Ratio and Proportion

$$a:b \rightarrow \frac{a}{b}$$

1] Write 100 into 2:3 Ratio

So here 2+3 = 5

2 X (100/5) : 3 (100/5)

= 40: 60

A:B = B:C Means A,B,C,D is in Proportion

2] a:b = 2:3; b:c = 4:5 Find a:b:c = ?

a:b:c = (2x4) : (3x4) : (3x5)

Answer = a:b:c => 8:12:15

3] a:b:c = 8:12:15, c:d = 7:5, Find a:b:c:d = ?

a:b:c:d = (7x8):(7x12):(7x15):(5x15)

a:b:c:d = 56:84:105:75

4] a= 7; b= 21; Find a:b =?

a:b = a/b = 7/21 = 1/3

1:3

5] 15:25 ---Lowest Form?

3:5

6] 250 m.l to 3 litres

250:3000

1:12

7] 45mins to 2 hrs

45:120

9:24

3:8

8] 30 paise to Rs. 3

30:300

1:10

9] 1.2 hour equal to

1hr = 60 mins

.2hr = (2/10) x 60

= 12 mins

So 60+12 = 72 mins

10] Which one is greater one 2:3, 3:4

2/3 , 3/4

Take lcm, we get 8/12, 9/12

Greater one is 3:4

11] Which one is smaller one? 3:7 or 7:9

Take lcm => 3/7, 7/9

24/63, 49/63

Smaller one is 3:7

12] Divide 2m 25cm in the ratio 5:4

225 cm = (5:4)

225/9 = 25

5 (225/9) & 4 (225/9)

125:100

Answer: (1m 25min, 1m)

13] Divide 5 hours in the ratio 1:5

(300/6) mins

1 (300/6), 5 (300/6)

50, 250

Answer: 50 mins, 4hrs 10 mins

14] A/B = 2/3, B/C = 2/4, C/D = 2/5, Then A:D is equal to ?

A:B = 2:3

B:C = 2:4

A:B:C = 4:6:12

A/B X B/C X C/D = 2/3 X 2/4 X 2/5

A/D = 2/15

15] A:B = 1/2 : 3/8, B:C = 1/3 : 5/9, C:D = 5/6 : 3/4

A:B:C:D = ?

A:B = 1/2 : 3/8 = 4:3

B:C = 1/3 : 5/9 = 9:15 = 3:5

C:D = 5/6 : 3/4 = 20:18 = 10:9

A:B:C = 12:9:15 = 4:3:5

A:B:C:D = 40:30:50:45

= 8:6:10:9

General Questions With Explanation

1. The sum of the two numbers is 40 and their difference is 4. The ratio of the numbers is

இரண்டு எண்களின் கூட்டுத்தொகை 40 மற்றும் அவற்றின் வித்தியாசம் 4 எனில் அந்த இரு எண்களின் விகிதம் என்ன?

a. 11:9   b. 10:7   c. 20:12   d. 11:12

Answer: a

Explanation:

அந்த இரு எண்களை x மற்றும் y என்க

$$\Rightarrow (x+y)/(x-y) = 40/4$$

$$\Rightarrow (x+y) = 10 (x-y) => (x+y) = 10 (x-y)$$

$$\Rightarrow 9x = 11y => x/y = 11/9$$

2. The ratio of two numbers is 4:7. On subtracting 10 from each number, the ratio becomes 1:2 then the greater number is

இரு எண்களின் விகிதம் 4:7. அந்த இரு எண்களிலும் முறையே 10ஐ கழிக்கும் போது அவற்றின் விகிதம் 1:2 எனில் அந்த இரு எண்களில் பெரிய எண்?

a. 40   b. 70   c. 80   d. 100

Answer: b

Explanation:

As the two numbers are in ratio 4:7.

So, there must be a common factor.

let the number be x.

Then, required number will be 4x and 7x.

After subtracting 10 from each we get (4x-10) and (7x-10).

Now the two new numbers are in the ratio 1/2.

(4x-10)/(7x-10) = 1/2

2(4x-10) = 1 (7x-10)

8x-20 = 7x-10

X = 10

so the required number is 4*10 = 40 and 7*10 = 70.

we can check this as we subtract 10 from the two numbers 40 and 70 we get 30 and 60.

which are in the ratio 1:2.

