Year 6 Maths
Week 13 Lesson 2

Statistics – Mode and Median

Statistics – Statistics – Mode and Median

In this lesson you will:

- build on your knowledge of the mean average;
- begin to learn what mode and median averages are.

True or False?

The mean of a set of consecutive numbers will be the middle number.

White Rose Maths

True or False?

True

For example

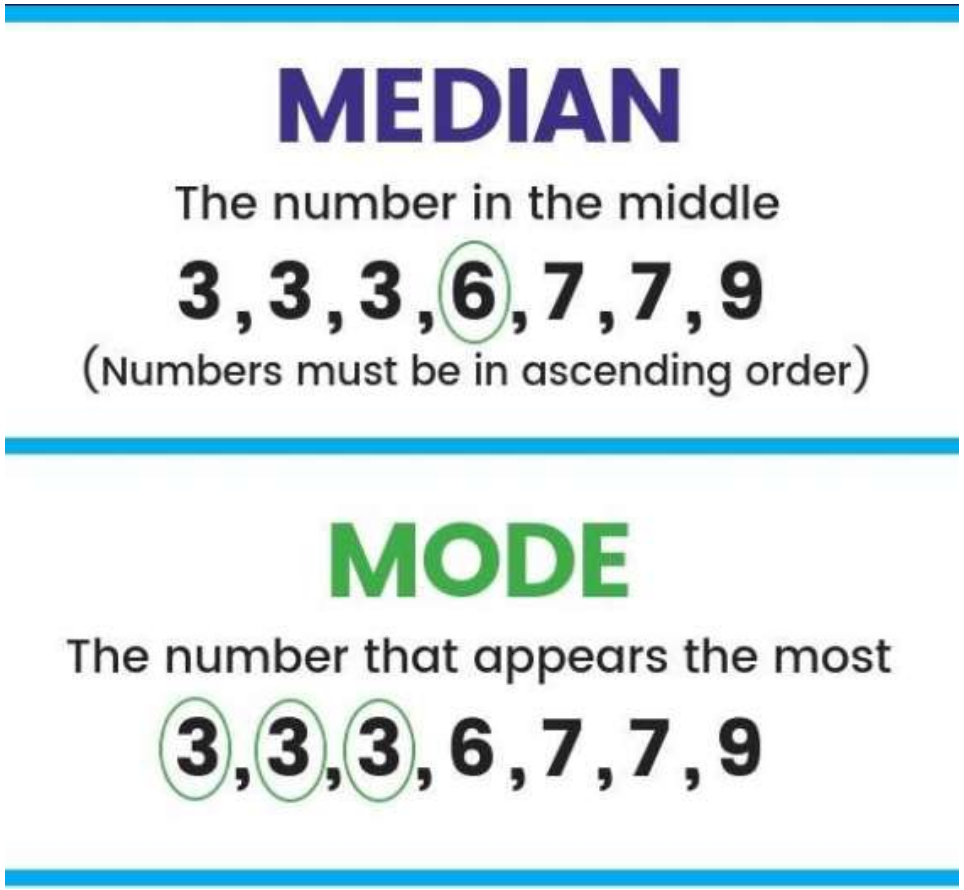
$$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 = 45$$

$$45 \div 9 = 5$$

White Rose Maths

There are three main types of average:

- **mean** - The mean is what most people mean when they say 'average'. It is found by adding up all of the numbers you have to find the mean of, and dividing by the number of numbers. So the mean of 3, 5, 7, 3 and 5 is 23/5 = 4.6 .
- **mode** - The mode is the number in a set of numbers which occurs the most. So the modal value of 5, 6, 3, 4, 5, 2, 5 and 3 is 5, because there are more 5s than any other number.
- **median** - The median of a group of numbers is the number in the middle, when the numbers are in order of magnitude. For example, if the set of numbers is 4, 1, 6, 2, 6, 7, 8, the median is 6



Why different types of averages?

To answer this, we are going to look at this crazy golf hole. This red-headed chap is about to have a go at this hole.

To make a prediction of how many shots he will need to complete the hole we can look at how many shots other people took to complete this hole.

Averages are useful in life to help with understanding the world around us.

