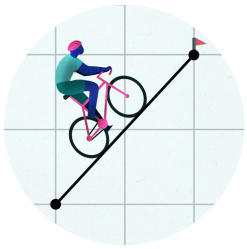

Riding the Slope

Slope

Stephanie Bayne, Brittany Bowens, Matthew McDonald
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Grade Level	8th Grade
Subject	Mathematics
Course	Pre-Algebra

Essential Question

How do we find slope from a table, a graph, and an equation?

Summary

This lesson engages students in learning about slopes through an interactive, real-world approach. Students begin by role-playing as business owners, graphing their company's financial changes over time, and then use the WIS-WIM strategy to interpret their graphs. They then collaborate in a Card Sort activity to connect tables, graphs, and equations before comparing them to their business scenarios. Students further explore slope concepts through videos, trifold activities, vocabulary discussions, and collaborative strategies such as Think-Pair-Share. The lesson concludes with practice identifying slopes and y-intercepts in graphs, connecting them to real-world contexts, and reflecting on their evolving understanding with the 3-2-1 strategy.

Snapshot

Engage

Students establish a business and graph their sales over time based on real-world scenarios. They then complete a WIS-WIM over their graph.

Explore

Students organize a card sort to match a table with its corresponding graph and an equation.

Explain

The students watch an explanatory video from the Slope Dude and work to identify and define slope, *y*-intercept, dependent, and independent variable using a trifold.

Extend

Students work with partners to identify slopes and *y*-intercepts, practice recognizing slopes through real-world examples and group sharing, and then describe and discuss the movement involved in plotting points.

Evaluate

Students apply slope and *y*-intercept to real-world scenarios, then reflect on their learning with a 3-2-1 strategy.

Attachments

- 3-2-1—Riding the Slope - Spanish.docx
- 3-2-1—Riding the Slope - Spanish.pdf
- 3-2-1—Riding the Slope.docx
- 3-2-1—Riding the Slope.pdf
- Business Performance—Riding the Slope - Spanish.docx
- Business Performance—Riding the Slope - Spanish.pdf
- Business Performance—Riding the Slope.docx
- Business Performance—Riding the Slope.pdf
- Intro to Slope Trifold—Riding the Slopes - Spanish.docx
- Intro to Slope Trifold—Riding the Slopes - Spanish.pdf
- Intro to Slope Trifold—Riding the Slopes.docx
- Intro to Slope Trifold—Riding the Slopes.pdf
- Lesson Slides—Riding the Slope.pptx
- Real-World Scenarios—Riding the Slope - Spanish.docx
- Real-World Scenarios—Riding the Slope - Spanish.pdf
- Real-World Scenarios—Riding the Slope.docx
- Real-World Scenarios—Riding the Slope.pdf
- Slope Card Sort—Riding the Slope.docx
- Slope Card Sort—Riding the Slope.pdf
- The Four Types of Slope—Riding the Slope - Spanish.docx
- The Four Types of Slope—Riding the Slope - Spanish.pdf
- The Four Types of Slope—Riding the Slope.docx
- The Four Types of Slope—Riding the Slope.pdf

Materials

- Lesson Slides (attached)
- Slope Card Sort handout (attached; one per group)
- The Four Types of Slope handout (attached; optional; one per student)
- 3-2-1 handout (attached; one per group)
- Intro to Slope Trifold (attached; one per group)
- Real-World Scenarios handout (attached; one per group)
- Graph paper
- Colored pencils or highlighters

50 minutes

Engage

Use the attached **Lesson Slides** to follow along with the lesson. Begin with **slide 2**, inform students that today they will learn about *slopes*. Move to **slide 3** and briefly read aloud the essential question. Then, move to **slide 4** and share the objectives.

Transition to **slide 5** and pass out the **Business Performance** handout. Inform students that they are going to role-play as business owners. As such, they will need to come up with a business name and a product they will be selling.

After students have come up with their business, walk students through filling out the title, and the *x* and *y* axes on their graphs. Next, use **slides 6–9** to walk students through the scenarios that happen in their business over the next year. Ask students to draw the line graph of their bank account over time that matches each scenario that you read.

At the end of the scenario, move to **slide 10**. Introduce students to the WIS-WIM strategy. You may choose to go over the Biological Sciences Curriculum Study's example graph with the students on how to complete WIS-WIM properly, then assign students to pairs. With their partner, have students select one of their graphs to complete WIS-WIM. They need to identify three things they see across their graph and follow up with what each of them means. Lastly, have each pair add a caption at the bottom of their graph that summarizes the entire graph based on their WIS-WIMs. Have students share what they discovered.

