WALT calculate different types of averages
Success Criteria I know different averages such as mean, Median and Mode have a different ways of calculating.
In statistics, it is referred to as a measure of central tendency.

1. We will first be examining the mean. The mean can only be calculated from Numerical data
2. The symbol for the mean is
3. $\text{Mean } (\bar{x})$

EXAMPLE 1

Find the mean of each set of scores.

a 3, 9, 5, 7, 10, 8 **b** 12, 15, 15, 11, 13, 10, 8, 6, 9, 7

a $\text{Mean} = \frac{3+9+5+7+10+8}{6} = \frac{42}{6} = 7$

b $\text{Mean} = \frac{12+15+15+11+13+10+8+6+9+7}{10} = \frac{106}{10} = 10.6$

The mean does not have to be one of the scores.

1 Complete the following to find the mean of 8, 9, 10, 11, 11, 12.

$\bar{x} = \frac{8+9+\ldots}{6} = \frac{\square}{6} = \_\_\_$

2 Nikki completed question **1** using her calculator and her answer was 51. What mistake did she make?

3 Find the mean (to 1 decimal place if necessary) 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

Finding Mean using Frequency Distribution Tables
Extension Work on the next page - Group three practice a few examples from the work above and then proceed to the distribution table work.

Find the mean of the scores given in this frequency distribution table.

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

For simplicity, use x for the values of the scores and f for the frequencies. Add an $f \times x$ column to the table.

Score (x)	Frequency (f)	$f \times x$	
4	3	$3 \times 4 = 12$	This is the sum of all the 4s.
5	2	$2 \times 5 = 10$	This is the sum of all the 5s.
6	4	$4 \times 6 = 24$	This is the sum of all the 6s.
7	8	$8 \times 7 = 56$	This is the sum of all the 7s.
8	6	$6 \times 8 = 48$	This is the sum of all the 8s.
	$\Sigma f = 23$	$\Sigma fx = 150$	This is the sum of all the 4s, 5s, 6s, 7s and 8s.

Σf = the sum of the frequencies = the total number of scores = 23

Σfx = the sum of the subtotals 12, 10, 24, 56 and 48
= the sum of all the scores = 150

$\therefore$ Mean $(\bar{x}) = \dfrac{\text{sum of all scores}}{\text{number of scores}} = \dfrac{150}{23} = 6.5$ (to 1 decimal place)

The Greek letter Σ is used to mean the 'sum of'.

5 **a** Complete this frequency distribution table.
b Calculate the mean, correct to 1 decimal place.

Score (x)	Frequency (f)	$f \times x$
8	6	48
9	8	
10	15	
11	11	121
12	3	
	$\Sigma f =$	$\Sigma fx =$

6 **a** Complete this frequency distribution table.
b Calculate the mean, correct to 1 decimal place.

Score (x)	Frequency (f)	$f \times x$
18	3	
19	5	95
20	10	
21	15	
22	8	
23	1	
	$\Sigma f =$	$\Sigma fx =$

7 For each of the following frequency distribution tables:
i Copy the table and add an fx column. **ii** Calculate the mean.

a

x	13	14	15	16	17
f	2	3	6	4	1

b

x	2	3	4	5	6
f	4	6	5	3	2

c

x	50	51	52	53	54	55
f	3	5	8	6	2	4

d

x	18	19	20	21	22
f	12	28	25	26	9