

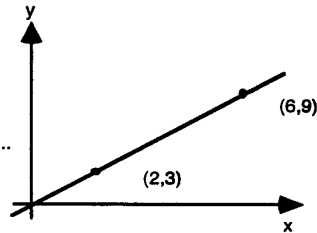
Exhibit 33. Sample item on pedagogical beliefs for Population 2 mathematics teachers. This exhibit shows one item used to gather information on teachers' beliefs about more and less effective pedagogical approaches. This particular item was for Population 2 mathematics teachers. It deals with introducing a new topic and with a particular mathematics topic. A parallel item used counterparts of each strategy listed but different mathematics content and sought teachers' beliefs about correcting a widely held student misconception.

Each year many teachers must help their students learn to solve problems such as "Juan was able to run 1.5 kilometers in 5 minutes. If he was able to keep up this same average speed, how far would he run in 12.5 minutes?"

I BELIEVE THE BEST APPROACH OR SEQUENCE OF APPROACHES IS...

IF YOU NEEDED TO HELP YOUR CLASS LEARN HOW TO SOLVE SUCH PROBLEMS, WHAT APPROACH OR SEQUENCE OF APPROACHES DO YOU BELIEVE WOULD BEST HELP STUDENTS LEARN?

Place a "1" in the box next to the approach you believe to be the best. If you believe other approaches would also be acceptable, place a number in the box next to each one indicating the order in which you would consider using it. You need not choose more than one approach. Leave blank the box for any approach you do not consider acceptable.



a. I would present a general graph such as this..... because an understanding of graphs with a constant ratio of change in x to change in y is one important mathematical tool for solving problems like this one.

a

b. I would present the method of using proportional equations to solve this problem, as in

$$\frac{15}{5} = \frac{x}{12.5} \rightarrow 5x = (15)(12.5) \rightarrow x = 18.75/5 = 3.75 \text{ km}$$

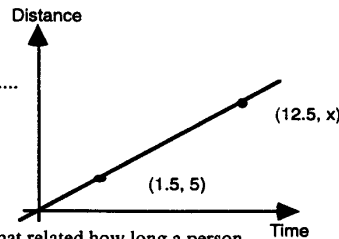
After presenting other examples of this type of problem, I would assign practice exercises to students.

b

c. I would use the method suggested by the textbook for dealing with problems of this type, carrying out the strategy suggested by the textbook.

c

d. I would work with students to develop a reasonable graph for this *specific* problem, such as and then work with students on using the properties of graphs like this one to find a numerical solution to the problem.



d

e. I would have students use a calculator to find pairs of numbers that related how long a person has run at a constant average speed to how far that person has traveled. I would then have the students use these pairs of numbers to study how to determine the distance a person running at constant average speed would travel in a given time.

e

f. I would divide the class into several groups and have the students in each group work together on the problem until each group found a method for solving the given problem and then found a method that would work for similar problems.

f

g. Which of these do you believe to be the most unacceptable approach? Place the letter of that approach in the box.