MBA PIONEER 2024

QUANTITATIVE APTITUDE

DPP: 3

Ratio & Proportion 1

- Q1/ A sum of money is to be distributed among A, B and C in the ratio of 2: 4: 9. If C gets Rs 1400 more than A, then what is the share of B?
 - (A) Rs 540

(B) Rs 750

(C) Rs 640

(D) Rs 800

Three numbers are in the ratio 8: 7: 5 respectively and their sum is 900. When largest number is decreased by 80 and other two numbers are increased by 35 each, then the respective ratio changes to:

(A) 9:10:7

(B) 24: 28: 21

(C) 28: 35: 26

(D) 14: 15: 13

Q3 The ratio of the monthly income of P and Q is 6: 7 and that of their monthly expenditure is 4: 5. If the income of P is twice the expenditure of Q, then what is the ratio between the savings of P and Q?

(A) 10: 9

(B) 9:10

(C) 3: 7

(D) 6:5

Q4/ Sunil divided Rs 6200 among A, B and C. The ratio of the amount received by A and C is 3:5 and the ratio of the amount received by A and B is 2:5. What is the share of A?

(A) 1800

(B) 1200

(C) 1450

(D) 1600

Ratio of total chocolates with A to B is 3: 2 and the ratio of chocolates with B to C is 3: 5. If C has 2 chocolates more than A, then find the total chocolates with all three students.

Q6 The table given below shows the price of 50 shirts.

Price (in Rs.)	Number of shirts
Less than 150	10
Less than 200	24
Less than 250	30
Less than 300	40
Less than 350	44
Less than 400	50

The ratio of the number of shirts with price less than Rs. 250 to the number of shirts with price Rs. 300 or more is:

(A) 2: 1

(B) 3:1

(C) 1: 3

(D) 1: 2

Which of the following is/are correct?

1: Ratio of the volume of two cylinders is equal to the ratio of square of their respective radius.

II: Ratio of the curved surface area of two cylinders is equal to the ratio of product of their respective radius and height.

Note:

Volume of cylinder = πr^2 h

Curved surface area of cylinder = $2\pi rh$

(A) Only I

- (B) Only II
- (C) Neither I nor II
- (D) Both I and II
- **Q8** If (a + b) : (b + c) : (c + a) = 4 : 6 : 5 and a + b + c =

Consider the following statements:

i.a > b

ii. c - b = 4

iii. c - b = c - a

Which of the following is/are true?

(A) Only i

(B) Only ii

(C) i., ii. and iii

(D) Neither i. nor ii

Q9 , A number is divided into 3 parts. 6 times the third part is equal to the 8 times the second part, which is equal to 5 times the first part. In what ratio is the number divided?

(A) 5:8:6

(B) 24:15:20

(C) 6:8:5

(D) 20:16:24

Mohan divided some amount among his wife, son and daughter such that the amount received by his wife and his son in the ratio 5: 7 and his son and his daughter in the ratio 2: 5. If his daughter received 42000 more than son, then what amount Mohan divided among them?

(A) Rs 218000

(B) Rs 118000

(C) Rs 140000

(D) Rs 211000

Rs. 1110 is divided among three brothers Anku, Banku and Chanku such that 4 times Anku's share is equal to 5 times Banku's share which in turn is equal to 6 times Chanku's share. What is the worth of the share of Banku?

(A) 370

(B) 360

(C) 350

(D) 340

Rs. 3,960 is divided among Aman, Susheel and Raman such that half of Aman's part, one-third of Susheel's part and one-sixth of Raman's part are equal. What is the ratio of Aman's share to the difference of Susheel and Raman's share?

(A) 2: 9

(B) 2: 5

(C) 2: 3

(D) 4: 5

A south Indian dish is made using two ingredients, Jaggery and Orange peels in the proportion 2: 5. The price of the jaggery is three times the price of the orange peels. The overall cost of production of a bottle of the dish is Rs. 520 including Rs.80 as labour charges. What is the value of jaggery used in a bottle of the

(A) Rs 440

dish?

(B) Rs 200

(C) Rs 240

(D) Cannot be determined

Q14 Ratio of total students (boys and girls) in class A to class B is 9: 10 and ratio of boys in class A to class B is 10: 13. If ratio of boys to girls in class A is 5: 4, then find the ratio of total boys in class A to total girls in class B.