3. Three numbers are in the ratio 4:5:6 and their average is 25. The largest number is

மூன்று எண்களின் விகிதங்கள் முறையே 4:5:6. அவற்றின் சராசரி 25 எனில் அவற்றில் பெரிய எண் எது?

a. 35   b. 40   c. 45   d. 30

Answer: d

Explanation:

Let the numbers be 4x, 5x and 6x, Then, (4x + 5x + 6x) / 3 = 25
=> 5x = 25
=> x = 5.
Largest number 6x = 30.

4. The product of three number with the ratio 1:2:3 is 750, then the sum of their squares is

1:2:3 என்ற விகிதத்தில் உள்ள மூன்று எண்களின் பெருக்குத்தொகை 750. எனில் அவற்றின் வர்க்கங்களின் கூடுதல் என்ன?

a. 350   b. 600   c. 450   d. 400

Answer: a

Explanation:

let the three numbers be 1x, 2x , 3x

Product of the numbers = $6x^3$ = 750

x^3 = 125

x = 5

sum of their squares is to be $x^2 + 4x^2 + 9x^2 = 14x^2$

$14x^2$ = 14 X 25 = 350

5. Two numbers are 10% and 15% less than a third number. Find the ratio of the two numbers.

இரண்டு எண்கள் மூன்றாம் எண்னைக்காட்டிலும் 10%, 15% குறைவாக உள்ளன. எனில் அந்த இரு எண்களின் விகிதம் என்ன?

a. 9: 16   b. 9 : 14   c. 13 : 16   d. 18 : 17

Answer: d

Explanation:

Let the third number be 100.

Two numbers are 10% and 15% less than a third number.

Then, the two number are 100 -10 = 90 & 100 - 15 = 85.

So, the ratio of two numbers = 90/85 = 19/18

= 19:18

Hence, the correct answer is option (D) 18: 17

6. A horse and two cows together cost Rs.680. If a horse cost Rs.80 more than a cow then the ratio of cost of horse and cow is

ஒரு குதிரை மற்றும் இரண்டு மாடுகளின் விலை 680 ரூபாய். ஒரு குதிரையின் விலை, ஒரு மாட்டின் விலையை விட 80 ரூபாய் அதிகம் எனில் குதிரை மற்றும் மாட்டின் விலைகளுக்கிடையேயான விகிதம் என்ன?

a. 7:5   b. 5:7   c. 8:9   d. 9:8

Answer: a

Explanation:

Let the cost of a horse be Rs.x.

Let the cost of two cows be Rs.2y

x + 2y = Rs.680…. (1)

x - y = Rs.80 … (2)

…………………………

3y = Rs. 600

So y = Rs.200

x - 200 = 80

x = 280

x : y = 280 : 200

= 7 : 5

7. In a bag there are coins of 25p, 10p and 5p in the ratio 1:2:3. If there are Rs.30 in all then the number of 5p coins are

ஒரு பையில் 25 பைசா , 10 பைசா , 5 பைசா நாணயங்கள் முறையே 1:2:3 என்ற விகிதத்தில் உள்ளன. அந்த பையில் மொத்தம் 30 ரூபாய் உள்ளதெனில் 5 பைசா நாணயங்களின் எண்ணிக்கை?

a. 200   b. 30   c. 150   d. 250

Answer: c

Explanation:

Let 25 paise coins be x, 10 paise coins be 2x and 5 paise coins be 3x.

The value of 25 paise coins would be x/4, that of 10 paise coin be 2x/10 and that of 5 paise coin be 3x/20.

Adding all, we get (12x/20) = 30, I.e., x=50
No of 5 paise coins are 3x, i.e., 150.

8. Ten years ago, the ages of X and Y were in the ratio 1:3. The ratio of their present ages is 2:1. Their present ages are

10 வருடங்களுக்கு முன்பு X, Y என்ற நபர்களின் வயதின் விகிதம் 1:3. தற்போது அவர்களின் வயதின் விகிதம் 2:1 எனில் அவர்களது தற்போதைய வயது என்ன?

a. 40, 20   b. 20, 10   c. 30, 15   d. 60, 30

Answer: a

Explanation:

Let's say the ages of A and B

before ten years be x and y respectively.

Therefore x:y = 1:3

Implies, 1x = 3y

After 10 years, (x+10) : (y+10) = 2:1

Implies, 1 (x+10) = 2 (y+10),

Implies, x+10 = 2y+20, implies, x = 2y+10

But x = 3y, implies, 3y = 2y + 10

By equating both the equations, implies,

Y = 10

X = 30

So now the difference between their ages = 30-10 = 20 years.

Now their current ages of A and B would be 40 and 20 years respectively.

