

# Math Made Easy: Finding the mode, mean, median, and range of a set of numbers (part 2)

<http://www.youtube.com/watch?v=lgxZfQDf4qY>

**Listen to and watch the video and try to answer the questions.**

1. What is the mean of a set of numbers? .....
2. Why should you be interested in a 7 day weather forecast? .....
3. Is this forecast reliable? .....
4. How do you proceed if you want to get a mean of a set?
  - a) .....
  - b) .....
5. How do you round numbers? .....

**Work with your neighbor and try to describe how you can find**

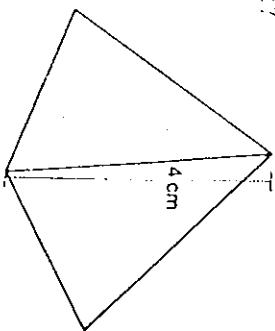
1. the mode of a set .....
2. the median of a set .....
3. the range of a set. ....

6. Look at this table:

QUESTION	ANSWER
How high is that building?	It is 200 m high.
What is the height of that building?	The height of that building is 200 m. OR It has a height of 200 m.

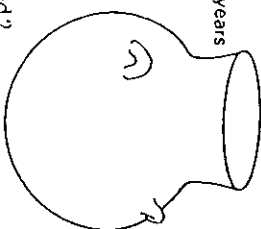
Use the table to ask and answer questions about the following:  
(Note: The first pair is not always possible, and should not be used in (f) and (g).)

a) height?

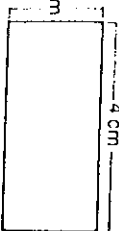


e) age?

3600 years

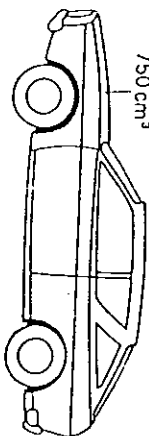


b) width?  
length?  
area?



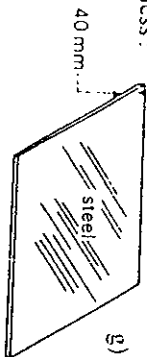
f) top speed?  
capacity?  
weight?

750 cm<sup>3</sup>

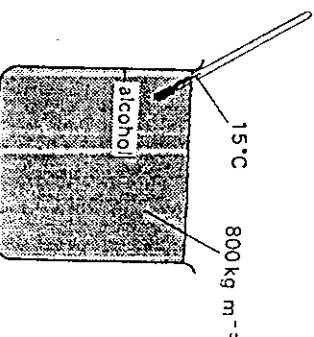


500 kg  
120 km hr<sup>-1</sup>

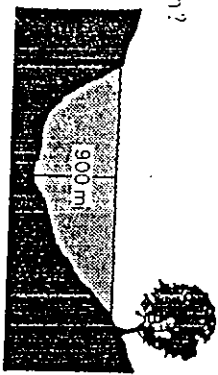
c) thickness?



g) temperature?  
density?



d) depth?



7. Look and read:

- Temperature is measured in degrees Celsius.
- The degree Celsius is a unit of temperature.

Now make similar sentences beginning with the following words:

- |               |                     |
|---------------|---------------------|
| a) The joule  | f) Velocity         |
| b) The newton | g) Loudness         |
| c) Time       | h) Electric current |
| d) Mass       | i) The litre        |
| e) The watt   | j) Angles           |

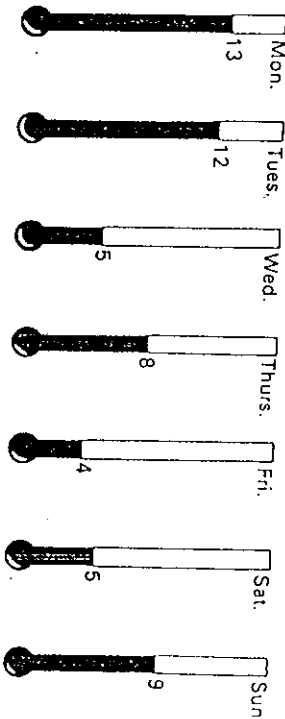
## Section 3 Reading

8. Read this:

Different kinds of average

The word 'average' is used frequently; for example, we talk about 'the average mark' in a test, the 'average rainfall' for a particular geographical location, or the 'average distance' of the Earth from the Sun. There are, however, many different kinds of average; here are some examples.

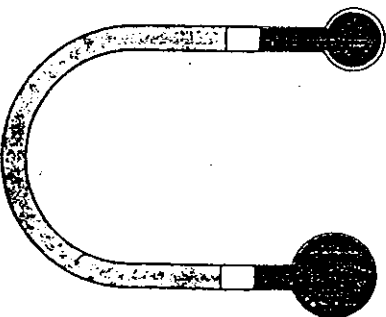
### 1 The arithmetical mean



In a certain town, the temperature is recorded at mid-day each day in a particular week. The results are shown above. The 'average' is

