1

We have set consisting of 35 terms (terms=number of members): 9+4+1+2+1+8+10=35. Median of a set, with odd number of terms, would be the middle term, so 18th term. Values of terms: 9 terms=1, 4 terms=2, 1 term=3, 2 terms=4 , 1 term=5, 8 terms=6 and 10 terms=7 --> 18th term is 6.

To illustrate:
1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 3, 4, 4, 5, **6**, 6, 6, 6, 6, 6, 6, 6, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7.

Answer: E.

2

If a set has odd number of terms the median of a set is the middle number when arranged in ascending or descending order;
If a set has even number of terms the median of a set is the average of the two middle terms when arranged in ascending or descending order.

There are total of $17+13+21+4+2+2+1=60$ drivers (60 terms) so the median number of accidents per driver would be the average of accidents of 30th and 31st drivers (as we have even # of terms).

30th term equals to 1 and 31st term equals to 2 so $median = \frac{1+2}{2}$.

Answer: C.

To elaborate more, you can imagine these data points as:
0, ..., 0, 1, ..., 1, 2, ..., 2, 3, ..., 3, 4, ..., 4, 5, ..., 5, 6, ..., 6 --> 17 zeros, 13 ones, 21 twos and so on, total of 60 data points. Median would be the average of 30th and 31st terms: $median = \frac{1+2}{2}$.

3

Division A's percent of total income exceeded its percent of total expenses by 38%-35%=3%;
Division B's percent of total income did not exceeded its percent of total expenses, 12%-26%=-14%;
Division C's percent of total income exceeded its percent of total expenses by 20%-14%=**6%**;
Division D's percent of total income exceeded its percent of total expenses by 30%-25%=5%;

Since division C's difference is the greatest then we should calculate the amount of this difference in $: 0.20*1,560,000-0.14*495,000=~240,000.
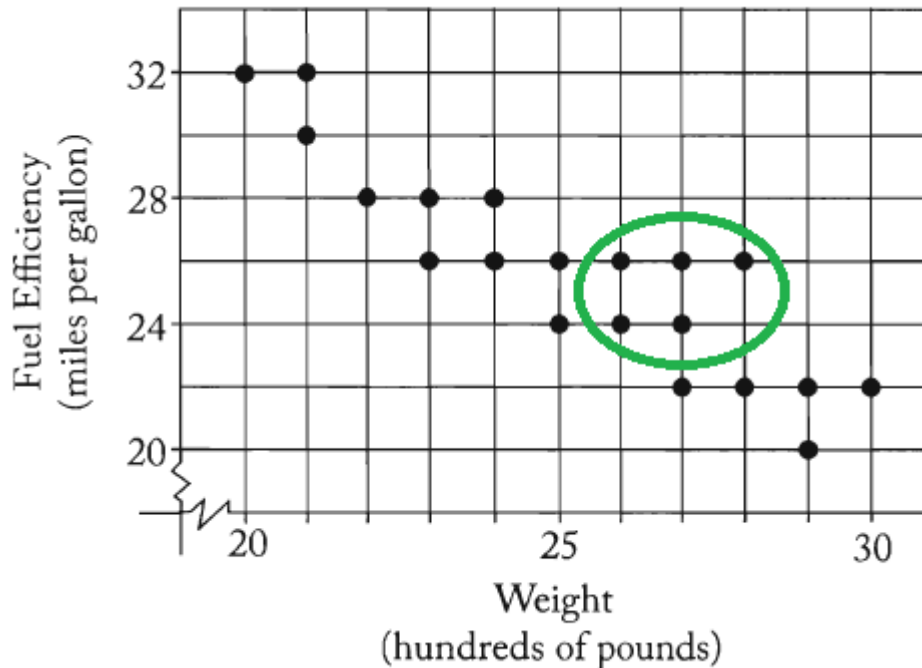
Answer: E.

4

Since we are dealing with percents only no need to use $0.7 at all.

In 1980 44.4% of the cost to the consumer went to the farmer. Now, 44.4% is a little less than 1/2, so the answer must be 4/9 (basically the questions asks to transform 44.4% into a fraction).

Answer: C.

5

All the dots that are to the right of 25 AND above 22 satsify the condition, so there are 5 such cars:

Answer: B.

6

We have 11 (odd) data points (from 1990 to 2000, inclusive), thus the median of these 11 numbers would be the middle term (6th largest number), when arranged in ascending order.

The 6th largest number, the 6th tallest bar, is for year 1994, which corresponds to approximately 310,000.

Answer: C.

7

There are total of 20 students.
1st group: 1 student wrote between 0-9 pages;
2nd group: 4 students wrote between 10-19 pages;
3rd group: 6 students wrote between 20-29 pages;
4th group: 7 students wrote between 30-39 pages;
5th group: 2 students wrote between 40-49 pages.

As there are 20 students, then the median length would be the average of 10th and 11th students writings. Both, 10th and 11th students are in the third group, so both these student wrote between 20 and 29 pages (so the median will be between 20 and 29).

A. We want to minimize the # of writings which fall in the range median-6 and median+6 pages. We want to spread the # of writings as far as possible. Make, all but 10th and 11th students from 3rd group to write 20 pages (min possible for this group), all student from 4th group to write 39 pages (max possible for this group) and 10th and 11th students to write 29 pages each, then median=(29+29)/2=29 and only these 2 student fall in the range 29-6=23 and 29+6=35 pages. Note that less than 2 is not possible as even if we put as far apart as possible 10th and 11th students' writings, 20 pages for 10th and 29th pages for 11th, then the median=(20+29)/2=24.5 and still these 2 student (at least) fall in the range median-6=18.5 and median+6=30.5 pages.

Answer: 2.

B. We want to maximize the # of writings which fall in the range median-6 and median+6 pages. We want to group # of writings as close as possible to the median, which still will be between 20 and 29. Now, make ALL 4 students from the second group to write 19 pages (max possible for this group) and ALL 7 students from the fourth group to write 30 pages (min possible for this group). Also make 10th and 11th students form the third group to write 24 and 25 pages, so that the median will be (24+25)/2=24.5. In this cases all these writings will fall in the range 24.5-6=18.5 and 24.5+6=30.5, so total of 4+7+6=17 writings.

Answer: 17.