(A) 8:5

(B) 10:7

(C) 12: 7

(D) 11: 6

Q15 Age of A after 8 years will be equal to the present age of B. The sum of age of A after 18 years and the age of B after 10 years will be 100 years. Find the respective ratio of the ages of A and Bafter 4 years.

(A) 7:11

(B) 11:13

(C)7:9

(D) 9:11

Q16 There is a rectangular field, whose length is double of its breadth. Two square fields of maximum and equal areas are made in that rectangular field such that no area of the rectangular field is left after that. Find the ratio of perimeter of the rectangular field to that of one square field?

(A) 4:3

(C) 2:1

Q17 A consultancy company, at the time of inflation, reduced the number of employees in the ratio



- 18: 7, and the average salary per employee was increased in the ratio 8:15. By doing so, the company saved Rs. 97,500. What is the current expenditure (in Rs.) of the company on salary?
- Q18 The monthly salaries of Karan and Arjun are in the ratio 7:8. If both of them get a salary increment of Rs. 1500, the new ratio becomes 52 : 59. What is the new monthly salary of Arjun?
- Q19 Jitu's current age is fourteen years less than 1.8 times that of Chinu's. 30 years ago, Chinu's age was three year more than $\frac{2}{5}$ th of Jitu's age. What is Jitu's present age in years?
- **Q20** Monthly income of Ajay and Vijay are in the ratio 7: 8 respectively and Vijay saves Rs.25920 every month and spends the remaining 46% amount. If monthly savings and expenditure of Ajay are in the ratio 3: 1 respectively, then find Ajay's monthly expenditure.
- Q21 Some amount of money was given to Bhima, Nakul and Arjun by their mother such that the ratio of money received by Bhima to money received by Nakul and Arjun together is 3: 8 and the ratio of money received by Bhima to that received by Arjun is 6: 7. Find the ratio of money received by Nakul to money received by Bhima.

(A) 3:2 (B) 2:1 (C) 1:5 (D) 4:3

Q22 Matthew sells a laptop to David for Rs. 73000 which David further sells to Jennifer at a loss of 15%. If Matthew originally buys the laptop at double the price which Jennifer had paid David, find the ratio of the losses of Matthew and David.

(A) 4:1 (B) 7:6 (C) 14:3 (D) 10:7 **Q23** The sum of the present age of Chandan and his wife is 60 years. After 4 years this ratio will be 9: 8. When they were married, the sum of their ages was 50 years, then find the ratio of their ages at the time of their marriage.

> (A) 7:6 (B) 27:23

(C) 9:8 (D) None of these

Q24 Rs. 10900 has been divided among x, y and zsuch that if their shares are reduced by Rs. 30, Rs. 20 and Rs. 50, the balance is in the ratio of 4: 3: 5. What is y's share?

> (A) 3,180 (B) 2,720

(C) 3,253.33 (D) 3,200 Q25

Three numbers a, b and c are in continued proportion. If 3 is subtracted from each number, the ratio of these numbers is 3:5:8. Find the value of (a + b + c)?

/A) 57 (B) 40 (C) 60 (D) 20

Q26 Ramesh divided his amount among three Sons Manjesh, Kamlesh and Sudesh such that the ratio of the amount received by Manjesh and Kamlesh is 3:5 and the ratio of the amount received by Kamlesh and Sudesh is 3:4. If the amount received by Sudesh is Rs 8800, then find the total amount of Ramesh?

(A) Rs 18240 (B) Rs 19360 (C) Rs 20460 (D) Rs 22600

Q27 Suppose P, Q, R, S and T are five companies. The profits made by P, Q and R are in the ratio 5 : 5.5 : 6 while the profits made by Q, S and T are in the ratio 11: 18: 20. If R has made a profit of Rs. 10 crore more than P, then find the profit made by all the companies is:

> (A) Rs. 249 crore (B) Rs. 284 crore (C) Rs. 240 crore (D) Rs. 355 crore

Q28 Kumar planned a weekend trip with his family to Lonavala. They planned various activities during the trip. They went there, and had lots of fun. One night they sat all together and started discussing their salaries, Kumar stated "onethird of my salary, two-fifth of my brother's salary, half of my wife's salary and three-fourth of my son's salary are the same". If the total family income is Rs. 6,36,000, what are the salaries earned by Kumar and his son together?

