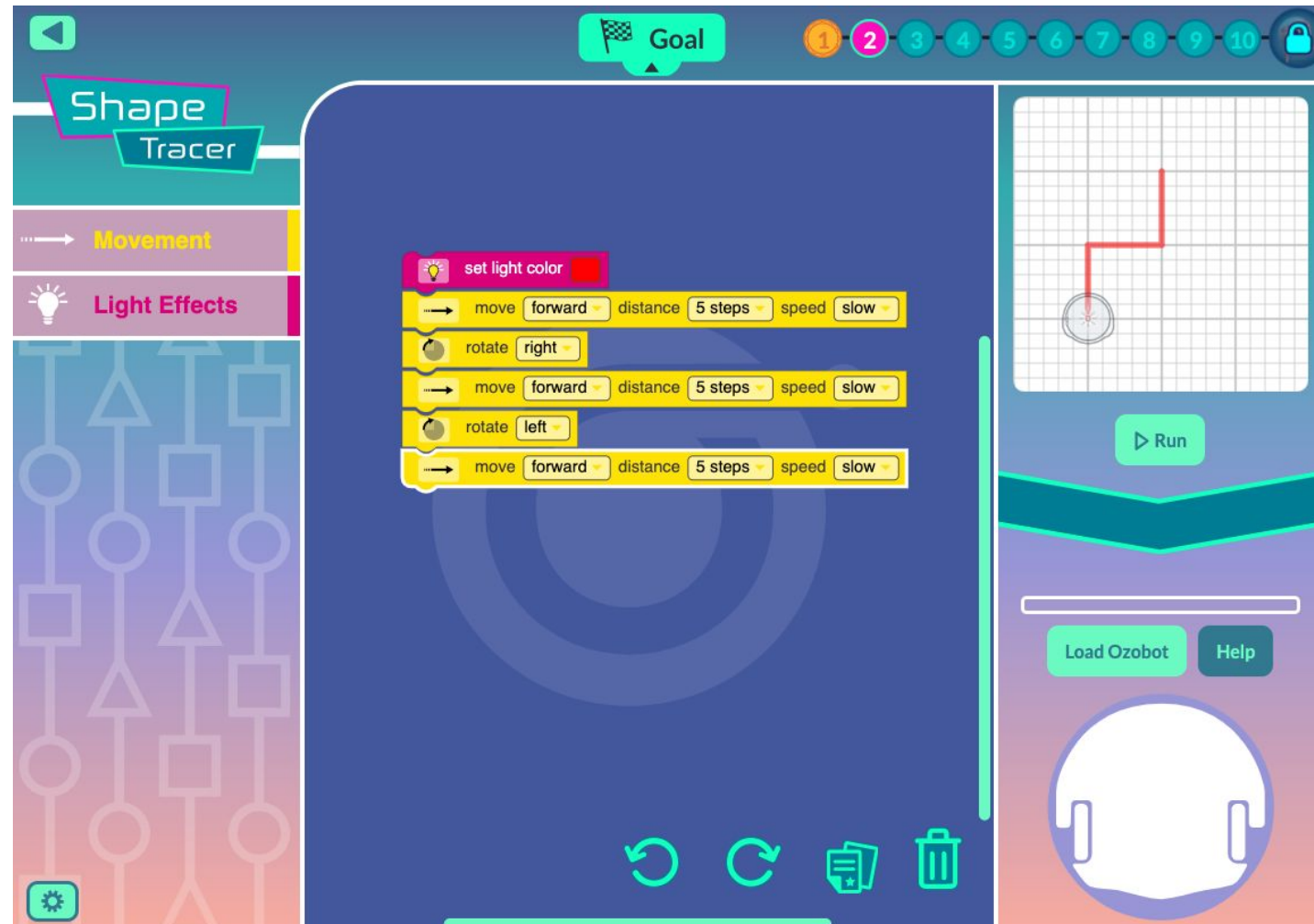
- Remind students that the “set light color” occurs before movement
- Explain to students that each unit in the grid represents 1 step.
- Darker grid squares represent 5 steps.
- Orientation of the bot: round shape represents the back wheels
- Guiding questions:
 - How can you quickly determine how far the bot needs to move?



