Analyzing Children's Thinking about Mean and Median

The following item appeared on the 2007 National Assessment of Educational Progress (NAEP):

The table below shows the number of customers at Malcolm's Bike Shop for 5 days, as well as the mean (average) and the median number of customers for these 5 days.

Number of Customers at Malcolm's Bike Shop	
Day 1	100
Day 2	87
Day 3	90
Day 4	10
Day 5	91
Mean (average)	75.6
Median	90

Which statistic, the mean or the median, best represents the typical number of customers at Malcolm's Bike Shop for these 5 days?

Explain your reasoning.

Here are some children's responses to the NAEP item:

Student 1

The Median because on a typical day the Bike Shop had normally 90 customers

Student 2

Median

The median better represents the statistic in this question because on day 4, Malcom only had 10 customers, which is an outlier and greatly lowered the average

The mean Because its
the average of all the days.

Source: Eighth-grade NAEP test item, block: 2007-8M9, number 8 (NAEP 2007); National Assessment of Educational Progress

After reading each student response presented above, do the following:

1. Organize the responses from "most developed" to "least developed." You can use as many categories to organize the responses as you wish. Explain why you categorized the students' responses in the manner you chose.
2. Describe the steps you would take to further support each student's learning.