7.1 Mean and Mode

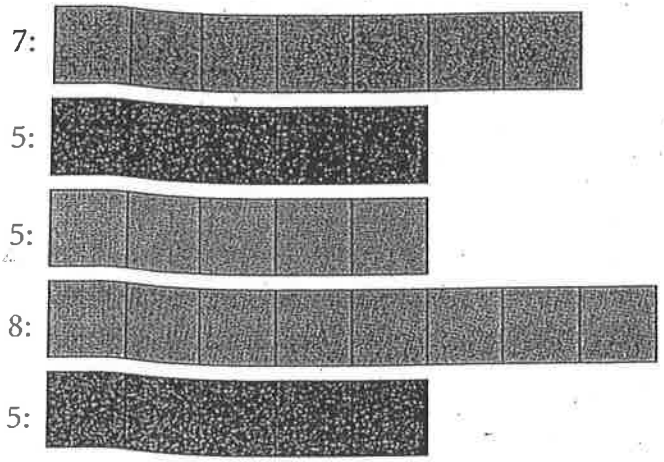
Name:

At Home / At School

Quick Review

The mean is a number that can represent the centre of a set of numbers.
Here are two ways to find the mean of: 7, 5, 5, 8, 5

➤ Use linking cubes.
Show each number with cubes:



Rearrange the cubes to make rows of equal length.
There will be 6 cubes in each row.
So, the mean of 7, 5, 5, 8, 5 is 6.

➤ Add, then divide.
Add: $7 + 5 + 5 + 8 + 5 = 30$
Divide by the number of numbers in the set.
There are 5 numbers in the set: $30 \div 5 = 6$
The mean of 7, 5, 5, 8, 5 is 6.

The mode is the number that occurs most often in a set of data.
In the set: 7, 5, 5, 8, 5; the number 5 occurs most often.
So, the mode of 7, 5, 5, 8, 5 is 5.

Both the mean and the mode are sometimes called average.
The mean and the mode are measures of central tendency.

Practice

1. Use linking cubes to find the mean of each set of data.

a) 3, 6, 6, 1, 4 _____

b) 1, 3, 3, 3, 5, 3 _____

2. What is the mode of each data set in question 1?

a) _____ b) _____

3. Find the mode of each set of data.

a) 3, 7, 6, 7, 6, 4, 6 _____ b) 8, 4, 8, 2, 4, 8, 7, 8 _____

c) 1, 4, 1, 7, 1, 3, 1 _____ d) 3, 6, 3, 6, 8, 3, 3 _____

e) 19, 15, 14, 15, 15 _____ f) 94, 16, 94, 83, 83, 94 _____

4. Calculate the mean of each set of data.

a) 24, 16, 35, 52, 18 _____ b) 150, 64, 73, 125 _____

c) 20, 35, 14 _____ d) 75, 70, 36, 51, 18 _____

5. Here are the masses of 6 dogs: 25 kg, 30 kg, 25 kg, 20 kg, 25 kg, 25 kg

a) What is the mean mass? _____

b) What is the mode of the masses? _____

6. Geraldo received these marks on 5 spelling tests: 100, 98, 97, 100, 100

a) What is Geraldo's mean mark? _____

b) What is the mode of his marks? _____

7. This table shows the heights and circumferences of 5 trees.

Tree	Height (m)	Circumference (cm)
Oak	20	65
Elm	16	82
Maple	20	60
Birch	15	82
Poplar	9	21

a) What is the mean height?

_____

b) What is the mean circumference?

_____

c) What is the mode of the heights? _____

d) What is the mode of the circumferences? _____

8. Jocelyn has 6 birds.
Their mean age is 10.
The mode of their ages is 8.
What might their ages be?

_____

7.2 Median and Range

NAME:

At Home / At School

Quick Review

The median of a data set is the middle number when the data are arranged in order.

The range of a data set tells how spread out the data are.
It is the difference between the greatest and the least numbers in the set.

➤ Sofia caught 7 rainbow trout.
She listed the lengths, in centimetres, from least to greatest:
37, 39, 39, 40, 43, 44, 44
The middle number is 40. The median length is 40 cm.