Level 2

Instructional Tips and Tricks

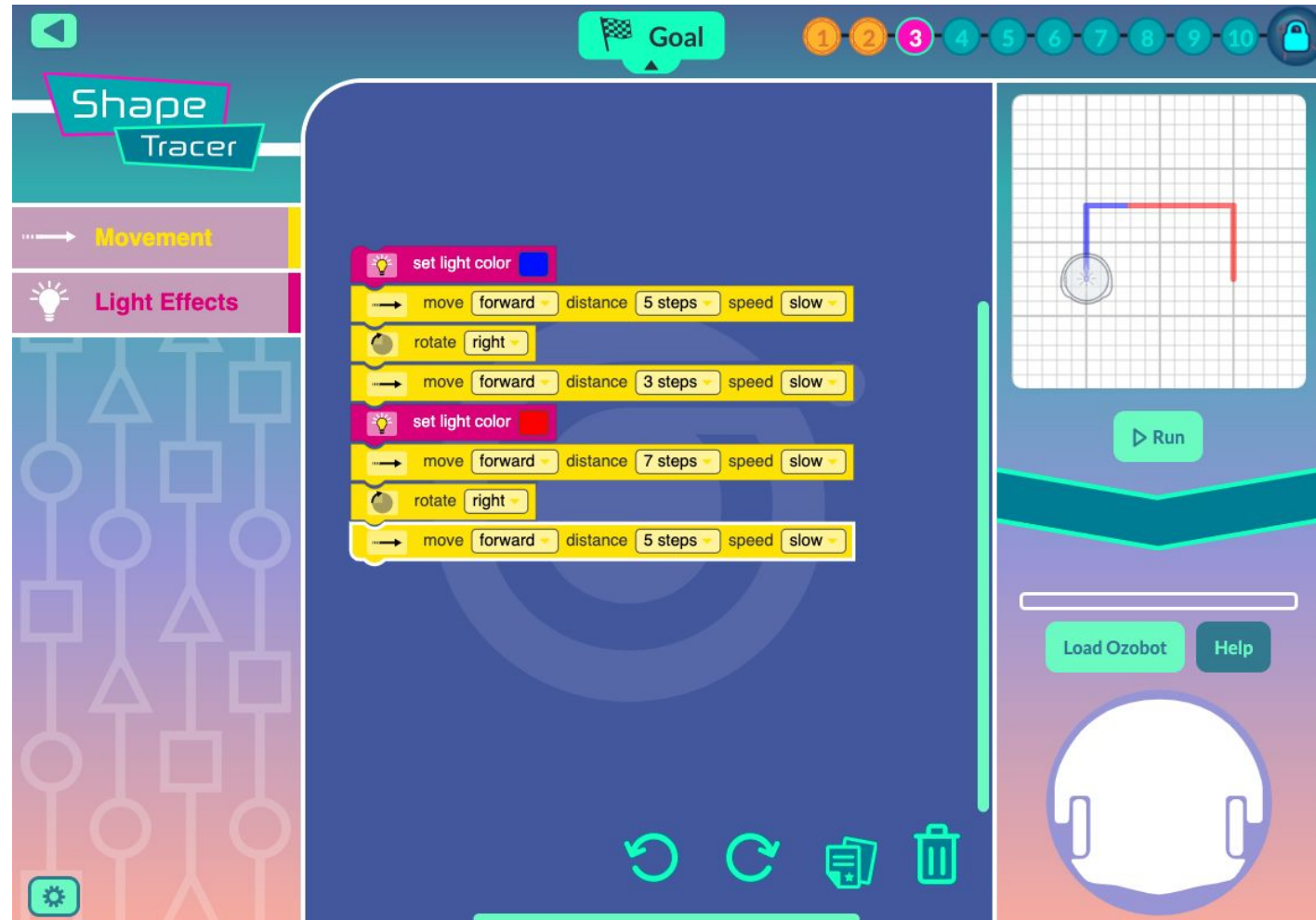
- Review directionality (right, left) with students
- Remind students that orientation matters! Ask students to think about which way the bot is facing to determine direction.
- **Math** connection:
 - right/left = right angle/ 90 degree turn
 - slight right/slight left= 45 degrees
 - Right click + duplicate = shortcut



