Unequal Averages Assignment

NOTE: This is a live problem from nrich. The first 2 questions are compulsory . If possible try to answer the last 3 questions.

Here's an interesting set of five numbers: 2,5,5,6,7

The mean, mode, median and range are all 5.

Q. 1: Can you find other sets of five numbers where:

Mean = Median = Mode = Range

4,10,10,12,14

6,15,15,18,21

Q. 2: Can you find sets of five numbers that satisfy the following properties?

A. Mode < Median < Mean

1,1,4,10,14

Mode = 1, Median = 4,Mean = 6

B. Mode < Mean < Median

2,2,9,10,12

Mode =2 , Median =9 ,Mean =7

C. Mean < Mode < Median

Mode = , Median = ,Mean =

Not possible. Explained later.

D. Mean < Median < Mode

2,5,8,10,10

Mode = 10,Median = 8,Mean = 6

E. Median < Mode < Mean

5,10,15,40,40

Mode = 40 , Median =15 ,Mean = 22

F. Median < Mean < Mode

Q.3 : Not all of these can be satisfied by sets of five numbers! Can you explain why

F:since they can only be accomplished with the median being a decimal, not a whole number.

2C: since the smallest target should be 20.then it should average out to 4 in each place.Since the numbers have to be smaller than 4, making the median will not be possible.

Q.4: Show that some of them can be satisfied with sets of just four numbers. A 1,1,3,9 B.2,2,10,4.

Q. 5: Show that all of them can be satisfied with sets of six numbers.

A 1,1,5,5,10,33

B 3,3,10,10, 20,

C 0,1,2,7,9,9.

D 2,3,6,10,10,11

I can not find any answers for F and E