Ratio & Proportion

Short Tricks

Questions & solutions

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Ratio & Proportion Short Tricks & Questions with solutions

Ratio & Proportion is very important for all competitive exams generally 1-2 questions comes from this topic in maximum exams. So we are here providing you the concepts and important short tricks to solve Ratio & Proportion in very fast and efficient way. At the end we will provide few practice questions also apply the trick on those and see that you have got the trick or not.

Here we are providing some cases of Ratio & Proportion and tricks to solve it. Hope this would be helpful to all aspirants.

Ratio and proportion shortcuts

Hint 1:

a/b is the ratio of a to b . That is a:b

Hint 2:

When two ratios are equal, they are said to be in proportion.

Example:

If a:b = c:d, then a,b,c & d are proportion.

Hint 3:

Cross product rule in proportion:

Product of extremes = Product of means.

Example:

Let us consider the proportion a:b = c:d

Extremes = a & d, means = b & c

Then, as per the cross product rule, we have

ad = bc

Hint 4:

Inverse ratios:

b:a is the inverse ratio of a:b and vice versa.

That is, a:b & b:a are the two ratios inverse to each other.

Hint 5:

Verification of inverse ratios:

If two ratios are inverse to each other, then their product must be 1.

That is, a:b & b:a are two ratios inverse to each other.

Then, (a:b)X(b:a) = (a/b)X(b/a) = ab/ab = 1

Hint 6:

If the ratio of two quantities is given and we want to get the original quantities, we have to multiply both the terms of the ratio by some constant, say "x".

Example:

The ratio of earnings of two persons is 3:4.

Then,

the earning of the first person = 3x

the earning of the second person = 4x

Hint 7:

If we want compare any two ratios, first we have to express the given ratios as fractions.

Then, we have to make them to be like fractions.

That is, we have to convert the fractions to have same denominators.

Example:

Compare: 3:5 and 4:7.

First, let us write the ratios 3:5 and 4:7 as fractions.

That is 3/5 and 4/7.

The above two fractions do not have the same denominators. Let us make them to be same.

For that, we have to find L.C.M of the denominators (5,7).

That is, 5X7 = 35. We have to make each denominator as 35.

Then the fractions will be 21/35 and 20/35.

Now compare the numerators 21 and 20.

21 is greater.

So the first fraction is greater.

Hence the first ratio 3:5 is greater than 4:7.

Hint 8:

If two ratios P:Q and Q:R are given and we want to find the ratio P:Q:R, we have to do the following steps.

First find the common tern in the given two ratios P:Q and Q:R. That is Q.

In both the ratios try to get the same value for "Q".

After having done the above step, take the values corresponding to P, Q, R in the above ratios and form the ratio P:Q:R.

Example:

If P:Q = 2:3 and Q:R = 4:7, find the ratio P:Q:R.

In the above two ratios, we find "Q" in common.

The value corresponding to Q in the first ratio is 3 and in the second ratio is 4.

L.C.M of (3, 4) = 12.

So, if multiply the first ratio by 4 and second by 3,

we get P:Q = 8:12 and Q:R = 12:21

Now we have same value (12) for "Q" in both the ratios.

Now the values corresponding to P, Q & R are 8, 12 & 21.

Hence the ratio P:Q:R = 8:12:21

Hint 9:

If the ratio of speeds of two vehicles in the ratio a:b, then time taken ratio of the two vehicles would be b:a.

Example:

The ratio of speeds of two vehicles is 2:3. Then time taken ratio of the two vehicles to cover the same distance would be 3:2.

Hint 10:

If the ratio of speeds of two vehicles in the ratio a:b, then the distance covered ratio in the same amount of time would also be a:b.

Example:

The ratio of speeds of two vehicles is 2:3. Each vehicle is given one hour time. Then, the distance covered by the two vehicles would be in the ratio 2:3.

Hint 11:

If A is twice as good as B, then the work completed ratio of A and B in the same amount of time would be 2:1.

Example:

A is twice as good as B and each given 1 hour time. If A completes 2 unit of work in 1 hour, then B will complete 1 unit of work in one hour.

Hint 12:

If A is twice as good as B, then the tame taken ratio of A and B to do the same work would be 1:2.

Example:

A is twice as good as B and each given the same amount of work to complete. If A takes 1 hour to complete the work, then B will take 2 hours to complete the same work.

Hint 13:

If "m" kg of one kind costing $a per kg is mixed with "n" kg of another kind costing $b per kg, then the price of the mixture would be $ (ma+nb)/(m+n) per kg.

Hint 14:

If one quantity increased or decreases in the ratio a:b,

then the new quantity is = "b" of the original quantity/a

More clearly, new quantity = ("b" X original quantity) / a

Example:

David weighs 56 kg. If he reduces his weight in the ratio 7:6, find his new weight.

New weight = (6 X 56) / 7 = 48 kg.

Hence, David's new weight = 48 kg.

RATIO:

Ratio can be simply said as fractions. A number which is written as a fraction. Then, the Ratio's specified is not the exact value and it is the multiples of the value specified.

Ratio compares 2 numbers and they should be of the same unit

The reciprocal of the same number is not same ***ie (4/3) is not equal to(3/4)***

Example:

4 The value is Multiples of 4

3 The value is Multiples of 3

 # 1.TYPE 1:

BASIC PROBLEMS:

This is Basic type of questions in Ratio and Proportion,In this type Question contains Individual Ratio/Total Ratio and Individual Value/Total Value then,you will be asked to find the Ratio or Value.Since these type of questions are basic questions,and they can used in any other topic

1.If a certain sum of money is distributed among A and B in the ratio 4:3 and B gets Rs.3000,then what is total money distributed?

Explanation:

A B A+B

4x 3x 7x

3x=3000 x=1000

*Total money distributed =7x=7*1000=***Rs.7000***

2.If a certain task is distributed among A,B,C and D in the ratio 2:5:7:9 in 1 day then D performs 1800 task in 1 day. Then how many task is completed for 2day when A and B works?

Explanation:

D=9x=1800

x=200.

A and B when combines in 1 day they does = 2x+5x=7x

*7*200=1400*

*For 2 days they complete 1400*2=***2800 task.***

 # 2.TYPE 2:

BASED ON EFFICIENCY:

In this type efficiency of the Person is given and the ratio were also given we have to find the new ratio.Tricks and Tips to solve the Problem based on Efficiency.

1.Seats for mathematics, physics and biology in a school are in the ratio 5:7:8.There is a proposal to increase these seats by 40%,50% and 75% respectively. What will be the ratio of increased seats?

Explanation:

The ratio's are 5x:7x:8x let ***x=10*** *then,*

Mathematics=50 Physics =70 Biology=80

Then Increased Percentage be 40%,50% and 75%:

10% of 50=5 then 140% of 50=70

10% of 70=7 then 150% 0f 70=105

10%of 80=8 then 175% of 80=140

Mathematics=70 Physics =105 Biology=140

Their ***increased ratio=2:3:4***

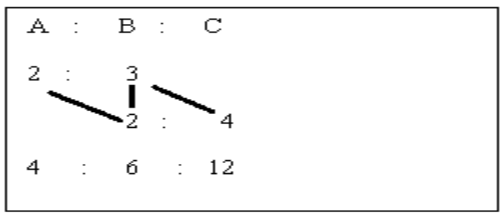
 # 3.TYPE 3:

FORMATION OF NEW RATIO'S:

This type of Problem consists of two Ratio's and we asked to find a new ratio.These type of questions can be asked in ***Partnership Problems***

1.If a:b=2:3 and b:c=2:4 then a:b:c=?

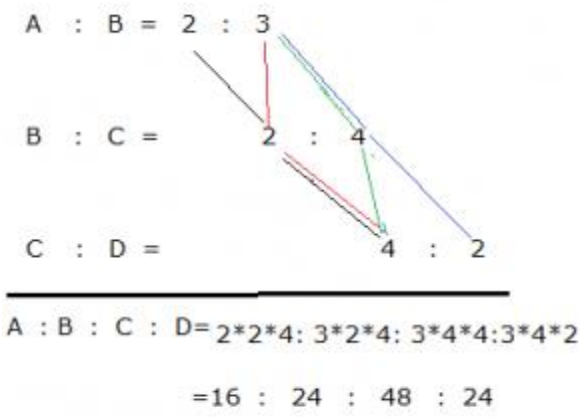
Explanation:



Therefore the ***new Ratio=2:3:6***

2.If a:b=2:3 and b:c= 2:4 and c:d= 4:2 then a:b:c:d=?

Explanation:



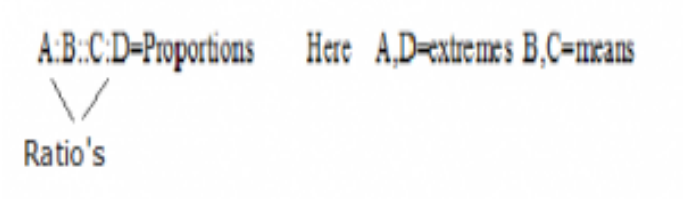
Therefore,the ***new Ratio is 2:3:6:3***

PROPORTIONS:

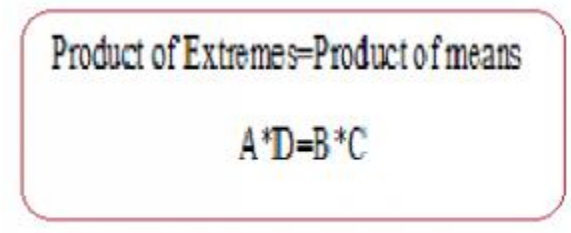
The Equality Of Two Ratios Is Called Proportions.

Proportion has basically 5 types,Questions asked in IBPS Exams are nowadays with high difficulty,So, to solve all the difficult problem we should know how to solve the basic problems.Here we have covered all the basic Problem and its types and Shortcut method for solving all the basic Problems

That is:



Rule:



If X=KY, K=constant then X is directly proportional toY

XY=K, then X is inversely proportional to Y.

#.1.TYPE 1:

FINDING NUMBER OF PERSON:

These type of question in Proportionality are the basic type and we can solve these type of problems by two methods

1.Method 1:Solving by equations

2.Method 2:Shortcut Method

1.A Sum Of Rs.312 Is To Be Distributed Among 100 Boys And Girls Such That If Each Boy Gets Rs.3.60 And Each Girl Gets Rs.2.40 Then Find How Many Number Of Boys In The Class?
Explanation:

Let there be X boys in the class and Y girls in the girls

X+Y=100

3.6X+2.4Y=312

By solving 1 & 2 we get X=60 and Y=40

*The number of boys present in the class=**60***

Shortcut Method:

Boys Girls

3.60 2.40

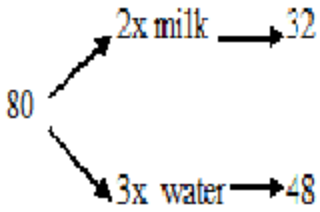
3 2

100(3/5)=60.The number of Boys=**60***

#.2 TYPE 2:

BASED ON ADDITION/SUBTRACTION OF QUANTITY:

1In A 80 Litre Of Solution Containing Milk And Water In The Ratio 2:3.How Much Milk Should Be Added To The Solution So That The New Ratio Becomes 4:1?
Explanation:



*The new ratio is **4:1** that means only water is added to the solution which means that the water in the solution remains constant in the new ratio also*

*Therefore **1x=48litre***

*4x=192 litre where as the solution already contain 32 litre therefore we should add **160litres of milk***

2.In A 60 Litres Mixture Of Milk And Water The Ratio Of Milk And Water Is 7:5.How Much Water Should Be Added In The Mixture So That The Ratio Of Milk To Water Becomes 5:7?
Explanation:

Mixture 60

Milk Water

7x=35 5x=25

*Milk is not added and kept as it is so 5x=35 x=7 there by 7x=7*7=49*

*Already there is 25litres of water in the mixture so additionally we need to add **24 litres** of water*

#.3 TYPE 3:

BASED ON EQUALITY:

If the original ratio a:b

*Duplicate Ratio:**$a^2:b^2$***

*Sub Duplicate Ratio: **$\sqrt{a}:\sqrt{b}$***

*Triplicate Ratio: **$a^3:b^3$***

*Sub Triplicate Ratio:**a^(1/3):b^(1/3)***

1.If Twice A Is Equal To 3b And That Is Equal To 5 Times Of C.Then Find A:b:c?
Explanation:

LCM of 2,3,5=30

a:b:c=30/2:30/3:30/5

=15:10:6

2.If The Sub Duplicate Ratio Of A:b=2:3.Then Find The Triplicate Ratio Of A:b?

Explanation:

$\sqrt{a}:\sqrt{b}=2/3$

$a:b=4/9$

$\boldsymbol{a^3:b^3=64/729}$

3.A Hound Pursues A Hare And Takes 6 Leaps Foe Every 9 Leaps Of The Hare,But 3 Leaps Of The Hound Are Equal To 5leaps Of The Hare.Compare The Rates Of The Hound And The Hare?

Explanation:

Given:

Hound Hare

6L 9L

3Hound=5Hare

Hound=(5/3)Hare

Rates of Hound:Rates of Hare

6(5/3)L : 9L*

10:9

Some important points:

1) If ratio is written as A:B, it is said to be a linear form and in case it is written as A/B, it is said to be fractional form.

2) Ratio does not have any unit. It is mere number.

3) The equality of two ratios is known as proportion i.e. a/b = c/d

If a/b = c/d , then it is also equal to a+c/b+d

***Invertendo** : If a/b = c/d , then b/a = d/c*

***Alterendo** : If a/b = c/d , then a/c = b/d*

***Componendo** : If a/b = c/d , then a+b/b = c+d/d*

***Dividendo** : If a/b = c/d , then a-b/b = c-d/d*

Componendo and Dividendo : If a/b = c/d , then a+b/a-b = c+d/c-d

4) If a/b = b/c = c/d =..... so on, then a,b,c,d... are in G.P.

Proof: Let a/b = b/c = c/d =k
c= dk, b= ck, a= bk
Therefore, b= dk^2 and a= dk^2
All are in G.P.

5) If a>b and same positive number is added to each term, then ratio decreases.
For example: a/b = 4/3 = 1.3, If 2 is added to each term, then a/b = 4+2/3+2 = 6/5 = 1.2
Therefore, ratio decreases.

6) If a<b and same positive number is added to each term, then ratio increases.
For example: a/b = 3/4 = 0.7, If 2 is added to each term, then a/b = 3+2/4+2 = 5/6 = 0.8
Therefore, ratio increases.

7) If we multiply or divide any number, there will be no effect on ratio.

8) Let a:b is a ratio

a^2:b^2 is duplicate ratio of a:b
a^3:b^3 is triplicate ratio of a:b
a^1/2:b^1/2 is sub-duplicate ratio of a:b
a^1/3:b^1/3 is sub-triplicate ratio of a:b

9) Proportions i.e. a:b = c:d
a and d are known to be extremes
b and c are known to be means.

10) In a:b :: c:d, d is fourth proportional to a,b and c.

11) If x is third proportional to a,b then it is written as a:b :: b:x.

Ratio And Proportion Concept

Ratio – It is a way of comparing two numbers or quantities and showing the relationship between them.

It is denoted by → ':'

Ex: *In a class, there are 60 boys and 40 girls. What is the ratio of boys and girls?*

Sol.: boys=60 and girls=40

Ratio= boys/girls =60/40=3/2=3:2

3:2 means हर three boys पर 2 girls है| या मैं ऐसा भी बोल सकता हूँ कि 5(i.e 3+2=5) students में 3 boys है or 2 girls है|

→ *If boys : girls = 3 : 2 क्या मैं ऐसा भी बोल सकता हूँ कि boys=3 or girls=2 तो मेरा Ans. है नहीं. क्योंकि मैंने common factor को cancel out कर दिया है उसके बाद हमे 3:2 प्राप्त हुआ है|*

यदि हमे boys and girls का individual value निकलना हो तो common factor से multiply करना होगा |

that means boys=3×20=60 and girls=2×20=40.here common factor=20 यहाँ पर मुझे common factor मालूम था तो मैंने individual value निकाल लिया|

यदि मुझे common factor मालूम नहीं होता तो मैं boys=3x and girls=2x लिखता|

Ex: In a class, the ratio of boys and girls is 3:2. If there are total 100 students, then how many boys and girls in the class.

Solution:

Let boys=3x and girls=2x

Now,

5x=100

x=20

so,boys=3x=3×20=60and girls=2x=2×20=40

Another way:

In 5 (i.e 3+2=5) students there are 3 boys

so, 1 student, there are 3/5 boys

∴ In 100 student boys are=(3/5)×100=60 boys

In 5 (i.e 3+2=5) students there are 2 girls

so, 1 student, there are 2/5 girls

∴ In 100 student girls are=(2/5)×100=40 girls

OR

girls=100-60=40 girls

Shortcut:

boys=(3/5)×100=60 boys

Girls=(2/5)×100=40 girls

Important Point:

⇒ For a ratio, the two quantities must be in the same unit.

Ex: Ratio of Rs 5 to Rs 30 here unit=Rs. In this example both quantities unit are same.

So, Ratio=5/30=1:6

Ex-2 Ratio of Rs 5 to 30 paise.

Solution: we can't express in the form of a ratio. because a unit of both quantities is not same.

if u want to express in the form of a ratio, first of all, make the unit of both quantities are same ie. Rs 5 to Rs 0.30 or 500 paise to 30 paise.

Rule:

The multiplication or division of each term of a ratio by the same non-zero number does not effect the ratio.

Ex: 4:5

$$\frac{4}{5}\ \begin{matrix}\times 2 = 8\\ \times 2 = 10\end{matrix}\quad \text{i.e } 8:10 = 4:5$$

PROPORTION:

If the ratio of the first and second quantities is equal to the ratio of the third and fourth quantities then it is called proportion.

It is represented by → '::'

i.e if a:b=c:d, we write a:b::c:d and we say that a, b, c, d are in proportional

Here a and d are called extremes while b and c are called mean terms.

Ex: *check 6, 10, 48, 80 are in proportional*

Solution: 6/10=3/5=3:5

and 48/80=3/5=3:5

so, 6, 10, 48, 80 are in proportional.

⇒ Fourth Proportional: If a:b=c:d, then d is called the fourth proportional to a, b, c.

⇒Fourth Proportional(d) =(b×c)/a

⇒ Third Proportional: If a:b=b:c, then c is called the third proportional to a and b.

⇒Third Proportional(c)=b^2/a

⇒Mean Proportional between a and b= √ab.

⇒Duplicate ratio of a:b= a^2:b^2 .

⇒Sub-duplicate ratio of a:b= √a:√b .

⇒Triplicate ratio of a:b = a^3:b^3

A common type of Ratio And Proportion problem that is frequently asked in the various competitive exam.

(Q1)If A:B=2:3 B:C=4:3 Find A:B:C

Solution:

[Concept: A:B and B:C दोनों में B common है so दोनों में जो B का ratio दिया हुआ है उसे equal करेंगें]

A:B	B:C
2:3 ×4	3×4:3
8:12	12:9

∴ A:B:C=8:12:9 Ans.

2nd Method:

	A	B	C
	2	3	
	4	3	
	8	12	9

∴ A:B:C=8:12:9 Ans.

(Q2) A:B=2:1 and A:C=1:3 then A:B:C is

Solution:

[Concept: A:B and A:C दोनों में A common है so दोनों में जो A का ratio दिया हुआ है उसे equal करेंगें]

	A:B	A:C
1×	2:1	2×1:3
	2:1	2:6

∴ A:B:C=2:1:6 Ans.

(Q3)If A:B=5:2 B:C=2:3 C:D=5:3 find ratio of A:B:C:D=?

Solution:

A:B **B:C**
5:2 **2:3**
Ratio of B is same

So, A:B:C=5:2:3

Now,

A:B:C **C:D**
5:2:3 ×5 **3× 5:3**
25:10:15 **15:9**

So, A:B:C:D = 25:10:15:9
Ans.

[Concept: A:B:C and C:D दोनों में C common है so दोनों में जो C का ratio दिया हुआ है उसे equal करने के लिए 5 से multiply किया गया है]

(Q4)If A:B=4:9 and A:C=2:3 then (A+B):(A+C) is.

Solution:[Concept: A:B and A:C दोनों में A common है so दोनों में जो A का ratio दिया हुआ है उसे equal करेंगें]

A:B **A:C**
1× 4:9 **2× 2:3**
4:9 **4:6**

∴ A:B:C=4:9:6

Now,

(A+B):(A+C)=(4+9):(4+6)=13:10 Ans.