Level 3

Instructional Tips and Tricks

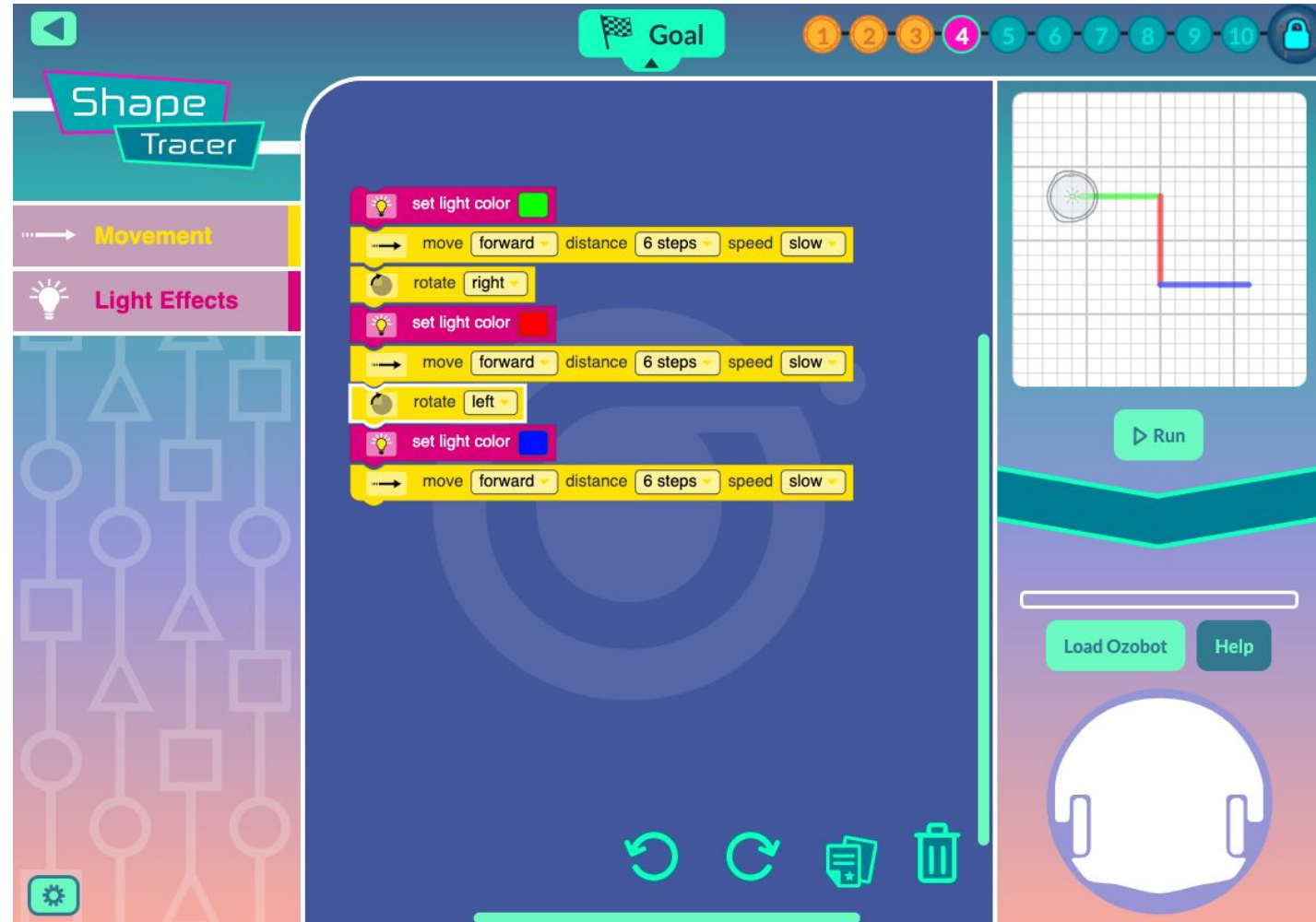
- Encourage testing and debugging
- **Math** connection:
 - Partners to 10: “If we know the whole segment is 10, and the blue portion is 3, what is the red portion?”
- Remind students to set light color before coding movement
- Right click + duplicate = shortcut