(A) Rs. 1,40,000

(B) Rs. 4,76,000

(C) Rs. 3,12,000

(D) Rs. 2,84,000

Q29 If the ratio of the population of town Timbuktoo to that of Gimbuktoo is 7:9. Total number of male populations of Timbuktoo is equal to female population of Gimbuktoo and the ratio of the female population of Timbuktoo to the male population of Gimbuktoo be 2:3, then

what is the ratio of the male population of Timbuktoo to the male population of Gimbuktoo?

(A) 1:3

(B) 1:2

(C) 1:4

(D) Cannot be determined

Q30 Rs. 4,500 was distributed among Amit, Bhanu and Chintu. From the amount that they received Amit, Bhanu and Chintu spent Rs. 110, Rs. 120 and Rs. 140 respectively. The amounts then left with Amit and Bhanu were in the ratio 3:4 and with Bhanu and Chintu were in the ratio 5 : 6. What amount (in Rs.) did Bhanu receive?

(A) 1520

(B) 1400

(C) 1600

(D) 1420

Answer Key

Q1	(D)
Q2	(C)
Q3	(B)
Q4	(B)
Q5	50
Q6	(B)
Q7	(B)
Q8	(B)
Q9	(B)

(B)

(B)

(C)

(C)

(B)

(D)

Q10

Q11

Q12

Q13

Q14

Q15

Q16 (B) Q17 262500 Q18 29500 Q19 85 Q20 10500 Q21 (A) Q22 (C) Q23 (B) Q24 (B) Q25 (A) Q26 (B) Q27 (D) (C) **Q28** Q29 (B)

Q30

(A)

Hints & Solutions

Q1 Text Solution:

A:B:C=2:4:9

Let the share of A, B and C be 2k, 4k and 9k respectively.

9k - 2k =1400

7k = 1400

k = 200

Share of B = $4k = 4 \times 200 = 800$

Q2 Text Solution:

Let the numbers are 8a, 7a and 5a respectively.

Then.

8a+7a+5a=900

a = 45

Then. $8a = 8 \times 45 = 360$

 $7a = 7 \times 45 = 315$

 $5a = 5 \times 45 = 225$

Therefore, new ratio = (360-80): (315+35): (225)

+35) = 28: 35: 26

Ans. c

Q3 Text Solution:

Income = Expenditure + saving

Let the monthly income of P and Q be '6a' and '7a' And expenditure be '4b' and '5b' It is given income of P is twice the expenditure of Q Therefore, $6a = 2 \times 5b$

 $\frac{a}{b} = \frac{5}{3}$, therefore a = 5y and b = 3y

Ratio between the savings of P and Q = $\frac{6a-4b}{7b-5b}$

Therefore,

$$\frac{6a-4b}{7a-5b} = \frac{6\times 5y-4\times 3y}{7\times 5y-5\times 3y} = \frac{30y-12y}{35y-15y} = \frac{18y}{20y} = \frac{9}{10}.$$

Q4 Text Solution:

A: C = 3:5

C: $A = 5: 3 \times 2$

C: A = 10:6

 $A:B=2:5\times 3$

A: B = 6:15

C: A: B=10:6:15

Share of A = $\frac{6}{31}$ × 6200 = 1200.

Q5 Text Solution:

A: B = 3:2

B: C = 3:5

A:B:C=9:6:10

Let the chocolates with A, B, and C are '9k', '6k' and '10k' respectively.

Now.

10k - 9k = 2

or, k = 2

Total chocolates with all three students = 9k + $6k + 10k = 25k = 25 \times 2 = 50$.

Q6 Text Solution:

The number of shirts with price less than Rs. 250

The number of shirts with price Rs. 300 or more = 50 - 40 = 10

Required ratio = 30:10 = 3:1

Ans. b

Text Solution:

Let radius of two cylinders are r_1 and r_2 respectively while their heights are h₁ and h₂ respectively.