(Q5)If 2A=3B=4C, then A:B:C is.

Solution:

L.C.M of 2,3,4=12

Now,

2A/12 =3B/12 = 4C/12

A/6 = B/4 = C/3

A:B:C=6:4:3 Ans.

(Q6)If A=(1/4)B and B=(½)C then A:B:C is

Solution:

A/B=1/4 and B/C=1/2

A:B=1:4 and B:C=1:2

[Concept: A:B and B:C दोनों में B common है so दोनों में जो B का ratio दिया हुआ है उसे equal करेंगें]

A:B	B:C
1:4 × 1	4 × 1:2
1:4	4:8

So, A:B:C=1:4:8 Ans.

(Q7)If A:B=2:3 and B:C=3:7 then (A+B):(B+C):(C+A) is.

Solution:

[Concept: A:B=2:3 B:C=3:7 दोनों में B common है so दोनों में जो B का ratio दिया हुआ है उसे equal करेंगें but in this question ratio of B in both cases are equal.]

∴ A:B:C=2:3:7

So, (A+B):(B+C):(C+A)=5:10:9 Ans.

(Q8)If x:y=4:5 then (3x+4y):(5x+3y)=?

Solution:

x:y=4:5

x/y=4/5

$$\frac{3x+y}{5x+3y}=\frac{\frac{3x}{y}+1}{\frac{5x}{y}+3}$$

Put the value of x/y then

(3x+4y):(5x+3y)=17:35 Ans.

(Q9)If a:b:c=2:3:4 and 2a-3b+4c=33, then the value of c is.

Solution:

a:b:c=2:3:4

∴ a/2 = b/3 = c/4 = K(let)

⇒ a=2k, b=3k, and c=4k

Given that 2a-3b+4c=33

=>2×2k-3×3k+4×4k=33

so, k=3

∴ c=4k=4×3=12 Ans.

(Q10)The fourth proportional to 4, 9, 12 is.

Solution:

Let the fourth proportional to 4, 9, 12 be x.

then 4:9::12:x

⇒4×x=9×12 (i.e a×d=b×c)

∴ x=27 Ans.

(Q11)The third proportional to 16 and 36 is.

Solution:

Let the third proportional to 16 and 36 be x

then 16:36:36:x

⇒ 16×x=36×36

∴ x=81 Ans.

(Q12)The mean proportional between 0.08 and 0.18 is.

Solution:

The mean proportional between 0.08 and 0.18=

$$\sqrt{0.08\times0.18} = \sqrt{\frac{8}{100}\times\frac{18}{100}} = \frac{12}{100} = 0.12 \text{ Ans}$$

(Q1)The product of two positive integers is 1575 and their ratio is 9:7. The smaller integer is.

दो संख्याओं का गुणनफल 1575 है और उनका अनुपात 9:7 है तो छोटी संख्या ज्ञात करें|

Solution:

Let the integers be 9x and 7x respectively

According to question

9x×7x = 1575

⇒ x^2 = 1575/63=25

⇒ x= 5

∴ smaller integer=7x=7×5=35 Ans.

(Q2)Three numbers are in the ratio of 3:2:5 and the sum of their squares are 1862. The smallest of these number is.

तीन संख्याओं का अनुपात 3:2:5 है और उनके वर्गों का योग 1862 है, तो सबसे छोटी संख्या ज्ञात करें|

Solution:

Let the number be 3x, 2x and 5x respectively

According to question

$(3x)^2 + (2x)^2 + (5x)^2 = 1862$

⇒$38x^2$=1862

⇒x^2=1862/38=49

⇒x = 7

∴ The smallest number=2x=2×7=14 Ans.

(Q3)The sum of three numbers is 116. The ratio of second to the third is 9:16 and the first to the third are 1:4. The second number is.

तीन संख्याओं का योग 116 है| दूसरी और तीसरी संख्या का अनुपात 9:16 और पहली और तीसरी संख्या का अनुपात 1:4 है, तो दूसरी संख्या ज्ञात करें|

Solution:

2nd	3rd	1st
9 :	16	
	4 :	1
36 :	64 :	16
9 :	16 :	4

Therefore, the second number=(9/29)×116

= 36 Ans.

(Q4)Of the three numbers, the ratio of the first and the second is 8:9 and that of the second and third is 3:4. If the product of the first and third number is 2400, then the second number is:

तीन संख्याओं में पहली और दूसरी संख्याओं का अनुपात 8:9 है और दूसरी व तीसरी का अनुपात 3:4 है। यदि पहली और तीसरी का गुणनफल 2400 है, तो दूसरी संख्या ज्ञात करें।

Solution:

1st	2nd	3rd
8 :	9	
	3 :	4
24 :	27 :	36
8 :	9 :	12

Let the 1st, 2nd, and 3rd number be 8x, 9x, and 12x respectively

8x×12x=2400

⇒ x^2=2400/96 = 25

⇒ x=5

2nd number=9x=9×5=45 Ans.

(Q5)what number should be added to each of 6, 14, 18 and 38 so that the resulting numbers make a proportion?

किस संख्या को 6, 14, 18, तथा 38 प्रत्येक में जोड़ा जाए की नई संख्याएँ समानुपातिक हो जाए।

Option: (1) 3 (2) 2 (3) 4 (4) 1

Solution:

Concept: if a, b, c, d are in proportion then a:b::c:d or a:b=c:d or a/b = c/d

Let x is added then

(6+x)/(14+x) = (18+x)/(38+x)

⇒ 228+38x+6x+x² = 252+14x+18x+x²

⇒ x²+44x+228 = x²+32x+252

⇒ 12x=24

∴x=2 Ans.

Second Method:

Let x is added then

(6+x)/(14+x) = (18+x)/(38+x)

put the value from option then

(6+2)/(14+2) = (18+2)/(38+2)

⇒ 8/16 = 20/40

⇒ 1/2 = 1/2

(Q6)Three numbers are in the ratio 3:4:5. The sum of the largest and the smallest equals the sum of the second and 52. the smallest number is.

तीन संख्याएँ 3:4:5 अनुपात में है| यदि सबसे बड़ी व सबसे छोटी संख्याओं का योग दूसरी संख्या व 52 के योग के बराबर है तो सबसे छोटी संख्या ज्ञात करें|

Solution:

Let the numbers be 3x, 4x and 5x

Now according to question

5x+3x = 4x+52

⇒ 4x=52

⇒ x=13

∴ Smallest number=3x=3×13=39 Ans.

(Q7)If the square of the sum of two numbers is equal to 4 times of their product, then the ratio of these numbers is:

किन्ही दो संख्याओं के योग का वर्ग, उनके गुणनफल के चार गुने के बराबर है, तो संख्याओं का अनुपात क्या है |

Solution:

Let the numbers are x and y

Now according to question

$(X+y)^2 = 4xy$

$\Rightarrow x^2 + y^2+2xy = 4xy$

$\Rightarrow x^2 + y^2-2xy=0$

$\Rightarrow (x-y)^2 = 0$

so, x=y

$\therefore x:y=1:1$ ***Ans.***

(Q8)The sum of two numbers is equal to 20 and their difference is 25. The ratio of the two numbers is.

दो संख्याओं का योग 20 है और उनका अंतर 25 है तो संख्याओं का अनुपात ज्ञात करें|

Solution:

1st method: Shortcut

20+25 : 20-25

=45 : 5

=9 : 1 Ans.

2nd Method: General

Let the numbers are x and y

Now according to question

$x+y = 25 \leftarrow (1)$

$x-y = 20 \leftarrow (2)$

on adding Eqn.(1)and (2)

$\Rightarrow 2x= 45$

$\Rightarrow x=22.5$

put the value of x in Eqn.(1)

$\Rightarrow 22.5+y=25$

y=2.5

∴ Required ratio=22.5:2.5 =9:1 Ans

(Q9)If A and B are in the ratio 4:5 and the difference of their squares is 81, what is the value of A?

यदि A तथा B 4:5 के अनुपात में है और उनके वर्गों का अंतर 81 है, तो A का मान ज्ञात करें|

Solution:

Let A=4x and B=5x

Now according to question

$(5x)^2 - (4x)^2 = 81$

$\Rightarrow 9x^2 = 81$

$\Rightarrow x^2 = 81/9 = 9$

$\Rightarrow x = 3$

∴ A=4x=4×3=12 Ans.

(Q1)The ratio of two numbers is 3:4 and their LCM is 120. The sum of numbers is.

दो संख्याएँ 3:4 के अनुपात में है और उनका लघुत्तम समापवर्त्य 120 है तो संख्याओं का योग ज्ञात करें|

Solution:

Let the numbers be 3x and 4x respectively.

LCM of 3x and 4x=12x

$\Rightarrow 12x = 120$

$\Rightarrow x = 10$

∴ Sum of the numbers=3x+4x=7x=7×10=70 Ans.

(Q2)The ratio of two numbers is 3:4 and their HCF is 15. Then the sum of the two numbers is:

दो संख्याएँ 3:4 के अनुपात में है और उनका महत्तम समापवर्त्य 15 है तो संख्याओं का योग ज्ञात करें|

Solution:

Let the numbers be 3x and 4x respectively.

HCF of 3x and 4x=x

$\Rightarrow x = 15$

∴ Sum of the two numbers=3x+4x=7x=7×15=105 Ans.

(Q1)In a school having roll strength 286, the ratio of boys and girls is 8:5. If 22 more girls get admitted into the school, the ratio of boys and girls becomes.

286 छात्रों की एक स्कूल में लड़कों व लड़कियों का अनुपात 8:5 है| यदि 22 और लड़कीयाँ स्कूल में दाखिला लेती है तो लड़कों व लड़कियों का नया अनुपात ज्ञात करें|

Solution:

Let boys=8x and girls=5x

Now, According to the question

8x+5x=286

⇒ x= 286/13 =22

Boys=8×22=176

Girls=5×22=110

No. of girls at present after adding 22 girls=110+22=132

∴ Ratio=176/132=4:3 Ans.

Method-2

Initially number of boys=(8/8+5)×286=(8/13)×286=176

Number of girls=(5/13)×286=110

No. of girls at present after adding 22 girls=110+22=132

∴ Ratio=176/132=4:3 Ans.

(Q2)If there is a reduction in the number of workers in a factory in the ratio 15:11 and an increment in their wage in the ratio 22:25, then the ratio by which the total wage of the workers should be decreased is.

यदि एक कारखाने में मजदूरों की संख्या में 15:11 के अनुपात में कटौती हो और उनकी मजदूरी 22:25 के अनुपात में बढाई जाए तो उनकी कुल घटी हुई मजदूरी का अनुपात ज्ञात करें|

Solution:

	Old	:	New
No. of workers	15		11
Wages	22		25
	330	:	275
	6	:	5 Ans

(Q3)Two numbers are in the ratio 3:5. By adding 10 to each of them, the new numbers are in the ratio 5:7. Find the two numbers.

दो संख्याओ का अनुपात 3:5 है| यदि प्रत्येक संख्या में 10 जोड़ दी जाए तो उनका अनुपात 5:7 हो जाता है, तो संख्याएँ ज्ञात करें |

Solution: 1st Method: Shortcut

	1st Number	:	2nd Number
New	5		7
Original	3		5
Difference=	2		2

Now,

2 unit = 10

1 unit = 5

1st number=3×5=15

2nd number=5×5=25

Second Method: Shortcut

	1st Number	:	2nd Number
New	5		7
Original	3		5

Now, cross multiply

(25-21)/7-5 = 4/2=2

Concept:[2 unit को 10 unit बनाना होगा क्योंकि question में दिया है 10 unit add किया जा रहा है।]

So, 2×5=10

1st number=3×5=15

2nd number=5×5=25

Third Method: General Method

Let the number be 3x and 5x

Now, According to the question

(3x+10)/(5x+10) = 5/7

⇒2x+70 = 25x+50

⇒4x=20

∴ x=5

1st number=3×5=15

2nd number=5×5=25

Important Note: जब difference same आएगा तब हमलोग इस type के question को method-1,2 and 3 किसी भी method से solve कर सकते है पर यदि इस type के question में difference same नहीं आएगा तब हमलोग method-2 and 3 से solve करेंगे।

(Q4)What should be added to each term of the ratio 7:11, so as to make it equal to 3:4?

7:11 अनुपात की प्रत्येक संख्या में किस संख्या को जोड़ा जाए की अनुपात 3:4 हो जाए।

Solution: 1st Method: Shortcut

	1st Number	: 2nd Number
New	3	4
Original	7	11

Now, cross multiply

(33-28)/4-3 = 5/1=5 Ans.

2 nd Method: General Method

Let the required number be x.

Now,

(7+x)/(11+x)= 3/4

⇒28+4x = 33+3x

⇒ x= 5 Ans.

(Q5)Two numbers are in the ratio 4:5 respectively. If each number is subtracted by 25, then the ratio becomes 3:4. Find the two numbers.

दो संख्याओ का अनुपात 4:5 है| यदि प्रत्येक संख्या में से 25 घटा दी जाए तो उनका अनुपात 3:4 हो जाता है, तो संख्याएँ ज्ञात करें|

Solution:1st Method: Shortcut

	1st Number	: 2nd Number
Original	4	5
New	3	4
Difference=	1	1

Now

1 unit = 25

1st number=4×25=100

2nd number=5×25=125

Second Method: Shortcut

	1st Number	: 2nd Number
Original	4	5
New	3	4

Now, cross multiply

(16-15)/4-3 = 1/1=1

Concept:[1 unit को 25 unit बनाना होगा क्योंकि question में दिया है 25 unit subtract किया जा रहा है|]

So, 1×25=25

1st number=4×25=100

2nd number=5×25=125

Third Method: General Method

Let the number be 4x and 5x

Now, According to the question

(4x-25)/(5x-25) = 3/4

⇒16x-100 = 15x-75

⇒x=25

1st number=4×25=100

2nd number=5×25=125

Important Note: जब difference same आएगा तब हमलोग इस type के question को method-1,2 and 3 किसी भी method से solve कर सकते है पर यदि इस type के question में difference same नहीं आएगा तब हमलोग method-2 and 3 से solve करेंगे।

(Q6)What number should be subtracted from both the terms of the ratio 11:15 so as to make it as 2:3?

11:15 अनुपात की संख्याओ में किस संख्या को घटाया जाए की अनुपात 2:3 हो जाए।

Solution:1st Method: Shortcut

	1st Number	:	2nd Number
Original	11		15
New	2		3

Now, cross multiply

(33-30)/3-2 = 3/1=3 Ans.

2 nd Method: General Method

Let the required number be x.

Now,

(11-x)/(15-x)= 2/3

⇒33-3x = 30-2x

⇒ x= 3 Ans.

(Q7)The students in three classes are in the ratio 4:6:9. If 12 students are increased in each class, the ratio changes to 7:9:12. Then the total number of students in the three classes before the increase is.

तीन कक्षाओं में छात्रों का अनुपात 4:6:9 है| यदि प्रत्येक कक्षा में 12 छात्र बढ़ा दी जाए तो अनुपात 7:9:12 हो जाता है, तो शुरुआत में कुल कितने छात्र थे|

Solution:1st Method: Shortcut

	1st	:	2nd	:	3rd	
New	7		9		12	= 28unit
Original	4		6		9	= 19unit
Diff.=	3	:	3	:	3	

Now,

3 unit=12

1 unit=4

Initially the number of students=19 unit=19×4=76 Ans.

2 nd Method: General Method

Let the original number of student be 4x, 6x, and 9x

Now,

(4x+12)/(6x+12)=7/9

⇒ 42x+84 = 36x+108

⇒ 6x= 24

⇒ x= 4

Initially the number of students=19x=19×4=76 Ans.

Important Note: जब difference same आएगा तब हमलोग इस type के question को method-1 and 2 किसी भी method से solve कर सकते है पर यदि इस type के question में difference same नहीं आएगा तब हमलोग method-2 से solve करेंगे|

(Q8)The ratio between the boys and girls in a class is 6:5 respectively. If 8 more boys join the class and two girls leave the class then the respective ratio becomes 11:7. What is the number of boys in the class now?

एक कक्षा में लड़के व लड़कियों का अनुपात क्रमशः 6:5 है| यदि 8 और लड़के कक्षा में दाखिला लेता है एवं 2 लड़कीयाँ कक्षा छोड़ती है तो लड़के व लड़कियों का अनुपात 11 :7 हो जाता है तो अभी कक्षा में लडको कि संख्या क्या है |

Solution:

Let the number of boys and girls be 6x and 5x respectively.

According to the question,

$(6x+8)/(5x-2) = 11/7$

$\Rightarrow 42x+56=55x-22$

$\Rightarrow 13x=78$

$\Rightarrow x=6$

∴ Number of boys in the class=6x+8

$=6\times6+8=42$ ***Ans.***

(Q1)80 liters of a mixture contains milk and water in the ratio of 27:5. How much is more water to be added to get a mixture containing milk and water in the ratio of 3:1?

80 लीटर के एक मिश्रण में दूध व पानी का अनुपात 27:5 है | तो कितना पानी और मिलाया जाए की मिश्रण में दूध व पानी का अनुपात 3:1 हो जाए|

Solution: Method-1-Shortcut

	M	:	W
Initial->	27	:	5
Final->	3	:	1

[Concept: According to question mixture में अलग से only water add करने की बात की जा रही है so in both situation(i.e initial state and Final state) quantity of milk will be equal. but यहाँ पर milk की मात्रा(quantity) दोनों में equal नहीं है so milk की मात्रा(quantity) equal करनी होगी|]

	M	:	W	
Initial->	27	:	5	
Final->	3	:	1	×9

Now,

	M	:	W	
Initial->	27	:	5	┐ diff.=4
Final->	27	:	9	┘

32units(i.e 27+5)=80 litres

1 unit=80/32

∴ 4 unit=(80/32)×4=10 litres Ans.

Method-2

M:W
27 : 5

80 litre
i.e total quantity
of mixture

Milk(M)=80×(27/32)=67.5 litres

Water(W)=80×(5/32)=12.5 litres

OR

Water=80-67.5=12.5 litres

Now,

Let x litre water to be added then

67.5/(12.5+x)=3/1

⇒37.5+3x=67.5

∴ x=10 litre Ans.

Method-3

Let quantity of milk in the mixture=27x

and quantity of water =5x

Now,

32x=80 liters

∴ x=5/2

Milk=27x=27×(5/2)=67.5 litres

Water=5x=5×(5/2)=12.5 litres

Let y litre water to be added then

67.5/(12.5+y)=3/1

⇒37.5+3y=67.5

∴ y=10 litre Ans.

(Q2)20 litres of a mixture contains milk and water in the ratio of 3:1. How much more milk is to be added to get a mixture containing milk and water in the ratio of 4:1?

20 लीटर के एक मिश्रण में दूध व पानी का अनुपात 3:1 है| तो कितना दूधऔर मिलाया जाए की मिश्रण में दूध व पानी का अनुपात 4:1 हो जाए|

Solution: Method-1: Shortcut

	M	:	W
Initial->	3	:	1
Final->	4	:	1

[Concept: According to question mixture में अलग से only milk add करने की बात की जा रही है so in both situation(i.e initial state and Final state) quantity of water will be equal. but यहाँ पर water की मात्रा(quantity) दोनों में पहले से equal है so water की मात्रा(quantity) equal करने की जरूरत नहीं है|]

So,

	M		W
Initial->	3		1
Final->	4	Diff.=1	1

4 unit(i.e 3+1)=20 liters

∴ 1 unit=20/4=5 litres Ans.

Method-2

M:W
3 : 1

20 litre
i.e total quantity
of mixture

Milk(M)=20×(3/4)=15 liters

Water(W)=20×(1/4)=5 liters

OR

Water=20-15=5 liters

Now,

Let x litre milk to be added then

(15+x)/(5)=4/1

⇒ 15+x=20

∴ x=5 litre Ans.

(Q3)729 ml of a mixture contains milk and water in the ratio 7:2. How much more water is to be added to get a new mixture containing milk and water in the ratio 7:3?