Level 4

Instructional Tips and Tricks

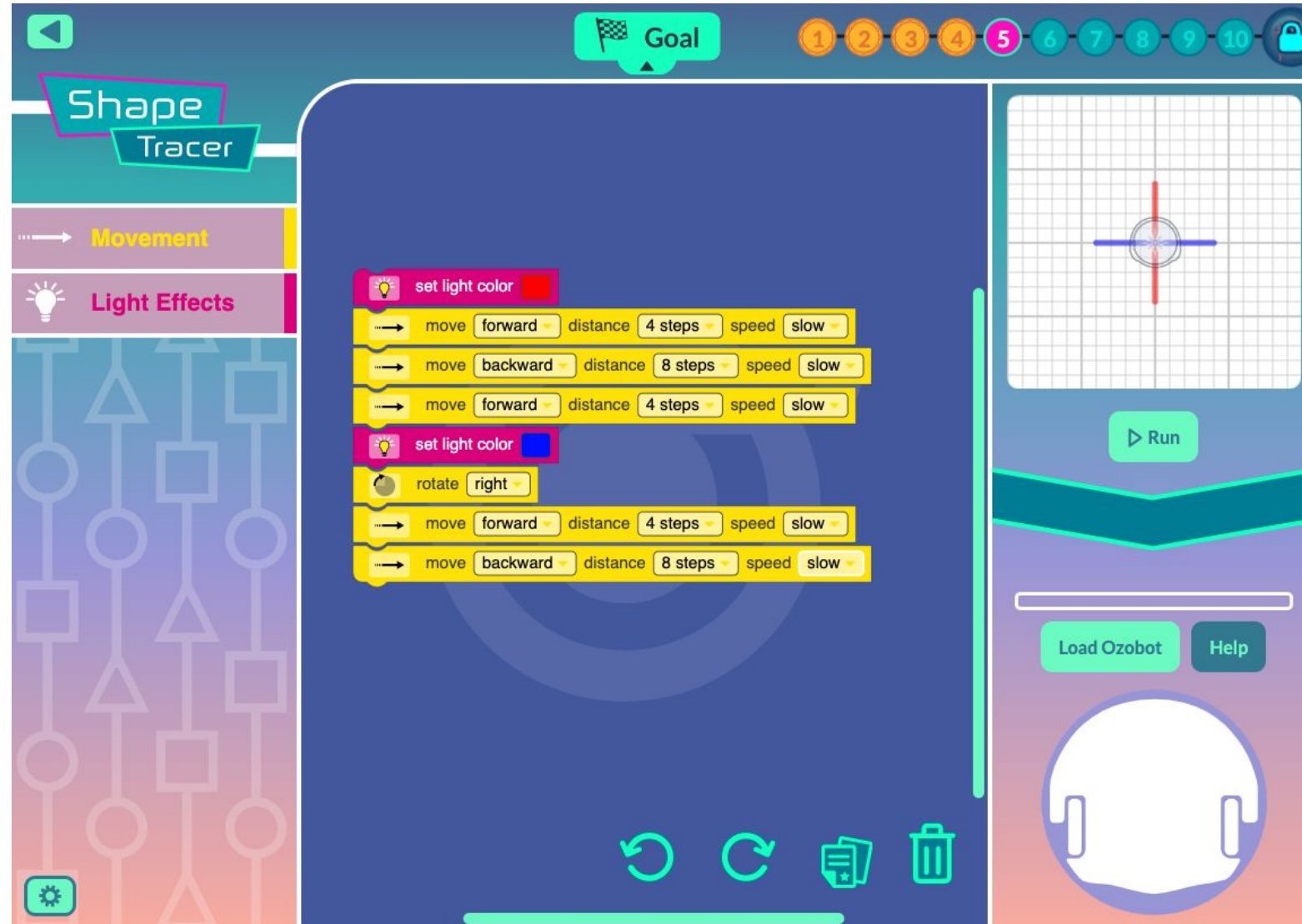
- Math connection:
 - Estimation: “If we know the whole segment is 5, and the color segment is slightly longer, what number would make sense?”
- Remind students to set light color before coding movement
- Right click + duplicate = shortcut
- Testing is your friend! Encourage students to test each segment so they reducing debugging later.