MEAN

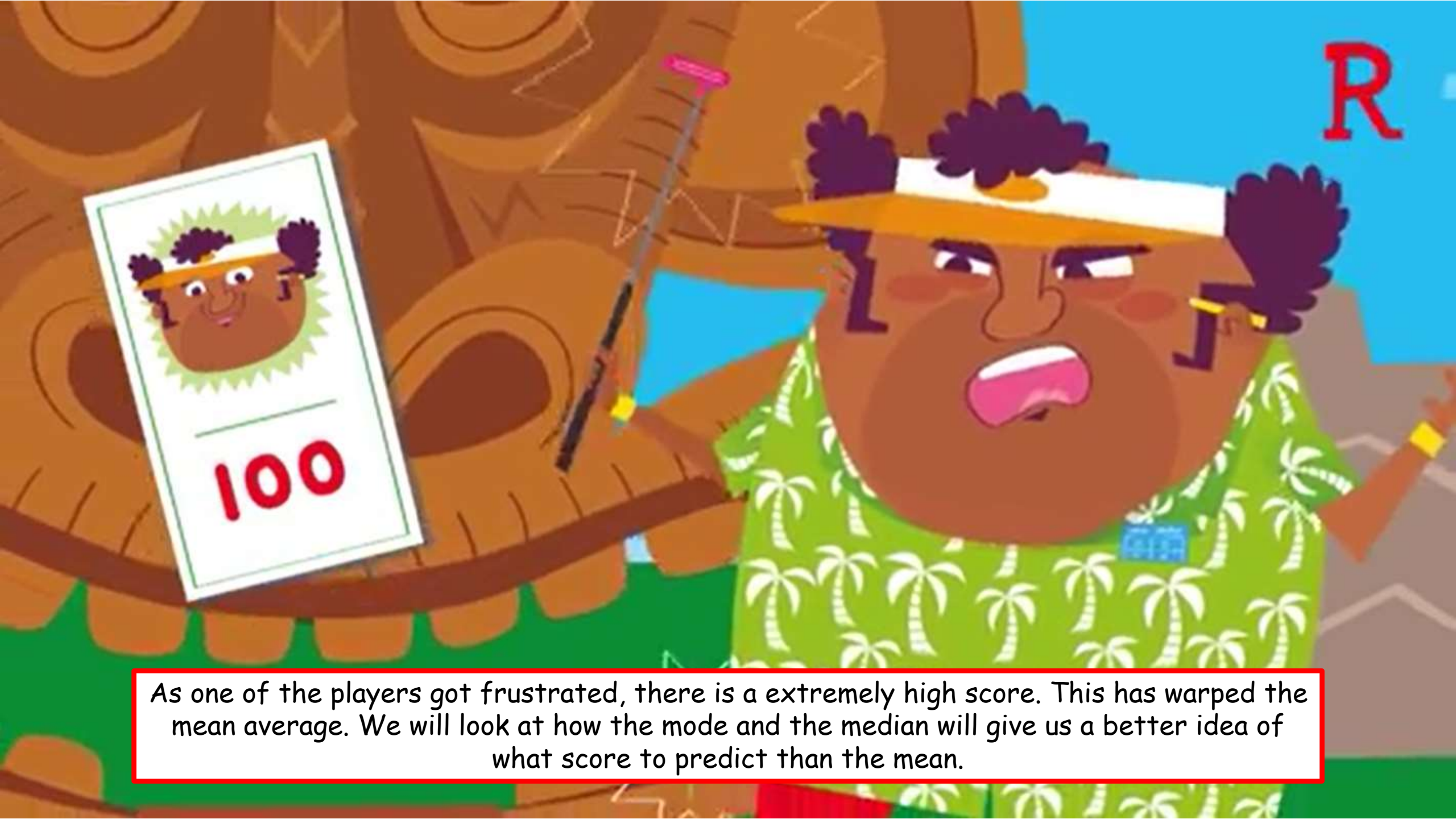
5 other players have played this hole today. These are there scores (the amount of shots required to complete the hole). Let's work out the mean average of their scores.

MEAN

$$\div 5 = 25$$

Do you think that the new player (the red-headed chap) will get a score of 25?

Discuss with your partner.



As one of the players got frustrated, there is a extremely high score. This has warped the mean average. We will look at how the mode and the median will give us a better idea of what score to predict than the mean.

The Median

The median is the middle value.

- To find the median, order the numbers and see which one is in the middle of the list.
- Eg 3, 3, 6, 13, 100 = 6
- The median is 6.

If there are two middle values the median is halfway between them. This might not be a whole number.

The Mode

The mode is the number that appears the most.