729 ml के एक मिश्रण में दूध व पानी का अनुपात 7:2 है| तो कितना पानी और मिलाया जाए की मिश्रण में दूध व पानी का अनुपात 7:3 हो जाए|

Solution: Shortcut

	M	:	W
Initial->	7	:	2
Final->	7	:	3

[Concept: According to question mixture में अलग से only water add करने की बात की जा रही है so in both situation(i.e initial state and Final state) quantity of milk will be equal. but यहाँ पर milk की मात्रा(quantity) दोनों में पहले से equal है so milk की मात्रा(quantity) equal करने की जरूरत नहीं है|]

So,

	M	:	W	
Initial->	7	:	2	diff.=1
Final->	7	:	3	

9 unit(i.e 7+2)=729

∴ 1 unit=729/9=81 ml Ans.

(Q4)An alloy contains copper, zinc, and nickel in the ratio of 5:3:2. The quantity of nickel (in Kg) that must be added to 100 kg of this alloy to have the new ratio 5:3:3 is.

एक मिश्रधातु में तांबा, जिंक तथा निकेल 5:3:2 के अनुपात में है| इस मिश्रधातु के 100 kg में कितनी निकेल की मात्रा (किग्रा. में) डाली जाए की नया अनुपात 5:3:3 हो जाए|

Solution: Shortcut

	CO	:	ZI	:	NI	
Initial->	5	:	3	:	2	Diff.=1
Final->	5	:	3	:	3	

10 unit(i.e 5+3+2)=100 kg

∴ 1 unit=100/10=10 Kg Ans.

(Q1)A mixture contains milk and water in the ratio 5:2 on adding 22 litres of water, the ratio of milk and water becomes 7:5. The quantity of water in the original mixture is.

एक मिश्रण में दूध व पानी का अनुपात 5:2 है| यदि 22 लीटर पानी और मिलाया जाए तो नए मिश्रण में दूध व पानी काअनुपात 7:5 हो जाता है तो original मिश्रण में पानी की कुल मात्रा ज्ञात करे|

Solution: Shortcut

	M	:	W
Initial->	5	:	2
Final->	7	:	5

[Concept: According to question mixture में अलग से 22 litres water add करने की बात की जा रही है so in both situation(i.e initial state and Final state) quantity of milk will be equal. but यहाँ पर milk की मात्रा(quantity) दोनों में equal नहीं है so milk की मात्रा(quantity) equal करनी होगी|]

	M	:	W
Initial->	5	:	2 × 7
Final->	7	:	5 × 5

Now,

	M	:	W	
Initial->	35	:	14	diff.=11
Final->	35	:	25	

11 unit=22 liters

1 unit=22/11

∴ 14 unit=(22/11)×14=28 liters Ans.

Method-2

Let the initial quantity of milk in mixture=5x and water=2x

adding 22 liters of water then

5x/(2x+22)=7/5

25x=14x+154

∴ x=14

The quantity of water in the original mixture=2x=2×14=28 liters Ans.

(Q2)The milk and water in a mixture are in the ratio 7:5. When 15 litres of water are added to it, the ratio of milk and water in the new mixture becomes 7:8. The total quantity of water in the new mixture is.

एक मिश्रण में दूध व पानी का अनुपात 7:5 है| यदि 15 लीटर पानी और मिलाया जाए तो नए मिश्रण में दूध व पानी काअनुपात 7:8 हो जाता है तो नए मिश्रण में पानी की कुल मात्रा ज्ञात करे|

Solution: Shortcut

	M	:	W
Initial->	7	:	5
Final->	7	:	8

[Concept: According to question mixture में अलग से 15 litres water add करने की बात की जा रही है so in both situation(i.e initial state and Final state) quantity of milk will be equal. but यहाँ पर milk की मात्रा(quantity) दोनों में पहले से equal है so milk की मात्रा(quantity) equal करने की जरूरत नहीं है|]

Now,

	M	:	W	
Initial->	7	:	5	┐ Diff.=3
Final->	7	:	8	┘

3 unit=15

1 unit=15/3

∴ 8 unit=(15/3)×8=40 litre Ans.

Method-2

Let the initial quantity of milk in mixture=7x and water=5x

adding 15 liters of water then

7x/(5x+15)=7/8

56x=35x+105

∴ x=5

In new mixture milk=7x and water=8x

The quantity of water in the new mixture=8x=8×5=40 liters Ans.

(Q3)The milk and water in a mixture is 1:3. If 5 litres of milk are added to it, the ratio of milk and water in the new mixture becomes 1:2. The total quantity of new mixture(in litres) is.

एक मिश्रण में दूध व पानी का अनुपात 1:3 है| यदि 5 लीटर दूध और मिलाया जाए तो नए मिश्रण में दूध व पानी का अनुपात 1:2 हो जाता है तो नए मिश्रण की कुल मात्रा ज्ञात करे|

Solution: Shortcut

	M	:	W
Initial->	1	:	3
Final->	1	:	2

[Concept: According to question mixture में अलग से 5 litres milk add करने की बात की जा रही है so in both situation(i.e initial state and Final state) quantity of water will be equal. but यहाँ पर water की मात्रा(quantity) दोनों में equal नहीं है so water की मात्रा(quantity) equal करनी होगी|]

Now,

	M	:	W
Initial->	1	:	3×2
Final->	1	:	2×3

Now,

	M		W
Initial->	2]	diff.=1	6
Final->	3]		6

1 unit=5 litres

9 unit(i.e3+6)=9×5=45 litres Ans.

Method-2

Let the initial quantity of milk in mixture=x and water=3x

adding 5 liters of milk then

(x+5)/3x=1/2

⇒2x+10=3x

⇒x=10

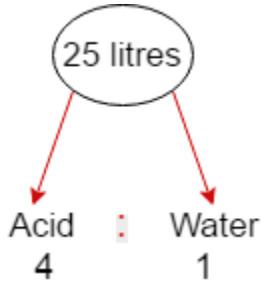
∴ quantity of new mixture=4x+5

=4×10+5=45 liters Ans.

(Q4)In a mixture of 25 litres, the ratio of acid to water is 4:1. Another 3 litres of water is added to the mixture. The ratio of acid to water in the new mixture is.

25 लीटर के एक मिश्रण में एसिड व पानी का अनुपात 4:1 है। यदि मिश्रण में 3 लीटर पानी मिलाया जाए, तो नए मिश्रण में एसिड व पानी का अनुपात क्या होगा।

Solution:



Acid= 25×(4/5)=20 litres

Water=25-20=5 litres

After adding 3 liters of water then total quantity of water=5+3=8 liters

Now, Ratio=20/8=5:2 Ans

Method-2

Let the initial quantity of Acid in mixture=4x and water=x

now,

5x(i.e 4x+x=5x)=25

⇒ x=5

Acid=4x=4×5=20 liters

Water=x=5 liters

after adding 3 liters of water then total quantity of water=8 liters

Now, ratio=20/8=5:2 Ans.

(Q1)Two equal vessels are filled with the mixture of milk and water in the ratio of 3:2 and 4:1 respectively. If the mixture is poured into a third vessel, the ratio of milk and water in the third vessel will be.

दो पतीला समान क्षमता के है जिसमे दूध व पानी के मिश्रण का अनुपात क्रमश: 3:2 और 4:1 है| यदि दोनों मिश्रण को तीसरा पतीला में मिला दिया जाए तो तीसरा पतीला के मिश्रण दूध व पानी का अनुपात क्या होगा|

Solution: Shortcut

	M	:	W		Total Quantity
Vessel1 ->	3	:	2	=	5
Vessel2 ->	4	:	1	=	5

[Concept: If total quantity of both vessels are equal then add milk+milk : water+water]

Here the quantity of both vessels are equal so, the ratio of milk and water in the third vessel=7:3 Ans.

Method-2

Total quantity of milk=(3/5)+(4/5)=7/5

Total quantity of water=(2/5)+(1/5)=3/5

Ratio=(7/5)/(3/5)=7:3 Ans.

(Q2)There are two containers of equal capacity. The ratio of milk to water in the first container is 3:1, in the second container 5:2. If they are mixed up, the ratio of milk to water in the mixture will be.

दो बर्तन समान क्षमता के है| पहले बर्तन में दूध व पानी का अनुपात 3:1 है और दूसरे बर्तन में दूध व पानी का अनुपात 5:2 है| यदि दोनों को मिला दिया जाए तो मिश्रण में दूध व पानी का अनुपात क्या होगा|

Solution:

	M	:	W		Total quantity
Container 1->	3	:	1	=	4
Container 2->	5	:	2	=	7

[Concept: Here total quantity of both containers are not equal so first of all we will have to make a total quantity of both containers are equal. Total quantity ko equal करने के लिए जिस-जिस number से 1st and 2nd के total quantity को multiply किया जाएगा उसी-उसी number से उनके ratio को भी multiply करेंगे|]

Now,

	M	:	W	Total quantity
Container 1->	3		1	= 4 ×7=28
Container 2->	5		2	= 7 ×4 =28

Now,

	M	:	W	Total quantity
Container 1->	21		7	= 28
Container 2->	20		8	= 28
	41	:	15	Ans.

Method-2

Total quantity of milk=(3/4)+(5/7)=41/28

Total quantity of water=(1/4)+(2/7)=15/28

Ratio=(41/28)/(15/28)=41:15 Ans.

(Q3)Three utensils contain equal quantity of mixtures of milk and water in the ratio 2:3, 1:4 and 4:1 respectively. If all the solutions are mixed together, the ratio of milk and water in the new mixture is.

तीन बर्तन समान क्षमता के है जिसमे दूध व पानी के मिश्रण का अनुपात क्रमश: 2:3, 1:4और 4:1 है| यदि तीनों बर्तन के मिश्रण को मिला दिया जाए तो नए मिश्रण में दूध व पानी का अनुपात क्या होगा|

Solution: Shortcut

	Milk	:	Water	Total quantity
1st utensils	2		3	= 5
2nd utensils	1		4	= 5
3rd utensils	4		1	= 5

Here total quantity of all utensils are equal, so ratio of milk and water =7:8 Ans

Concept: [Total quantity of all are equal then simply Add, (milk1+milk2+milk3) : (water1+water2+water3)]

2nd method:

Total quantity of milk=2/5+1/5+4/5=7/5

Total quantity of water=3/5+4/5+1/5=8/5

Ratio= (7/5)/(8/5) = 7:8 Ans.

(Q4)Three glasses of equal volume contains acid mixed with water. The ratios of acid and water are 6:1, 5:2 and 3:1 respectively. Contents of these glasses are poured in a large vessel. The ratio of acid and water in the large vessel is.

तीन ग्लास समान क्षमता के है जिसमे पानी से मिला एसिड रखा गया है| एसिड व पानी का अनुपात क्रमश: 6:1, 5:2और3:1 है|यदि तीनों ग्लासों के मिश्रण को एक टब में मिला दिया जाए तो इस मिश्रण में एसिड व पानी का अनुपात क्या होगा|

Solution:

	Acid	:	Water	Total quantity
1st glass ->	6		1	= 7
2nd glass ->	5		2	= 7
3rd glass ->	3		1	= 4

[Concept: Here total quantity of all glass are not equal so first of all we will have to make a total quantity of all glass are equal. Total quantity को equal करने के लिए जिस-जिस number से 1st and 2nd and 3rd के total quantity को multiply किया जाएगा उसी-उसी number से उनके ratio को भी multiply करेंगे|]

Now,

	Acid	:	Water	Total quantity
1st glass ->	6		1	= 7×4 =28
2nd glass ->	5		2	= 7×4 =28
3rd glass ->	3		1	= 4×7 =28

So,

	Acid	:	Water
1st glass ->	24		4
2nd glass ->	20		8
3rd glass ->	21		7
	65		19 Ans.

2nd Method

Total acid= (6/7)+(5/7)+(3/4)

= (24+20+21)/28 = 65/28

Total water= (1/7)+(2/7)+(1/4)

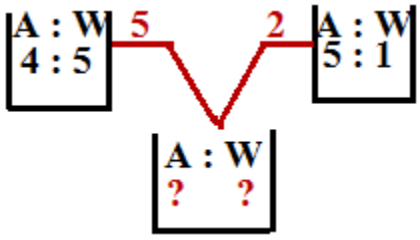
= (4+8+7)/28 = 19/28

∴ Ratio= (65/28)/(19/28) = 65:19 Ans.

(Q1) Two container A and B contain a mixture of Acid and water in the ratio of 4:5 and 5:1. If both containers are mixed in the proportion of 5:2 respectively, Find the ratio of acid and water in the newly formed mixture is.

दो बर्तन A और B में एसिड और पानी का मिश्रण रखा गया है जिसमें एसिड और पानी का अनुपात 4:5 और 5:1 है| यदि दोनों बर्तन को 5:2 के अनुपात में मिलाया जाता है तो नए मिश्रण में एसिड और पानी का अनुपात क्या होगा|

Solution:



In 5 unit of mixture

Quantity of acid=(4/9)×5=20/9

Quantity of water=(5/9)×5=25/9

In 2 unit of mixture

Quantity of acid=(5/6)×2=5/3

Quantity of water=(1/6)×2=1/3

∴ Required ratio=[(20/9)+(5/3) : (25/9)+(1/3)]

= 35/9:28/9 =5:4 Ans.

Second Method:

	Acid	:	Water	Total Quantity
Container A->	4		5	= 9
Container B->	5		1	= 6

[Concept: Container A और container B का total quantity equal नहीं है so,Step-1: Container A और container B के total quantity को equal करना है| equal करने के लिए जिस number से total quantity को multiply किया जाएगा उसी- उसी number से उसके ratio को भी multiply करना है| Step-2: दोनों container को जिस ratio में मिलाया जा रहा है फिर उससे multiply करना है]

	Acid	:	Water		Total Quantity	
Container A->	4		5	=	9 - ×2	}step-1
Container B->	5		1	=	6 - ×3	
	8		10		18 - ×5	}step-2
	15		3		18 - ×2	
	40		50			
	30		6			
	70		56			
	5	:	4 Ans			

(Q2) Two alloys contain tin and iron in the ratio of 1:2 and 2:3. If the two alloys are mixed in the proportion of 3:4 respectively the ratio of tin and iron in the newly formed alloy is:

दो मिश्र धातुओं में टीन तथा लोहा 1:2 और 2:3 के अनुपात में है| यदि मिश्र धातुओं को 3:4 के अनुपात में मिलाया जाता है, तो नए मिश्र धातु में टीन तथा लोहे का अनुपात क्या होगा|

Solution:

	Tin	:	Iron		Total Quantity
1st alloy->	1		2	=	3
2nd alloy->	2		3	=	5

[Concept: 1st alloy और 2nd alloy का total quantity equal नहीं है so,Step-1: 1st alloy और 2nd alloy के total quantity को equal करना है| equal करने के लिए जिस number से total quantity को multiply किया जाएगा उसी- उसी number से उसके ratio को भी multiply करना है| Step-2: दोनों container को जिस ratio में मिलाया जा रहा है फिर उससे multiply करना है]

	Tin	:	Iron		Total Quantity	
1st alloy->	1		2	=	3 - ×5	}Step-1
2nd alloy->	2		3	=	5 - ×3	
	5		10		15 - ×3	}Step-2
	6		9		15 - ×4	
	15		30			
	24		36			
	39		66			
	13	:	22 Ans			

(Q3)Three glasses contains acid mixed with water. The ratios of acid and water are 3:2, 2:1 and 2:3 respectively. If the mixture taken out in the ratio 10:9:5. What is the ratio of acid and water in new mixture is.

तीन ग्लास जिसमे पानी से मिला एसिड रखा गया है| एसिड व पानी का अनुपात क्रमश: 3:2, 2:1और 2:3 है| यदि मिश्रण को 10:9:5 के अनुपात में निकला जाए तो नए मिश्रण में एसिड व पानी का अनुपात क्या होगा|

Solution:

	Acid :	Water	Total quantity
1st glass ->	3	2	= 5
2nd glass ->	2	1	= 3
3rd glass ->	2	3	= 5

[Concept: 1st glass, 2nd glass और 3nd glass का total quantity equal नहीं है so, Step-1: 1st glass, 2nd glass और 3nd glass के total quantity को equal करना है| equal करने के लिए जिस number से total quantity को multiply किया जाएगा उसी- उसी number से उसके ratio को भी multiply करना है| Step-2: तीनों container से जिस ratio में मिश्रण निकाला जा रहा है फिर उससे multiply करना है]

	Acid :	Water	Total quantity
1st glass ->	3	2	= 5×3 =15
2nd glass ->	2	1	= 3×5 =15
3rd glass ->	2	3	= 5×3 =15

So,

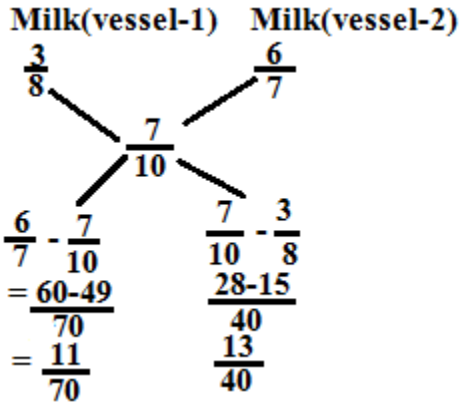
	Acid :	Water		Acid	: Water
1st glass ->	9	6 ×10		90	60
2nd glass ->	10	5 ×9	=	90	45
3rd glass ->	6	9 ×5		30	45
				210	150

7 : 5 Ans.

(Q1)Two vessels contain milk and water in the ratio 3:5 and 6:1. Find the ratio in which the contents of the two vessels have to be mixed to get a new mixture in which the ratio of milk and water is 7:3.

दो बर्तन में दूध व पानी का मिश्रण 3:5 और 6:1 के अनुपात में है| तो इन्हें किस अनुपात में मिलाया जाए की नए मिश्रण में दूध व पानी का अनुपात 7:3 हो जाए|

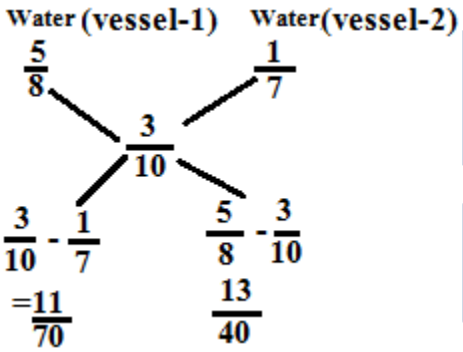
Solution:



∴ Required ratio=(11/70):(13/40)

=44:91 Ans.

OR

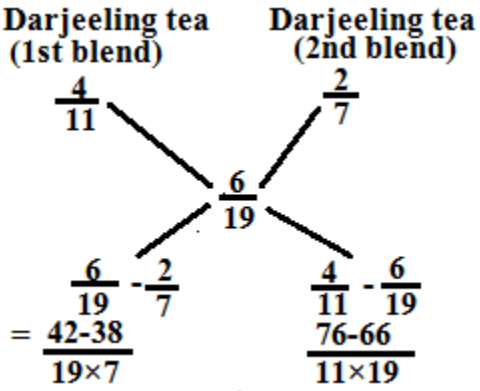


∴ Required ratio=(11/70):(13/40)

=44:91 Ans.

(Q2)In two blends of mixed tea, the ratios of Darjeeling and Assam tea are 4:7 and 2:5. The ratio in which these two blends should be mixed to get the ratio of Darjeeling and Assam tea in the new mixture as 6:13 is.

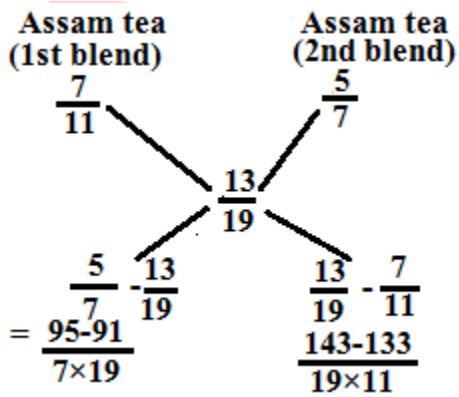
मिश्रित चाय के दो मिश्रणों में दार्जीलिंग और असम चाय के अनुपात 4:7 और 2:5 है| इन दोनों मिश्रणों को किस अनुपात में मिलाया जाए कि दार्जिलिंग और असम चाय का अनुपात नए मिश्रण में 6:13 हो जाए|



∴ Required ratio=(4/(19×7)):(10/(11×19))

=22:35 Ans.

OR



∴ Required ratio=(4/(7×19)):(10/(19×11))

=22:35 Ans.