Level 5

Instructional Tips and Tricks

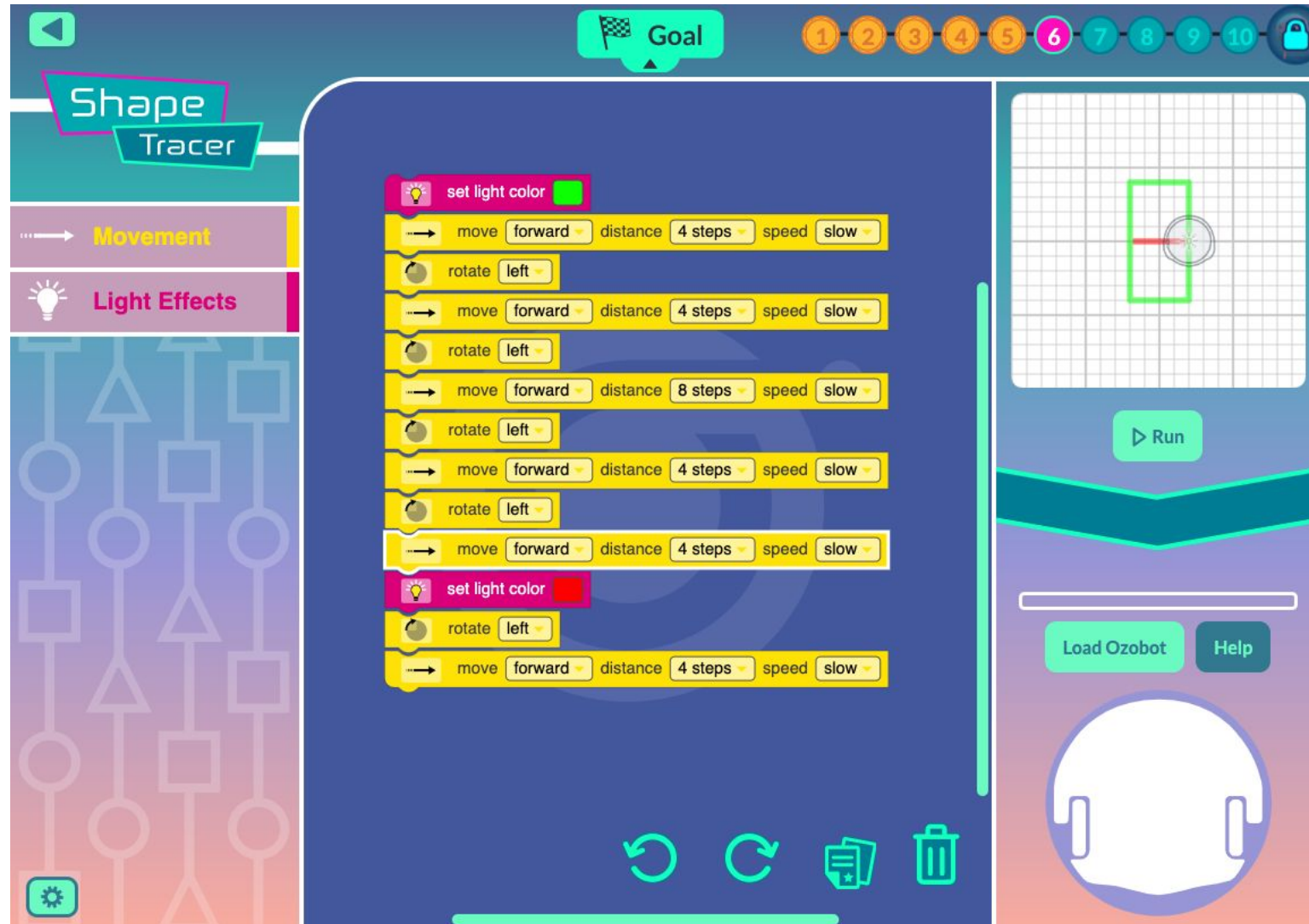
- Pay careful attention to the length of the segments
- **Math connection:** “If the bot moves *forward* 4 steps, and moves *double* the amount backward, how many steps does it need to move backward?”