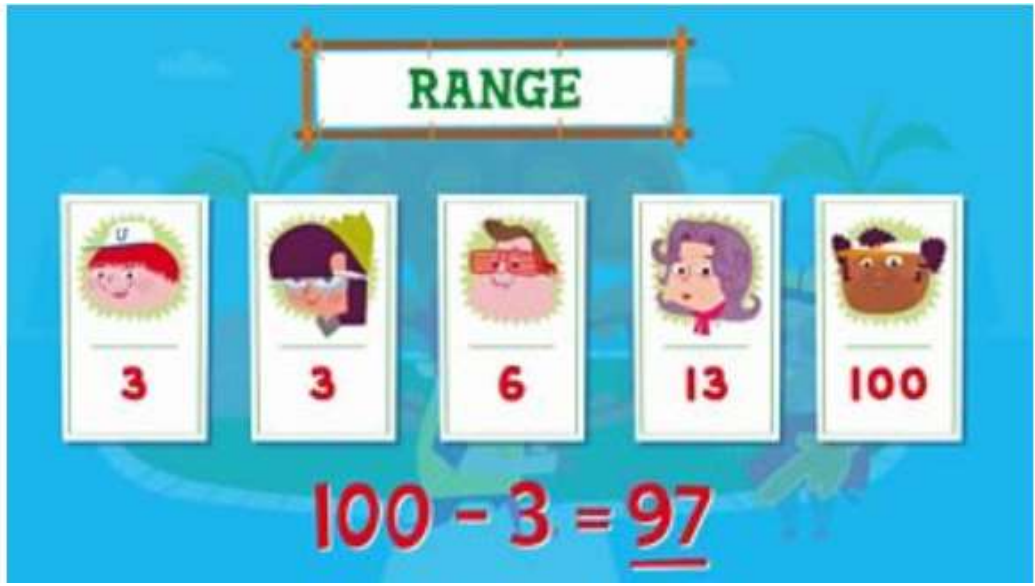
- To find the mode, order the numbers lowest to highest and see which number appears the most often.
- Eg 3, 3, 6, 13, 100 = 3
- The mode is 3.

There may be no modes (if no values appears more than the others), or multiple modes (if multiple numbers appear the same amount of times and more than the others.

The Range

The range is the difference between the biggest and the smallest number.

- To find the range, subtract the lowest number from the biggest number.
- Eg 100 - 3 = 97
- The range is 97.



Can you match the term with the correct number?

Putter

2 2 9 10 17

8	< RANGE
9	< MODE
15	< MEDIAN
2	< MEAN

Answers

Putter

2 2 9 10 17

8	< MEAN
9	< MEDIAN
15	< RANGE
2	< MODE

Here are Louie's scores after seven holes of golf.
What is the **mean**?

2 - 8 - 7 - 4 - 4 - 5 - 40

Mean =

Now work out the:

Mode =

Median =

Range =

2 - 8 - 7 - 4 - 4 - 5 - 40

Mean = 10 ✓

Well done

You know the meaning of mean.

Answers:

Mode = 4

Median = 5

Range = 38

Main Tasks – part i

Level 1

1. Calculate the mean, mode, median and range of:

a) 3, 3, 4, 5, 10

b) 8, 9, 9, 9, 12

c) 4, 4, 4, 4, 4

d) 10, 10, 15, 25, 30

e) 100, 300, 400, 700, 700

Level 2

1. Calculate the mean, mode, median and range of :

(a) 1, 6, 9, 5, 11, 8, 5, 13, 5.

(b) 23, 11, 17, 12, 14, 29, 30, 11, 29, 19.

(c.) 8, 3, 6, 5, 2, 10, 1, 7, 4, 9.

(d) 103, 134, 109, 112, 121, 148, 134.

(e) 9, 1, 7, 3, 5, 4, 3, 5, 4, 8, 2, 9.

2. This list shows the amounts spent by seven families on their holidays :

£100, £400, £320, £300, £5430, £100, £350.

(a) Calculate the mean, mode, median and range of these amounts.

(b) Suggest which of the three averages is the most useful indicator of how much a typical family spends on their holiday.

Main Tasks – part i

Level 1 - answers

1. Calculate the mean, mode, median and range of:

a) 3, 3, 4, 5, 10 Mean: 5 Mode: 3 Median: 4 Range: 7

b) 8, 9, 9, 9, 12 Mean: 9.4 Mode: 9 Median: 9 Range: 4

c) 4, 4, 4, 4, 4 Mean: 4 Mode: 4 Median: 4 Range: 0

d) 10, 10, 15, 25, 30 Mean: 18 Mode: 10 Median: 15 Range: 20

e) 100, 300, 400, 700, 700 Mean: 440 Mode: 700 Median: 400 Range: 600

Main Tasks – part i

Level 2 - Answers

1. (a) Mean: 7, Mode: 5, Median: 6, Range: 12
(b) Mean: 19.5, Mode: 11 and 29, Median: 18, Range: 19
(c) Mean: 5.5, Mode: No Mode, Median: 5.5, Range: 9
(d) Mean: 123, Mode: 134, Median: 121, Range: 31
(e) Mean: 5, Mode: 3, 5 and 9, Median: 5, Range: 8

2. (a) Mean: £1000, Mode: £100, Median: £320, Range: £5,080

(b) Example Answer: As there is one value which is much higher than the rest, the Median gives the best average.
There is not a wrong answer as long as you can argue your case.