



# Calculating averages

## Introduction

This sheet is adapted from material developed by the Property Services NTO, Trident Training and Age Concern Training as part of their Key Skills Support Programme development projects. It explains how to calculate the three types of average:

- the mean
- the median
- the mode.

## Mean

You calculate the mean by:

- adding up the total
- dividing the total by the number of items in the group.

### For example:

Working out the average sales over a six-month period you would divide the total number of sales by six to get the mean monthly sales figure.

### For example:

You have collected information on the ages of people attending a day-care centre. They were:

78,74,93,82,91,76,88,90,82,95

You want to find the mean age. First of all, you add up all ten items of data to find the total:

$78+74+93+82+91+76+88+90+82+95=849$

You then divide the total by 10 (the number of items). This will give you the mean age of people attending the day-care centre.  $849 \div 10 = 84.9$ . You can round this up to 85 to make more sense.

## Median

Median is the ‘middle’ number when the data is set in order. You can take the median as your average instead of the mean if appropriate – for example, it is sometimes the best average to use when calculating average wages as it is less affected by very large or very small values.

**For example:**

If you rearrange: 4, 16, 3, 2, 10 in order you get:

2, 3, 4, 10, 16

The ‘middle’ number or median is 4.

If you have an even amount of numbers, you would take the *two* middle numbers, add them together and divide by 2 to get the median average.

**For example:**

2, 3, 4, 10, 11, 14

Here, the middle two numbers are 4 and 10. Add them and divide by two and you get 7, which is your median.

## When would I use median?

An example of when you might use the median average would be to identify low, medium and highest priced properties.

If you wanted to find out the ‘middle’ price of, say, a group of similar properties you would put all prices of properties in ascending order and identify the ‘middle’ number. This gives you the middle price of a real property as opposed to the average price buyers are paying.

# Mode

Mode is the number that appears most frequently in a set of data. To find the mode you count up how often each number or category appears. Have a look at these sales figures:

Month	No of sales	Month	No of sales
1	20	4	20
2	20	5	21
3	16	6	27

The mode average is 20 because this number appears most frequently. The mode is the only average that can be used for non-numerical data.

**For example:**

In a survey, information was collected on what residents of a residential care home did in the afternoon.

watching TV = 11

craft work = 9

reading = 11

talking = 3

sleeping = 8

playing cards = 5

There are two modes: watching TV and reading.

## When would I use mode?

An example of when you might use mode is as a ‘quick rule of thumb’ to gain an idea of sales figures at a glance. Be careful though: sometimes mode can be misleading if you have a set of wildly fluctuating figures. If this is the case, you should work out the mean.

## Deciding which average to use

You need to decide which average makes the most sense to use. The mean is often appropriate – but this is not always the case.

### Example

You are employing a new sales representative and are analysing the average wage of the office staff.

	£
The wages are currently:	
Office assistant	8,750
Administrative assistant	9,500
Accounts assistant	10,500
Administrator	13,000
Personal Assistant	13,500
Customer Service Advisor	13,500
Accountant	24,000
Managing Director	<u>43,000</u>
	<u>135750</u>

In this example:

- Mean = 135750 divided by 8 = £16,968.75
- Median = £13,000
- Mode = £13,000

In this situation the mean is higher because the Managing Director's wage is much higher than others. The median and mode are the same in this instance, and give an indication of the general wage that the office staff are earning.