

Sampurna Jan 2026

Quantitative Aptitude

DPP: 1

Ratio and Proportion, Indices, Logarithm

- Q1** The ratio of the quantities is 5 : 7. If the consequent of its inverse ratio is 5, the antecedent is
(A) 5 (B) $\sqrt{7}$
(C) 7 (D) None of these
- Q2** If $a : b = 3 : 4$, the value of $2a + 3b : 3a + 4b$ is
(A) 54 : 25 (B) 8 : 25
(C) 17 : 24 (D) 18 : 25
- Q3** The duplicate ratio of 3 : 4 is
(A) $\sqrt{3} : 2$ (B) 4 : 3
(C) 9 : 16 (D) None of these
- Q4** The sub-duplicate ratio of 25 : 36 is
(A) 6 : 5 (B) 36 : 25
(C) 50 : 72 (D) 5 : 6
- Q5** The sub-triplicate ratio of 8 : 27 is
(A) 27 : 8 (B) 24 : 81
(C) 2 : 3 (D) None of these
- Q6** The ratio compounded of 4 : 9 and the duplicate ratio of 3 : 4 is
(A) 1 : 4
(B) 1 : 3
(C) 3 : 1
(D) None of these
- Q7** $\frac{3x-2}{5x+6}$ is the duplicate ratio of $\frac{2}{3}$, then find the value of x .
(A) 6 (B) 2
(C) 5 (D) 9
- Q8** If $x : y = 3 : 4$, the value of $x^2y + xy^2 : x^3 + y^3$ is
(A) 13 : 12
(B) 12 : 13
(C) 21 : 31
(D) None of these
- Q9** The ratio compounded of 4 : 9, the duplicate ratio of 3 : 4, the triplicate ratio of 2 : 3 and 9 : 7 is
(A) 2 : 7
(B) 7 : 2
(C) 2 : 21
(D) none of these
- Q10** The ratio compounded of duplicate ratio of 4 : 5, triplicate ratio of 1 : 3, sub-duplicate ratio of 81 : 256 and sub-triplicate ratio of 125 : 512 is
(A) 4 : 512
(B) 3 : 32
(C) 1 : 12
(D) None of these
- Q11** The monthly income of A and B are in the ratio 4 : 5 and their monthly expenditures are in the ratio 5 : 7. If each saves ₹150 per month, find their monthly incomes.
(A) (₹40, ₹50) (B) (₹50, ₹40)
(C) (₹400, ₹500) (D) None of these
- Q12** Four persons A, B, C, D wish to share a sum in the ratio of 5 : 2 : 4 : 3. If D gets ₹1000 less than C, then the share of B ?
(A) ₹2000
(B) ₹1200
(C) ₹2400
(D) ₹3000
- Q13** If $\frac{p}{q} = \frac{2}{3}$ then the value of $\frac{2p+q}{2p-q}$ is
(A) $\frac{1}{7}$ (B) $-\frac{1}{7}$
(C) 1 (D) 7
- Q14** The ratio compounded of 4 : 5 and sub-duplicate of 4 : a is 8 : 15. Then value of "a" is
(A) 9 (B) 6



(C) 4

(D) None of these

Q15 The price of scooter and moped are in the ratio 7 : 9. The price of a moped is ₹1600 more than

that of a scooter. Then the price of moped is:

(A) ₹7200

(B) ₹5600

(C) ₹800

(D) ₹700



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Answer Key

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

Q9 (C)
Q10 (D)
Q11 (C)
Q12 (A)
Q13 (D)
Q14 (A)
Q15 (A)



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Hints & Solutions

Q1 Text Solution:

For the ratio $a : b$, a is called antecedent and b is called consequent.

Given, ratio of two quantities = $5 : 7$

$\Rightarrow$ Inverse of the ratio = $7 : 5$

Let x be the antecedent of the ratio whose consequent is 5.

According to the question,

$$\frac{7}{5} = \frac{x}{5}$$

$$\Rightarrow x = \frac{7 \times 5}{5}$$

$$\Rightarrow x = 7$$

Therefore, the required antecedent is 7.

Hence, the correct option is (C) i.e., 7.

