# Averages (or Mean).

The average, or mean, of 5 people taking a test would be the five scores added together DIVIDED by 5.

This can be written as shown below:

$=\frac{10+12+14+16+18}{5}$

 $=\frac{70}{5}=14$

Now read through the following examples.

## Example 1:

Find the average of 2, 4, 6, 8, 10 and 12.

First **ADD** all the numbers to give the **SUM** of the numbers, the sum is 42. Then, count the number of numbers, in this case there are 6 numbers. Now divide 42 by 6, the answer is 7.

This can be written as shown below:

 $=\frac{2+4+6+8+10+12}{6}$

 $=\frac{42}{6}=7$

If you are given the average of a set of numbers, then the sum of those numbers can be worked out.

 **Total (sum) = average multiplied by the number of numbers**

## Example 2:

The average of four numbers is 16. What is the sum of the numbers?

Remember: **Total (sum) = average multiplied by the number of numbers**

So, 16 multiplied by 4 = 64.

This can be written as shown below:

 $16$ x $4=64$

## Example 3:

A box of chocolates has a mass of 4500 grams.

If the average mass of one chocolate is 125 grams, how many chocolates are there in the box?

Substitute what we know into the formula:

(Total) 4500 = (average) 125 multiplied by the number of chocolates.

$=\frac{4500}{125}$

$=36$ chocolates in the box.

## Example 4:

The average height of a football team with 11 players is 176 cm.

If the average height without the goalkeeper is 175 cm, what is the height of the goalie?

**FIRST** find the total height of team: $176$ x $11=1936 cm$

The total height of 10 players is $175$ x $10=1750 cm$

 So, the height of the goalkeeper is $1936-1750=186cm$

## Example 5:

Find the average price per kg, if 3 kg of apples costing 40p per kg are mixed with 5 kg of pears costing 50p per kg.

**FIRST** find the cost of the apples and the cost of the pears.

The cost of 3 kg of apples is $3$ x $40p=120p$

The cost of 5 kg of pears is $5$ x $50p=250p$

The total cost of the apples and the pears is $250+120=370p$

**THEN,** find the number of kilograms: $3+5=8$

To find the Average price per kilo, divide the Total Price by the number of kilograms:

$\frac{370}{8}=46.25 $per kilogram.

### Exercise:

1. Find the average of 3, 6, 9, 10 and 12.
2. The average of a set of 15 numbers is 12.4, what is the sum of the numbers?
3. The average of three numbers is 115, and the average of two of them is 90. What is the value of the third number?
4. A shopkeeper sells 20 packets of crisps at 12p per packet, 15 packets of Hula Hoops at 10p per packet and 25 packets of Krunchi Puffs at 13p per packet. Find the average price of these packets to the nearest pence.

5. A greengrocer sells 4 kg of apples at 20p per kg, and 8 kg of apples at 14p per kg. What is the average price per kilogram?

6. Oranges in a box have a mass of 2400 g. If the average mass of an orange is 24 g, how many oranges are there in the box?

7. The average of four numbers is 25. When a fifth number is added the average then becomes 24. What is the value of the fifth number?

8. A boy buys 2 packets of mint flavoured chewing gum at 10p per packet and 3 packets of strawberry flavoured at 15p per packet. What is the average price of these packets?

### Answers.

1. The average is 8.

2. The sum of the numbers is 186.

3. The value of the third number is 165.

4. Crisps: $20$ x $12p=240 $pence

Hula Hoops: $15$ x $10p=150 $pence

Krunchi Puffs: $25$ x $13p=325 $pence

$240+150+325=715$ pence

$20+15+25=60$ packets

 $\frac{715}{60}=11.92$ pence

5. $\frac{192}{12}=16p$

6. 100 Oranges.

7. The value of the fifth number is 20.

8. The average price is 13p.

This concludes the Statistics – Averages study pack.