

Averages and Range Overview – www.m4ths.com

(1) (a) Find the mean number of cats owned per household using the frequency table below.

Number of Cats in House	Frequency
0	8
1	5
2	13
3	2
4	4
12	1

(b) Fred says that the modal number (mode) of cats owned by any household is 12. Explain why he is wrong.

(c) Explain why the crazy cat lady in the survey is an 'outlier'

(2) The table below shows information about how long it took some students to complete a Rubik's Cube. The time (T) shown is in minutes.

Time Taken to Complete	Frequency
$0 < T \leq 1$	2
$1 < T \leq 5$	1
$5 < T \leq 9$	4
$9 < T \leq 13$	6
$13 < T \leq 15$	8

(a) Find an estimate for the mean time taken to complete the Cube.

(b) Explain why it's an estimate.

(c) Which is the modal category (mode)?

(d) Another play completes the cube in 2 minutes. What would this do to the mean time if their time was added to the table? You don't have to calculate the new mean.

(3) The frequency table below shows the heights of a crop of trees in metres

Height	$0 < H \leq 1$	$1 < H \leq 5$	$5 < H \leq 9$	$9 < H \leq 11$
Number	4	0	6	3

(a) Find an estimate for the mean height of the trees.

(b) Explain why the modal height of the trees can't be 10 metres.

(4) The frequency table below shows the number of days students in Year 8 went to school one week.

Number of Days	Frequency
5	108
4	22
3	6
2	4
1	1
0	1

(a) Find the mean number of days the year 8s went to school that week. Give your answer to 2 dp.

(b) Find the modal number of days.

(c) Explain why the range is 5 and not 107.

(5) Find 3 different numbers with a mean of 6.

(6) Show that you have to add a negative number to 4, 3, 1 and 3 to get a mean of 2 for the five numbers.

(7) The numbers -3, -2, -4, -6 and N have a range of 17. Given that N is a negative number, find the value of N .

(8) Find 4 numbers with a mean of 8, range of 3 and a mode.

(9) There are 9 people in Trevor's class before he joins. The mean height is 1.26m before he joins. When he joins the mean height including Trevor is 1.3m

(a) Without any calculations, state whether Trevor is taller than 1.26m or not.

(b) Find Trevor's height.

(c) One more person joins the 10 people so there are now 11 in the class. How tall would they have to be to make the new mean height of the class 1.28m?

(10) 4 numbers have a mean of 5. One number is taken away and the mean is now 3. Which number was taken away?

(11) Write down 3 numbers where the mode is less than the mean.

(12) Find 5 numbers where the median is greater than the mean.

(13) Go back to question (2). Explain why the median time will fall in the category $9 < T \leq 13$.

(14) Go back to question (3). Explain why the mode can't be 10 metres.

(15) Find 3 numbers where the mode is a square number and the mean is also a square number.

(16) Find the two cube numbers that have a mean of 17.5

(17) Find 3 numbers with a mean of 0 and range of 10.