9. Three partners A, B and C invest Rs.36,000, Rs.45,000 and Rs.54,000 respectively in a business. Out of a total profit of Rs.37,500, C"s share is

ஒரு தொழிலில் மூன்று பங்குதாரர்கள் A, B, C முறையே 36000, 45000 மற்றும் 54000 முதலீடு செய்கின்றனர். அவர்களுக்கு 37500 மொத்த லாபமாக கிடைத்தால், அதில் C-இன் பங்கு யாது?

a. Rs.12,500   b. Rs.15,000   c. Rs.10,000   d. Rs.15,500

Answer: b

Explanation:

Ratio of their investment (A:B:C) = 36000 : 45000 : 54000
= 4 : 5 : 6

Total = 15
So, C's Share = 37500 * 6/15
= 7500 * 2

= **15000**

10. A sum of Rs.53 is divided among A B C in such a way that A gets Rs.7 more than what B gets and B gets Rs.8 more than what C gets. The ratio of their share is

ரூபாய் 53 A,B,C என்னும் மூன்று நபர்களுக்கு பிரித்து கொடுக்கும்போது, A-விற்கு B-ஐ விட ரூபாய் 7 அதிகமாகவும், B-க்கு C-ஐ விட ரூபாய் 8 அதிகமாகவும் கிடைக்கின்றது எனில் , அவர்களின் பங்குகளின் விகிதம் யாது?

a. 16:9:18   b. 25:18:10   c. 18:25:10   d. 15:8:30

Answer: b

Explanation:

Suppose C gets Rs. x. Then, B gets Rs. (x + 8) and A gets Rs. (x + 15).

Then, x + (x + 8) + (x + 15) = 53

3x + 23 = 53

3x = 30

x = 10

A : B : C = (10 + 15) : (10 + 8) : 10

= 25 : 18 : 10.

Previous & Model Tnpsc Questions

1. The sum of the two numbers is 116 2 3 % of the second number, then the ratio of the first number to the second number is

a. 1:6 b. 3:7 c. 7:3 d. 7:4

Answer: a

2. In a village of 1, 21,000 people, the ratio of men to women is 6:5. The number of men

a. 33,000 b. 66,000 c. 55,000 d. 44,000

Answer: b

3. Divide Rs.672 in the ratio 5:3

a. Rs.420, Rs.252 b. Rs.520, Rs.152 c. Rs.430, Rs.242 d. Rs.460, Rs.212 Answer: a

4. If a:b = 5:9 and b:c = 4:7 find a:b:c a. 20:36:63 b. 15:25:60 c. 10:!8:45 d. 6:18:54

Answer: a

5. If x : y = 5 : 2 then (8x+9y) : (8x+2y) is a. 22: 29 b. 26:61 c. 29: 22 d. 61: 26

Answer: c

6. If A:B = 3:4 and B:C = 8:9 then A:C is a. 1:3 b. 3:2 c. 2:3 d. 1:2

Answer: c

7. If A:B = 5:7 and B:C = 6:11 then A:B:C is

a. 30:42:77 b. 40:35:27 c. 20:15:17 d. 15:20:30

Answer: a

8. If a:b = 6:7 and b:c = 8:9 then a:c is equal to

a. 16:21 b. 6:9 c. 27:28 d. 1:2

Answer: a

9. If A:B = 8:15, B:C = 5:8 and C:D = 4:5 then A:D is equal to a. 2:7 b. 4:15 c. 8:15 d. 15:4 Answer: b

10. If A:B = 2:3 and B:C = 4:5 then find the ratio of C:A

a. 15:8 b. 8:15 c. 5:4 d. 5:20

Answer: a

11. If a:b = 2:3, b:c = 6:5 and a+b+c = 30, then 2a+3b+4c is

a. 30 b. 92 c. 100 d. 90

Answer: b

12. If a:b = 3:5 and b:c = 7:8 then a:c will be

a. 21:40 b. 40:21 c. 22:42 d. 42:22

Answer: a

13. Which of the following ratios is greatest?

a. 7:15 b. 15:23 c. 17:25 d. 21:29

Answer: d

14. If 2x + 3y – 5z = 0 and -3x + 2y + 7z = 0 then the ratio x:y:z is equal to

a. 31: 1: 13 b. 1: 13: 31 c. 2:3:5 d. 13:7:5

Answer: a

15. Golden ratio 1:1.6 forms a proportion with x:8 then the value of x is

a. 5 b. 3 c. 2 d. 1

Answer: a

16. If a/10 = b/15 = c/20 then a:b:c is

a. 1:2:3 b. 2:3:4 c. 3:4:5 d. 4:5:6

Answer: b

17. Two numbers are in the ratio 3:5. If 9 be subtracted from each, then they are in the ratio 12:23. Find the second number.

a. 52 b. 53 c. 54 d. 55

Answer: d

18. Sum of squares of three positive numbers is 608 and they are in the ratio 2:3:5. Then, find the numbers.

a. 6, 9, 15 b. 8, 12, 20 c. 10, 15, 25 d. 14, 21, 35

Answer: b 4.