Ratio of volume of both cylinders = $\pi r_1^2 h_1 \pi r_2^2 h_2$ Ratio of curved surface area of both cylinders = $2\pi r_1 h_1 : 2\pi r_2 h_2$

We can clearly see that "Ratio of the volume of two cylinders is equal to the ratio of product of their height and square of radius." Also "Ratio of the curved surface area of two cylinders is equal to the ratio of product of their respective radius and height".

Hence, only II is correct.

Ans. b

Q8 Text Solution:

We have:

$$(a + b) : (b + c) : (c + a) = 4k : 6k : 5k$$

$$\Rightarrow$$
a + b + b + c + c + a = 4k + 6k + 5k

$$\Rightarrow$$
a + b + c = $\frac{15k}{2}$ (i)

Given:
$$a + b + c = 30 \dots$$
 (ii)

Equating equations (i) and (ii), we get:

$$\frac{15k}{2} = 30$$

$$\Rightarrow k = 4$$

$$\therefore$$
 a = 30 - (b + c) = 30 - 24 = 6

$$c = 30 - (a + b) = 30 - 16 = 14$$
 and

$$b = 30 - (a + c) = 30 - 20 = 10$$

i.
$$a > b \Rightarrow 6 > 10$$
, false.

ii.
$$c - b = 4 \Rightarrow 14 - 10 = 4$$
, true.

iii.
$$c - b = c - a$$

$$\Rightarrow$$
 c - a = 14 - 6 = 8, false.

Thus, option B) is correct.

Q9 Text Solution:

Let the 3 parts into which the number is divided

be a, b and c. It is given that

$$5a = 8b = 6c$$

Let each value be equal to x.

So,
$$5a = x => a = \frac{x}{5}$$

$$8b = x => b = \frac{x}{8}$$

$$6c = c = c = \frac{x}{6}$$

Hence, a : b : c =
$$\frac{x}{5}$$
 : $\frac{x}{8}$: $\frac{x}{6}$

LCM of a, b and c will be 120.

a:b:c=
$$(\frac{x}{5}:\frac{x}{8}:\frac{x}{6}) \times 120$$

= 24 : 15 : 20 (where 120 is the LCM of 5, 8 and 6)

Hence, a, b and c are in the ratio of 24:15:20.

Q10 Text Solution:

Wife: Son = 5:7

Son: Daughter =2:5

Wife: Son: Daughter = 10:14:35

Let his daughter received = 35x and his Son

received 14x

Difference = 35x - 14x = 21x,

Total amount = 59x = Rs 1,18,000

Q11 Text Solution:

$$4A = 5B = 6C$$

Dividing by LCM of 4,5, 6 i.e., 60 we get

$$\frac{A}{15} = \frac{B}{12} = \frac{C}{10}$$

Thus, A:B:C = 15:12:10.

So, B =
$$\frac{12}{(15+12+10)}$$
 × 1110 = 360

Q12 Text Solution:

Let the share of Aman, Susheel, and Raman be

A, B and C.

Given
$$\frac{A}{2} = \frac{B}{3} = \frac{C}{6} = k(say)$$

Then,
$$A = 2k$$
, $B = 3k$ and $C = 6k$

$$C - B = 3k$$

A:
$$(C - B) = 2k : 3k = 2 : 3$$

Q13 Text Solution:

Let the amount of Jaggery and Orange peel used be 2x and 5x.

Let the price of orange peels be p.

Price of jaggery = 3p

Total Cost =
$$(2x)(3p) + (5x)(p) = 520 - 80$$

$$6xp + 5xp = 11xp = 440$$

$$xp = 40$$

Thus, value of Jaggery = 6xp = 240

Q14 Text Solution:

Let total students in class A and B is '9x' and

'10x' respectively.

Boys in class A = $9x \times (\frac{5}{9}) = 5x$

Girls in class A = 9x - 5x = 4x

Boys in class B = $5x \times (\frac{13}{10}) = 6.5x$

Girls in class B = 10x - 6.5x = 3.5xRequired ratio = 5x : 3.5x

= 10:7

Ans. b

Q15 Text Solution:

Let the present age of A = A years and present age of B = B years.

According to the question,

A + 8 = B

B - A = 8 ... (1)

According to the question,

A + 18 + B + 10 = 100

A + B = 72 ... (2)

After solving (1) and (2),

2B = 80

B = 40 years

And A = 32 years.