Level 6

Instructional Tips and Tricks

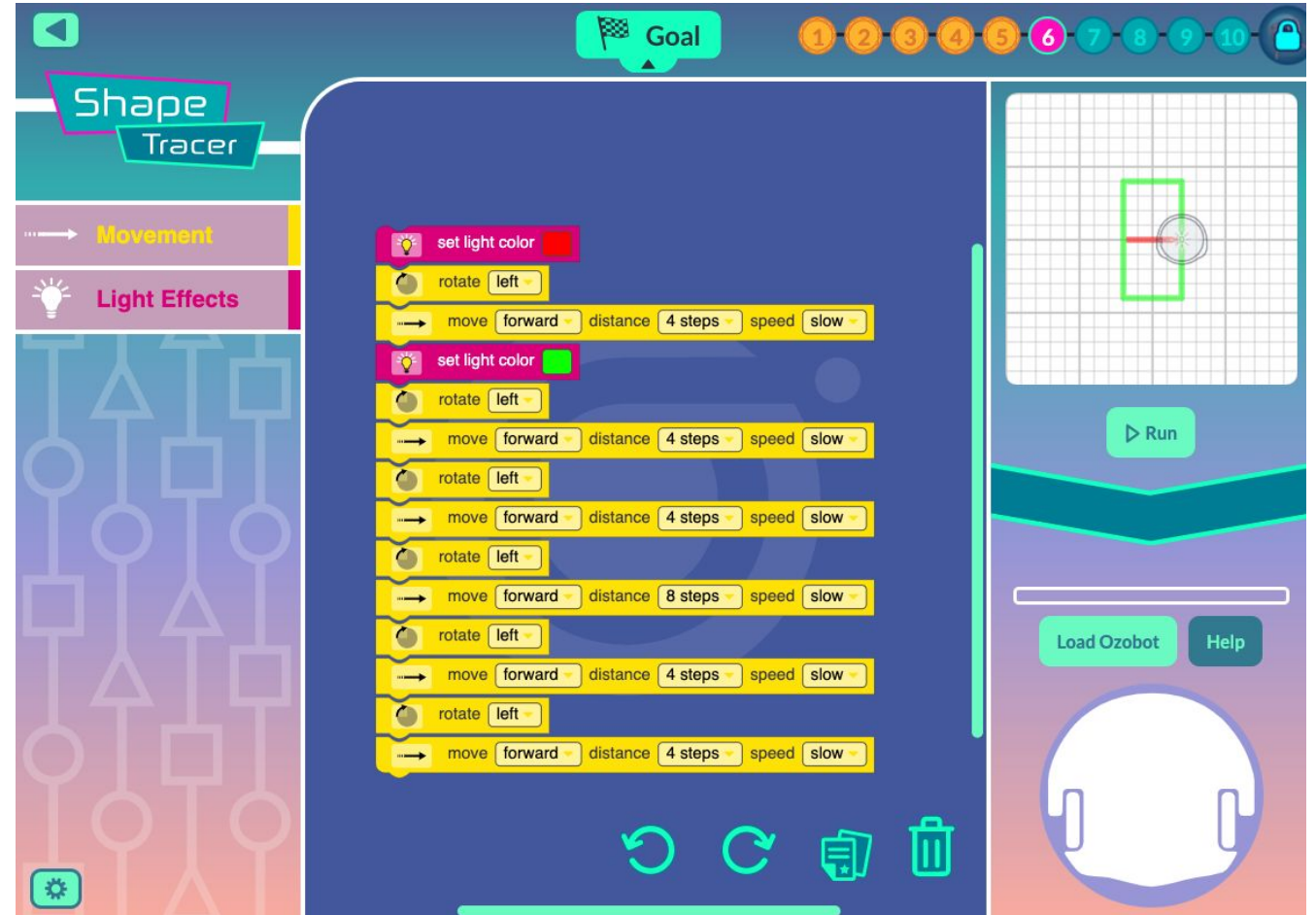
- Multiple solutions
- Encourage students to use the least number of blocks
 - Hint: Turns require a movement block, so utilize the bot's directionality to your advantage!