19. In a mixture of 60litres, the ratio of milk and water is 2:1. If this ratio is to be 1:2, then what is the quantity of water to be further added?

a. 20 litres b. 30 litres c. 50 litres d. 60 litres

Answer: d

20. 20 litres of a mixture contains milk and water in the ratio 5:3. If 4 litres of this mixture are replaced by 4litres of milk, the ratio of milk to water in the new mixture will become

a. 2:1 b. 7:3 c. 8:3 d. 4:3

Answer: b

21. Three partners shared the profit in a business in the ratio 5:7:8. They had partnered for 14months, 8months and 7months respectively. What was the ratio of their investments?
a. 5:7:8 b. 28:49:64 c. 38:28:21 d. 20:35:64

Answer: d

22. The monthly income of two persons are in the ratio 4:7 and their monthly expenditure are in the ratio 5:9. If each saves Rs.75 per month, then their monthly income is

a. Rs.300, Rs.400 b. Rs.400, Rs.500 c. Rs.1200, Rs.2100 d. Rs.1400, Rs.2600

Answer: c

23. Salaries of A, B and C are in the ratio 1:2:3. Salary of B and C together is Rs.3000. By what percent is salary of C more than that of A?

a. 50 b. 100 c. 200 d. 300

Answer: c

24. Rs.1870 are divided among A, B, C such that A gets 2/3 of what B gets and B gets ¼ of what C gets. Then B"s share is

a. Rs.210 b. Rs240 c. Rs.330 D. Rs.360

Answer: c

25. Gold is 19 times as heavy as water and copper is 9 times as heavy as water. In what ratio should these be mixed to get an alloy 15 times as heavy as water?

a. 1:1 b. 2:3 c. 1:2 d. 3:2

Answer: d

26. Which one of the following is the smallest ratio? 7:13, 17:25, 7:15, 15:23 a. 7:13 b. 17:25 c. 7:15 d. 15:23

Answer: c

27. If 30% of A = 0.25 of B = 1/5 of C, then find the ratio A:B:C. a. 15:12:10 b. 12:15:10 c. 10:12:15 d. 10:15:12

Answer: c

28. What is the third proportional to 0.34 and 0.50? a. 0.74 b. 0.75 c. 0.76 d. 0.77

Answer: a

29. The sub triplicate ratio of 64:729 is a. 8:27 b. 4:9 c. 27:8 d. 9:4

Answer: b

30. If 0.75:x = 5:8 then x is

a. 1.12 b 1.20 c. 1.25 d. 1.30

Answer: b

31. An amount of Rs.9000 is to be divided among A,B and C in the proportion of 2:3:5. Then the amount C gets more than that of A is

a. Rs.2000 b. Rs.3000 c. Rs.2500 d. Rs.2700

Answer: d

32. A mixture contains alcohol and water in the ratio 4:3. If 7 litres of water is added to the mixture the ratio of alcohol and water becomes 3:4 then the quantity of alcohol in the mixture is

a. 15 b. 13 c. 14 d. 12

Answer: d

33. A mixture contains alcohol and water in the ratio 4:3. If 5 litres of water is added to the mixture, the ratio becomes 4:5. Find the quantity of alcohol in the given mixture.

a. 8 litres b. 10 litres c. 12 litres d. none of these

Answer: b

34. If the ratio of the ages of son and father in 2014 and 2022 are 1:4 and 3:8 respectively, then the sum of the ages of son and father in 2010 is

a. 42 b. 43 c. 50 d. 45

Answer: a

35. The boys and girls are in the ratio 3:2. If 10% of the boys and 25% of the girls are brilliant, the percentage of students not brilliant is

a. 80% b. 84% c. 72% d. 60% Answer: b

36. At an election involving two candidates, 68votes are invalid. The winning candidate secures 52% and wins by 98 votes. The total number of votes is

a. 2382 b. 2450 c. 2518 d. 2550

Answer: c

37. A bag contains 50p, 25p and 10p coins in the ratio 5:9:4 amounting to Rs.206. Find the number of coins of each type in that order.