(Q1)A vessel contains 80 liters of milk. 8 liters of milk is taken out from it and replaced by water. Then again from mixture, 8 liters is again taken out and replaced by water. Find the amount of milk in the final mixture.

एक बर्तन में 80 लीटर दूध है| इसमें से 8 लीटर दूध निकालकर उतना ही पानी मिला दिया जाता है| फिर दूसरी बार 8 लीटर मिश्रण निकालकर उसमे उतना ही पानी मिला दिया जाता है, तो नए मिश्रण में दूध की मात्रा क्या है|

Solution:

$$\text{Final quantity} = \text{Initial quantity}\left(1 - \frac{x}{c}\right)^n$$

Where, c=capacity of vessel

x=Quantity taken out at a time

n=Number of process

Now,

Final quantity=80(1-8/80)²

=80×(9/10)×(9/10)

=64.8 liters Ans.

(Q2)A vessel contains 60 liters of milk. 12 liters of milk is taken out from it and replaced by water. Then again from mixture, 12 liters is again taken out and replaced by water. The ratio of milk and water in the resultant mixture is.

एक बर्तन में 60 लीटर दूध है| इसमें से 12 लीटर दूध निकालकर उतना ही पानी मिला दिया जाता है| फिर दूसरी बार 12 लीटर मिश्रण निकालकर उसमे उतना ही पानी मिला दिया जाता है, तो नए मिश्रण में दूध व पानी का अनुपात है|

$$\text{Final quantity} = \text{Initial quantity}\left(1 - \frac{x}{c}\right)^n$$

Now,

Final quantity=60(1-12/60)²

=60×(4/5)×(4/5)

=38.4 liters

Quantity of water=60-38.4=21.6 liters

∴ Required ratio=38.4 : 21.6

=16:9 Ans.

(Q3)A vessel contains 20 liters of acid. 4 liters of acid is taken out of the vessel and replaced by the same quantity of water. Next 4 liters of the mixture are with drawn, and again the vessel is filled up with water. The ratio of acid left in the vessel with that of the original quantity is.

एक बर्तन में 20 लीटर एसिड है| उसमें से 4 लीटर एसिड निकालकर उसके स्थान पर उतनी ही मात्रा में पानी डाल दिया जाता है| फिर उसमे से 4 लीटर मिश्रण निकाल लिया जाता है और बर्तन में उतनी ही मात्रा में पानी डाल दिया जाता है| बर्तन में बचे एसिड कि मात्रा और प्रारंभ में एसिड की मात्रा का अनुपात क्या होगा|

Solution:

$$\text{Final quantity} = \text{Initial quantity}\left(1 - \frac{x}{c}\right)^n$$

Now,

Final quantity=20(1-4/20)²

=20×(4/5)×(4/5)

=12.8 liters

∴ Required ratio=12.8 : 20

=16:25 Ans.

(Q1)A container contains two liquids A and B in the ratio 7:5. When 9 liters of mixture are drawn off and the container is filled with B, the ratio of A and B becomes 1:1. How many liters of liquid A was in the container initially?

एक डिब्बे में दो द्रवों A तथा B का मिश्रण 7:5 के अनुपात में है| जब 9 लीटर मिश्रण निकाला गया और डब्बे को B से भर दिया गया, तो A तथा B का अनुपात 1:1 हो गया तो द्रव A की शुरुआती मात्रा कितनी थी|

Solution:

	Liquid A	:	Liquid B
Initially->	7		5
Finally->	1		1

[Concept: जब mixture में से कुछ mixture को यदि निकाला जाए तो निकले गए mixture में भी ratio उतना ही होगा जितना original mixture में था एवं बचे हुए mixture में भी ratio उतना ही होगा जितना original mixture में था| बचे हुए mixture का ratio तब change होगा जब उसमे कुछ extra मिलाया जायेगा|

इस question में बचे हुए mixture में liquid B अलग मिलाया जा रहा है तो liquid B का ratio change होगा but liquid A का ratio उतना ही रहेगा जितना original mixture में था| लकिन question में दिया है कि final ratio 1:1 हो जाता है so final ratio में liquid A के ratio को 7 बनाना होगा]

	Liquid A	:	Liquid B	
Initially->	7		5	
Finally->	1		1	- × 7
	7		5	
	7		7	
			2 units	

2 units=9

1 units=9/2

Initial mixture=12×(9/2)+9

= 63 liters

liquid A=(7/12)×63=36¾ liters Ans.

(Q2)A vessel contains liquid A and B in ratio 5:3. If 16 liters of the mixture are removed and the same quantity of liquid B is added, the ratio becomes 3:5. What quantity does the vessel hold?

एक बर्तन में दो द्रवों A तथा B का मिश्रण 5:3 के अनुपात में है| जब 16 लीटर मिश्रण निकाला गया और डब्बे को द्रव B से भर दिया गया, तो A तथा B का अनुपात 3:5 हो गया तो बर्तन में कुल मात्रा कितनी है|

Solution:

	Liquid A	:	Liquid B
Initially->	5		3
Finally->	3		5

	Liquid A	:	Liquid B	
Initially->	5		3	- × 3
Finally->	3		5	- × 5
	15		9	
	15		25	
			16 units	

16 unit = 16

1 unit = 16/16=1

Initial mixture=24×1+16

=40 liters Ans.

Second Method:

Quantity of A= (5/8)×16=10

Total quantity=((5+3)² /5² – 3²)×10

=(64/16)×10

= 40 liters Ans.

Note: जब Ratio reverse होगा (i.e 5:3 becomes 3:5) तब हमलोग इस method का use कर सकते है|

(Q3)A can contains a mixture of two liquids A and B in the ratio 7:5. When 9 liters of mixture are drained off and the can is filled with B, the ratio of A and B becomes 7:9. How many liters of liquid A was contained by the can initially?

एक केन में दो द्रवों A तथा B का मिश्रण 7:5 के अनुपात में है| जब 9 लीटर मिश्रण निकाला गया और डब्बे को B से भर दिया गया, तो A तथा B का अनुपात 7:9 हो गया तो द्रव A की शुरुआती मात्रा कितनी थी|

	Liquid A	:	Liquid B
Initially->	7		5
Finally->	7		9
			4 units

[Concept: इस question में बचे हुए mixture में liquid B अलग मिलाया जा रहा है तो liquid B का ratio change होगा but liquid A का ratio उतना ही रहेगा जितना original mixture में था| so इस question में पहले से ही liquid A same है|]

4 unit = 9

1 unit = 9/4

initial mixture =12×(9/4)+9

=36 liters

liquid A = (7/12)×36

=21 liters Ans.

(Q1) The ratio of the income to the expenditure of a family is 10:7. If the family's expenses are Rs 10,500, then saving of the family is.

एक परिवार की आय और खर्च का अनुपात 10:7 है| यदि परिवार का खर्च Rs 10500 है तो परिवार की बचत ज्ञात करे|

Solution:

	Income	:	Expenditure
Let ->	10x		7x

Saving = Income – Expenditure

= 10x – 7x = 3x

Given that,

⇒ 7x=10500

⇒ x=1500

∴ saving=3×1500=4500 Ans.

(Q2) The ratio of income and expenditure of a person is 11:10. If he saves Rs 9000 per annum, his monthly income is.

एक व्यक्ति की आय और खर्च का अनुपात 11:10 है| यदि वह RS 9000 हर वर्ष बचत करता है तो मासिक आय ज्ञात करें|

Solution:

	Income	:	Expenditure
Let ->	11x		10x

Saving = 11x – 10x

= x

Given that,

x = 9000

Annual income=11x=11×9000

=Rs 99000

∴ Monthly income=99000/12=Rs 8250 Ans.

(Q3) The income of A, B and C are in the ratio 7:9:12 and their spendings are in the ratio 8:9:15. If A saves 1/4th of his income, then the saving os A, B and C are in the ratio of.

A, B और C की आय 7:9:12 के अनुपात में है तथा उनके खर्च 8:9:15 के अनुपात में है| यदि A अपनी आय का 1/4 भाग बचाता है, तो A, B और C की बचतों का अनुपात है|

Solution:

	A	:	B	:	C
Income ->	7X		9X		12X
Spendings ->	8Y		9Y		15Y
Saving ->	(7X - 8Y)	:	(9X - 9Y)	:	(12X - 15Y)
	7×32-8×21		9(32-21)		12×32-15×21
	56	:	99	:	69

56 : 99 : 69 Ans.

[Rough:

According to question

7x-8y = (1/4)×7x

28x-32y=7x

21x=32y

x=32

y=21]

(Q1)The monthly income of two persons are in the ratio 2:3 and their monthly expenditure are in the ratio 5:9. if each of them saves Rs 600 per month, then their monthly incomes are.

दो व्यक्तियो की मासिक आय 2:3 के अनुपात में है तथा उनका मासिक व्यय 5:9 के अनुपात में है| यदि इनमें से प्रत्येक प्रतिमास Rs 600 की बचत करता है, तो उनकी मासिक आय है|

Solution:

Let the income of 1st and 2nd person are 2x and 3x

[Note: Income(I)=Expenditure(E) + Saving(S)]

∴ I – S = E

Now according to the question

$$\frac{2x - 600}{3x - 600} = \frac{5}{9}$$

⇒ 18x – 5400 = 15x – 3000

⇒ 3x = 2400

∴ x=800

Income of 1st person=2x=2×800

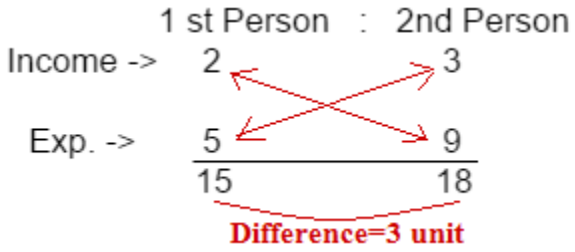
=Rs 1600 Ans.

Income of 2nd person=3x=3×800

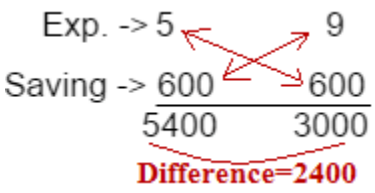
=Rs 2400 Ans.

Second Method:

Step-1: सबसे पहले Income और Expenditure को cross-multiply करना है फिर उसके बाद difference निकालना है|



Step-2: Expenditure और Saving को cross-multiply करना है फिर उसके बाद difference निकालना है|



3 unit = 2400

1 unit = 800

Income of 1st person=2unit=Rs 1600 Ans.

Income of 2nd person=3unit=Rs 2400 Ans.

(Q2)The incomes of two persons are in the ratio 3:2 and their expenditure are in the ratio 5:3. If each saves Rs. 1000, then 1st person income is.

दो व्यक्तियो की मासिक आय 3:2 के अनुपात में है और उनका खर्च 5:3 के अनुपात में है| यदि प्रत्येक Rs 1000 बचाता है, तो पहले व्यक्ति की आय कितनी है|

Solution:

Let the income of 1st and 2nd person are 3x and 2x

[Note: Income(I)=Expenditure(E) + Saving(S)]

∴ I – S = E

Now according to the question

$$\frac{3x - 1000}{2x - 1000} = \frac{5}{3}$$

⇒ 9x – 3000 = 10x – 5000

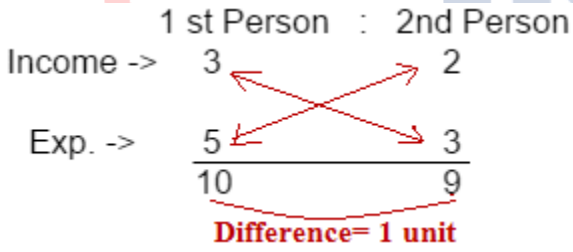
⇒ x = 2000

Income of 1st person=3x=3×2000

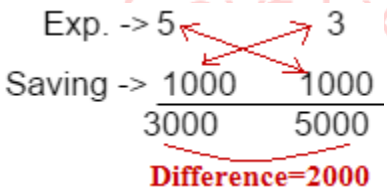
=Rs 6000 Ans.

Second Method

Step-1: सबसे पहले Income और Expenditure को cross-multiply करना है फिर उसके बाद difference निकालना है।



Step-2: Expenditure और Saving को cross-multiply करना है फिर उसके बाद difference निकालना है।



1 unit = 2000

Income of 1st person=3unit

=Rs 6000 Ans.

(Q1) The ratio of income of two persons is 5:3 and that of their expenditures is 9:5. Find the income of each person, if they save Rs 1300 and Rs 900 respectively.

दो व्यक्तियो की आय का अनुपात 5:3 है तथा उनके व्यय का अनुपात 9:5 है। यदि ये क्रमशः Rs 1300 और Rs 900 की बचत करते हैं, तो प्रत्येक की आय ज्ञात कीजिए।

Solution:

Let the income of 1st and 2nd person are 5x and 3x

Note: Income(I)=Expenditure(E) + Saving(S)

I – S = E

Now according to the question

$$\frac{5x - 1300}{3x - 900} = \frac{9}{5}$$

⇒ 25x – 6500 = 27x – 8100

⇒ x= 800

Income of 1st person=5x=5×800

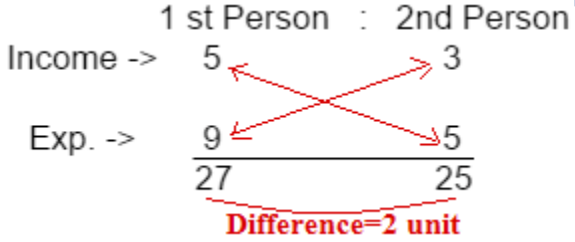
=Rs 4000 Ans.

Income of 2nd person=3x=3×800

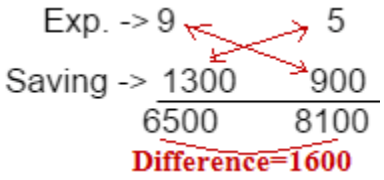
=Rs 2400 Ans.

Second Method

Step-1: सबसे पहले Income और Expenditure को cross-multiply करना है फिर उसके बाद difference निकालना है



Step-2: Expenditure और Saving को cross-multiply करना है फिर उसके बाद difference निकालना है|



2 unit = 1600

1 unit = 800

Income of 1st person=5unit=Rs 4000 Ans.

Income of 2nd person=3unit=Rs 2400 Ans.

(Q2) Two person have their monthly incomes in the ratio 8:5, while their monthly expenditures are in the ratio 5:3. If they have saved Rs 12000 and Rs 10000 monthly respectively, then the difference in their monthly income is.

दो व्यक्तियो की मासिक आय 8:5 के अनुपात में है जबकि उनका मासिक व्यय 5:3 के अनुपात में है| यदि उन्होंने क्रमशः Rs 12000 और Rs 10,000 की मासिक बचत की हो, तो उनकी मासिक आय में अंतर कितना है|

Solution:

Let the income of 1st and 2nd person are 5x and 3x

[Note: Income(I)=Expenditure(E) + Saving(S)]

∴ I – S = E

Now according to the question

$$\frac{8x - 12000}{5x - 10000} = \frac{5}{3}$$

⇒ 24x-36000=25x-50000

⇒ x=14000

Income of 1st person=8x=8×14000

=Rs 112000

Income of 2nd person=5x=5×14000

=Rs 70000

Difference=112000-70000=42000 Ans.

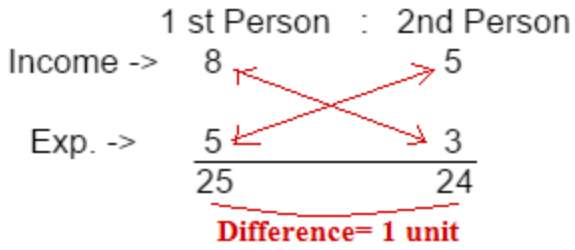
OR

Difference in monthly income=8x-5x=3x

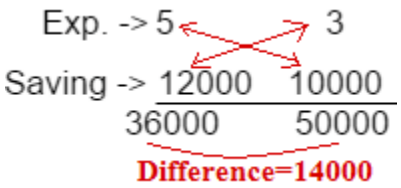
=3×14000=42000 Ans.

Second Method

Step-1: सबसे पहले Income और Expenditure को cross-multiply करना है फिर उसके बाद difference निकालना है



Step-2: Expenditure और Saving को cross-multiply करना है फिर उसके बाद difference निकालना है|



Difference in monthly income=8-5=3

Now,

1 unit=14000

3 unit=14000×3=42000 Ans.

(Q1) A box contains 280 coins of one-rupee, 50-paise and 25-paise. The values of each kind of the coins are in the ratio of 8:4:3. Then the number of 50-paise coins is.

एक बॉक्स में Rs 1, 50 पैसे और 25 पैसे के 280 सिक्के है| प्रत्येक प्रकार के सिक्के के मूल्य 8:4:3 के अनुपात में हैं, तो 50 पैसे के सिक्कों की संख्या बताइए|

Solution:

***[Concept:** 50 पैसे को Rs 1 बनाना है तो 50 पैसे को 2 से multiply करना होगा या यह भी कह सकते है 50 पैसे के 2 सिक्के लेंगे| इस प्रकार 50 पैसे के total 8 सिक्के होंगे(i.e 4×2=8)| 25 पैसे को Rs 1 बनाना है तो 25 पैसे को 4 से multiply करना होगा या यह भी कह सकते है 25 पैसे के 4 सिक्के लेंगे| इस प्रकार 25 पैसे के total 12 सिक्के होंगे(i.e 3×4=12)|]*

	Rs 1	:	50p	:	25p
Value ->	8		4		3
No. of Coins ->	8		8		12

Total no of coins=28

28 coins =280

1 coins = 10

No. of 50 paise coins = 8×10 =80 Ans.

(Q2) There are 480 coins in half rupees, quarter rupees and 10 paise coins and their values are proportional to 5:3:1. The number of coins in each case are.

50 पैसे, 25 पैसे और 10 पैसे के कुल 480 सिक्के है| उनका मूल्य 5:3:1 के अनुपात में है तो प्रत्येक सिक्कों की संख्या कितनी है|

Solution:

***[Concept:** 50 पैसे को Rs 1 बनाना है तो 50 पैसे को 2 से multiply करना होगा या यह भी कह सकते है 50 पैसे के 2 सिक्के लेंगे तो इस प्रकार 50 पैसे के total 10 सिक्के होंगे(i.e 5×2=10)| 25 पैसे को Rs 1 बनाना है तो 25 पैसे को 4 से multiply करना होगा या यह भी कह सकते है 25 पैसे के 4 सिक्के लेंगे तो इस प्रकार 25 पैसे के total 12 सिक्के होंगे(i.e 3×4=12)| 10 पैसे को Rs 1 बनाना है तो 10 पैसे को 10 से multiply करना होगा या यह भी कह सकते है 10 पैसे के 10 सिक्के लेंगे तो इस प्रकार 10 पैसे के total 10 सिक्के होंगे(i.e 1×10=10)|]*

	50p	:	25p	:	10p
Value ->	5		3		1
No. of Coins ->	10		12		10

Total no of coins=32

32 coins =480

1 coins = 15

No. of 50 paise coins = 10×15 =150 Ans.

No. of 25 paise coins = 12×15 =180 Ans.

No. of 10 paise coins = 10×15 =150 Ans.