Q2 Text Solution:

Given, $a : b = 3 : 4$

Let $a = 3x$ and $b = 4x$

Substituting the values of ' a ' and ' b ' in $2a + 3b$:

$3a + 4b$, we get

$$\frac{2a+3b}{3a+4b} = \frac{2(3x) + 3(4x)}{3(3x) + 4(4x)}$$

$$= \frac{6x + 12x}{9x + 16x}$$

$$= \frac{18x}{25x}$$

$$= 18 : 25$$

Therefore, the correct option is (D) i.e., 18 : 25.

Q3 Text Solution:

We know that,

$a^2 : b^2$ is the duplicate ratio of $a : b$.

$\Rightarrow$ The duplicate ratio of $3 : 4$ is given by

$$3^2 : 4^2 = 9 : 16$$

Therefore, the duplicate ratio of $3 : 4$ is $9 : 16$.

Hence, the correct option is (C) i.e. $9 : 16$.

Q4 Text Solution:

We know that, the sub-duplicate ratio of $a : b$ is

$$\sqrt{a} : \sqrt{b}.$$

Thus, the sub-duplicate ratio of $25 : 36 =$

$$\sqrt{25} : \sqrt{36} = 5 : 6$$

Hence, the correct option is (D) i.e., $5 : 6$.

Q5 Text Solution:

We know that, the sub-triplicate ratio of $a : b$ is $\sqrt[3]{a} : \sqrt[3]{b}$.

Therefore, the sub-triplicate ratio of $8 : 27 =$

$$\sqrt[3]{8} : \sqrt[3]{27}$$

$$= 2 : 3$$

Hence, the correct option is (C) i.e., $2 : 3$.

Q6 Text Solution:

As we know, $a^2 : b^2$ is the duplicate ratio of $a : b$.

$\Rightarrow$ The duplicate ratio of $3 : 4 = 9 : 16$

Also, the ratio compounded of the two ratios $a : b$ and $c : d$ is $ac : bd$.

$\therefore$ The ratio compounded of $4 : 9$ and the duplicate ratio of $3 : 4$

i.e., the ratio compounded of $4 : 9$ and $9 : 16$

$$= 4(9) : 9(16)$$

$$= 4 : 16$$

$$= 1 : 4$$

Hence, the correct option is (A) i.e., $1 : 4$.

Q7 Text Solution:

Given: $\frac{3x-2}{5x+6}$ is the duplicate ratio of $\frac{2}{3}$

We know that, $a^2 : b^2$ is the duplicate ratio of $a : b$.

$$\Rightarrow \text{The duplicate ratio of } \frac{2}{3} = \frac{(2)^2}{(3)^2} = \frac{4}{9}$$

According to the given problem, we have

$$\frac{3x-2}{5x+6} = \frac{4}{9}$$

On cross multiplication, we get

$$9(3x-2) = 4(5x+6)$$

$$\Rightarrow 27x - 18 = 20x + 24$$

$$\Rightarrow 27x - 20x = 24 + 18$$

$$\Rightarrow 7x = 42$$

$$\Rightarrow x = 6$$

Therefore, the value of x is 6.

Hence, the correct option is (A).

Q8 Text Solution:

Given, $x : y = 3 : 4$

Let $x = 3a$ and $y = 4a$

On substituting the above values of x and y in the given expression, we get



$$x^2y + xy^2 : x^3 + y^3$$

$$= \frac{x^2y + xy^2}{x^3 + y^3}$$

$$= \frac{(3a)^2(4a) + (3a)(4a)^2}{(3a)^3 + (4a)^3}$$

$$= \frac{36a^3 + 48a^3}{27a^3 + 64a^3}$$

$$= \frac{84a^3}{91a^3}$$

$$= \frac{84}{91}$$

$$= \frac{12}{13}$$

$$\text{Thus, } x^2y + xy^2 : x^3 + y^3 = 12 : 13$$

Hence, the correct option is (B).

Q9 Text Solution:

Let us find the individual ratios first.

$$\text{Duplicate ratio of } 3 : 4 \text{ is } 3^2 : 4^2 = 9 : 16$$

$$\text{Triplicate ratio of } 2 : 3 \text{ is } 2^3 : 3^3 = 8 : 27$$

We know that, the ratio compounded of two ratios $a : b$ and $c : d$ is $ac : bd$.

