Inverse problems on average.

Example 1

The average of 3 numbers is 12. What is the sum of the three numbers?

$$\text{Since average} = \frac{\text{sum of all items}}{\text{number of items}}$$

$$12 = \frac{\text{sum of all numbers}}{3}$$

Multiply each side by 3.

$$12 \times 3 = \frac{\text{sum of all numbers} \times 3}{3}$$

$$36 = \text{sum of all numbers}$$

$\therefore$ sum of the three numbers is 36

Exercise 8:8 Now try these:

1. The average of 5 numbers is 6. What is the sum of the 5 numbers?
2. The average mark of a pupil in 4 tests is 80. What is his total mark?
3. The average weight of 7 men is 85 *kg*. What is their total weight?
4. The average length of 5 ropes is 45 *cm*. What is the total length of the ropes?
5. The average age of 9 pupils is 15 years. What is their total age?
6. Find the total number of litres of water if 21 people use 35 *litres* of water on average.
7. The average age of 3 students is 20 years. Find the total age of all students.
8. The average cost of 9 books in a bookshop is *sh.* 1080. What is the total cost of the books ?
9. Find the total wages of 8 factory workers whose average pay is *sh.* 2400 per day, per worker.

More about averages.

Example 1

The average mark of 4 pupils is 6, and the average mark of 4 other pupils is 8. What is the average mark of all the 8 pupils ?

The total mark of 4 pupils	$= (4 \times 6)$	$= 24$
The total mark of 4 other pupils	$= 4 \times 8$	$= 32$
The total mark of the (4 +4) pupils	$= (24 + 32)$	$= 56$
The average mark of the 8 pupils	$= \frac{{}^{7}\cancel{56}}{\cancel{8}_{1}}$	$= 7$