

Weekly Focus: slope
Weekly Skill: application

LESSON 35: Finding Slope and Graphing, part 2

Lesson Summary: For the warm-up, students will solve a problem about the cost of clothing with tax. In Activity 1, students will do problems in the workbook. In the application activity, they will compare the costs of different types of light bulbs. Estimated time for the lesson is 2 hours.

Materials Needed for Lesson 35:

- *Mathematical Reasoning Test Preparation for the 2014 GED Test Workbook (pages 106 – 109)*
- Application Problem Worksheet (embedded link without answers)

Objectives: Students will be able to:

- Solve the item cost and tax problem
- Solve various slope and graphing problems
- Compare the costs of different types of light bulbs by using a table and a graph

ACES Skills Addressed: N, CT, LS

CCRS Mathematical Practices Addressed: Building Solution Pathways, Reason Abstractly and Quantitatively

Levels of Knowing Math Addressed: Intuitive, Abstract, and Application

Notes:

You can add more examples if you feel students need them before they work. Any ideas that concretely relates to their lives make good examples.

For more practice as a class, feel free to choose some of the easier problems from the worksheets to do together. The “easier” problems are not necessarily at the beginning of each worksheet. Also, you may decide to have students complete only part of the worksheets in class and assign the rest as homework or extra practice.

The GED Math test is 115 minutes long and includes approximately 46 questions. The questions have a focus on quantitative problem solving (45%) and algebraic problem solving (55%).

Students must be able to understand math concepts and apply them to new situations, use logical reasoning to explain their answers, evaluate and further the reasoning of others, represent real world problems algebraically and visually, and manipulate and solve algebraic expressions.

This computer-based test includes questions that may be multiple-choice, fill-in-the-blank, choose from a drop-down menu, or drag-and-drop the response from one place to another.

The purpose of the GED test is to provide students with the skills necessary to either further their education or be ready for the demands of today’s careers.

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Lesson 35 Warm-up: Solve the socks problem

Time: 10 Minutes

Write on the board: Lydia went to the store to buy some clothes. With tax, she paid \$49.14 for a \$26 shirt and 6 pairs of socks. (She doesn't live in MN).

Basic Questions:

- If the tax rate is 8%, how much was each pair of socks?
 - First, we need to figure out the tax. Students may just divide \$49.14 by 1.08 (the price plus 8% tax) or may set up a proportion first: $\frac{\$49.14}{1.08} = \frac{\$x}{1}$. $x = \$45.50 =$ the cost of the items before tax
 - $\$45.50 - \26 for the shirt = \$19.50 for 6 pairs of socks
 - $\$19.50/6 = \3.25 for each pair
 - Check answer

Extension Question:

- Write an equation for the problem. Let x = the number of pairs of socks
 - $(6x + 26)(1.08) = \$49.14$
 - $6.48x + 28.08 = 49.14$
 - $6.48x = 21.06$
 - $x = \$3.25$

Notes:

- Discuss the different ways of solving the problem. An equation would usually be setup with the 1.08 in front of the parentheses, but some students may find it easier to write in the order it happens: all of the items times the tax.
- Making the tax 1.08 is a shortcut. Students may understand better the items times 0.08 and adding those to the price of the items. Explain how they are the same.

Lesson 35 Activity 1: Practice Problems

Time: 40 Minutes

1. Solve the problems in the **workbook pages 106-109**.
2. Do #1 and #2 on page 106 together first.
3. Circulate to help.
4. If there is extra time now or at the end of class, add to the following problems:

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- Question 5: Graph the two parallel lines
- Question 8: Make a table
- Questions 13 and 14: Make a table and graph
- Questions 20 and 21: Make a table and a graph
- Or choose other problems to expand

Lesson 35 Application: Which Light Bulb is Best?

Time: 45 Minutes

1. This [application activity](#) from yummymath about the cost of using light bulbs connects math and science skills.
2. As you introduce the activity, have a short discussion about the different types of bulbs. Encourage students to explain the differences and give examples of when each type might be used (i.e. LEDs are used on bicycles). Show images that are different from those on the worksheet if you have internet access.
3. The activity is a review of decimals and practice with graphing also.
4. Students may use calculators to fill in the table.
5. The last activity, number 9, can be left out or assigned as homework.
6. Close the activity by measuring the slope of each line on the first graph (if possible). Count the change in y units divided by the change in x units. (It is a little difficult to see on the answer sheet but may be easier to count from a student's graph or yours if you made one.)
7. Here is a suggestion on how to group the different sections of the activity:
 - a. Discussion of light bulbs, #1 and #2 (10 minutes)
 - b. Filling out chart, #3 and #4 (10 minutes)
 - c. First graph and #5 (10 minutes)
 - d. #6, #7, and 2nd graph (10 minutes)
 - e. #8 and figuring slope (5 minutes)
 - f. #9 and #10: homework