Ratio & Proportion Questions

Q1. Seats for Maths, Physics and Biology are in the ratio of 5 : 7 : 8 respectively. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the respective ratio of increased seats ?
(1) 2 : 3 : 4
(2) 6 : 7 : 8
(3) 6 : 8 : 9
(4) Cannot be determined
(5) None of these

Q2. DVDs at a rent of Rs. 578. If they used it for 8 hours, 12 hours and 14 hours respectively, what is Kiara's share of rent to be paid ?
(1) Rs. 238
(2) Rs. 204
(3) Rs. 192
(4) Rs. 215
(5) None of these

Q3. persons in the ratio of 2 : 3 : 4 : 5. Out of the four, one person gets Rs. 200 more than the other and Rs. 100 less than another. What is the sum ?
(1) Rs. 2800
(2) Rs. 1400
(3) Rs. 4200
(4) Cannot be determined
(5) None of these

Q4. In a college the number of students studying Arts, Commerce and Science are in the ratio of 3 : 5 : 8 respectively. If the num- ber of students studying Arts, Commerce and Science is increased by 20%, 40% and 25% respectively, what will be the new ratio of students in Arts, Commerce and Science respectively ?
(1) 18 : 35 : 50
(2) 3 : 10 : 10
(3) 4 : 8 : 5
(4) 32 : 35 : 25
(5) None of these

Q5. 20 boys and 25 girls form a group of social workers. During their membership drive, the same number of boys and girls joined the group (e.g. if 7 boys joined, 7 girls joined). How many members does the group have now, if the ratio of boys to girls is 7 : 8 ?
(1) 75
(2) 65
(3) 70

(4) 60
(5) None of these

Q6. A sum of money is divided among A, B, C and D in the ratio of 3 : 4 :9 : 10 respectively. If the share of C is Rs. 2,580 more than the share of B, then what is the total amount of money of A and D together ?
(1) Rs. 5,676
(2) Rs. 6,192
(3) Rs. 6,708
(4) Rs. 7,224
(5) None of these

Q7. Production of company A is 120% of the production of company B and 80% of the production of company C. What is the ratio between the productions of companies A, B and C respectively ?
(1) 6 : 5 : 9
(2) 6 : 5 : 4
(3) 12 : 10 : 15
(4) 10 : 12 : 15
(5) None of these

Q8. Number of students in Arts and Science faculties in an institute are in the ratio of 5 : 8 respectively. If 150 more students join Art faculty while 80 more students join Science faculty, the respective ratio becomes 3 : 4. Originally what was the total number of students in both faculties together ?
(1) 1200
(2) 1400
(3) 1150
(4) Cannot be determined
(5) None of these

Q9. 75% of a number is equal to 58*th of another number. What is the ratio between the first number and the second number respectively ?*
(1) 5 : 4
(2) 6 : 5
(3) 4 : 5
(4) 5 : 6
(5) None of these

Q10. In a test, a candidate secured 336 marks out of maximum marks 'x'. If the maximum marks 'x' were converted into 400 marks, he would have secured 192 marks. What were the maximum marks of the test ?

(1) 700
(2) 750
(3) 500
(4) 650
(5) 800

Q11. Which of the following represents ah = 64 ?
(1) 8 : a = 8 : b
(2) a : 16 = b : 4
(3) a : 8 = b : 8
(4) 32 : a = b : 2
(5) None of these

Q12. The ratio of the number of students studying in schools A, B and C is 5 : 8 : 4 respectively. If the number of students studying in each of the schools is increased by 20%, 25% and 30% respectively, what will be the new respective ratio of the students in schools A, B and C ?
(1) 13 : 25 : 15
(2) 20 : 25 : 13
(3) 15 : 25 : 13
(4) Cannot be determined
(5) None of these

Q13. When 30% of one number is subtracted from another number, the second number reduces to its own four-fifth. What is the ratio between the first and the second numbers respectively ?
(1) 4 : 7
(2) 3 : 2
(3) 2 : 5
(4) Cannot be determined
(5) None of these

Q14. The largest and the second largest angles of a triangle are in the ratio of 3 : 2 respectively. The smallest angle is 20% of the sum of the largest and the second largest angles. What is the sum of the smallest and the second largest angles ?
(1) 80°
(2) 60°
(3) 100%
(4) 90°
(5) None of these

Q15. The ratio between the angles of a quadrilateral is 7 : 2 : 5 : 6 respectively. What is the sum of double the smallest angle and half the largest angle of the quadrilateral ?
(1) 162°

(2) 198°
(3) 99°
(4) 135°
(5) None of these

Q16. The angles of a quadrilateral are in the ratio of 2 : 4 : 7 : 5. The smallest angle of the quadrilateral is equal to the smallest angle of a triangle. One of the angles of the triangle is twice the smallest angle of the triangle. What is the second largest angle of the triangle ?
(1) 80°
(2) 60°
(3) 120°
(4) Cannot be determined
(5) None of these

Q17. The ratio between the angles of a quadrilateral is 3 : 4 : 6 : 7. Half the second largest angle of the quadrilateral is equal to the smaller angle of a parallelogram. What is the value of adjacent angle of the parallelogram ?
(1) 136°
(2) 126°
(3) 94°
(4) 96°
(5) None of these

Q18. The ratio between the three angles of a quadrilateral is 1 : 4 : 5 respectively. The value of the fourth angle of the quadrilateral is 60°. What is the difference between the value of the largest and the smallest angles of the quadrilateral ?
(1) 120°
(2) 90°
(3) 110°
(4) 100°
(5) None of these

Q19. Mr. Pandit owned 950 gold coins all of which he distributed amongst his three daughters Lalita, Amita and Neeta. Lalita gave 25 gold coins to her husband, Amita donated 15 gold coins and Neeta made jewellery out of 30 gold coins. The new respective ratio of the coins left with them was 20 : 73 : 83. How many gold coins did Amita receive from Mr. Pandit ?
(1) 380 (2) 415
(3) 400 (4) 350
(5) None of these

Q20. The largest and the second largest angles of a triangle are in the ratio of 13 : 12 respectively. The smallest angle is 20% of the sum of the largest and the second largest angles. What is the sum of the smallest and the second largest angles ?

(1) 120° (2) 108°
(3) 100° (4) 102°
(5) None of these

Q21. Twenty five percent of Pranab's annual salary is equal to eighty percent of Surya's annual salary. Surya's monthly salary is forty percent of Dheeru's monthly salary. IfDhreeu's annual salary is Rs 6 lacs, what is Pranab's monthly salary ? (At some places annual income and in some place monthly income are given)
(1) Rs 7.68 lacs
(2) Rs 56,000
(3) Rs 8.4 lacs
(4) Rs 64,000
(5) None of these

Q22. The ratio between the three angles of a quadrilateral is 1 : 6 : 2 respectively. The value of the fourth angle of the quadrilateral is 45°. What is the difference between the value of the largest and the smallest angles of the quadrilateral ?
(1) 165°
(2) 140°
(3) 175°
(4) 150°
(5) None of these

Q23. The ratio between the angles of a quadrilateral is 3 : 4 : 6 : 5. Two-third of the largest angle of the quadrilateral is equal to the smaller angle of a parallelogram. What is the value of adjacent angle of the parallelogram ?
(1) 120°
(2) 110°
(3) 100°
(4) 130°
(5) None of these

Q24. Rohit has some 50 paisa coins, some 2 rupee coins, some 1 rupee coins and some 5 rupee coins. The value of all the coins is Rs 50. Number of 2 rupee coins is 5 more than that of the 5 rupee coins. 50 paisa coins are double in number than 1 rupee coins Value of 50 paisa coins and 1 rupee coins is Rs 26. How many 2 rupee coins does he have ?
(1) 4
(2) 2
(3) 7
(4) Cannot be determined
(5) None of these

Q25. The ratio between the adjacent angles of a parallelogram is 2 : 3 respectively. Half the smaller angle of the parallelogram is equal to the smallest angle of a quadrilateral. Largest angle of quadrilateral is four times its smallest angle. What is the sum of largest angle of quadrilateral and the smaller angle of parallelogram.
(1) 252°
(2) 226°
(3) 144°
(4) 180°
(5) None of these

Q26. One of the angles of a triangle is two-third of sum of adjacent angles of parallelogram. Remaining angles of the triangle are in ratio 5 : 7 respectively. What is the value of second largest angle of the triangle ?
(1) 25°
(2) 40°
(3) 35°
(4) Cannot be determined
(5) None of these

Q27. The largest and the smallest angles of a triangle are in the ratio of 3 : 1 respectively. The second largest angle of the triangle is equal to 44°. What is the value of 150 per cent of the largest angle of the triangle ?
(1) 149 (2) 129
(3) 153 (4) 173
(5) None of these

Q28. One of the angles of a quadrilateral is thrice the smaller angle of a parallelogram. The respective ratio between the adjacent angles of the parallelogram is 4 : 5. Remaining three angles of the quadrilateral are in ratio 4 : 11 : 9 respectively. What is the sum of the largest and the smallest angles of the quadrilateral ?
(1) 255°
(2) 260°
(3) 265°
(4) 270°
(5) None of these

Q29. Smallest angle of a triangle is equal to two-third of the smallest angle of a quadrilateral. The ratio between the angles of the quadrilateral is 3 : 4 : 5 : 6. Largest angle of the triangle is twice its smallest angle. What is the sum of second largest angle of the triangle and largest angle of the quadrilateral ?
(1) 160°
(2) 180°
(3) 190°

(4) 170°
(5) None of these

Q30. The largest and the second largest angles of a triangle are in the ratio of 4 : 3 respectively. The smallest angle is half the largest angle. What is the difference between the smallest and the largest angles of the triangle?
(1) 30°
(2) 60°
(3) 40°
(4) 20°
(5) None of these

Q31. The ratio between the three angles of a quadrilateral is 13 : 9 : 5 respectively. The value of the fourth angle of the quadrilateral is 36°. What is the difference between the ***largest*** *and the* ***second smallest*** *angles of the quadrilateral ?*
(1) 104°
(2) 108°
(3) 72°
(4) 96°
(5) None of these

Q32. The ratio between the adjacent angles of a parallelogram is 7 : 8 respectively. Also the ratio between the angles of quadrilateral is 5 : 6 : 7 : 12. What is the sum of the smaller angle of parallelogram and second largest angle of the quadrilateral ?
(1) 168°
(2) 228°
(3) 156°
(4) 224°
(5) None of these

Q33. The ages of Sulekha and Arunima are in the ratio of 9 : 8 respectively. After 5 years the ratio of their ages will be 10 : 9. What is the difference in years between their ages.
(1) 4 years
(2) 5 years
(3) 6 years
(4) 7 years
(5) None of these

Q34. The ages of Sonal and Nitya are in the ratio of 9 : 5 respectively. After 8 years the ratio of their ages will be 13 : 9. What is the difference in years between their ages ?
(1) 4 years
(2) 12 years

(3) 6 years
(4) 14 years
(5) None of these

Q35. The ratio of the ages of a father and son is 17 : 7 respectively. 6 years ago the ratio of their ages was 3 : 1 respectively. What is the father's present age ?
(1) 64
(2) 51
(3) 48
(4) Cannot be detremined
(5) None of these

Q36. Ratio of Rani's and Komal's age is 3 : 5 respectively. Ratio of Komal's and Pooja's age is 2 : 3 respectively. If Rani is two-fifth of Pooja's age, what is Rani's age ?
(1) 10 years
(2) 15 years
(3) 24 years
(4) Cannot be determined
(5) None of these

Q37. Present ages of Amit and his father are in the ratio of 2 : 5 respectively. Four years hence the ratio of their ages becomes 5 : 11 respectively. What was father's age five years ago ?
(1) 40 years
(2) 45 years
(3) 30 years
(4) 35 years
(5) None of these

Q38. Four years ago Shyam's age was 34 times that of Ram. Four years hence, Shyam's age will be 56times that of Ram. What is the present age of Shyam ?
(1) 15 years
(2) 20 years
(3) 16 years
(4) 24 years
(5) 8 years

Q39. The ratio of the ages of Tina and Rakesh is 9 : 10 respectively. Ten years ago the ratio of their ages was 4 : 5 respectively. What is the present age of Rakesh ?
(1) 25 years
(2) 20 years
(3) 30 years
(4) 24 years

(5) None of these

Q40. The present ages of Vishal and Shekhar are in the ratio of 14 : 17 respectively. Six years from now, thier ages will be in the ratio of 17 : 20 respectively. What is Shekhar's present age ?
(1) 17 years
(2) 51 years
(3) 34 years
(4) 28 years
(5) None of these

Q41. The ratio between the ages of a father and a son at present is 5 : 2 respectively. Four years hence the ratio between the ages of the son and his mother will be 1 : 2 respectively. What is the ratio between the present ages of the father and the mother respectively?
(1) 3 : 4
(2) 5 : 4
(3) 4 : 3
(4) Cannot be determined
(5) None of these

Q42. Radha's present age is three years less than twice her age 12 years ago. Also the respective ratio between Raj's present age and Radha's present age is 4 : 9. What will be Raj's age after 5 years ?
(1) 12 years
(2) 7 years
(3) 21 years
(4) Cannot be determined
(5) None of these

Q43. The ratio of the present ages of Meena and Fiona is 16 : 13 respectively. Four years ago the respective ratio of their ages was 14 : 11. What will be Fiona's age four years from now ?
(1) 28 years
(2) 32 years
(3) 26 years
(4) 36 years
(5) None of these

Q44. The respective ratio of the present ages of Swati and Trupti is 4 : 5. Six years hence the respective ratio of their ages will be 6 : 7. What is the difference between their ages ?
(1) 2 years
(2) 3 years
(3) 4 years

(4) Cannot be determined
(5) None of these

Q45. The respective ratio between the present ages of Ram and Rakesh is 6 : 11. Four years ago the ratio of their ages was 1 : 2 respectively. What will be Rakesh's age after five years ?
(1) 45 years
(2) 29 years
(3) 49 years
(4) Cannot be determined
(5) None of these

Q46. The respective ratio between the present ages of son, mother, father and grandfather is 2 : 7 : 8 : 12. The average age of son and mother is 27 years. What will be mother's age after 7 years ?
(1) 40 years
(2) 41 years
(3) 48 years
(4) 49 years
(5) None of these

Q47. The respective ratio between the present ages of Ram, Rohan and Raj is 3 : 4 : 5. If the average of their present ages is 28 years then what would be the sum of the ages of Ram and Rohan together after 5 years ?
(1) 45 years
(2) 55 years
(3) 52 years
(4) 59 years
(5) None of these

Q48. The respective ratio between present age of Manoj and Wasim is 3 : 11. Wasim is 12 years younger than Rehana. Rehana's age after 7 years will be 85 years. What is the present age of Manoj's father who is 25 years older than Manoj ?
(1) 43 years
(2) 67 years
(3) 45 years
(4) 69 years
(5) None of these

Q49. The respective ratio between the present age of Aarti and Savita is 5 : x. Aarti is 9 years younger than Jahnavi. Jahnavi's age after 9 years will be 33 years. The difference between Savita's and Aarti's age is same as the presen age of Jahnavi. What will come in place of x ?

(1) 21
(2) 37
(3) 17
(4) Cannot be determined
(5) None of these

Q50. An amount of money is to be divided among P, Q and R in in the ratio of 3 : 5 : 7 respectively. If the amount received by R is Rs 4,000 more than the amount received by Q, what will be the be total amount received by P and Q together ?
(1) Rs. 8,000
(2) Rs. 12,000
(3) As. 16,000
(4) Cannot be determined
(5) None of these

Solution

Q1. Option(1)
Let the inital seats for Maths Physics and Biology be 5x, 7x and 8x respectively.
Now, new seats for Maths $=5x\times140100$
For physics $= 7x\times150100$
and for biology $= 8x\times175100$
Required ratio
$5x\times140100:7x\times150100:8x\times175100$

$= 5 \times 140 : 7 \times 150 : 8 \times 175$
$= 2 : 3 : 4$

Q2. Option (1)
Ratio of rent's sharing
$= 8 : 12 : 14 = 4 : 6 : 7$
Total rent = Rs. 578
Share of Kiara $= 717\times578 =$ *Rs 238*

Q3. Option (2)
From the options,
$2x + 3x + 4x + 5x = 1400$
$=>14x = 1400 => x = 100$
shares are : Rs. 200, Rs. 300.
Rs. 400 and Rs. 500.
Hence, total sum = 200 + 300 + 400 + 500
= Rs. 1400

Q4. Option (1)

Let the number of students in Arts, Commerce and Science be 3x, 5x and 8x respectively.
On increasing their respective numbers,
Required ratio = 3x×120100:5x×140100:8x×125100

Q5. Option (1)
Let x boys and x girls joined the group.
According to the question,

- 20+x25+x=78
- 160+8x=175+7x
- 8x-7x=175-160
- x=15

New number of members
= 20 + x + 25 + x = 45 + 2x
= 45 + 2 × 15 = 75

Q6. Option (3)
Let the amounts received by A, B, C and D be Rs. 3x, 4x, 9x, and Rs. 10x respectively.
According to the question,
9x - 4x = 2580

- 5x=2580
- x=25805=516

Total amount of the money of A and D
= 3x + 10x
= 13x = 13 × 516 = Rs. 6708

Q7. Option(3)
Let the production of company B = 100 units
Production of company A = 120 units
Production of company C
120×10080=150 *units*
Required ratio = 120 : 100 : 150
= 12 : 10 : 15

Q8. Option(5)
Let the original number of students in Arts and Science faculties be 5x and 8x respectively.
According to the question,
5x+1508x+80=34

- *24x + 240 = 20x + 600*
- *4x = 360*
- x=3604=90

Original number of students
= 5x + 8x = 13x

= 13 × 90 = 1170

Q9. Option(4)
Let the number be x and y respectively
75x100=5y8

- xy=5810075=56

Q10. Option (1)
x : 336 = 400 : 192

- *x × 192 = 336 × 400*
- *x* =336×400192= *700*

Q11. Option(4)
32a=b2

- *32 : a = b : 2*
- ab=64

Q12. Option(3)
Required Ratio = 5×120100:8×125100:4×130100= *5 × 120 : 8 × 125 : 4 × 130*
= 15 : 25 : 13

Q13. Option(5)
let the numbers be x and y respectively.
According to the question
y-x×30100=4y5

- y5=3x10
- xy=103×5=2:3

Q14. Option(4)
Tricky approach
If the largest and the second largest angles be 3x° and 2x°. respectively then, third angle = x
x + 2x + 3x = 180°
x = 30°
Required sum = x + 2x = 3x = 90°

Q15. Option(4)
7x + 2x + 5x + 6x = 360°

- *20x = 360°*
- x=36020=18
- *Required answer* = 2×2x+7x2

= 15x2=15×182= 135°

Q16. Option(2)
2x + 4x + 7x + 5x = 360°
- *18x = 360°*
- x=36018= 20°

Smallest angle of the triangle
= 2 × 20° = 40°
Second angle = 2 × 40° = 80°
Required angle = 180° - 80° - 40° = 60°

Q17. Option(3)
3x + 4x + 6x + 7x = 360°
- *20x = 360°*
- *x = 18°*

smaller angle of the parallelogram = 6x2=3x=54o
Adjacent angle of parallelogram
= 180° - 54° = 126°

Q18. Option(1)
x + 4x + 5x + 60 = 360°
- *10 x = 300°*
- *x° = 30*

Required difference = 5x - x = 4x
= 4 × 30 = 120°

Q19. Option(1)
20x + 73x + 83x = 950 - 25 - 15 – 30
- *176x = 880*
- x=880176=5

Number of coins got by Amita = 73x + 15
= 73 × 5 + 15 = 380

Q20. Option(4)
Sum of three angles of a triangle =180°
Largest angle = 13x°
Second largest angle = 12x°
*Third angle = (13x + 12x)*15 *= 5x°*
13x + 12x + 5x = 180°
- *30x = 180°*
- x=18030= 6°

Required sum = 5x + 12x = 17x = 17 × 6 = 102°

Q21. Option(4)

*Pranab*25100 = *Surya*80100

- PranabSurya=8025=165
- *Pranab : Surya = 16 : 5*

SuryaDheeru=40100=25

- *Surya : Dheeru = 2 : 5*

Pranab : Surya : Dheeru
= 16 × 2 : 5 × 2 : 5 × 5
= 32 : 10 : 25
Now,
25 = 600000
32 = 60000025×32
= Rs. 768000 = Pranab' annual income
Pranab's monthly salary
= 76800012= *Rs 64000*

Q22. Option(3)
Sum ofthe angles of quadrilateral = 360°

- *x + 6x + 2x + 45 = 360°*
- *9x = 360 - 45 = 315°*
- x=3159= *35°*

Q23. Option(3)
Sum of the angles of a quadrilateral = 360°
3x + 4x + 6x + 5x = 360°

- *8x = 360°*
- *x = 20°*

The largest angle ofthe quadrilateral
= 6 × 20 = 120°
Smaller angle of parallelogram
= 120×23=80°

Q24. Option(3)
If the number of 2-rupee coins be x, then
number of 5 rupee coins = x – 5

- *2x + 5 (x - 5) = 50 – 26*
- *2x + 5x - 25 = 24*

- *7x = 24 + 25 = 49*
- x=497=7

Q25. Option(5)
If the adjacent angles of parallelogram be 2x° and 3x° respectively, then
2x° + 3x° = 180°
- *5x° = 180°*
- *x° = 36°*

