

Learning Project **6** Fractions, Proportions and Percents

Inquiry Activity 6-1: Setting up and Solving a Proportion

(Note: The italicized portion is directed to the learners.)

1. Identifying the Problem (Item # 14, PA) Calculator Not Allowed.

Read the question carefully, as you would if taking the actual test.

14. The scale on a hiker's map states that 1 inch = 2000 feet. Anna wants to know how far it is to her next campsite. On the map, the next campsite is 5 inches from her present location. What is the actual distance, in feet, between Anna's present location and her next campsite?

- (1) 5
- (2) 400
- (3) 600
- (4) 5,000
- (5) 10,000

**Calculator
NOT Allowed**



Here are some problem clarification questions you may want to consider when reading test questions.

What words and/or symbols might be important to understand to answer this problem and what are they telling you?

Cannot know what words the learner will choose. The following represents a possible, though non-exclusive, list: scale, actual distance, 1 inch = 2000 feet.

What words and/or symbols are unfamiliar and what do you think they mean?

Here is a non-exclusive list of some of the words that may present problems with some learners: new campsite, present location.

2. Becoming Familiar with the Problem

Ask yourself questions like these about the problem, taking note of the ones that were especially helpful so that you can remember to use them when you take the test.

Reread the question. What is the question really asking?

Which information in the problem is relevant to what you need to find?

What do I know about this kind of problem?

Could be using a map to take a road trip, reading scales on a map, camping experience, etc.

What does the problem really look like — sketch a picture of what's going on in the problem.

3. Planning, Assigning and Performing Tasks

Try to answer the test question any way you can, even if you have to guess, but try to be aware of the reasoning and operations that you are using. The following questions and strategies can be helpful as strategies to use solve test questions.

Use your experience with similar problems to make sense of this one.

What is the problem asking you to do in terms of mathematics...bringing together, separating, or comparing?



Restate the question (or situation) using fewer words.

Estimate an answer – tolerate some fuzziness, but be aware of the steps you took to make the estimate, even if you guessed!

Eliminate unreasonable multiple-choice answers.

Find the answer.

Compare your answer to the estimate.

Is the answer reasonable?

Be ready to defend your answer (whether you worked individually or with someone else) and the way you found it.

4. Sharing with Others

Telling other people what you know helps you to understand the material better. So take this opportunity not only to share your knowledge, but also to learn it more completely.

Small groups: Compare your answers to others in the group and explain why and how you found it and why you think it is correct.

Agree on the correct answer and the step-by-step process used to find that answer.

Do some research in the math texts that are available and look up unfamiliar vocabulary if necessary so that everyone can agree.

Write the procedure that you used as a sequence of steps, that is, Step 1, Step 2, etc.

Write the procedure as a mathematical expression.

Prepare a presentation of your answers to all these questions, including the estimation process members of your group used.

Whole Class: Report to the class your determinations of the steps you decided on to answer this question, the estimation process used, as well as the mathematical expression that summarizes them.

At the completion of all the group presentations, the class should discuss all of the different ways to solve the problem, or if everyone used the same method, what other methods could be used.

5. Reflecting, Extending and Evaluating

Reflecting: Think about what you learned. (group activity or instructor led)

Here are some questions to start you thinking about the experience you just had. Thinking about what you have learned and experienced is part of the learning process. When the focus is only on the answer, you don't get much time to think about what was learned.

What reading and thinking skills did you use to solve this item?

Did you solve this problem without knowing or using the proportion formula? Explain.

How will reading and thinking skills help you during the test? In future learning?

If you have had previous experience with using maps or going camping, how did that experience help you with this problem?

Extending: Extend what you learned to new situations. (group activity or instructor led)

In extending, you are being asked to transfer the information presented in the Practice Test question to other information or situations you already know and maybe making new connections to other information.

This kind of problem is known mathematically as proportion problem. Find what the textbook says about how to set up the solution to this problem and solve it. Be prepared to present the textbook method.

Compare the method you used to solve this problem and the textbook explanation. Which do you prefer?

Learners may say that their method is better and that the textbook explanation is too academic. Have them be sure the their method works for other kinds of proportion problems.

How is a proportion problem similar to or different from the algebra used in both Algebra Learning Projects you previously explored?

The textbook formula does use an equation with an unknown.

Have you ever used your road map to calculate the distance of a trip or the estimated time of arrival? Explain how you did that.

Evaluating: Assess what you learned and how you learned it.

In this last step, you get a chance to review both the content of what you learned and the methods used to learn. There are no right or wrong answers to these questions; it is your chance to look more closely at your learning style and the opportunity to state how you benefited or didn't benefit from the content and/or the methods to help you pass the GED test.

What strengths of mine were apparent during this Inquiry Activity?

How can you use those strengths to learn math problems with which you are not familiar?

What weaknesses of mine were exposed and how can I overcome them?

Is the format of the Inquiry Activity helpful to you in learning math? Explain.

Is the process you go through (the first three steps) in the Inquiry Activities helpful to you in taking tests? Explain.

Your instructor will lead a class discussion of all of the questions and issues discussed in your groups in this Extending, Extending, and Evaluating section.

Each group should be prepared to present and support their answers. They should also be flexible of mind to determine if another group may be presenting new or useful information or computation techniques that they can use.