a. 200, 360, 160 b. 360, 160, 200 c. 160, 200, 360 d. 100, 210, 320

Answer: a

38. A bag contains coins of Rs.5, Rs.2 and Rs.1 in the ratio 3:7:4 amounting to Rs.1980. Find the number of coins of each type.

a. 180, 420, 240 b. 120, 180, 240 c. 420, 240, 180 d. 240, 180, 360

Answer: a

39. Salaries of Ravish and Sumita are in the ratio 2:3. If the salary of each is increased by Rs.4000, the new ratio becomes 40:57. What is Sumita"s present salary?

a. Rs.32,000 b. Rs.34,000 c. Rs.38,000 d. Rs.40,000

Answer: c

40. The ratio of the prices of two cows was 23:16. Two years later the price of the first cow rises by Rs.477 and that of the second by 10% and the ratio of their prices became 20:11. Find the original prices

a. Rs.1219 , Rs.848 b. Rs.1218, Rs.848 c. Rs.1210, Rs.850 d. Rs.1219, Rs.840

Answer: a

41. A horse and two cows together cost Rs.680. If a horse cost Rs.80 more than a cow then the ratio of cost of horse and cow is

a. 7:5 b. 5:7 c. 8:9 d. 9:8

Answer: a

42. An alloy contains copper and zinc in the ratio 5:4 and another alloy contains copper and tin in the ratio 8:5. If equal amount of both the alloys are melted together, find the weight of tin in the resulting alloy per Kg.

a. 192.3 b. 173.8 c. 186.5 d. 187.8

Answer: a

43. In a factory, the ratio of male workers to female workers was 5:3. If the number of female workers is less by 40, what was the total number of workers in the factory?

a. 100 b. 320 c. 160 d. 180

Answer: c

44. In a box of 240 machine parts 15% were defective and in the 2nd box of 200 machine parts 4% were defective. In the 2boxes combined, find the percentage of defective items.

a. 10% b. 12% c. 11% d. 9%

Answer: a

45. A, B, C play cricket. The runs scored by A and B, B and C are in the same ratio 3:2. If A, B, C together scored 342 runs, then the runs scored by A, B, C respectively are

a. 162, 108, 72 b. 192, 90, 60 c. 162, 72, 108 d. 160, 108, 74
Answer: a

46. DCBA have a certain sum of money each in the ratio 3:3:5:7 respectively. Suppose D gives 10% of what he has to C and B

gives 10% of what he has to A. Then find the new ratio of DCBA.

a. 9:11:15:25 b. 11:12:10:14 c. 10:10:12:13 d. 9:12:13:14

Answer: a

47. Divide Rs.2600 among A,B,C in the ratio ½: 1/3: ¼

a. Rs.1200, Rs.600, Rs.800

b. Rs.800, Rs.1200, Rs.600

c. Rs.600, Rs.800, Rs.1200

d. Rs.1200, Rs.800, Rs.600

Answer: d

48. The square ratio of 3:4 is

a. 3:2 b. 4:3 c. 9:16 d. None of these

Answer: c

49. The cube root (sub triplicate) ratio of 8:27 is

a. 27:8 b. 24:81 c. 2:3 d. none of these

Answer: c

50. If A:B = 1/3:4/9 , B:C = 5/6:7/12, C:D = 2/7:5/14 then A:B:C:D is

a. 40:28:35:30 b. 30:40:28:35 c. 28:30:40:35 d. 35:30:28:40

Answer: b

51. If A:B = 2:3 and B:C = 4:5 then C:A is equal to a. 15:8 b. 12:10 c. 8:5 d. 8:15 Answer: a 23. If x:y = 5:7, 7x – 3y/14x + 5y = ?

a. 2/15 b. 1/7 c. 7/3 d. 5/7

Answer: a

52. A:B = 5:8; B:C = 24:30 then A:B:C

a. 5:24:30 b. 15:24:30 c. 8:24:30 d. 5:8:30

Answer: b

53. If 0.35:x :: 100:0.2 than x is

a. 7 b. 0.7 c. 0.007 d. 0.0007

Answer: d

54. If (3x + 2y): (3x – 2y) = 5:2. Then x:y is

a. 5:2 b. 14:9 c. 9:14 d. 2:5

Answer: b

55. Which is largest in 28%, 2.8%, 2/9 and 0.25?

a. 28% b. 2.8% c. 2/9 d. 0.25

Answer: a