

Ozobot Evo Classroom Application: Slope Practice

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Are you a middle school teacher who teaches the mathematical concept of *slope*? Would you like to give your students a fun way to practice calculating slope in your classroom? Then the ***Ozobot Evo Classroom Application: Slope Practice*** may be just what you need!

All you need to do is load *EvoSlopePractice.ozocode* (share code is **wwhhdu**) into your classroom Ozobot Evo and print copies of the maze on the last page of this document for each group of students.

The maze contains a Cartesian coordinate grid system with ten line segments having varying slopes. The line segments are identified and differentiated by the letters A through J. The instructions are pretty straight forward:

1. Place Ozobot Evo on line segment A, near the letter A and facing toward the end of the line segment. Turn Ozobot Evo on and then double-click the button to start the program. He will start moving along the segment while displaying a yellow LED.
2. When he reaches the end of the segment, he will stop for 10 seconds while continuing to display a yellow LED, giving the student time to determine the slope.
3. After the 10 seconds has elapsed, Ozobot Evo will quickly flash the yellow LED several times as a warning that time is up and he is about to display the answer.
4. He will then display the answer by flashing his led as follows.
 - a. White means the slope is zero.
 - b. Red means that the slope is negative.
 - c. Blue represents a decimal point in the answer.
 - d. Green flashes signify digits.

For example:

If the slope is -1.4, Ozobot Evo would flash .

If the slope is 3, Ozobot Evo would flash .

If the slope is .2, Ozobot Evo would flash .

If the slope is 0, Ozobot Evo would flash .

5. After flashing the answer, Ozobot Evo will move ever so slightly and display a solid purple LED for 7 seconds, allowing 7 seconds for the student to move him to the next line segment. ***It is important that Ozobot be moved to segments in alphabetical order each time the purple LED is displayed.*** After displaying the answer on the final line segment (J) Ozobot Evo will shut off.

Class Discussion Questions

1. What is the slope of any line segment that is horizontal? [0]
2. Ask the students if they notice anything similar about line segments G and J. *[They should have found that both of these segments have the same slope, namely -2. Hopefully, they will also notice that the two segments are parallel. Segments with the same slope are always parallel (or may lie on the same infinite straight line).]*
3. Ask the students if they notice a *geometrical relationship* between segments B and F. *[Hopefully, they will observe that these two segments are at right angles to one another.]* Then ask them what the slopes of these two segments are. *[The slope of segment B is -.5 and the slope of segment F is 2.]* Then ask them to multiply these two slopes together. *[The product is -1.]* **If the product of two slopes is -1, then the two segments will be perpendicular to one another.**
4. Suppose that a line segment has a slope of -1.25. What would be the slope of any segment that is perpendicular to it? *[-1.25x = -1 implies that x = .8]*
5. Discuss the problem of computing the slope of a vertical line segment. *[With **slope** defined as **rise/run**, or $\Delta y/\Delta x$, the problem with a vertical segment is that Δx is 0. Division by zero is “not allowed”. The slope is **undefined**.]*

Ozobot Evo

Slope Practice