Level 6- Alternative solution (1 extra block)

Instructional Tips and Tricks

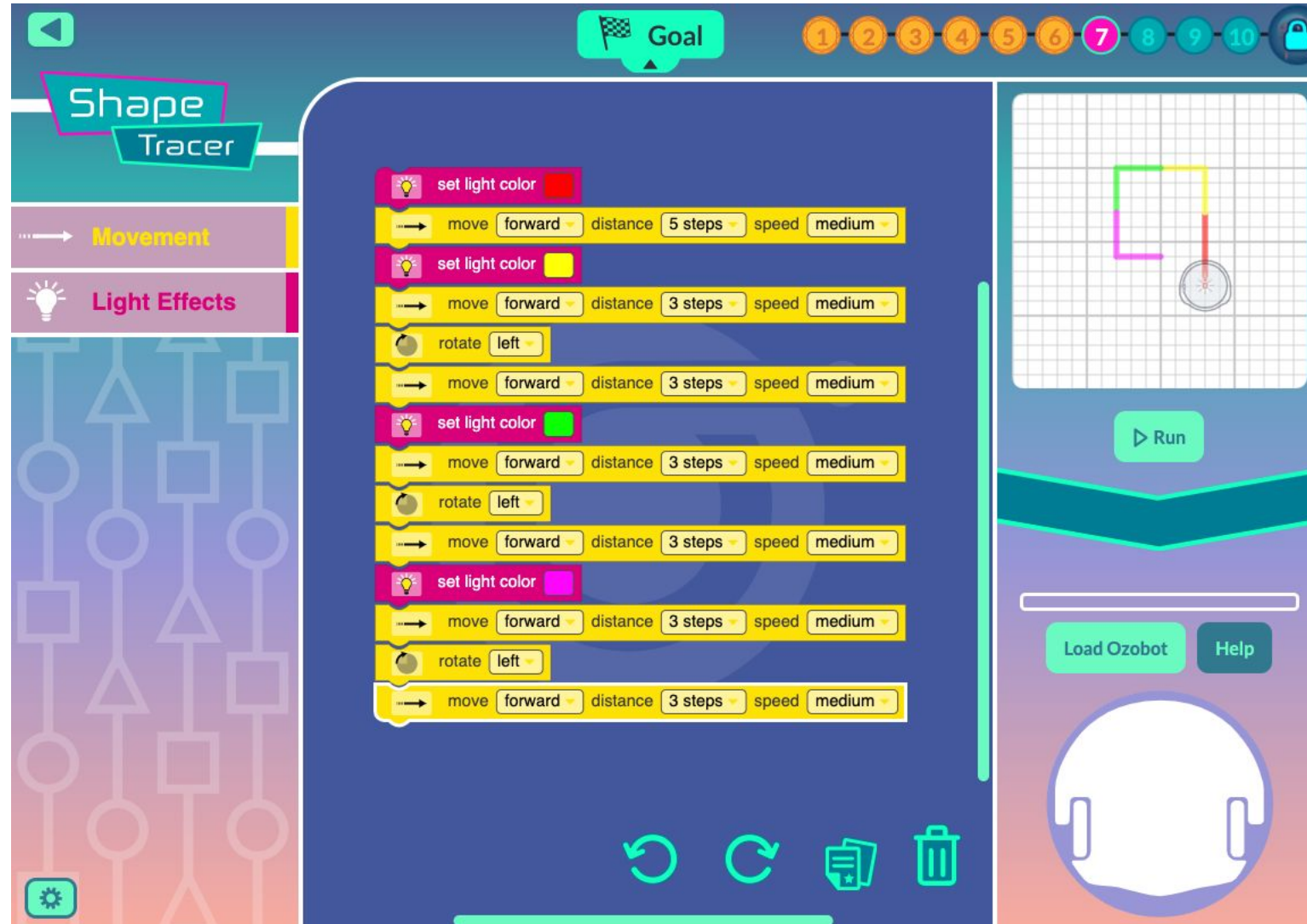
- Alternative solution
 - This code has the bot tracing the red line first. It utilizes one extra block due to the turn required in the second block.



