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Math : Ratio & Proportion

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$a : b$

Antecedent ---- a

Consequent ----- b

$a : b :: c : d$

A & d --- extremes

B & c --- middle extremes

Inverse ratio (Reciprocal ratio) = $a : b$ — $b : a$

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Compound Ratio

Compound ratio of

$$a : b, c : d, e : f \text{ ---- } (ace : bdf)$$

$$\text{Duplicate ratio} = a : b \text{ ---- } a^2 : b^2$$

Triplicate ratio = $a : b$ ----- $a^3 : b^3$

↓

Sub duplicate ratio = $a : b$ —

Sub triplicate ratio = $a : b$

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Invertendo

If $a/b = c/d$

then $b/a = d/c$

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Q.1

i) $2 : 3 :: 45 : x$

ii) $3^2 : 15^3 :: 3 : x$

iii) $5 : 8 :: 10 : x$

Q.2

Find the first proportional to 8 , 4 is ?

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Q.3

The fourth proportional to 5, 8, 15 is

- | | |
|--------|--------|
| (a) 18 | (b) 20 |
| (c) 21 | (d) 24 |

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Q.4

The fourth proportional to 0.12, 0.21 and 8 is

- | | |
|---------|--------|
| (a) 8.9 | (b) 14 |
| (c) 17 | (d) 56 |

Q.5

Fourth proportional to $(a^2 - b^2)$, $(a^2 - ab)$, $(a^3 + b^3)$
is

(a) $(a - b)$

(b) $a^4 + b^4$

(c) $a(a^2 - ab + b^2)$

(d) $a^3 - a^2b^2 + b^2$

Q.6

. The third proportional to 38 and 15 is

(a) $\frac{15 \times 15}{38}$

(b) $\frac{38 \times 15}{2}$

(c) $\frac{38 \times 38}{15}$

(d) $\frac{15}{38 \times 38}$

Q.7

The third proportional to $(x^2 - y^2)$ and $(x - y)$ is

(a) $(x + y)$

(b) $(x - y)$

(c) $\frac{x + y}{x - y}$

(d) $\frac{x - y}{x + y}$

Q.8

The mean proportional between 234 and 104 is

(a) 12

(b) 39

(c) 54

(d) None of these

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Q.9

The mean proportional between 0.02 and 0.32 is

- (a) 0.3 (b) 0.08
(c) 0.16 (d) 0.34

—

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Q.10

The mean proportional between $(3 + \sqrt{2})$ and $(12 - \sqrt{32})$ is

(a) $\sqrt{7}$

(b) $2\sqrt{7}$

(c) 6

(d) $\frac{15 - 3\sqrt{2}}{2}$

Q.11

The ratio between the third proportional of 12 and 30 and mean proportional of 9 and 25 is

- (a) 2 : 1 (b) 5 : 1
(c) 7 : 15 (d) 9 : 14

Q.12

The product of the duplicate ratio of $2a : 6b$ and the reciprocal ratio of $4a^2 : 25b^2$ is

- (a) 0
- (b) 1
- (c) $a : b$
- (d) None of these

Q.13

If $A : B = 9 : 3$

$B : C = 4 : 7$

then $A : B : C = ?$

$A : C = ?$

Q.14

If $X:Y = 4:5$

$Y:Z = 3:2$

Then $X:Y:Z = ?$

Q.15

if $A : B = 4 : 5$

$B : C = 3 : 4$

$C : D = 6 : 7$

Then $A : B : C : D = ?$

Q.16

if $A : B = 3 : 2$

$B : C = 4 : 5$

$C : D = 2 : 5$

Then $A : B : C : D = ?$

Q.17

If a sum of money to be disturbed among A , B and C in the ratio of 2 : 3 : 2 respectively . If A gets 600 rs , then how much does B and C get ?

Q.18

The ratio of the number of boys and girls in a school is 4.5 : 3.5 respectively. If the number of girls is 1540, then how many students are there in that school?

Q.19

if $A/3 = B/4$

then $A : B = ?$

Q.2

if $A/3 = B/4 = C/5$

Then $A : B : C = ?$

Q.21

If $A : B = \frac{1}{3} : \frac{1}{4}$

Then $A : B = ?$

Q.22

if $A : B : C = \frac{1}{3} : \frac{1}{4} : \frac{1}{5}$

Then $A : B : C = ?$

Q.23

if $\frac{4}{5}$ of B = A, $\frac{5}{2}$ of C = B

then A : C = ?

Q.24

IF $A = B/3$, $B = C/2$

then $A : B : C = ?$

Q.25)

IF 30% of A = 0.25 of B

then A : B : C = ?

. 26)

$$\text{IF } A/3 = B/4 = C/7,$$

Then $A + B + C = ?$

Q. 27)

IF $X : Y = 2 : 1$,

Then $(X^2 - Y^2) : (X^2 + Y^2) = ?$

Q.28)

IF $X/5 = Y/8$,

THEN $(X+5) : (Y+8) = ?$

Q. 29)

IF $X : Y = 3 : 5$

THEN $(10X + 3Y) : (5X + 2Y) = ?$

Q. 30)

A boy contains Rs. 20, Rs. 10 and Rs. 5 notes in the ratio of 3 : 4 : 5. If the total money in the bag is Rs. 1000, then what is the number of Rs. 5 notes?

Q. 31)

- . A bag contains one-rupee, 50-paise and 25-paise coins in the ratio 5 : 6 : 8. If the total amount of money in the bag is ₹ 210, find the number of coins of each kind.

Q. 32)

There are 420 coins consisting of one-rupee coins, 50-paise coins and 25-paise coins. If the ratio of their values be $2 : 3 : 5$, then the number of one-rupee coins is

(a) 20

(b) 30

(c) 90

(d) 300

Q.33)

What should be added to each term of $7 : 13$, so that the new numbers became in the ratio of $2 : 3$?

Q. 34)

What should be subtracted from each of 21, 38, 55, 106 so that the new numbers become proportional ?

Q. 35)

The ratio of milk and water in a 20 ltr. Mixture is 3 : 1. How much more milk should be added to this mixture so that the ratio of milk and water in the new mixture becomes 4 : 1 ?

Q. 36)

The ratio of milk and water in 45 liter of mixture is 4 : 1 . How much more water should be added to it so that the ratio becomes 3 : 2 ?

Q. 37) In two alloys of gold and copper, the ratio is $7 : 2$ and $7 : 11$. Equal quantities of both the alloys were melted and mixed to form a third alloy. What will be the ratio of the quantities of gold and copper in the third alloy?