Now required ratio = (32 + 4): (40 + 4) = 36: 44 =9:11.

Q16 Text Solution:

Let the breadth of the rectangular field = x

So, the length of the rectangular field = 2x

And side of each square field = x

Perimeter of the rectangular field = $2 \times (2x + x) =$

6х

Perimeter of the square field = 4x

Required ratio = 6x: 4x = 3: 2

Q17 Text Solution:

Let the initial number of employee be = 18x

And final of employee = 7x

Total initial salary = $18x \times 8 = 144x$

And total final salary = $7 \times 15x = 105x$

According to question,

144x - 105x = 97500

 \Rightarrow 39x = 97500

$$\Rightarrow$$
 x = 2,500

 \therefore The current expenditure of company = 105 × 2500 = Rs. 262500.

Q18 Text Solution:

Let the unit of ratio be x

Karan's salary = 7x

Arjun's salary = 8x

After increment,

$$\Rightarrow \frac{(7x+1500)}{(8x+1500)} = \frac{52}{59}$$

$$\Rightarrow$$
 59(7x + 1500) = 52(8x + 1500)

$$\Rightarrow$$
 413x + 88500 = 416x + 78000

$$\Rightarrow$$
 x = Rs. 3500

 \Rightarrow Arjun's new month salary = 8x + 1500 = 8 × 3500 + 1500

- ⇒ Arjun's new month salary = Rs. 29500
- : The new monthly salary of Arjun is Rs. 29500.

Q19 Text Solution:

Let the current age of Jitu be x years and of Chinu be y years.

$$\Rightarrow$$
 Given, x = 1.8y - 14 ----(1)

30 years ago,

$$\Rightarrow$$
 y - 30 = $\frac{2}{5}$ (x - 30) + 3 ----(2)

Put value of equation (1) in (2)

$$\Rightarrow$$
 y - 30 = 0.4 (1.8y - 44) +3

$$\Rightarrow$$
 y = 55 years

On putting this value in equation 1 we get,

$$x = 1.8 \times 55 - 14$$

$$\Rightarrow$$
 x = 85 years

: Jitu's present age is 85 years.

Q20 Text Solution:

Vijay's monthly savings = 25920

Vijay's monthly income = 25920 $\times \frac{100}{(100-46)}$ =

48000

Ajay's monthly income = $48000 \times \frac{7}{8} = 42000$

Therefore, Ajay's monthly expenditure = 42000 ×

Q21 Text Solution:

Let Money received by Nakul = Rs. xLet money received by Bhima = Rs. 6a and money received by Arjun = Rs. 7aAccording to the question,

$$\frac{6a}{x+7a} = \frac{3}{8}$$

$$\Rightarrow 6a \times \frac{8}{3} = x+7a$$

$$\Rightarrow 16a = x+7a$$

$$\Rightarrow 9a = x$$

So, ratio of money received by Nakul to money received by Bhima = 9a:6a=3:2Ans. a

Q22 Text Solution:

S.P. for Matthew = C.P. for David = Rs. 73000 S.P. for David = C.P. for Jennifer = $0.85 \times 73000 =$ Rs. 62050

Loss for David = 73000 - 62050 = Rs. 10950 Thus, C.P. for Matthew = $62050 \times 2 = Rs$. 124100 Loss for Matthew = 124100-73000 = Rs. 51100Ratio = 51100: 10950 = 14:3

Hence, option 3.

Ans. c

Q23 Text Solution:

Let x, y be the present age of Chandan and his wife.

According to the question:

$$x + y = 60 \dots (i)$$

$$\frac{x+4}{y+4} = \frac{9}{8}$$

$$\Rightarrow 8x + 32 = 9y + 36$$

$$\Rightarrow 8x - 9y = 4 \dots (ii)$$

Solving equations (i) and (ii), we get:

$$x = 32$$
 and $y = 28$

:. The present age of Chandan = 32 years and the present age of his wife = 28 years

Suppose they have married m years ago.

$$(32 - m) + (28 - m) = 50$$

$$\Rightarrow$$
 2m = 10

They were married the ratio

$$\frac{32-5}{28-5} = \frac{27}{23} = 27:23$$

Q24 Text Solution:

Given, x + y + z = 10900 and

$$x - 30$$
: $y - 20$: $z - 50 = 4$: 3: 5

So, in total 100 is reduced.