Therefore, the compounded ratio of $4 : 9$, $9 : 16$, $8 : 27$ and $9 : 7$

$$= \frac{4 \times 9 \times 8 \times 9}{9 \times 16 \times 27 \times 7}$$

$$= \frac{2}{3 \times 7}$$

$$= \frac{2}{21}$$

$$= 2 : 21$$

Hence, the correct option is (C) i.e., $2 : 21$.

Q10 Text Solution:

Let us find the individual ratios first.

$$\text{Duplicate ratio of } 4 : 5 \text{ is } 4^2 : 5^2 = 16 : 25$$

$$\text{Triplicate ratio of } 1 : 3 \text{ is } 1^3 : 3^3 = 1 : 27$$

$$\text{Sub-duplicate ratio of } 81 : 256 \text{ is } = 9 : 16$$

$$\text{Sub-triplicate ratio of } 125 : 512 \text{ is } \sqrt[3]{125} : \sqrt[3]{512} = 5 : 8$$

We know that,

The ratio compounded of the two ratios $a : b$ and $c : d$ is $ac : bd$.

Therefore, the required compounded ratio

$$= \frac{16 \times 1 \times 9 \times 5}{25 \times 27 \times 16 \times 8}$$

$$= \frac{1}{5 \times 3 \times 8}$$

$$= \frac{1}{120}$$

$$= 1 : 120$$

Hence, the correct option is (D) i.e., none of these.

Q11 Text Solution:

Given: Ratio of monthly incomes of A and B = $4 : 5$

Ratio of their expenditures = $5 : 7$

Let the monthly income of A be $4x$ and that of B be $5x$

Now, if each saves ₹150 per month, then the expenditures of two persons are ₹ $(4x - 150)$ and ₹ $(5x - 150)$

According to the question,

$$\frac{4x-150}{5x-150} = \frac{5}{7}$$

$$\Rightarrow 7(4x - 150) = 5(5x - 150)$$

$$\Rightarrow 28x - 1050 = 25x - 750$$

$$\Rightarrow 3x = 300$$

$$\Rightarrow x = 100$$

Therefore, the monthly income of A = $4x = 4(100) = ₹400$

Monthly income of B = $5x = 5(100) = ₹500$

Hence, the correct option is (C).

Q12 Text Solution:

Given, Ratio of A, B, C and D = $5 : 2 : 4 : 3$

Let the share of A, B, C and D be $5x$, $2x$, $4x$ and $3x$ respectively.

Since, D gets ₹1000 less than C, thus

$$D = C - 1000$$

$$\Rightarrow 3x = 4x - 1000$$

$$\Rightarrow x = 1000$$

Therefore, the share of B = $2x = 2(1000) = 2000$

Hence, the correct option is (A).

Q13 Text Solution:

$$\text{Given, } \frac{p}{q} = \frac{2}{3}$$

$$\text{Let } p = 2x \text{ and } q = 3x$$

$$\text{Then, } \frac{2p+q}{2p-q}$$

$$\Rightarrow \frac{2(2x)+3x}{2(2x)-3x}$$

$$\Rightarrow \frac{4x+3x}{4x-3x}$$

$$\Rightarrow \frac{7x}{x}$$

$$\Rightarrow \frac{7}{1}$$

$$\Rightarrow 7$$

Q14 Text Solution:



We know, sub-duplicate of 4 : a is

$$\sqrt{4} : \sqrt{a} = 2 : \sqrt{a}$$

Since, ratio compounded of 4 : 5 and sub-duplicate of 4 : a = 8 : 15 i.e.,

$$\frac{4}{5} \times \frac{2}{\sqrt{a}} = \frac{8}{15}$$

$$\Rightarrow \frac{8}{5} = \frac{8\sqrt{a}}{15}$$

$$\Rightarrow \sqrt{a} = 3$$

$$\Rightarrow a = 3^2$$

$$\Rightarrow a = 9$$

Q15 Text Solution:

Given; Ratio of prices of scooter and moped = 7 : 9

Let the price of scooter be 7x and moped be 9x.

Since, the price of a moped is ₹1600 more than that of a scooter

$$\Rightarrow 9x - 7x = 1600$$

$$\Rightarrow 2x = 1600$$

$$\Rightarrow x = 800$$

Therefore, the price of moped is

$$9x = 9(800) = ₹7200.$$



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