CHAPTER TWO

RATIO, PROPORTION AND SHARING

Ratio:

Q1. The ages of two students are such that John is 6 years old and Peter is 18 years old. Find the ratio of John's age to that of Peter.

Soln.

John : Peter

6 : 18

1 : 3

$\Rightarrow$ *the ratio of their ages is* 1: 3.

N/B: The ratio 6:18 was reduced to its lowest term, by dividing the 6 and 18 by 6 to get 1:3.

Q2. Kofi has 4 pens and Esi has 6 pens. Find the ratio of the number of pens had by Kofi to that had by Esi.

Soln.

Kofi : Esi

4 : 6

2 : 3

$\Rightarrow$ *the ratio of the number of pens had by Kofi to that had by Esi is* 2 : 3.

N/B: The ratio 4: 6 was reduced to its lowest term by dividing by 2 to get 2: 3

Q3. Esi is 2m tall and Adjoa is 8m tall. Find the ratio of their heights.

Soln.

Esi : Adjoa

2 : 8

1 : 4

$\Longrightarrow$ *the ratio of their heights is* 1: 4.

Q4. Kwaku has 7 oranges and Atta has 3 oranges. Find the ratio of the number of oranges had by Kwaku to that had by Atta.

Soln.

Kwaku : Atta

7 : 3

The required ratio is 7:3 respectively.

N/B: The ratio 7:3 cannot be reduced to a lower term.

Q5. A stick is 5cm long and a second one is 9cm long. Find the ratio of the length of the first stick to that of the second one.

. . Soln

First stick : Second stick

5 : 9

$\Longrightarrow$ *the ratio of first stick to that of the second*

one is 5 ∶ 9 *respectively*.

Q6. The ratio of the ages of John to Kate is 2:3 respectively. If Kate is 18 years old, calculate

a. John's age.
b. their total age.

Soln.

John : Kate

2 : 3

↓ : ↓

? : 18 years

If 3 = 18 yrs

∴ 2 = ?

N/B: Since a ratio of 3 gave us 18yrs, then a ratio of 2 will give us a less value. And if less, more divide therefore use the 3 to divide.

a. If 3 = 18yrs, then 2 = $^{2}/_{3}$ x 18 = 12yrs.
b. Their total age = 12+18 = 30yrs.

Q7. The ratio of the amount had by Esi to that had by Ama is 1:5 respectively. If Esi had ¢40,

a. determine the amount had by Ama.
b. Find their total amount.

Soln.

a. Esi : Ama

1 : 5

↓ : ↓

¢40 : ?

If 1 = ¢40,

then 5 = $^{5}/_{1}$ x 40 = ¢200.

N/B: Since a ratio of 1 gave us ¢40, then for a ration of 5, the answer will be more and if more, then less divide. That was why 1 was used to divide.

b. Their total amount ¢40 + ¢200 = ¢240.

Q8. The ratio of the ages of three friends, Addo, Paul and Peter is 4:3:6 respectively. If Addo is 16yrs old, calculate

a. Paul's age.
b. Peter's age.
c. their total age.

Soln.

Addo	:	Paul	:	Peter
4	:	3	:	6
↓	:	↓	:	↓
16yrs	:	?	:	?

a. If 4 = 16,

$\Longrightarrow 3 = \frac{3}{4}$ x 16 = 12,

$\Longrightarrow Paul's\ age = 12yrs.$

b. If 4 = 16yrs,

$\Longrightarrow 6 = \frac{6}{4}$ x 16 = 24,

$\Longrightarrow$ Peter is 24yrs old.

c. Their total age = Addo's age + Paul's age + Peter's age = 16+12+24 = 52yrs.

Q9. The ratio of the weights of Ama, Kofi and Charles is 2:1:6 respectively. If Kofi's weight is 10kg, find

a. Ama's weight. b. Charles` weight.

c. their total weight.

Soln.

Ama : Kofi : Charles

2 : 1 : 6

↓ : ↓ : ↓

? : 10kg : ?

a. If 1 = 10kg, then $2 = \frac{2}{1}$x $10 = 20$.

$\therefore Ama's\ weight = 20kg.$

b. If 1 = 10kg, then 6 = $^{6}/_{1}$ x 10 = 60kg,

$\Longrightarrow Charles`\ weight = 60kg.$

c. Their total weight = Ama's weight + Kofi's weight + Charles' weight = 20 + 10 + 60 = 90kg.

Q10. The ratio of the ages of two boys is 1:4 respectively. If the older one is 16yrs old, find

a. the age of the younger one.
b. their total age.

Soln.

Younger boy : older boy

1 : 4

↓ : ↓

? : 16yrs

a. If 4 = 16, then 1 = ¼ x 16 = 4,
   $\Longrightarrow$ the younger boy is 4yrs old.
b. Their total age = 4+16 = 20yrs.