50 minutes

Explore

Place students into groups of 2–3. Move to **slide 11**. Invite students to participate in the Card Sort strategy. Instruct students not to open their cards until after you've finished giving the instructions, then provide students with the **Slope Card Sort** handout. Transition to **slide 12** and inform students to discuss within their group the correct match for each table with a graph, and an equation, sharing the example presented in the slides.

Once they are done, review the correct groupings for the card sort. Next, ask students to return to their business graph and compare the slopes in the business graph to that of the card sort, i.e., Which card looks like August in our business?

Teacher's Note: Resist The Urge to Help

Walk around the room and monitor students as they arrange the cards but don't assist them with the Card Sort beyond sharing the basic instructions.

Teacher's Note: Optional Activity

Display **slide 13,** distribute **The Four Types of Slope** handout. Ensure students have access to four different colored pencils or highlighters. Each colored pencil (or highlighter) will represent the type of slope. Students will use different color pencils for each slope to write their name and come up with an equation for a piece of their name to make it true. Before students start to graph their name, tell them to also create a key by highlighting or marking with a colored pencil the color that goes with each slope in the squares above, where they will create their name. Transition to **slide 14** to share the example to help guide students. Once students have completed this activity, have them hang their names somewhere in the room for the upcoming Gallery Walk. Once you have established your Gallery Walk, have students walk through and view their classmates' names and equations.

50 minutes

Explain

Pass out the **Intro to Slope Trifold** and navigate to **slide 15**. Invite students to watch MathGives YouPower's Slope Dude video. After the video, transition to **slide 16** and engage in a discussion with the students about their own experience of going up a hill. Invite students to answer the reflection questions to complete the first page of the **What is My Movement** section of the trifold about Slope Dude. Afterward, students will do a Think (Write)-Pair-Share activity. They will write what movement is involved in plotting one point to the next. The answer they write should be "left to right". They will then pair up and share their thoughts.

Display **slide 17**. Students may now begin to complete the **Does this Match** section of the trifold. Have students work with a partner to determine if the provided table and graph match.

Vocabulary and Symbols: Move students to the Vocab section and review the following terms:

- Slope
- *y*-intercept
- Dependent
- Independent variable
- Slope intercept form

After students have completed this section, engage in a discussion about each vocabulary word. Share answers from **slides 18 and 19.**

Transition to **slide 20.** Facilitate a whole class or small group discussion regarding what students think individually and as a whole about slope and *y*-intercept.

Continue through **slides 21–25**. As a class, work each problem, finding the slope and *y*-intercept for each equation.

30 minutes

Extend

Display **slide 26** and begin the **Identify the Slope and *y*-Intercept** section of the trifold. With a partner, one will determine the slope and the other the *y*-intercept and then trade places, so the other person can identify the slope and the other can identify the *y*-intercept.

Move to **slide 27** and direct students to **What's My Slope?**. Once they have had a bit to work through the activity on their own, come together to draw out each slope. Complete the Think-Pair-Share strategy by having students respond to the question related to this section on their own, then have them pair with a partner to come up with a cohesive answer. Then, have a few students share their pair's responses.

20 minutes

Evaluate

Provide students with the **Real-World Scenarios** handout. Ask them to identify the slope and *y*-intercept for each line segment and come up with a real-world scenario that may cause this type of graph.

Display **slide 28** and distribute the **3-2-1** handout. Students will now complete a 3-2-1 over what they have learned. Give students time to answer the questions on their own before asking a few to share their thoughts with the class.

Finally, take a moment and return to the Card Sort from the **Explore**. Have students retry the Card Sort to test their mastery of identifying the slope's corresponding graph and equation.

Resources

- BSCS Science Learning. (2012). *I can use the identify and interpret (I^2) strategy*. BCBS. https://media.bscs.org/icans/Icans_I2_SE.pdf
- K20 Center. (n.d.). 3-2-1. Strategies. https://learn.k20center.ou.edu/strategy/117
- K20 Center. (n.d.). Card sort. Strategies. https://learn.k20center.ou.edu/strategy/147
- K20 Center. (n.d.). Gallery walk/Carousel. Strategies. https://learn.k20center.ou.edu/strategy/118
- K20 Center. (n.d.). Think, pair, share. Strategies. https://learn.k20center.ou.edu/strategy/139
- K20 Center. (n.d.). WIS-WIM. Strategies. https://learn.k20center.ou.edu/strategy/1201
- MathGives YouPower. (2014, January 3). *Slope dude* [Video]. YouTube. https://youtu.be/ZcSrJPiQvHQ?si=iOW0eE0i0Q6U8KD_