

WALT understand the mode and the range

Success Criteria I know mode is the score that occurs most often or with the highest frequency, it can be used for both Numerical and Categorical data. It is the only measure that can be used for categorical data. The range is the simplest measure of the spread of scores. Its calculated by finding the difference between the highest and lowest.

● EXAMPLE 1

Find the mode for each set of scores.

a 3, 7, 8, 9, 9

b 10, 6, 14, 9, 14, 7

c 4, 5, 8, 7, 5, 4, 3, 4, 6, 5

a The score 9 occurs twice, while all other scores occur once.
The mode is 9.

The mode is always one of the scores. !

b First arrange the scores in order: 6, 7, 9, 10, 14, 14. The mode is 14.

c First arrange the scores in order: 3, 4, 4, 4, 5, 5, 5, 6, 7, 8. Two scores occur three times.
This means that there are two modes: 4 and 5.
This data set is **bimodal**.

Bimodal means there are two modes. !

Exercise 13B

1 Complete the following to find the mode of 6, 3, 8, 4, 5, 9, 5.

First arrange the scores in order: 3, 4, ____, ____, ____, 8, 9.

The mode is ____.

2 Find the mode of each set of data.

a 2, 4, 5, 6, 9, 9, 10

b 2, 3, 3, 4, 5, 6, 7, 8, 9

c 11, 13, 13, 16, 17

d 27, 28, 29, 27, 30, 31, 27, 31, 30

e 0, 2, 4, 5, 7, 6, 4, 5, 4, 0, 1

f 20, 20, 20, 23, 25, 27

g 51, 52, 54, 55, 57, 57, 58, 59

h 1, 1, 2, 4, 4, 4, 4, 7, 7, 8, 9, 10

i 240, 243, 245, 246, 244, 243

j 104, 101, 104, 102, 104, 105, 106, 101

3 Find the mode of each set of data.

a ABAC CDBA BDCC ABDA

b Mon, Tue, Mon, Sun, Thu, Tue, Fri, Mon, Sat

c blue, green, red, green, green, red, blue



● EXAMPLE 2

Find the range of each set of scores.

a 3, 7, 8, 9, 9

b 10, 6, 14, 9, 14, 7

a Range = highest score – lowest score
= 9 – 3 = 6

b Range = highest score – lowest score
= 14 – 6 = 8

- 4 Complete the following to find the range of 6, 8, 5, 3, 9.

$$\begin{aligned} \text{Range} &= \text{_____ score} - \text{lowest _____} \\ &= 9 - \text{_____} = \text{_____} \end{aligned}$$

- 5 Find the range of each data set in question 2.
- 6 Can you find the range for each data set in question 3? Explain.



EXAMPLE 3

Find the mode and range of each set of scores.

a

Score	Frequency
4	2
5	3
6	5
7	8
8	3

b

Score	Frequency
18	1
19	3
20	6
21	4
22	2

- a** The score with the highest frequency is 7 (7 occurs 8 times), so the mode is 7.

$$\begin{aligned} \text{Range} &= \text{highest score} - \text{lowest score} \\ &= 8 - 4 = 4 \end{aligned}$$

To find the range, use scores, not frequencies.

- b** The score with the highest frequency is 20 (20 occurs 6 times), so the mode is 20.

$$\begin{aligned} \text{Range} &= \text{highest score} - \text{lowest score} \\ &= 22 - 18 = 4 \end{aligned}$$

Extension with Frequency tables

- 7 Use this frequency distribution to answer the questions.

Complete the following.

- a** The highest frequency is _____.

This means the mode is _____.

- b** The highest score is _____.

The _____ score is 9.

$$\text{Range} = \text{_____} - 9 = \text{_____}$$

Score	Frequency
9	8
10	12
11	6
12	3
13	4

- 8 Find the mode for each frequency distribution.

a

<i>x</i>	3	4	5	6	7
<i>f</i>	2	3	6	4	1

b

<i>x</i>	12	13	14	15	16
<i>f</i>	4	6	5	3	2

c

<i>x</i>	<i>f</i>
24	9
25	11
26	18
27	0
28	12

d

Mass (kg)	Frequency
23	2
24	5
25	7
26	4
27	2

e

Score	Frequency
100	3
101	0
102	10
103	8
104	7
105	2

f

Number of patients/day	Frequency
33	13
34	15
35	16
36	10
37	4
38	2

9 Find the range of each set of scores in question 8.

10 Find the mode for each frequency distribution.

a

Car type	Frequency
Nissan	18
Toyota	22
Holden	24
Peugeot	4

b

Order	Number sold
Pizza	81
Burger	87
Pie	72
Sandwich	63

