Which average? Which spread?

Mean, median, mode, range and interquartile range. Give exact answers, or money to 2 decimal places.

Name _____

Date _____

Part A: one of each

Each question tells you which measure to find. All five use the same data.

1 MEAN

3, 5, 5, 6, 8, 9, 13. Find the mean.

Answer: _____

2 MEDIAN

3, 5, 5, 6, 8, 9, 13. Find the median.

Answer: _____

3 MODE

3, 5, 5, 6, 8, 9, 13. Find the mode.

Answer: _____

4 RANGE

3, 5, 5, 6, 8, 9, 13. Find the range.

Answer: _____

5 INTERQUARTILE RANGE

3, 5, 5, 6, 8, 9, 13. Find the IQR.

Answer: _____

Part B: you decide

Mean
The total shared out equally. Uses every value, so one extreme value pulls it.

Median
The middle value once the data is in order. An extreme value does not affect it.

Mode
The most common value. Works for data such as sizes, where an in-between value makes no sense.

Range
Largest minus smallest: the full spread, extremes included.

IQR
Upper quartile minus lower quartile: the spread of the middle half, not affected by extremes.

Read what each question wants, tick the measure that does that job, then work it out. With n values in order, the quartiles are the $\frac{n+1}{4}$th and $\frac{3(n+1)}{4}$th values. Each answer matches a letter in the code table; the letters from questions 1 to 8 spell a word.

1

House prices on a street, in thousands of pounds: 210, 225, 230, 240, 255, 260, 1450. Give a typical price that the one very expensive house does not distort.

Which method? ☐ Mean ☐ Median ☐ Mode ☐ Range ☐ IQR

Answer: _____ Letter: ____

2

Shoe sizes sold in a morning: 5, 6, 6, 7, 7, 7, 7, 8, 8, 9, 10. The shop wants to know which size to reorder most of.

Which method? ☐ Mean ☐ Median ☐ Mode ☐ Range ☐ IQR

Answer: _____ Letter: ____

3

Midday temperatures (°C) over a week: 6, −4, 9, 3, 12, 5, 1. How far apart were the warmest and coldest days?

Which method? ☐ Mean ☐ Median ☐ Mode ☐ Range ☐ IQR

Answer: _____ Letter: ____

4

Five friends' bills in a café: 14.60, 22.60, 15.80, 27.00, 21.00. They decide to split the total equally. How much does each pay?

Which method? ☐ Mean ☐ Median ☐ Mode ☐ Range ☐ IQR

Answer: _____ Letter: ____

5

Times (s) for 11 runners: 12.1, 12.4, 12.6, 12.9, 13.0, 13.2, 13.5, 13.8, 14.1, 14.4, 19.6. One runner fell. Give a measure of spread that his time does not affect.

Which method? ☐ Mean ☐ Median ☐ Mode ☐ Range ☐ IQR

Answer: _____ Letter: ____

6

Goals	0	1	2	3	4
Matches	3	7	6	3	1

If the total number of goals had been shared equally between the matches, how many goals would each match have had?

Which method? ☐ Mean ☐ Median ☐ Mode ☐ Range ☐ IQR

Answer: _____ Letter: ____

7

Pets	0	1	2	3	4
Students	3	4	7	4	1

The students line up in order of how many pets they have. How many pets does the student in the middle have? (Careful.)

Which method? ☐ Mean ☐ Median ☐ Mode ☐ Range ☐ IQR

Answer: _____ Letter: ____

8

A batter's scores in 7 innings: 34, 0, 56, 12, 0, 78, 37. If she had scored the same total but the same number of runs every innings, what would each score have been?

Which method? ☐ Mean ☐ Median ☐ Mode ☐ Range ☐ IQR

Answer: _____ Letter: ____

1.5	1.6	2	4	6.4	7	7.27	7.5	8	16	20.20	21.00	31	34	240	410
T	**I**	**L**	**O**	**C**	**U**	**W**	**N**	**B**	**A**	**R**	**S**	**E**	**V**	**Q**	**P**

1 2 3 4 5 6 7 8

_____ _____ _____ _____ _____ _____ _____ _____

Answers

Part A

1. $\frac{49}{7} = 7$

2. 7 values, so the median is the 4th: 6

3. 5 appears twice

4. $13 - 3 = 10$

5. Lower quartile = 2nd value = 5, upper quartile = 6th value = 9. IQR $= 9 - 5 = 4$

Part B

1. Median. The 4th of 7 values, 240 thousand pounds. (The mean, 410, is pulled up by 1450.) → **Q**

2. Mode. Size 7 sold most often. A mean such as 7.27 is not a shoe size. → **U**

3. Range. $12 - (-4) = 16$ → **A**

4. Mean. Total 101.00, shared between 5 is 20.20 → **R**

5. IQR. Lower quartile is the 3rd value (12.6), upper quartile the 9th (14.1), so IQR $= 14.1 - 12.6 = 1.5$ s → **T**

6. Mean. $\frac{0 \times 3 + 1 \times 7 + 2 \times 6 + 3 \times 3 + 4 \times 1}{20} = \frac{32}{20} = 1.6$ → **I**

7. Median. 19 students, so the 10th. The first 7 have 0 or 1 pet; the 8th to 14th have 2. So 2 → **L**

8. Mean. $\frac{217}{7} = 31$ → **E**

The word is **QUARTILE**. Other letters come from using a different measure on the same data, or from slips such as $12 - 4$ for the range in question 3, dividing by the number of columns in question 6, or finding the middle frequency in question 7.