Logo

Description automatically generated

**FUNCTIONAL SKILLS**

Maths Level 2



**Area: Handling information and data**

Criterion: Calculate the median and mode of a set of quantities

**Median and mode**

**Median** is a type of average. An average is a number that gives an overview of collected data.

The median is the middle value of a dataset. It can be calculated in 2 steps.

1. Order the numbers from smallest to largest
2. Find the middle value

Sometimes, there will be an even number of values. When this occurs, the median is calculated by finding the average of the 2 middle values.

For example,

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 2 | 8 | 17 | 23 | 32 | 45 |

As there are an even number of values in this dataset, both 17 and 23 fall into the middle. To find the median, we must calculate the average of these 2 values.

To calculate the average of these 2 middle values (the median):

* add the 2 middle values together

17 + 23 = 40

* divide the answer by 2

40 ÷ 2 = 20

The median is 20

**Mode** is also a type of average. The mode is the most common value in a dataset. It can be calculated in 2 steps.

1. Order the numbers
2. Find the most frequent (or most common) value

Sometimes, there will be more than 1 mode. When this occurs, **all** modes must be stated as the answer. For example,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2 | 6 | 3 | 2 | 6 |

In this dataset, the number 2 appears twice, as does 6

Therefore, the mode is 2 and 6

**Question 1**

Cathy has been timing her 5km runs over the past 7 days. Her times in minutes are shown below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 31 | 29 | 30 | 32 | 28 | 29 | 29 |

What are Cathy’s median and mode run times?

(Show your working out.)

(2 marks)

|  |
| --- |
| Median: \_\_\_\_\_\_\_\_\_\_  Mode: \_\_\_\_\_\_\_\_\_\_ |

**Question 2**

Find the median and mode for the following dataset.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | 20 | 15 | 8 | 7 | 8 |
| 7 | 11 | 11 | 1 | 8 |  |

(Show your working out.)

(2 marks)

|  |
| --- |
| Median: \_\_\_\_\_\_\_\_\_\_  Mode: \_\_\_\_\_\_\_\_\_\_ |

**Question 3**

Below is a table outlining different employees’ hourly earnings.

|  |  |
| --- | --- |
| **Employee** | **Hourly earnings (£)** |
| Employee A | £10.96 |
| Employee B | £12.55 |
| Employee C | £12.55 |
| Employee D | £10.96 |
| Employee E | £11.04 |
| Employee F | £11.96 |
| Employee G | £11.16 |

Calculate the median and mode.

(Show your working out.)

(3 marks)

|  |
| --- |
| Median: \_\_\_\_\_\_\_\_\_\_  Mode: \_\_\_\_\_\_\_\_\_\_ |

**Question 4**

A class sit a multiple-choice exam. Below are their scores.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 38 | 23 | 31 | 53 | 54 | 69 | 37 |
| 18 | 56 | 62 | 42 | 13 | 21 | 42 |

Calculate the median and mode scores.

(Show your working out.)

(4 marks)

|  |
| --- |
| Median: \_\_\_\_\_\_\_\_\_\_  Mode: \_\_\_\_\_\_\_\_\_\_ |

**Question 5**

Find the median and mode for the following set of data:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 53 | 22 | 76 | 46 | 68 | 22 | 15 | 53 | 36 |

(Show your working out.)

(3 marks)

|  |
| --- |
| Median: \_\_\_\_\_\_\_\_\_\_  Mode: \_\_\_\_\_\_\_\_\_\_ |

**Exam practice 1**

A yellow calculator with a grey stick

Description automatically generated

The temperature of different places around the world were recorded as follows:

|  |  |
| --- | --- |
| **Location** | **Temperature** |
| Amsterdam | 5ºC |
| Hong Kong | 15ºC |
| New York | 6ºC |
| London | 2ºC |
| Toronto | 3ºC |
| Sidney | 26 ºC |
| Singapore | 26ºC |

Find the median and mode of the temperatures.

(Show your working out.)

(4 marks)

|  |
| --- |
| Median: \_\_\_\_\_\_\_\_\_\_  Mode: \_\_\_\_\_\_\_\_\_\_ |

**Exam practice 2**

Icon

Description automatically generated

Calculate the median and mode of the following dataset:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 21 | 38 | 48 | 36 | 92 | 45 |
| 50 | 21 | 15 | 19 | 38 | 24 |

(Show your working out.)

Insert number of marks if applicable

|  |
| --- |
| Median: \_\_\_\_\_\_\_\_\_\_  Mode: \_\_\_\_\_\_\_\_\_\_ |

**Answers**

**Median and mode**

**Question 1**

Median: 29

Mode: 29

**Question 2**

Median: 8

Mode: 8

**Question 3**

Median: £11.16

Mode: Both £10.96 and £12.55 appear twice.

Therefore, the mode is both £10.96 and £12.55

**Question 4**

Median: The middle numbers are 38 and 42. We need to calculate the average of these middle values to find the median.

38 + 42 = 80

80 ÷ 2 = 40

The median is 40

Mode: 42

**Question 5**

Median: 46

Mode: Both 22 and 53 appear twice.

Therefore, the mode is both 22 and 53

**Exam practice**

**Exam practice 1**

Median: 6ºC

Mode: 26ºC

**Exam practice 2**

Median: The middle numbers are 36 and 38. We need to calculate the average of these middle values to find the median.

36 + 38 = 74

74 ÷ 2 = 37

The median is 37

Mode: The number 21 and 38 both appear twice.

Therefore, the mode is both 21 and 38

**Your functional skills exam**

Your functional skills exams will consist of 2 papers.   
These papers will take place over the following time periods:

* Non-calculator paper – 40 minutes
* Calculator – 1 hour 50 minutes

Further information on the format that your test will take can be obtained from your training provider.

**Hints and tips**

* Find out what format your exam will be in. It may be paper-based   
  or on-screen.
* Plan what you are going to revise in advance. Don’t leave it until the last minute.
* Do as many past papers as you can so you are prepared for the day. If possible, try to complete the past papers following the same format as the actual exam.
* Find a quiet place to study and revise. It helps to sit at a table or a desk, don’t revise in bed.
* Don’t stay up all night revising the night before your exam. It’s important to have a good rest so you feel refreshed and ready to go.
* Read the question 3 times. The first time to ensure you understand what is being asked, the second time to get an understanding of what you need to do, and a third time to figure out exactly what maths techniques you should be applying.
* If you are struggling with a question, skip it and come back to it later. Try not to sit getting worked up about a difficult question, it will only waste exam time. Move on and come back to it after you have answered the other questions.
* Take note of the number of marks available. This will give you an indication of how much working out you must show. For example, 1 mark will need an answer only and more marks will need you to show your working out.
* When you’ve finished the exam, go back and check your answers. If you still have time remaining, use it to check your answers and when you have checked your answers check them again.