Level 7

Instructional Tips and Tricks

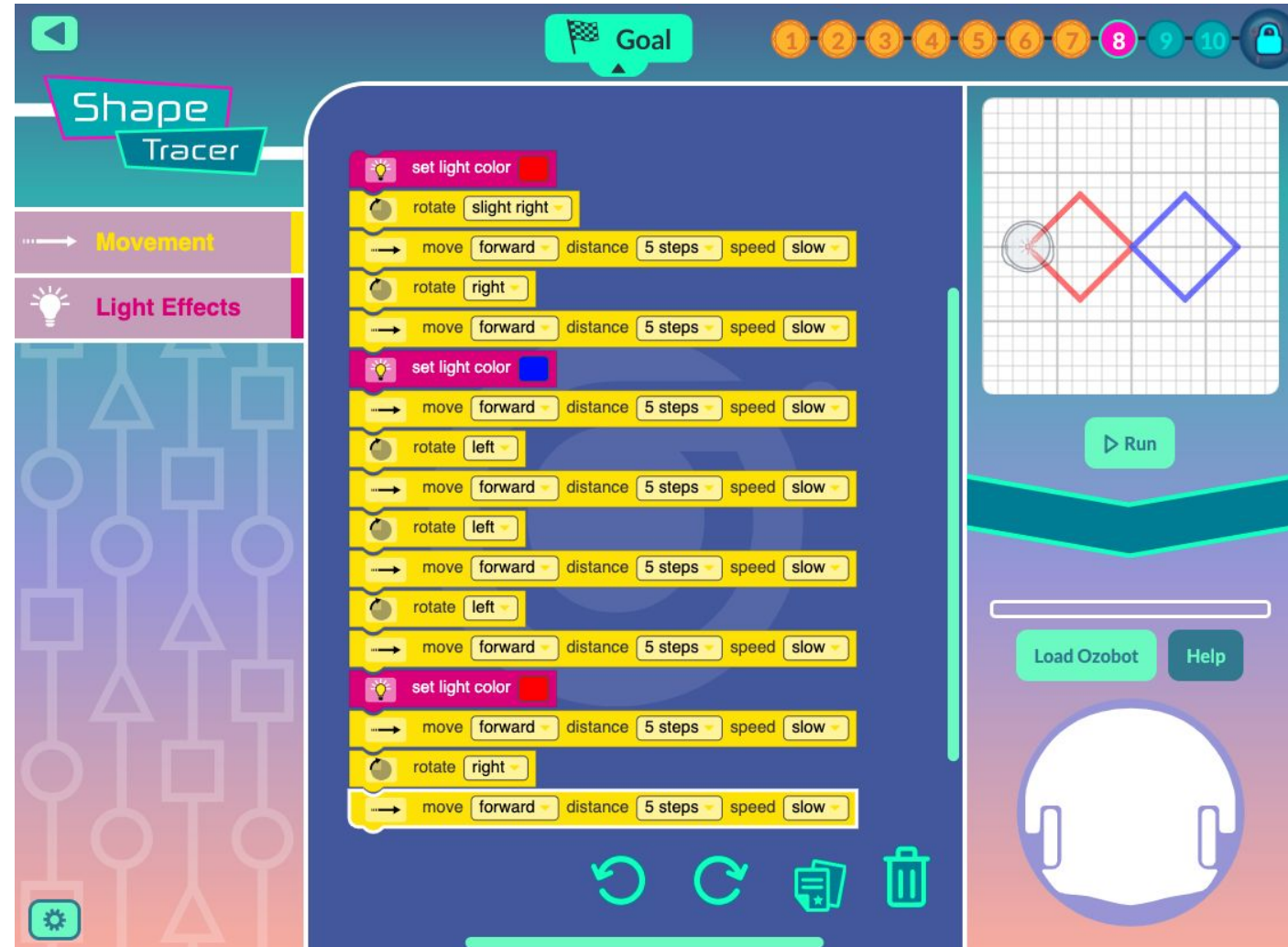
- **Math Connection:**
 - Subtraction: Using the dark gray grid, model how to use subtraction to find the length of the segments.



Level 8

Instructional Tips and Tricks

- **Math Connection:**
 - Angles
 - slight right/slight left = 45 degrees
 - right/left = 90 degrees
 - Geometry
 - the rhombus shapes are the same size as the 5 X 5 squares.
- **Logic:**
 - What is the shortest path to completion?
 - Does it make more sense to trace the red square first, then move to the blue square? Or is there an alternative path?



Level 9

Instructional Tips and Tricks

- Math Connection:
 - Angles
 - Some turns are less than 90 degrees, so the “slight right” needs to be utilized.