Smaller angle of parallelogram
= 2x = 72°
Smallest angle of the quadrilateral = 36°
Its largest angle = 4 × 36 = 144°
Required sum = 144 + 72 = 216°

Q26. Option(3)
Sum of adjacent angles of a parallelogram = 180°
One of the angles of triangle
= 23×180°=120°
Sum of three angles of a triangle = 180°
5x + 7x = 180 – 120
- *12x = 60*
- x = *5*

Second angle of triangle = 5 × 5 = 25°
Third angle of triangle = 7 × 5 = 35°
The second largest angle of triangle = 35°

Q27. Option(3)
Sum of angles of a triangle = 180°
- *3x + x + 44 = 180°*
- *4x = 180 - 44 = 136°*
- x=1364=34°

Largest angle of triangle = 3 × 34 = 102°
150% of 102 = 102×150100=153°

Q28. Option(2)
For the Parallelogram,
4x° + 5x° = 180°
- *9x = 180°*
- x=1809=20°

Smaller angel of parallelogram = 4 × 20 = 80°
One angle of the quadrilateral = = 3 × 80 = 240°
4y + 11y + 9y = 360 - 240 = 120°
- *24y =120°*

- $y = 12024 = 5°$

Q29. Option(2)
Sum of the angles of quadrilateral = 360°
3x + 4x + 5x + 6x = 360°
- *18x = 360°*
- $x = 36018 = 20°$

Smallest angle of quadrilateral = 3 × 20 = 60°
Largest angle of quadrilateral = 6 × 20 = 120°
Smallest angle of triangle = 6023 = 40°
Largest angle of triangle = 2 × 40 = 80°
Third angle of triangle = 180° - 40° - 80° = 60°
Required answer = 60 + 120 = 180°

Q30. Option(3)
The smallest angle of triangle is half of the largest angle.
Ratio of three angles = 4 : 3 : 2
4x + 3x + 2x = 180
9x = 180
x = 20
Required difference = 4x - 2x = 2x = 2 × 20 = 40°

Q31. Option(4)
Let the three angles of quadrilateral be 13x°, 9x° and 5x° respectively.
13x + 9x + 5x = 360 - 36
27x = 324°
- $x = 32427 = 12°$

Required difference = 13x - 5x = 8x
= 8 × 12 = 96°

Q32. Option(1)
Let the adjacent angles be 7x° and 8x°.
7x + 8x = 180°
- *15x = 180°*
- *x = 12°*

Smaller angle = 7 × 12 = 84°
Again, 5y + 6y + 7y + 12y = 360o
- *30y = 360°*
- $y = 36030 = 12°$

Q33. Option(2)

Let the present ages of Sulekhaa and Arunima be 9x and 8x years respectively.
According to the question,
After 5 years,
= 9x+58x+5=109

- *81x + 45 = 80x + 50*
- *81x - 80x = 50 – 45*
- *x = 5*

Required difference = 9x - 8x = x = 5 years

Q34. Option(5)
Let the present ages of Sonal and Nitya be 9x and 5x year respectively
According to the question,
= 9x+85x+8=139

- *81x + 72 = 65x + 104*
- *81x - 65x = 104 – 72*
- *16x = 32*
- x=3216=2

Q35. Option (2)

Let the present ages of father and son be 17x years and 7x years respectively.
According to the question,
=17x-67x-6=31

- *21x - 18 = 17x – 6*
- *21x - 17x = 18 – 6*
- *4x = 12*
- *x* = 124 = *3*

Father's present age = 17 × 3 = 51 years

Q36. Option(4)
Rani : Komal = 3 : 5 = 6 :10
Komal : Pooja = 2 : 3 = 10 : 15
Rani : Komal : Pooja = 6 : 10 : 15
We have insufficient data to solve this question.

Q37. Option(4)
Let the present ages of Amit and his father be 2x years and 5x years respectively.
2x+45x+4=511

- *25x + 20 = 22x + 44*
- *3x = 24*
- *x* = 243=8

Father's age 5 years ago = 5x - 5

= 5 × 8 - 5 = 35 years

Q38. Option(3)
Four years ago,
Shyam : Ram = 3 : 4
After four years,
3x+84x+8=56

- *20x + 40 = 18x + 48*
- *2x = 48 - 40 = 8*
- *x* = 82=4

Shyam's present age = 3x + 4
= 3 × 4 + 4 = 16 years

Q39. Option(2)
Let the prestent ages of Tina and Rakesh be 9x and 10x years respectively.
10 years ago,
9x-1010x-10=45

- *45x - 50 = 40x – 40*
- *5x = 10*
- x=105=2

Rakesh's present age = 10x
= 10 × 2 = 20 years.

Q40. Option(3)
Let the present ages of Vishal and Shekhar be 14x and 17x years respectively.
After 6 years,
14x+617x+6=1720

- *280x + 120 = 289x + 102*
- *9x = 18*
- x=2
- *Shekhar's present age = 17x*
  = 17 × 2 = 34 years

Q41. Option(4)
Let the present ages of father and son be 5x and 2x years respectively.
After 4 years,
Son's age = y years
and mother's age = 2y years
y=2x+4

x=y-42
Father's present age = 5y-42 *years*

Mother's present age = (2y - 4) years
Clearly, data is inadequate.

Q42. Option(5)
Let Radha's present age = x years.
x = 2(x - 12) – 3

- *x = 2x - 24 – 3*
- *x = 27*

*Raj's present age =*49 × *27 = 12 years*
Raj's age after 5 years = 12 + 5 = 17 years

Q43. Option(5)

Let the present ages of Meena and Fiona be 16x and 13x years respectively.
According to the question,
16x-413x-4=1411

- *176x - 44 = 182x – 56*
- *182x - 176x = 56 – 44*
- *6x = 12*
- *x = 2*

Fiona's age after four years = 13x + 4 = 13 × 2 + 4 = 30 years

Q44. Option(2)
Let Swati's present age = 4x years
Trupti's present age = 5x years
4x+65x+6=67

- *30x + 36 = 28x + 42*
- *2x = 42 - 36 = 6*
- *x = 3 = difference of their ages*

Q45. Option(3)
Let Ram's present age be 6x years and that of Rakesh be 11x years.
Four years ago,
6x-411x-4=12

- *12x - 8 = 11x – 4*
- x=8-4=4

Rakesh's age after five years = 11x + 5
= 11 × 4 + 5 = 49 years
Q46. Option(4)

According to the question,
2x+7x2=27

- *9x = 27 × 2 = 54*
- x=549=6

Mother's age after 7 years = 7x + 7
= 7 × 6 + 7 = 49 years

Q47. Option(4)
Let the present ages of Ram, Rohan and Raj be 3x, 4x and 5x years respectively.
3x + 4x + 5x = 3 × 28

- *12x = 84*
- x=8412=7

Sum of the ages of Ram and Rohan after 5 years
= 3x + 4x + 10 = 7x + 10
= 7 × 7 + 10 = 59 years

Q48. Option(1)
Rehana's present age = 85 - 7 = 78 years
Wasim's present age = 78 - 12 = 66 years
*Manoj's present age =*311×66=18 *years*
Manoj's father's present age = 25 + 18 = 43 years

Q49. Option(5)
Jahnavi's present age = 33 - 9 = 24 years
Aarti's present age = 24 - 9 = 15 years
Now, Aarti : Savita = 5 : x = 15 : 3x
Savita's present age = 3x years
3x - 15 = 24

- *3x = 24 + 15 = 39*
- x=393=13

Q50. Option(3)
Let the amount received by P, Q and R
be Rs. 3x, Rs. 5x and Rs. 7x respectively.
7x - 5x = 4000

- x=40002=2000

Amount received by P and Q together
= 8x = 8 × 2000 = Rs. 16000

RATIO & PROPORTION

Q1.

Seats for Maths, Physics and Biology are in the ratio of 5 : 7 : 8 respectively. There is a proposal to Increase these seats by 40%, 50% and 75% respectively. What will be the respective ratio of increased seats ?

(a) 2 : 3 : 4

(b) 6 : 7 : 8

(c) 6 : 8 : 9

(d) Cannot be determined

(e) None of these

Q2.

Samira, Mahira and Kiara rented a set of DVDs at a rent of Rs. 578. If they used it for 8 hours, 12 hours and 14 hours respectively, what is Kiara's share of rent to be paid ?

(a) Rs. 238

(b) Rs. 204

(c) Rs. 192

(d) Rs. 215

(e) None of these

Q3.

A sum of money is to be divided among four persons in the ratio of 2 : 3 : 4 : 5. Out of the four, one person gets Rs. 200 more than the other and Rs.100 less than another. What is the sum ?

(a)Rs. 2800

(b)Rs. 1400

(c)Rs. 4200

(d) Cannot be determined

(e) None of these

Q4.

In a college the number of students studying Arts, Commerce and Science are in the ratio of 3 : 5 : 8 respectively. If the number of students studying Arts, Commerce and Science is increased by 20%, 40% and 25% respectively, what will be the new ratio of students in Arts, Commerce and Science respectively ? (a) 18 : 35 : 50

(b) 3 : 10 : 10

(c) 4 : 8 : 5

(d) 32 : 35 : 25

(e) None of these

Q5.

20 boys and 25 girls form a group of social workers. During their membership drive, the same number of boys and girls joined the group(e.g. if 7 boys joined, 7 girls joined). How many members does the group have now, if the ratio of boys to girls is 7 : 8 ?1

However, in the above question, if we take the ratio of income of Vinay and Arun as 3:5 and the ratio of their expenses as 3:1, then Arun is saving

(a)75

(b)65

(c)70

(d)60

(e) None of these

Q6.

A sum of money is divided among A, B, C and D in the ratio of 3 : 4 : 9 : 10 respectively. If the share of C is Rs. 2,580 more than the share of B, then what is the total amount of money of A and D together ?.

(a)Rs. 5,676

(b)Rs. 6,192

(c)Rs. 6,708

(d) Rs. 224

(e) None of these

Q7.

Production of company A is 120% of the production of company B and 80% of the production of company C, What is the ratio between the productions of companies A, B and C respectively?

(a) 6 : 5 : 9

(b) 6 : 5 : 4

(c) 12 : 10 : 15

(d) 10 : 12 : 15

(e) None of these

Q8.

Number of students in Arts and Science faculties in an institute are in the ratio of 5 : 8 respectively. If 150 more students join ' Arts faculty while 80 more students join Science faculty, the respective ratio becomes 3 : 4. Originally what was the total number of students in both faculties together ?

(a)1200 (b)1400 (c)1150

(d) Cannot be determined

(e) None of these

Q9.

75% of a number is equal to 5/8th of another number. What is the ratio between the first number and the second number respectively?

(a) 5 : 4

(b) 6 : 5

(c) 4 : 5

(d) 5 : 6

(e) None of these

Q10.

In a test, a candidate secured 336 marks out of maximum marks 'x, If the maximum marks ‘x’ were converted into 400 marks, he would have secured 192 marks, What were the maximum marks of the test ? (a)7001

(b)750

(c)500

(d)650

(e)800 Q11.

Which of the following represents ab = 64 ?

(a)8 : a = 8 : b .

(b) a : 16 = b : 4

(c) a : 8 = b : 8.

(d) 32 : a=b : 2

(e) None of these

Q12.

The ratio of the number of students studying in school A, B and C is 5 : 8 : 4 respectively. If the number of students studying in each of the school is increased by 20%, 25% and 30% respectively, what will be the new respective ratio of the students in school A, B and C ? (a) 13 : 25 : 15

(b) 20 : 25 : 13

(c) 15 : 25 : 13

(d) Cannot be determined

(e) None of these

Q13.

When 30% of one number is subtracted from another number, the second number reduces to its own four- fifth. What is the ratio between the first and the second numbers respectively?

(a) 4 : 7

(b) 3 : 2

(c) 2 : 5

(d) Cannot be determined

(e) None of these:

Q14.

The largest and the second largest angles of a triangle are in the ratio of 3 : 2 respectively. The smallest angle is 20% of the sum of the largest and the second largest angles. What is the sum of the smallest and the second largest angles ?

(a)80

(b)60

(c)100

(d)90

(e) None of these

Q15.

The ratio between the angles of a quadrilateral is 7 : 2

: 5 : 6 respectively. What is the sum of double the smallest angle and half the largest angle of the quadrilateral?

(a)162

(b)198

(c)99

(d)135

(e) None of these

Q16.

The angles of a quadrilateral are in the ratio of 2 : 4 : 7

: 5. The smallest angle of the quadrilateral is equal to the smallest angle of a triangle. One of the angles of the triangle is twice the smallest angle of the triangle. What is the second largest angle of the triangle? (a)80

(b)60

(c)120

(d) Cannot be determined

(e) None of these

Q17.

The ratio between the angles of a quadrilateral is 3 : 4

: 6 : 7. Half the second largest angle of the quadrilateral is equal to the smaller angle of a parallelogram. What is the value of adjacent angle of the parallelogram ?

(a)136

(b)126

(c)94

(d)96

(e) None of these

Q18.

The ratio between the three angles of a quadrilateral is 1 : 4 : 5 respectively. The value of the fourth angle of the quadrilateral is 60. What is the difference between the value of the largest and the smallest angles of the quadrilateral ?

(a)120

(b)90

(c)110

(d)100

(e) None of these

Q19.

Mr. Pandit owned 950 gold coins all of which he distributed amongst his three daughters Lalita, Amita and Neeta. Lalita gave 25 gold coins to her husband, Amita donated 15 gold coins and Neeta made jewellery out of 30 gold coins. The new respective ratio of the coins left with them was 20 : 73 : 83. How many gold coins did Amita receive from Mr. Pandit?

(a)380

(b)415

(c)400

(d)350

(e) None of these

Q20.

The largest and the second largest angles of a triangle are in the ratio of 13 : 12 respectively. The smallest angle is 20% of the sum of the largest and the second largest angles. What Is the sum of the smallest and the second largest angles ?

(a)120

(b)108

(c)100

(d)102

(e) None of these

Q21.

Twenty five percent of Pranab's annual salary is equal to eighty percent of SuRya's annual salary. Surya's monthly salary is forty percent of Dheeru's monthly salary. If Dheeru's annual salary is Rs. 6 lacs, what is Pranab's monthly salary ?

(a)Rs. 7.68 lacs

(b)Rs. 56,000

(c)Rs. 8.4 lacs

(d)Rs. 64,000

(e) None of these

Q22.

The ratio between the three angles of a quadrilateral is 1 : 6 : 2 respectively. The value of the fourth angle of the quadrilateral is 45. What is the difference between the value of the largest and the smallest angles of the quadrilateral ?

(a)165

(b)140

(c)175

(d)150

(e) None of these

Q23.

The ratio between the angles of a quadrilateral is 3 : 4

: 6 : 5. Two-third of the largest angle of the quadrilateral is equal to the smaller angle of a parallelogram. What is the value of adjacent angle of the parallelogram ?

(a)120

(b)110

(c)100

(d)130

(e) None of these

Q24.

Rohit has some 50 paisa coins, some 2 rupee coins, some 1 rupee coins and some 5 rupee coins. The value of all the coins is Rs. 50. Number of 2 rupee coins is 5 more than that of the 5rupeecoins. 50 paisa coins are double In number than 1 rupee coins. Value of 50 paisa coins and 1 rupee coins is Rs. 26, How many 2 rupee coins does he, have?

(a)4

(b)2

(c)7

(d) Cannot be determined

(e) None of these

Q25.

The ratio between the adjacent angles of a parallelogram is 2 : 3 respectively. Half the smaller angle of the parallelogram is equal to the smallest angle of a quadrilateral. Largest angle of quadrilateral is four times its smallest angle. What is the sum of largest angle of quadrilateral and the smaller angle of parallelogram?

(a)252

(b)226

(c)144

(d)180

(e) None of these

Q26.

One of the angles of a triangle is two-third of sum of adjacent angles of parallelogram. Remaining angles of the triangle are in ratio 5 : 7 respectively. What is the value of second largest angle of the triangle ?

(a)25

(b)40

(c)35

(d) Cannot be determined

(e) None of these

Q27.

The largest and the smallest angles of a triangle are in tile ratio of 3 : 1 respectively. The second largest angle of the triangle is equal to 44. What is the value of 150 percent of the largest angle of the triangle?

(a)149

(b)129

(c)153

(d)173

(e) None of these

Q28.

One of the angles of a quadrilateral is thrice the smaller angle of a parallelogram. The respective ratio between the adjacent angles of the parallelogram is 4 :

5. Remaining three angles of the quadrilateral are in

ratio 4 : 11 : 9 respectively. What is the sum of the largest and the smallest angles of the quadrilateral?

(a)255

(b)260

(c)265

(d)270

(e) None of these

Q29.

Smallest angle of a triangle is equal to two-third of the smallest angle of a quadrilateral. The ratio between the angles of the quadrilateral is 3 : 4 : 5 : 6. Largest angle of the triangle is twice its smallest angle. What is the sum of second largest angle of the triangle and largest angle of the quadrilateral?

(a)160

(b)180

(c)190

(d)170

(e) None of these

Q30.

The largest and the second largest angles of a triangle are In the ratio of 4 : 3 respectively. The smallest angle Is half the largest angle. What Is the difference between the smallest and the largest angles of the triangle?

(a)30

(b)60

(c)40

(d)20

(e) None of these ’

Q31.

The ratio between the three angles of a quadrilateral is 13 : 9 : 5 respectively. The value of the fourth angle of the quadrilateral is 36. What is the difference between the largest and the second smallest angles of the quadrilateral?

(a)104

(b)108

(c)72

(d)96

(e) None of these

Q32.

The ratio between the adjacent angles of a parallelogram is 7 : 8 respectively. Also the ratio between the angles of quadrilateral is 5 : 6 : 7 : 12. What is the sum of the smallest angle of parallelogram and second largest angle of the quadrilateral?

(a)168

(b)228

(c)156

(d)224

(e) None pf these

Q33.

The age of Sulekha and Aruni-ma are in the ratio of 9 : 8 respectively. After 5 years the ratio of their age will be 10 : 9. What is the difference (in years) between their age?

(a) 4 years

(b) 5 years

(c) 6 years

(d) 7 years

(e) None of these

Q34.

The age of Sonal and Mitya are in the ratio of 9 : 5 respectively. After 8 years the ratio of their age will be 13 : 9. What is the difference (in years) between their age ?

(a) 4 years

(b) 12 years

(c) 6 years

(d) 14 years

(e) None of these

Q35.

The ratio of the age of a father and son is 17 : 7 respectively. 6 years ago the ratio of their age was 3 : 1 respectively. What is the father's present age ?

(a) 64 yrs

(b) 51 yrs

(c) 48 yrs

(d) Cannot be determined

(e) None of these

Q36.

Ratio of Rani's and Komal's age is 3 : 5 respectively. Ratio of Komal's and pooja's age is 2 : 3 respectively. If Rani is two-fifth of, Pooja's age, what is Rani's age ?

(a) 10 years

(b) 15 years

(c) 24 years

(d) Cannot be determined

(e) None of these

Q37.

Present age of Amit and his father are in the ratio of 2

: 5 respectively. four years hence the ratio of their age becomes 5 : 11 respectively. What was father's age five years ago ?

(a) 40 years

(b) 45 years

(c) 30 years

(d) 35 years

(e) None of these

Q38.

Four years ago Shyam's age was ¾ times that of Ram. Four years hence, Shyam's age will be 5/6 times that of Ram. What is the present age of Shyam ?

(a) 15 years

(b) 20 years

(c) 16 years

(d) 24 years

(e) 8 years

Q39.

The ratio of the age of Tina and Rakesh is 9 : 10 respectively. Ten years ago the ratio of their age was 4

: 5 respectively. What is the present age of Rakesh ?

(a) 25 years

(b) 20 years

(c) 30 years

(d) 24 years

(e) None of these

Q40.

The present age of vishal and Shekhar are In the ratio of 14 : 17 respectively. Six years from now, thier age will be in the ratio of 17 : 20 respectively, What is

Shekhar's present age ?

(a) 17 years

(b) 51 years

(c) 34 years

(d) 28 years

(e) None of these

Q41.

The ratio between the age of a father and a son at present is 5 : 2 respectively. Four years hence the ratio between the age of the son and his mother will be 1 : 2 respectively. What is the ratio between the present age of the father and the mother respectively

?

(a) 3 : 4

(b) 5 : 4

(c) 4 : 3

(d) Cannot be determined

(e) None of these

Q42.

