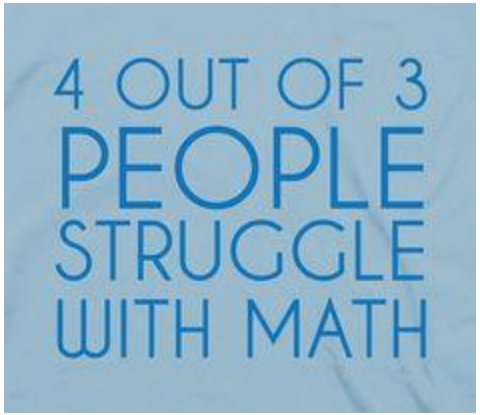
RATIO & PROPORTIONS

Concepts and Problems

CONCEPTS

- Ratio
- Proportion
- Continued Proportion
- Problems based on coins
- Problems based on ages



Compare the number of boys to girls in your class.

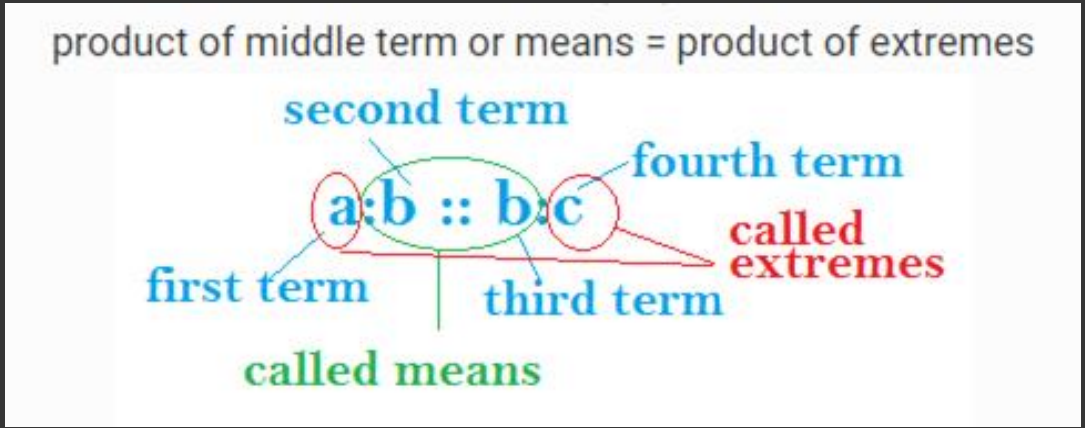
No of boys =
No of girls =
Now compare boys to girls,we get

RATIO

- Comparison or simplified form of two quantities of the same kind
- While comparing ,the two quantities should have same unit
- Ratio is expressed either as a:b or a/b or a to b

PROPORTION

- Equality of two ratios is called proportion
- If a:b = c:d or a/b = c/d ,then a,b,c,d are in proportion
- It can also be written as a:b :: c:d



For eg. If A covers 100 km in 1 hr and B covers 500 km in 5 hrs, 100/1 =500/5

- If 3:6 = 4:8, then
  4 and 8 are the third and fourth proportion
  3 and 8 are called the extremes
  whereas 6 and 4 are called means

- Product of extremes = Product of means
  3/6 =4/8 then 3*8 = 6*4

Are 8/10 and 7/10 in proportion?

CONTINUED PROPORTION

- If a:b=b:c,then continued proportion is a:b:c

  So to form continued proportion the mean should be common

- Eg. if 8:10 = 4:5 ,to find continued proportion

  Lcm of 10 and 4 is 40..so middle term is 40

  10*4 =40,so 8*4 =32 and 4*10 =40,so 5*10=50

  => 32:40:50 is the continued proportion

Write 9:8 = 7: 6 in continued proportion???

S.No	Ratio	Proportion
1	The ratio is used to compare the size of two things with the same unit	The proportion is used to express the equality of two ratios
2	It is expressed using a colon (:), slash (/)	It is expressed using the double colon (::) or equal to the symbol (=)
3	It is an expression	It is an equation

PROBLEMS ON COINS

1.A bag contains 25p coins, 50p coins and 1 rupee coins whose values are in the ratio of 8:4:2. The total values of coins are 840. Then find the total number of coins

PROBLEMS ON AGES

If you are assuming the current age to be x

- Age after n years will be (x+n) years
- the age before n years will be (x-n) years
- n times the current age will be (x×n) years
- 1/n times the current age will be x/n years
- If the age is given in the form of a ratio, for example, p:q, then the age shall be considered as qx and px

- Hence means add
- Ago means subtract

For eg.If age of A is 20,

5 years hence,20 +5 =25

5 years ago,,20-5 =15

5 times his current age = 5*20 =100

If age of A:B is 2:3 then A's age is 2x and B's age is 3x

1.A: How old is your kid?
B: His current age is 1.5 times his age 10 years ago

What is his age?

2.The ratio of present ages of Ravi and Rahul is 2:3.15 yrs hence the ratio will be 3:4.What is Rahul's present age?

Story for illustration purposes only