➤ Sofia caught 1 more trout. It was 42 cm long.
To find the new median, Sofia inserted the number in its correct position in the ordered list:
37, 39, 39, 40, 42, 43, 44, 44
Now there are two middle numbers: 40 and 42
The median is the mean of the two middle numbers:
$(40 + 42) \div 2 = 41$
The median length is now 41 cm.

Tip
The median is another measure of central tendency.

➤ The range of the lengths is: 44 cm – 37 cm = 7 cm

Practice

1. Arrange the numbers in each set from least to greatest.
Then, find the median and the range.

a) 12, 18, 27, 9, 42
From least to greatest: _____
Median: _____ Range: _____

b) 87, 76, 93, 74, 67, 91, 79
From least to greatest: _____
Median: _____ Range: _____

c) 55, 45, 62, 71, 74, 58, 66, 58, 47
From least to greatest: _____
Median: _____ Range: _____

d) 17, 12, 18, 14, 16, 11
From least to greatest: _____

Median: _____ Range: _____

e) 44, 62, 17, 38, 59, 53, 48, 38
From least to greatest: _____

Median: _____ Range: _____

2. Find the median and the range of these amounts: $10, $14, $9, $11, $7, $12

Median: _____ Range: _____

3. a) Measure the arm spans and the strides of 5 people, to the nearest centimetre. Record your data in the table.

Name	Arm Span (cm)	Stride (cm)

b) What is the median arm span? _____

c) What is the median stride? _____

d) What is the range of the arm spans? _____

e) What is the range of the strides? _____

f) Measure one more person.
What is the new median arm span? _____

What is the new median stride? _____

g) Has the range of arm spans changed? If so, what is the new range? _____

Has the range of strides changed? If so, what is the new range? _____

4. This list shows the numbers of books 12 students read over the summer:
8, 4, 13, 2, 4, 3, 5, 17, 7, 12, 4, 5
Find each measure:

a) mean: _____ b) median: _____

c) mode: _____ d) range: _____

Unit Review

Name: _____

LESSON

7.1 **1.** Calculate the mean and mode of each set of data.

a) The weekly allowances of ten students:
$20, $25, $15, $20, $10, $20, $30, $10, $20, $0

Mean: _____ Mode: _____

b) Students' scores on a spelling quiz marked out of 10:
5, 8, 8, 4, 6, 3, 10, 10, 4, 6, 7, 9, 7, 9, 9

Mean: _____ Mode: _____

7.2 **2.** Arrange the data in each set in order, then calculate the median and the range.

a) The heights, in centimetres, of eleven 12-year-olds:
160, 155, 162, 152, 161, 154, 153, 160, 158, 155, 159

From least to greatest: _____

Median: _____ Range: _____

b) The hours that ten grade 7 students exercised in one week:
5, 7, 18, 5, 13, 9, 4, 12, 7, 20

From least to greatest: _____

Median: _____ Range: _____

7.3 **3.** These data show the daily temperatures, in degrees Celsius, for two weeks in the summer in Nelson, B.C.:
23, 25, 22, 25, 28, 24, 25, 24, 25, 25, 52, 24, 20, 22

a) Find the mean, median, mode, and range for these data.

Mean: _____ Median: _____ Mode: _____ Range: _____

b) Identify the outlier. _____

Why do you think the outlier is so much greater than the other temperatures?

_____

_____

c) Calculate the mean, median, mode, and range without the outlier.

Mean: _____ Median: _____ Mode: _____ Range: _____

d) When reporting the average daily temperature, should the outlier be included?

Explain. _____

7.3 7.4 **4.** The times, in minutes, that 10 students spent walking home from school one day are:
20, 16, 10, 12, 22, 65, 8, 12, 18, 7

a) Calculate the mean, mode, and median times for these data.

Mean: _____ Mode: _____ Median: _____

b) Identify the outlier. _____

c) Calculate the mean, mode, and median without the outlier.

Mean: _____ Mode: _____ Median: _____

d) Which average best describes the data? Explain.

_____

_____

_____

7.4 **5.** Cary scored these points in his last six basketball games: 5, 8, 10, 7, 15, 15

a) Find the mean, median, and mode scores.

Mean: _____ Median: _____ Mode: _____

b) Which measure of central tendency is Cary likely to use to persuade his coach that he is a valuable player? Explain.

_____

_____

c) Which measure is the coach likely to use to help her decide if Cary is a valuable player? Explain.

_____

_____

_____