

One store, Price Pleasers, reduces the price each week of a \$100 stereo by 10 percent of the original price.

Another store, Bargains Plus, reduces the price each week of the same \$100 stereo by 10 percent of the previous week's price.

After 2 weeks, how will the prices at the two stores compare?

Did you use the calculator on this question?

Yes No

Scoring Guide

Solution:

A. Cheaper at Price Pleasers

At Price Pleasers the stereo would be \$80 after 2 weeks.

At Bargain Plus, it would cost \$81.

OR

Successive 10% reductions of the original price will yield greater savings than successive reductions of 10% of the reduced price.

Score & Description

Correct

Correct response—cheaper at Price Pleasers with an explanation that compares price at each store after 2 weeks (\$80 vs. \$81)

OR

Cheaper at Price Pleasers with an explanation that generalizes as described in solution above

NOTE: Score CORRECT if incorrect answer is B or C with a clear statement that Price Pleasers is cheaper and explanation is correct and complete.

Partial

Cheaper at Price Pleasers with anything less than a complete explanation

OR

Computes the correct amount for at least 2 weeks for either Price Pleasers or Bargain Plus, but conclusion is missing, incomplete, or incorrect (if the store is not identified the score is still a 2)

Incorrect

Incorrect response

In this question the student was asked to compare the sale price of a stereo, after 3 weeks, based on two different ways for reducing the price. In one store, the price was reduced each week by a fixed amount (10% of \$100, or \$10). In the other store the price was reduced each week by a varying amount (10% of the current price, which is less each week). To earn full credit, the student needed to indicate that the price would be less at the first store after 3 weeks and explain how the solution was obtained. Students were permitted to use a calculator.

Correct - Student Response

- 1 One store, Price Pleasers, reduces the price each week of a \$100 stereo by 10 percent of the original price.

Another store, Bargains Plus, reduces the price each week of the same \$100 stereo by 10 percent of the previous week's price.

After 2 weeks, how will the prices at the two stores compare?

- (A) The price will be cheaper at Price Pleasers
- (B) The price will be the same at both stores
- (C) The price will be cheaper at Bargains Plus

Explain your reasoning.

$$\begin{array}{l}
 \text{Price} \quad 100 - 90 - \textcircled{80} - 70 - 60 \\
 \text{Bargains Plus} \quad 100 - 90 - \textcircled{81} - 72.9 - 65.61
 \end{array}$$

Partial - Student Response

- 1 One store, Price Pleasers, reduces the price each week of a \$100 stereo by 10 percent of the original price.

Another store, Bargains Plus, reduces the price each week of the same \$100 stereo by 10 percent of the previous week's price.

After 2 weeks, how will the prices at the two stores compare?

- (A) The price will be cheaper at Price Pleasers
- (B) The price will be the same at both stores
- (C) The price will be cheaper at Bargains Plus

Explain your reasoning.

If Price Pleasers keep going down then it will ALWAYS be less than Bargains.

Incorrect - Student Response

- 1 One store, Price Pleasers, reduces the price each week of a \$100 stereo by 10 percent of the original price.

Another store, Bargains Plus, reduces the price each week of the same \$100 stereo by 10 percent of the previous week's price.

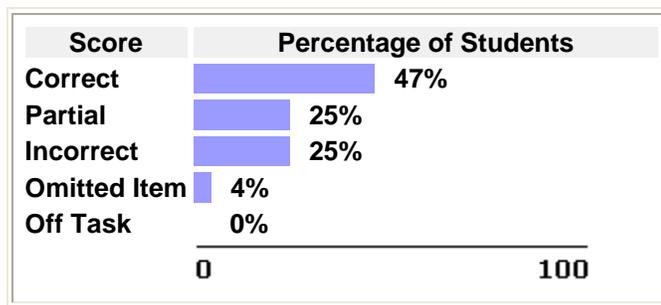
After 2 weeks, how will the prices at the two stores compare?

- (A) The price will be cheaper at Price Pleasers
- (B) The price will be the same at both stores
- (C) The price will be cheaper at Bargains Plus

Explain your reasoning.

Because they reduce it 10% from the previous week

2003 National Performance Results



Note:

- These results are for public and nonpublic school students.
- Percentages may not add to 100 due to rounding.

Mathematical Content Area: *Number sense, properties, and operations*
Mathematical Ability: *Problem solving*

Mathematical Content Area

Number sense, properties, and operations

This question measures number sense, properties, and operations. This content area focuses on students' understanding of numbers (whole numbers, fractions, decimals, integers, real numbers, and complex numbers), operations, estimation, and applications to real-world situations. Students are expected to demonstrate an understanding of numerical relationships as expressed in ratios, proportions, and percents. Students are also expected to understand properties of numbers and operations, generalize from numerical patterns, and verify results. Number sense includes questions that address a student's understanding of relative size, equivalent forms of numbers, and use of numbers to represent attributes of real-world objects and quantities.

Mathematical Ability

Problem solving

This question measures students' problem solving ability. Students demonstrate problem solving in mathematics when they recognize and formulate problems; determine the consistency of data; use strategies, data, models; generate, extend, and modify procedures; use reasoning in new settings; and judge the reasonableness and correctness of solutions. Problem solving situations require students to connect all of their mathematical knowledge of concepts, procedures, reasoning, and communication skills to solve problems.

	Description	Grade	Type	Difficulty
1	Compare percent reduction	8th	Short Constructed Response	Hard