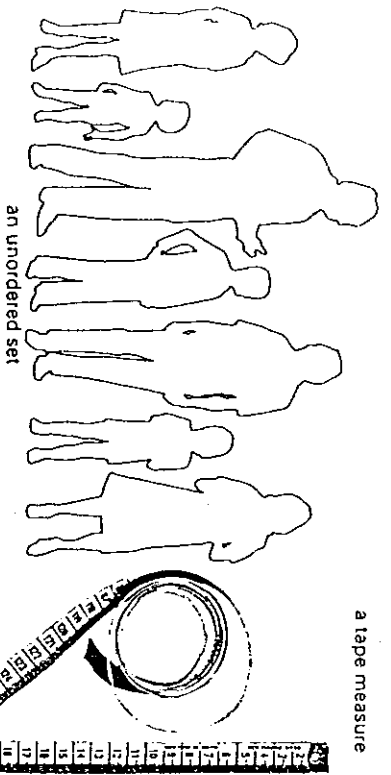
$$\frac{13+12+5+8+4+5+9}{7} = 8, \text{ and this is called the arithmetical mean.}$$

### 2 The midrange

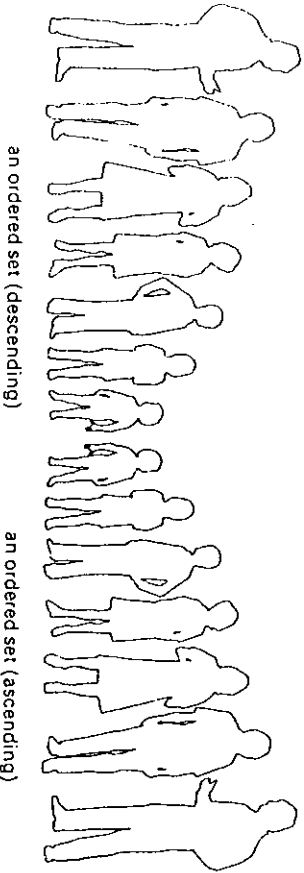


A maximum-minimum thermometer shows that the maximum temperature yesterday was 18°C and the minimum 2°C, i.e. the range is from 18° to 2°C, and 18°C and 2°C are the extremes of the range. The 'average'

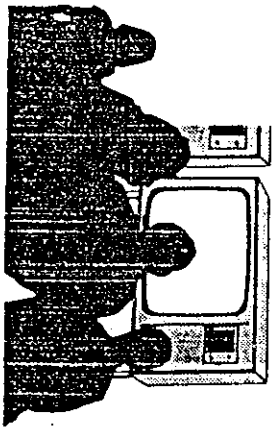
$$\frac{18+2}{2} = 10^\circ\text{C} \text{ is called the mean of the extremes or the midrange.}$$



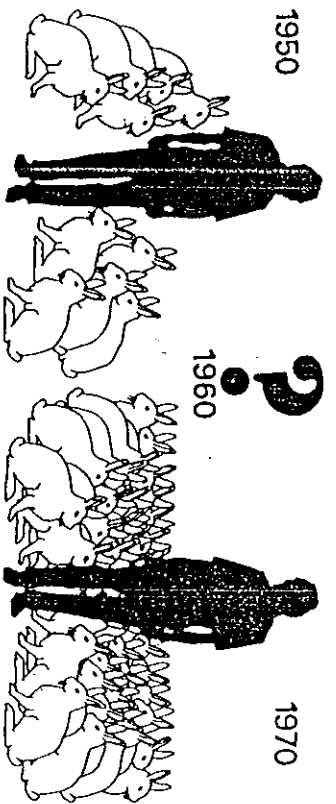
With a tape measure, we can find the arithmetical mean of the heights of the people shown above. Without a tape measure, we can use a different kind of average. First, we arrange the people in ascending or descending order of height. We then select the middle member of this ordered set. This kind of average is known as the median.



4 The mode



Of the forty families who live in our street, 36 own a television set, 3 own 2 television sets, and one doesn't have a television set. If we take the arithmetical mean, we find that the 'average' family owns 1.05 television sets. A more useful average in this case is the mode i.e. the most common number, in this case one.



A man bought ten rabbits in 1950. In 1970, he had 200 rabbits. How many did he have in 1960? The answer is not the arithmetical mean of 10 and 200 i.e. 105, because population does not grow arithmetically (e.g. 2, 4, 6, 8, ..... ) but geometrically (e.g. 2, 4, 8, 16, 32, .....). The geometric mean of 10 and 200 is  $\sqrt{10 \times 200} \approx 45$ .

9. Solve these problems:

- a) Find the median, the mode, the arithmetical mean and the midrange of the following set of values:  
11 14 16 4 9 9 14
- b) Find the geometric mean of the following pairs:  
3 and 27; 10 and 1000; 2 and 8192

10. Using words from the list, complete the definitions of the different kinds of average:

central	minimum	square root
divided	number	sum
divided	occurs	sum
maximum	ordered	value
	product	

- a) The arithmetical mean of a set is the \_\_\_\_\_ of the members of the set \_\_\_\_\_ by the \_\_\_\_\_ of members.
- b) The midrange of a set is the \_\_\_\_\_ of the \_\_\_\_\_ and \_\_\_\_\_ values of a set \_\_\_\_\_ by two.
- c) The mode of a set is the \_\_\_\_\_ which \_\_\_\_\_ most frequently.
- d) The median of a set is the \_\_\_\_\_ value of an \_\_\_\_\_ set.
- e) The geometric mean of two numbers is the \_\_\_\_\_ of the \_\_\_\_\_ of the numbers.

11. Read and answer:

The following sets of numbers are arithmetical or geometrical progressions. Decide which is which and say why.