Radha's present age is three years less than twice her age 12 years ago. Also the respective ratio between Raj's present age and Radha's present age is 4 : 9.What will be Raj'S age after 5 years ?

(a) 12 years

(b) 7 years

(c) 21 years

(d) Cannot be determined

(e) None of these

Q43.

The ratio of the present age of Meena and Fiona is 16 : 13 respectively. Four years ago the respective ratio of their age was 14 : 11. What will be Fiona's age four years from now ?

(a) 28 years

(b) 32 years

(c) 26 years

(d) 36 years

(e) None of these

Q44.

The respective ratio of the present age of Swati and Trupti is 4 : 5. Six years hence the respective ratio of their age will be 6 : What is the difference between their age?

(a) 2 years

(b) 3 years

(c) 4 years

(d) Cannot be determined

(e) None of these

Q45.

The respective ratio between the present age of Ram and Rakeshis 6 : 11. Four years ago the ratio of their age was 1 : 2 respectively. What will be Rakesh's age after five years?

(a) 45 years

(b) 29 years

(c) 49 years

(d) Cannot be determined

(e) None of these

Q46.

The respective ratio between the present age of son, mother, father and grandfather is 2 : 7 : 8 : 12. The average age of son and mother Is 27 years. What Will be mother's age after 7 years?

(a) 40 years

(b) 41 years

(c) 48 years

(d) 49 years

(e) None of these

Q47.

The respective ratio between the present age of Ram, Rohan and Raj is 3 : 4 : 5. If the average of their present age is 28 years then what would be the sum of the age of Ram and Rohan together after 5 years?

(a) 45 years

(b) 55 years

(c) 52 years

(d) 59 years

(e) None of these

Q48.

The respective ratio between present age of Manoj and Wasim is 3 : 11. Wasim is 12 years younger than Rehana. Rehana's age after 7 years will be 85 years. What is the present age of ManoJ's father who is 25 years older than Manoj ?

(a) 43 years

(b) 67 years

(c) 45 years

(d) 69 years

(e) None of these

Q49.

The respective ratio between the present age of Aarti and Savita Is 5 : x. Aarti Is 9 years younger than Jahnavi. Jahnavi's age after 9 years will be 33 years. The difference between Savita's and Aarti's age is same as the present age of Jahnavi. What will (come in place of x ?)

(a)21

(b)37

(c)17

(d) Cannot be determined.

(e) None of these

Q50.

An amount of money is to be divided among P, Q and R in the ratio of 3 : 5 : 7 respectively. If the amount received by R is Rs.4,000 more than the amount received by Q, what will be the total amount received by P and Q together ?

(a)Rs. 8,000

(b)Rs. 12,000

(c)Rs. 16,000

(d) Cannot be determined

(e) None of these

Q51.

Rita Invested 25% more than Sunil. Sunil invested 30% lessthan Abhinav who invested Rs. 6,000. What is the respective ratio between the amount that Rita invested and the total amount invested by all of them together ?

(a) 35 : 104

(b) 13 : 29

(c) 101 : 36

(d) 35 : 103

(e) None of these

Q52.

When X is subtracted from the numbers 9, 15 and 27, the remainders are In continued proportion. What is the value of X?

(a)8

(b)6

(c)4

(d)5

(e) None of these

Q53.

A certain amount was to be distributed among A, B and C in the ratio 2 : 3 : 4 respectively, but was erroneously distributed in the ratio 7 : 2 : 5 respectively. As a result of this, B got Rs. 40 less. What is the amount?

(a) Rs. 210

(b) Rs. 270

(c) Rs.230

(d) Rs. 280

(e) None of these

Q54.

A particular sum was divided among A, B and C in the ratio 2 : 6 : 7 respectively. If the amount received by A was Rs. 4,908, what was the difference between the amount received by B and C ?

(a)Rs. 2,454

(b)Rs. 3,494

(c) f 2,135

(d)Rs. 2,481

(e) None of these

Q55.

The average age of a man and his son is 30 years. The ratio of their age four years ago was 10 : 3 respectively. What is the difference between the present age of the man and his son?

(a) 28 years

(b) 16 years

(c) 26 years

(d) 44 years

(e) None of these

Q56.

A sum of Rs. 221 is divided among X, Y and Z such that X gets Rs. 52 more than Y. Y gets % 26 more than Z. The ratio of the shares of X, Y and Z respectively is : (a) 9 : 5 : 3

(b) 9 : 3 : 5

(c) 5 : 9 : 3

(d) 10 : 6 : 5

(e) None of these

Q57.

The average weight of boys in a class is 45 kg while that of girls Is 36 kg. The average weight of the whole class is 42.25 kg. What is the respective ratio between the number of boys and girls in the class?

(a) 11 : 25

(b) 25 : 11

(c) 25 : 12

(d) 12 : 25

(e) None of these

Q58.

If 50% of a certain number is equal to 3/4th of another number, what Is the ratio between the numbers?

(a) 3 : 2

(b) 2 : 5

(c) 5 : 2

(d) 3 : 4

(e) 4 : 3

Q59.

The ratio of the present age of Mahesh and Ajay is respectively 3 : 2. After 8 years, ratio of their age will be 11 : 8. What will be the present age of Mahesh's son if his age is half of the present age of Ajay?

(a) 12 years

(b) 24 years

(c) 18 years

(d) 9 years

(e) None of these

Q60.

A vessel contains 64 litres of mixture of milk and water In the ratio 7 : 3 respectively. 8 litres of mixture Is replaced by 12 litres of milk. What is the ratio of milk and water In the resulting mixture 7

(a) 64 : 21

(b) 35 : 22

(c) 64 : 23

(d) 65 : 21

(e) None of these

Q61.

There was a science exhibition in an auditorium. On the first day 14 persons visited the exhibition, on the second day 12 persons and on the third day only 10 persons visited the exhibition. The ratio of admission fees collected from each of them on these days was 2 : 3 : 5 respectively. If the total amount collected on these three days was Rs. 4560, what amount was collected on the first day ?

(a)Rs. 1120

(b)Rs. 1140

(c)Rs. 1150

(d)Rs. 1160

(e) None of these

Q62.

The ratio of present ages of P and Q is 8 : After 4 years their ages will be in the ratio 4 : 3 respectively.

What will be the ratio of P's age after 7 years from now and Q's age now?

(a) 3 : 2

(b) 1 : 2

(c) 2 : 1

(d) 3 : 1

(e) None of these

Q63.

15 years ago the average age of a family of four members was 40 years. Two children were bom in that span of 15 years. The present average age of the family remained unchanged. Among the two children who were bom in between the 15 years. If the older child at present is 8 years more than the younger one, what is the respective ratio between the present age of the older child and the present age of the younger child 7

(a) 9 : 4

(b) 7 : 3

(c) 7 : 6

(d) 7 : 4

(e) 9 : 5

Q64.

4 years ago, the respective ratio between ½ of A's age at that time and four times of B's age at that time was 5 : 12. Eight years hence 1/2 of A's age at that time will be less than B's age at that time by 2 years. What is B's present age 7

(a) 10 years

(b) 14 years

(c) 12 years

(d) 5 years

(e) 8 years

Q65.

The present age of Bob is equal to Abby's age 8 years ago. Four years hence, the respective ratio between Bob's age and Abby's age will be 4 : 5 at that time.

What is Bob's present age?

(a) 24 years

(b) 32 years

(c) 40 years

(d) 20 years

(e) 28 years

Q66.

Respective ratio between total number of students studying in College A and College B is 5 : 8. In College

B. out of the total number of students, 5/8th is boys, out of which 60% study Commerce and the remaining 800 boys study in other streams. What is the total number of students In College A ?

(a)1500 (b)2500 (c)1200 (d)4000 (e)2000 Q67.

At present the respective ratio between the ages of A and B is 3 : 4 and that between A and C is 1 : 2. Six years hence, the sum of ages of A, B and C will be 96 years. What is the present age of A?

(a) 12 years

(b) 21 years

(c) 18 years

(d) 15 years

(e) 9 years

Q68.

B is 8 years older than A and 8 years younger than C. 12 years hence, respective ratio of the ages of A and C will be 5 : 9. What is the sum of present ages of A, B and C ?

(a) 58 years

(b) '46 years

(c) 48 years

(d) 60 years

(e) None of these

Q69.

'B' is 3 years older than A' and'B' is also 3 years

younger than 'C'.'3 years hence, the respective ratio between the ages of A and G will be 4 : 5. .What is the sum of the present ages of A, B and C?

(a) 48 years

(b) 56 years

(c) 63 years

(d) 84 years

(e) 72 years

Q70.

The present ages of Ranjana and Rakhl are in the ratio of 15 : 17 respectively. After 6 years, the respective ratio between the age of RanjanaandRakhi will be 9 : 10.What will be the age of Ranjana after 6 years?

(a) Other than those given as options

(b) 40 years

(c) 34 years

(d) 30 years

(e) 36 years

Q71.

If 7 boys and 2 men working together can do three times as much work per hour as a boy and a man together, what will be the respective ratio of work done by a boy and a man for the given time?

(a) 3 : 1

(b) 1 : 2

(c) 1 : 3

(d) 2 : 3

(e) 1 : 4

Q72.

At present, the respective ratio between the ages of A and B is 3 : 4 and that between A and C is 1 : 2. Six years hence, the sum of the ages of A, B and C will be 96 years. What is the present age ofA?

(a) 12 years

(b) 21 years

(c) 18 years

(d) 15 years

(e) 9 years

Q73.

Four years ago, the respective ratio between the age of Ram and that of Sonu, was 4 : 9. Tina is ten years older than Ram. Tina is ten years younger than Sonu. What is Tina's present age ?

(a) 40 years

(b) 36 years

(c) 30 years

(d) 20 years

(e) 42 years

Q74.

When a number is added to a second number, the sum is 1000/3 percent of the second number. What is the ratio between the first number to the second number?

(a) 3 : 7

(b) 7 : 4

(c) 7 : 3

(d) Data inadequate

(e) None of these

Q75.

A sum of money is to be distributed among F, Q and R in the ratio 6 : 19 : 7. If R gives 200 from his share to Q, the ratio of P, Q and R becomes 3 : 10 : 3, what is the total sum?

(a)Rs. 6400

(b)Rs. 12800

(c)Rs. 3200

(d) Data inadequate

(e) None of these

Q76.

In a school the number of boys and that of the girls are In the respective ratio of 2 : 3, If the number of boys is increased by 20% and that of girls is increased by 10%, what will be the new ratio of number of boys to that of the girls ?

(a) 4 : 5

(b) 5 : 8

(c) 3 : 4

(d) Data inadequate

(e) None of these

Q77.

.Income of two companies A and B are in the ratio of 5

: 8. Had the income of company A' been more by Rs.

25. lakhs, the ratio of their income would have been 5

: 4 respectively. What is-the income of company 'B' ?

(a) Rs. 80 lakhs

(b) Rs. 50 lakhs

(c) Rs. 40 lakhs

(d) Rs. 60 lakhs

(e) None of these

Q78.

Ratio of the earnings of A and B is 4 : 7 respectively. If the earnings of A increase by 50% and the earnings of B decrease by 25% the new ratio of their earnings becomes 8 : 7 respectively. What are A's earnings ? (a)Rs. 26,000

(b)Rs. 28, 000

(c)Rs. 21,000 ,

(d) Data inadequate

(e) None of these

Q79.

Salaries of A, B and C are in the ratio of 2 : 3 : 5 respectively. If their salaries were increased by 15%, 10% and 20% respectively what will be the new respective ratio of their salaries ? .

(a) 3 : 3 : 10

(b) 23 : 33 : 60

(c) 10 : 11 : 20

(d) Can't be determined

(e) None of these

Q80.

Present age of Seema and Naresh are in the respective ratio of 5 : 7. Five years hence the ratio of their age becomes 3 : 4 respectively. What is Naresh's present age

(a)25

(b)40

(c)30

(d) Can not be determined

(e) None of these

Q81.

A and B together can complete atask in 15 days. B and C together can complete the same task in 20 days. A and C together can complete the same task in 30 days'. What is the respective ratio of the number of days

taken by A while completing the same task alone to the number of days taken by C while completing the same task alone?

(a) 2 : 3

(b) 1 : 4

(c)(3) 1 : 3

(d) 3 : 1

(e) None of these

Q82.

A sum of money Is divided among A, B, C and D in the ratio of 3 : 5 : 9 : 13 respectively. If the share of C is Rs. 2412 more than the share of A, then what is the total amount of money of B and D together ?

(a)Rs. 4422

(b)Rs. 7236

(c)Rs. 6030

(d)Rs. 4,824

(e) None of these

Q83.

The age of Khushi and Jagriti are in the ratio of 5 : 8 respectively. After 8 years the ratio of their age will be 3 : 4. What is the difference in their age ?

(a) 16 years

(b) 8 years

(c) 10 years

(d) 12 years

(e) None of these

Q84.

The respective ratio of, the present age of a mother and daughter is 7 : 1. Four years ago the respective ratio of their age was 19 : 1. What will be the mother's age four years from now?

(a) 42 years

(b) 38 years

(c) 46 years

(d) 36 years

(e) None of these

Q85.

Mr. X invested a certain amount in Debit and Equity funds in the ratio of 4 : 5 respectively. At the end of one year, he earned a total dividend of 30% on his investment. After one year he reinvested the amount including dividend in the ratio of 6 : 7 in Debit and Equity Funds. If the amount reinvested in Equity Funds was Rs. 94, 500, what was the original amount invested in Equity Funds ?

(a)Rs. 75,000

(b)Rs. 81,007

(c)Rs. 60,000

(d)Rs. 65,007

(e) None of these

ANSWERS :

1a	2a	3b	4a	5a	6c
7c	8e	9d	10a	11d	12c
13e	14d	15d	16b	17b	18a
19a	20d	21d	22c	23c	24c
25e	26c	27c	28b	29b	30c
31d	32a	33b	34e	35b	36d
37d	38c	39b	40c	41d	42e
43e	44b	45c	46d	47d	48a
49e	50c	51d	52e	53a	54a
55a	56a	57b	58a	59a	60a
61a	62d	63b	64a	65e	66e
67c	68c	69e	70e	71e	72c
73c	74c	75a	76e	77c	78d
79b	80e	81c	82b	83e	84c
85a					

1.(1) Let the initial seats for Maths, Physics and Biology be 5x, 7x, and 8x respectively,

Now, new seats for Maths

= 5x × 140/100

For physics = (7x × 150/100) and for Biology = 8x × 175/100

∴ Required ratio

= (5x × 140)/100 : 7x × 150/100 : 8x × 175/100

= 5 × 140 : 7 × 150 : 8 × 175

= 2 : 3 : 4

2.(1) Ratio of rent's sharing

= 8 : 12 : 14 = 4 : 6 : 7

Total rent = Rs. 578 Share of Kiara

= 7/17 × 578 =Rs. 238

3.(2) From the options, 2x + 3x + 4x+ 5x = 1400

= 14x = 1400 x= 100

∴ shares are : Rs. 200, Rs. 300, Rs. 400 and Rs. 500,

Hence, total sum = 200 + 300 + 400 + 500 = Rs. 1400 4.(1) Let the number of students in Arts, Commerce and Science be 3x, 5x and 8x respectively,

On increasing their respective numbers, Required ratio

= 3x × 120/100 : 5x × 140/100 : 8x × 125/100

= 360 : 700 : 1000 = 18 : 35 : 50

5.(1) Let x boys and x girls joined the group. According to the question,

(20 + x)/(25 + x) = 7/8

= 160 + 8x = 175 + 7x

= 8x – 7x = 175 – 160

= x = 15

∴ New number of members

= 20 + x + 25 + x = 45 + 2x

= 45 + 2 × 15 = 75

6.(3) Let the amount received by

A, B , C and D be Rs. 3x, 4x, 9x and Rs. 10x respectively.

According to the question, 9x – 4x = 2580

= 5x = 2580

x = 2580/5 = 516

Total amount of the money of A and D = 3x + 10x

= 13x = 13 × 516 = Rs. 6708

7.(3) Let the production of company B = 100 units

∴ Production of company A = 120 units Production of company C

= 120 × 100/80 = 150 units

∴ Required ratio

= 120 : 100 : 150

= 12 : 10 : 15

8.(5) Let the original number of students in Arts and Science faculties be 5x and8x respectively.

According to the question.

5x + 150/8x + 80 = ¾

= 24x + 240 = 20x + 60 4x + 240 = 20x + 600

= 4x = 360

=x = 360

= x 360 / 4 = 90

∴ Original number of students = 5x + 8x = 13x

= 13 × 90 = 1170

9.(4) Let the number be x and y respectively.

∴ 75x/100 = 5y/8

= x/y = 5/8 × 100/75

= 5/6 or 5 : 6

10.(1) x : 336 = 400 : 192

= x × 192 = 336 × 400

x = 336 × 400/192 = 700 11.(4) 32/a = b/2 = ab = 64 12.(3) Required ratio

= 5 × 120/100 : 8 × 125/100 : 4 × 130/100

= 5 × 120 : 8 × 125 : 4 × 130

= 15 : 25 : 13

13.(5) Let the number be x and y respectively,

According to the question

y → x × 30/100 = 4/5y = y/5 = 3x/10

→ x : y = 10/(3 × 5) = 2 : 3

14.(4) (Tricky approach)

If the largest and the second largest angles be 3x˚ and 2x˚, respectively then,

third angle = x

∴ Required sum

= x + 2x = 3x = 90˚ 15.(4) [Tricky approach] 7x + 2x + 5x+ 6x = 360˚

= 2x = 360˚

= x = 360/20 = 18

∴ Required answer = 2 × 2x + 7x/2

= 15x/2 = 15 × 18/2 = 135˚

16.(2) 2x + 4x + 7x + 5x = 360˚

= 18x = 360˚

x = 360˚/18 = 20˚

∴ Smallest angle of the triangle

= 2 × 20˚ = 40˚

Second angle = 2 × 40˚ = 80˚

∴ Required angle

= 180˚ - 80˚ - 40˚ = 60˚

17.(2) 3x + 4x + 6x + 7x = 360˚

= 20x = 360˚

x = 18˚

∴ Smaller angle of the parallelogram

= 6x/2 = 3x = 54˚

∴ Adjacent angle of parallelogram

= 180˚ - 54˚ = 126˚

18.(1) x + 4x + 5x + 60 = 360˚

= 10x = 300˚ x = 30

∴ Required difference = 5x – x

= 4x = 4 × 30 = 120˚

19.(1) 20x + 73x + 83x

= 950 – 25 – 15 – 30

= 176x = 880

x = 880/176 = 5

∴ Number of coins got by Amita

= 73x + 15 = 73 × 5 + 15 = 380

20.(4) Sum of three angles of a triangle = 180˚ Largest angle = 13x

Second largest angle = 12x

∴ Third angle

= (13x + 12x) × 1/5 = 5x

∴ 13x + 12x + 5x = 180˚

= 30x = 180˚

= x = 180/30 = 6˚

∴ Required sum = 5x + 12x

= 17x = 17 × 6 = 102˚

21.(4) Pranab × 25/100 = Surya × 80/100

= Pranab/ Surya = 80/25 = 16/5 Pranab : Surya = 16: 5

Surya/ Dheeru = 40/100 = 2/5 Surya : Dheera = 2 : 5

Pranab : Surya : Dheeru

= 16 × 2 : 5 × 2 : 5 × 5

= 32 : 10 : 25

Now,

∴ 25 =600000

∴ 32 = 600000/25 × 32

= Rs. 768000 = Pranab' annual income

∴ Pranab's monthly salary

= 768000/12 = Rs. 64000

22.(3) Sum of the angles of quadrilateral = 360˚

= x + 6x + 2x + 45 = 360

= 9x = 360 – 45 = 315

= x = 315/9 = 35

23.(3) Sum of the angles of a quadrilateral = 360˚

∴ 3x + 4x + 6x +5x = 360˚

= 18x = 360˚

x = 20˚

∴ The largest angle of the quadrilateral = 6 × 20 = 120˚

∴ Smaller angel of parallelogram

= 120 × 2/3 = 80˚

∴ Its adjacent angle

= 180 – 80 = 100˚

24.(3) If the number of 2 rupee coins be x, then number of 5 rupee cons = x- 5

∴ 2x + 5 (x - 5) = 50 – 26

= 2x + 5x – 25 = 24

= 7x = 24 + 25 = 49

x = 49/7 = 7

25.(5) Let the adjacent angles of parallelogram be 2x˚ and 3x˚ respectively, then

2x˚ + 3x˚ = 180˚

= 5x˚ = 180˚ = x˚ = 36˚

∴ Smallest angle of parallelogram

= 2x = 72˚

= smallest angle of the quadrilateral = 36˚

∴ Its largest angle = 4 × 36 = 144˚

∴ Required sum = 144 + 72 = 216˚

26.(3) Sum of adjacent angles of a parallelogram = 180˚

∴ One of the angles of triangle

= 2/3 × 180˚ = 120˚

Sum of three angles of a triangle

= 180˚ ∴ 5x + 7x = 180 – 120

= 12x = 60

x = 5

Second angle of triangle

= 5 × 5 = 25˚

Third angle of triangle

= 7 × 5 = 35˚

∴ The second largest angle of triangle

= 35˚

27.(3) Sum of angles of a triangle = 180˚

= 3x + x + 44 = 180

= 4x = 180 – 44 = 136 x = 136/4 = 34

∴ Largest angle of triangle

= 3 × 34 = 102˚

∴ 150% of 102 = 102 × 150/100 = 153

28.(2) For the Parallelogram, 4x˚ + 5x˚ = 180˚

= 9x = 180

x = 180/9 = 20

Smaller angle of parallelogram

= 4 × 20 = 80˚

∴ One angle of quadrilateral

= 3 × 80 = 240˚

Now, 4y + 11y + 9y

= 360 – 240 = 120

= 24 y = 120

= y = 120/24 = 5

= Its smallest angle

= 4 × 5 = 20˚

∴ Required sum

= 240˚ + 20˚ = 260˚

29.(2) Sum of the angles of quadrilateral = 360˚

∴ 3x + 4x + 5x + 6x = 360

= 18x = 360

x = 360/18 = 20

∴ Smallest angle of quadrilateral = 3 × 20 = 60˚

Largest angle of quadrilateral

= 6 × 20 = 120˚

∴ smallest angle of triangle

= 60 × 2/3 = 40˚

Largest angle of triangle

= 2 × 40 = 80˚

∴ Third angle of triangle

= 180˚ - 40˚ - 80˚ = 60˚

∴ Required sum

= 60 + 120 = 180˚

30.(3) The smallest angle of triangle is half of the largest angle.