So, the balance, 10800 should be divided in the ratio 4: 3: 5

Y Share =
$$\frac{3}{12}$$
 ×10800 + 20 = 2720

Q25 Text Solution:

a, b and c are in proportion.

$$\frac{a}{b} = \frac{b}{c}$$

3 is subtracted from each number, then the ratio is 3:5:8.

$$(a - 3)$$
: $(b - 3)$: $(c - 3)$ = 3:5:8

$$a - 3 = 3k \text{ or, } a = 3k + 3$$

$$b - 3 = 5k \text{ or, } b = 5k + 3$$

$$c - 3 = 8k \text{ or, } c = 8k + 3$$

Put a, b and c in equation (1)

$$(5k + 3)^2 = (3k + 3)(8k + 3)$$

$$25k^2 + 30k + 9 = 24k^2 + 33k + 9$$

$$k^2 - 3k = 0$$

$$k(k-3)=0$$

Either k = 0 or 3 [but k cannot be 0]

So,
$$k = 3$$

$$a = 3 \times 3 + 3 = 12$$

$$b = 5 \times 3 + 3 = 18$$

$$c = 8 \times 3 + 3 = 27$$

The sum of a + b + c is 12 + 18 + 27 = 57.

Q26 Text Solution:

Manjesh: Kamlesh = 3: 5 Kamlesh: Sudesh = 3: 4

Manjesh: Kamlesh: Sudesh = 9 : 15 : 20 Total amount = $\frac{44}{20}$ × 8800 = 19360

Q27 Text Solution:

Given:

P:Q:R=5:5.5:6......(i)

and Q:S:T = 11:18:20 (ii)

Multiplying (i) by 2, we get:

P:Q:R=10:11:12 and Q:S:T=11:18:20

.: P:Q:R:S:T = 10:11:12:18:20

Let the profit made by R be 12x and profit made by P be 10x.

According to question:

 $12x - 10x = of Rs. 10 crore \Rightarrow x = Rs. 5 crore$

 \therefore Total profit = 5(10 + 11 + 12 + 18 + 20) = Rs. 355 crore

Thus, option (D) is correct.

Q28 Text Solution:

Let the salaries of Kumar, his brother, his wife and his son be denoted as Rs K, Rs B, Rs W and Rs S respectively

$$\frac{K}{3} = \frac{2B}{5} = \frac{W}{2} = \frac{3S}{4} = M$$

K:B:W:S = 3M: $\frac{5M}{2}$:2M: $\frac{4M}{3}$

=> K : B : W : S = 18M : 15M : 12M : 8M

Since, Total Family income = 636000

∴ 18M + 15M + 12M + 8M= 636000

∴ M = 12000

: Kumar's salary + his son's salary

= 18M + 8M = 26M = 26(12000) = Rs. 3,12,000

Hence, the required salaries earned by Kumar and his son together is Rs. 3,12,000.

Q29 Text Solution:

Let male population of Timbuktoo be m_1 and male population of Gimbuktoo be m_2 .

Let the female population of Timbuktoo be f_1 and female population of Gimbuktoo be f_2 .

So,
$$(m_1 + f_1)$$
: $(m_2 + f_2) = 7:9$

$$m_1 = f_2$$

$$f_1$$
: $m_2 = 2:3$

$$=> 3f_1 = 2m_2$$

So
$$(m_1 + \frac{2}{3}m_2)$$
: $(m_2 + m_1) = 7:9$

$$9m_1 + 6m_2 = 7m_2 + 7m_1$$

$$m_1:m_2 = 1: 2$$

Q30 Text Solution:

Let's suppose that after spending the money Amit, Bhanu and Chintu were left with the amount (in Rs.) A, B and C respectively.

Now,
$$A : B = 3 : 4$$
 and $B : C = 5 : 6$

If
$$A = 15x$$
, then $B = 20x$ and $C = 24x$.

$$A + B + C = 59x = 4500 - 110 - 120 - 140 = 4130$$

Hence,
$$x = 70$$

Amount received by Bhanu = 20x + 120