∴ Ratio of three angles = 4 : 3 : 2

Now, 4x + 3x + 2x = 180

= 9x = 180

= x = 20

∴ Required difference

= 4x + 3x + 2x = 180

= 9x = 180 x= 20

∴ Required difference

= 4x – 2x = 2x

31.(4) Let the three angle of quadrilateral be 13x˚ 9x + 5x = 360 – 36

27x = 324 = x = 324/27 = 12

∴ Required difference

= 13x – 5x = 8x = 8 × 12 = 96˚

32.(1) Let the adjacent angles be 7x˚ + 8 = 180

= 15x = 180 x = 12

∴ Smaller angle = 7 × 12 = 84˚ Again, 5y + 6y + 7y + 12y = 360˚

= 30y = 360˚

y = 360˚/30 = 12˚

∴ Second largest angle of ht quadrilateral = 7 × 12 = 84˚

∴ Required sum = 84 + 84 = 168˚

33.(2) Let the present age of Sulekha and Arunima be 9x and 8x years respectively.

According to the question,

After 5 years, (9x + 5)/(8x + 5)

= 10/9

= 81x + 45 = 80x + 50

= 81x – 80x = 50 – 45

x = 5 years

34.(5) Let the present age of Sonal and Nitya be 9x and 5x years respectively

According to the question

= (9x + 8)/(5x + 8) = 13/9

= 81x + 72 = 65x + 104

= 81x – 65x = 104 – 72

= 16x = 32

x = 32/16 = 2

∴ Required difference = 9x – 5x

= 4x = 4 × 2 = 8 years

35.(2) Let the present age of father and son be 17x years and 7x years respectively.

According to the question.

(17x - 6)/(7x – 6) = 3/1

= 21x – 18 = 17x – 6

=21 – 17x = 18 – 6

= 4x = 12

x = 12/4 = 3

∴ Father's present age

= 17 × 3 = 51 years

36.(4) Rani : Komal = 3 : 5 = 6 : 10

Komal : Pooja = 2 : 3 = 10 : 15

∴ Rani : Komal : Pooja = 6 : 10 : 15

We have insufficient data to solve this questions.

37.(4) Let the present age of Amit and his father be 2x years and 5x years respectively.

∴ (2x + 4)/(5x + 4) = 5/11

= 25x + 20 = 22x + 44

= 3x = 24

x = 24/3 = 8

∴ Father's age 5 years ago

= 5x – 5 = 5 × 8 – 5 = 35 years

38.(3) Four years ago, Shyam : Ram = 3 : 4 After four years,

(3x + 8)/(4x + 8) = 5/6

= 20x + 40 = 18x + 48 2x = 48 – 40 = 8

= x = 8/2 = 4

∴Shyam's present age = 3x + 4

= 3 × 4 + 4 = 16 years

39.(2) Let the present age of Tina and Rakesh be 9x and 10x years respectively.

10years ago,

(9x – 10)/(10x - 10) = 4/5

= 45x – 50 = 40x – 40 5x = 10

x = 10/5 = 2

∴ Rakesh's present age

= 10x = 10 × 2 = 20 years

40.(3) Let the present age of Vishal and Shekhar be 14x and 17 years respectively.

After 6 years

= (14x + 6)/(17x + 6) = 17/20

= 280 x + 120 = 9x = 18 x= 18/9 = 2

=Shekhar's present age

= 17 × 2 = 34 years

41.(4) Let the present age of father and son be 5x and 2x years respectively,

After4 years,

Son's age = y years

and mother's age= 2y years Now, y = 2x + 4

= x (y - 4)/2

∴ Father's present age

= 5(y - 4)/2 years Now, y = 2x + 4

= x = (y – 4)/2

∴ Father's present age

= 5(y-4)/2 Years Mother's present age

= (2y - 4) years

Cleary, data are inadequate.

42.(5) Let Radha's present age

= x years

∴ Raj's present age = 4/9 × 27

= 12 years

∴ Raj's age after 5 years

43.(5) Let the present age of Meena and Fiona be 16x and 13x year respectively.

According to the question,

(16x - 4)/(13x- 4)

= 14/11

= 176x – 44 = 182x – 56

= 182x – 176x = 56 – 44

= 6x = 12

= x = 2

∴ Fiona'a age after four years

= 13x + 4

= 13 × 2 + 4 = 30 years

44.(4) Let Swati's present age

= 4x years

Trupati's present age = 5x years

∴ (4x+ 6)/(5x+ 6)

= 6/7

= 30x + 36 = 28x + 42

= 2x = 42 – 36 = 6

= x = 3 = difference of their age

45.(3) Let Ram's present age be 6x years and that of Rakesh be 11x years.

Four year ago,

(6x - 4)/(11x - 4) = ½

= 12x – 8 = 11x – 4 x= 8 – 4 = 4

∴ Rakesh's age after five years

= 11x + 5

= 11 × 4 + 5 = 49 years

46.(4) According to the question, (2x + 7x)/2 = 27

= 9x = 27 × 2 = 54 x= 54/9 = 6

∴ Mother's age after 7 Years

= 7x + 7 = 7 × 6 + 7 = 49 years 47.(4) Let the present age of Ram, Rohan and Raj be 3x , 4x and 5x years respectively.

∴ 3x + 4x + 5x = 3 × 28

= 12x = 84

= x = 84/12 = 7

Sum of the age of Ram and Rohan after 5 years

= 3x + 4x + 10 = 7x + 10

= 7 × 7 + 10 = 59 years

48.(1) Rehana's present age

= 85 – 7 = 78 years Wasim's present age

= 78 – 12 = 66 years

∴ Manoj's present age

= 3/11 × 66 = 18 years

49.(5) Jahnavi's present age

= 33 – 9 = 24 years

∴ Aarti's present age

= 24 – 9 = 15 years Now, Aarti : Savita

= 5 : x

= 15 : 3x

∴ Savita's present age

= 3x years

∴ 3x – 15 = 24

= 3x = 24 + 15 = 39

= x = 39/3 = 13

50.(3) Let the amount received by P, Q and R be Rs. 3x, Rs. 5x and Rs. 7x respectively.

∴ 7x – 5x = 4000

x = 4000 / 2 = 2000

∴ Amount received by P and Q together = 8x

= 8 × 2000 = Rs. 16000

51.(4) Abhinav's investment

= Rs. 6000

Sunil's investment = 70 × 6000/100

= Rs. 4200

Rita's investment = 4200 × 125/100

= Rs. 5250

∴ Required ratio

= 5250 : (6000 + 4200 + 5250)

= 5250 : 15450 = 35 : 103

52.(5) (9 - x)/(15 - x) = (15 - x)/(27 - x)

= 243 – 9x – 27x + x2 225 – 30x + x2

= 6x = 243 – 225 = 18

= x=3

53.(1) Let the amount be Rs. x,

∴ (3/9 – 2/14)x = 40

= (1/3 – 1/7)x = 40 = (7 - 3/21)x = 40

= x = (40 × 21)/4 = Rs. 210

54.(1) If the total amount be Rs. x1, then 2x/15 = 4908

x = (4908 × 15)/2 = Rs. 36810

∴ Required difference

= 7 – 6/15 × 36810 = Rs. 2454

55.(1) Four years ago,

Let, Father's age = 10x years Son's age = 3x years

∴ 10x + 3x + 8 = 60

= 13x = 60 – 8 = 52

= x = 4

∴ Required difference

= 7x = 7 × 4 = 28 years

56.(1) x = y + 52

z = y – 26

∴ x + Y + z = 221

= y + 52 + y + y – 26 = 221

= 3y = 221 – 26 = 195

y =195 /3 = 65

∴ x = 65 + 52 = 117

z = 65 – 26 = 39

∴ x : y : z = 117 : 65 : 39

= 9 : 5 : 3

57.(2) Number of boys = x (let) Number of girls = y (let)

∴ (45 × x + 36 × y) /(x + y)

= 42.25

= 45x + 36y = 42.25x + 42.25y

= 45x – 42.25x = 42.25y – 36y

= 2.75x = 6.25y

= x/y = 6.25/2.75 = 25/11

58.(1) Let, First number = x Second number = y

∴ x ×50/100 = y × ¾

= x/2 = y × ¾

= x/2 = ¾ × 2 = 3/2 or 3 : 2 59.(1) Let, Mahesh = 3x years Ajay = 2x years

After 8 years,

(3x + 8)/(2x + 8) = 11/8

= 24x + 64 = 22x + 88

2x = 88 – 64 = 24

=x= 12

∴ Ajay's age = 2x = 2 × 12

= 24 years

∴ Age of Mahesh's son

= ½ × 24 = 12 years

60.(1) In 64 litres of mixture, Milk = 7/10 × 64 = 44.8 litres Water = 64 – 44.8 = 19.2 litres In 8 litres of mixture,

Milk = 7/10 × 8 = 5.6 litres Water = 2.4 litres

In resulting mixture milk = 44.8 – 5.6 + 12

= 51.2 litres

Water = 19.2 – 2.4

= 16.8 litres

∴ Required ratio = 51.2 : 16.8

= 64 : 21

61.(1) Ratio of amount collected

= (14 × 2) : (12 × 3) : (10 × 5)

= 28 : 36 : 50= 14 : 18 : 25

Sum of ratio = 14 + 18 + 25

= 57

∴ Amount colleted on day one

=14/57 × 4560 = Rs. 1120

62.(4) P's present age = 8x years Q's present age = 5x years

After 4 years,

(8x + 4)/(5x + 4) = 4/3

= 24x + 12 = 20x + 16

= 24x – 20x = 16 – 12

= 4x = 4

x = 1

P's age 7 years hence =8x + 7

= 8 + 7 = 15 years

Required ratio = 15 : 5 = 3 : 1

63.(2) Present age of younger child = x years Present age of older child

= (x + 8) years

Sum of the present ages of 4 member family

= (4 × 40 + 4× 15) years

= (160 + 60) years = 220 years Sum of present ages of 6 members

= 6 × 40 = 240 years

∴ Sum of the present ages of children

= 240 – 220 = 20 years

∴ x + x + 8 = 20

= 2x = 20 – 8 = 12

x = 6 years

∴ Present age of older child

= 6 + 8 = 14 years

∴ Required ratio= 14 : 6

= 7 : 3

64.(1) 4 years ago, A's age = 10 years, B's age = 3x years

∴ A's present age

= (10x + 4) years

B's present age = (3x + 4) years According to the question,

(10x + 4 + 8)/2 – (3x + 4 + 8)

= - 2

= 3x + 12 – (5x + 6) = 2

= 3x + 12 – 5x – 6 = 2

= 5 – 2x = 2

= 2x = 6 – 2 = 4

x = 2

∴ B's present age = 3x + 4

= 3 × 2 + 4 = 10 years

65.(5) Bob's present age = x years (let)

∴ Abby's present age

= (x + 8) years

According to the question,

After to the question, After 4 years

= (x + 4)/(x + 12) = 4/5

= 5x + 20 = 4x + 48

= 5x – 4x = 48 – 20

x = 28 years

66.(5) Total number of students in college A= 5x Total number of students in college B = 8x

In college B,

Boys = 5/8 × 8x = 5x

Boys who study commerce

= 5x × 60/100 = 3x

Boys in other streams

= 5x- 3x =2x

∴ 2x = 800 x = 400

∴ Total number of students in college A

= 5x = 5 × 400 = 2000

67.(3) A : B = 3 : 4

A : C = 1 : 2 = 3 : 6

∴ A : B : C= 3 : 4 : 6

6 years hence,

3x + 4x + 6x + 18 = 96

= 13x = 96 – 18 = 78

= x = 78/13 = 6

∴ A's present age

= 3x =18 years

68.(3) Let A's present age be x years.

∴ B's present age = (x+ 8) years C's present age = (x+ 16) years After 12 years,

A's age/ C's age = 5/9

= (x +12)/(x+ 16 + 12)

= 5/9

= 9x + 108 = 5x + 140

= 9x – 5x = 140 – 108

= 4x = 32

x= 32/4 = 8

∴ Sum of the present age of A, B and C

= x + x + 8 + x + 16

= 3x + 24 = 3 × 8 + 24

= 48 years

69.(5) According to the question,

B = A + 3 = A = B – 3 and B = C – 3 = C = B + 3

Again, after 3 years, (B - 3 + 3)/(B + 3 + 3) = 4/5

= B/ B+ 6 = 4/5

= 5B = 4B + 24

= 5B – 4B = 24

= B = 24

∴ A + B + C

= B – 3 + B + B + 3

= 3B = 3 × 24 = 72 years

70.(5) Ranjana's present age

= 15x years

Rakhi's present age = 17x years After 6 years,

(15x + 6)/(17x + 6) = 9/10

= 153x + 54 = 150x + 60

= 153x – 150x = 60 – 54

= 3x = 6

x= 2

∴ Ranjana's age after 6 years

= 15x+ 6

= (15 × 2 + 6) years = 36 years

71.(5) 7 boys + 2 men

= 3 boys + 3 men

= 4 boys=1 man

∴ Required ratio =1 : 4

72.(3) A : B = 3 : 4

A : C =1 :2

=3 : 6

∴ A : B : C = 3 : 4 : 6

According to the question, After 6 years

Sum of ages of A, B and C = 96

= 3x + 4x + 6x + 18 = 96

= 13x = 96 – 18 = 78

= x = 78/13 = 6

∴ A's present age = 3x

= 3 × 6 = 18 years

73.(3) Ram's present age

= (4x + 4) years Sonu's present age

= (9x + 4) years According to the question, 4x + 4 + 10 = 9x + 4 – 10

= 4x + 14 = 14 + 6 = 5x = 20

= x = 4

∴ Tina's present age= 4x + 14

= 4 × 4 + 14 = 30 years

74.(3) Let the first number be x and the second number be y.

x + y =1000/3% of y.

x + y = [1000/(3× 1000)]y

x+ y = 10/3 y 3x + 3y = 10y 3x = 7y

x/ y = 7/3 = 7 : 3

75.(1) Let P's share be 6x Q's share be 19x and

R's share be 7x.

Total sum = 6x + 19x + 7x= 32x 6x : 19x + 200 : 7x – 200

= 3 : 10 : 3

We can write 6x = 7x – 200 x = 200

∴ Total Sum = 32x = Rs. 6400

76.(5) Ratio of no. boys: Girls = 2 : 3

Let the no. of boys = 2x Then the no. of girls = 3x

No. of boys after 20% increase

= 1.20 × 2x = 2.4x.

No. of girls after 10% increase

= 1.10 × 3x = 3.3x

Required ratio = 2.4x/3.3x

= 8/11 = 8 : 11

77.(3) A : B = 5 : 8

Let A's income be 5x and B's income be 8x According to question

(5x+ 25)/8x = 5/4

= 5 (x + 5)/4 × 2x = 5/4

=(x + 4)/2x = 1

x + 5 = 2x x = 5

B's income = 8x = 8 × 5 Rs. 40 lakhs

78.(4) Let the earnings of A and B Rs. 4x and 7x

respectively. After 50% of 4x

After 25% decrease

B's earning = 75% of 7x

Ratio = 150% of 4x : 75% of 7x

= 8 : 7

But their total earnings are unknown. Hence A's earning's can't be known.

79.(2) Let the salaries of A, B and C be Rs. 2x, Rs. 3x and

5x respectively.

After respective increase of 15%, 10% and 20% their salaries will be

115 × 2x/100, 110 × 3x/100 and 120 × 5x/100

∴ Required ratio

= 115 × 2x/100 : 110 × 3x/100 : 120 × 5x/100

= 23 : 33 : 60

80.(5) Let the present age of Seema and Naresh be 5x and 7x years respectively.

According to the question,

(5x + 5)/7x + 5 = ¾

= 21x + 15 = 20x + 20

=x = 20 - 15 = 5

∴ Naresh's present age

= 7x years = 7 × 5 = 35 years

81.(3) (A + B)'s 1 day's work = 1/15 (B + C)'s 1 day's work = 1/20

(C + A)'s 1 day's work = 1/30

On adding all three,

2 (A + B + C)'s 1 day's work

= 1/15 + 1/20 + 1/30

= (4 + 3 + 2)/60 = 9/60 = 3/20

∴ (A + B + C)'s 1 day's work = 3/40

∴ A's 1 day's work = 3/40 – 1/20

= 3 – 2/40 = 1/40

∴ Time taken by A = 40 day's C 1 day's work

= 3/40 – 1/15

= (9 - 8)/120 = 1/120

∴ Time taken by C = 120 days Required ratio

= 40 : 120

= 1 : 3

82.(2) Let the original sum be Rs. x,

Sum of the ratios

= 3 + 5 + 9 + 13 = 30

∴ C's share = 9x /30 = 3x / A's share = 3x/30 = 3x/10 According to the question 3x/10 – x/10 = 2412

= 2x/10 = 2412

= x = 2412 × 5 = Rs. 12060

∴ Amount received by B and together

= Rs. (5 + 13)/30 × 12060 = Rs. 7236

83.(5) Let the present age of Khushi and Jagriti be 5x and 8x years respectively.

After 8 years,

5x + 8/8x + 8 = ¾

= 24x + 24 = 20x + 32

= 4x = 32 – 24 = 8

= x = 8/4 = 2

∴ Required difference

= (8x – 5x)years

= 3x = 3 × 2 = 6 years

84.(3) Let the age of the mother and daughter be 7x and x years respectively.

∴ Four years ago, (7x – 4)/(x – 4) = 19/1

= 19x – 76 = 7x – 4

= 12x = 72 = x = 6

∴ Mother's age after four years

= 7x + 4 = 7 × 6 + 4 = 46 years

85.(1) Let the original amount invested in Debits and Equity fund be 4x and 5x respectively.

Dividend at the end of the year

= 9x × 30/100 = 27x/10

Total investment after one year

= Rs. (9x + 27x/10) = Rs. (117x/10)

Total investment after one year

= Rs. [9x + (27x/10)] = Rs. (117x/10)

∴ 7/13 × 117x/10

= 94500

=x = (94500 × 13 × 10)/(7 × 117)

= 15000

∴ The original amount invested in Equity funds = 5x

= 5 × 75000

= Rs. 75000