

# Solved MCQs On Quantitative Aptitude



## LCM and HCF

### Ques 1.

Six bells commencing tolling together toll at intervals of 2, 3, 6, 8, 10 and 12 seconds respectively. In 30 minutes how many times do they toll together?

**Ans 1.** L.C.M of 2, 4, 6, 8, 10 and 12 is 120.

so, the bells will toll together after 120 seconds i.e. 2 minutes .

In 30 minutes the bells toll together  $30/2 + 1$  times i.e. times.

### Ques 2.

The H.C.F of two numbers is 11 and their L.C.M is 7700. If one of these numbers is 275, then find the other number.

**Ans 2.** Product of two number = product of their H.C.F. and L.C.M.

required number =  $11 \times 7700 / 275 = 308$

### Ques 3.

A gardener had a number of shrubs to plant in rows . At first he tried to plant 8, then 12 and then 16 in a row but he always had 3 shrubs left with him . On trying 7 shrubs he was left with none. Find the total number of shrubs.

**Ans 3.** L.C.M of 8,12,16 = 48

Now,  $48 \times 1 + 3 = 51$  - not divisible by 7

$48 \times 2 + 3 = 99$  - not divisible by 7

$48 \times 3 + 3 = 147$  - not divisible by 7

Required number = 147

### Ques 4.

Three measuring rods are 64 cm, 80 cm and 96 cm in length . What is the least length of cloth that can be measured exact number of times using any one of these rods?

(a) 9.60 m

(b) 8 m

(c) 9.60 cm

(d) 96 m

**Ans 4.** 9.60 m

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**Ques 5.**

The sum of two numbers is 528 and their H.C.F is 33. What is the number of pairs of such numbers ?

- (a) 4
- (b) 12
- (c) 8
- (d) 6

**Ans 5.** 4

Hint : Let the number be  $33x$  and  $33y$  where  $x$  and  $y$  are co-prime.

**Ques 6.**

The largest numbers which divides 30, 78 and 102 to leave the same remainder in each case is

- (a) 24
- (b) 20
- (c) 8
- (d) 16

**Ans 6.** 24

**Ques 7.**

Find the least number of five digits which is exactly divisible by 12, 15 and 18.

- (a) 1080
- (b) 10080
- (c) 10025
- (d) 11080

**Ans 7.** 10080

Hint : The least number of 5 digits is 10000. L.C.M. of 12, 15 and 18 is 180 . On dividing 10000 is 100.

$\Rightarrow 10000 + 180 - 100 = 10080$  is divisible by 180.

**Ques 8.**

The smallest number which when divided by 20, 25, 35 and 40 leaves a remainder of 14, 19 , 29 and 34 respectively is

- (a) 1994
- (b) 1494
- (c) 1394
- (d) 1496

**Ans 8.** 1394

Hint: Note that  $20 - 4 = 6$ ;  $25 - 19 = 6$ ;  $35 - 29 = 6$ ;  $40 - 34 = 6$

Required number = L.C.M. of ( 20, 25, 35 and 40)-6

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**Ques 9.**

Find the greatest unit of time with which 5 hours 15 minutes and 8 hours 24 minutes can both be represented as integers.

- (a) 70 min.
- (b) 63 min.
- (c) 48 min.
- (d) 42 min.

**Ans 9.** 63 min.

**Ques 10.**

The L.C.M of two numbers is 14 times their H.C.F . The sum of the L.C.M. and the H.C.F . is 600. If one number is 280 , then the other number is

- (a) 40
- (b) 60
- (c) 80
- (d) 100

**Ans 10.** 80

## Average

**Ques 1.** The average weight of 45 passenger on board an aircraft is 50 kg. If the weight of 5 members of the crew is added, the average is reduced by half kilogram . What is the average weight of the crew members?

**Ans 1.** Total weight of 45 passenger =  $45 \times 50 = 2250$  kg

Total weight of 45 passenger and 5 crews =  $50 \times 49.5 = 2475$  kg

Total weight of 5 crews =  $2475 - 2250 = 225$ kg

Average weight of 5 crews =  $225/5 = 45$ kg.

**Ques 2.** A man spends Rs 1,800 per month on an average for the first four months and Rs 2,000 per month for the next 8 months and saves Rs 5,600 a year. What is his average monthly income ?

**Ans 2.** Total expenditure during first four months =  $1,800 \times 4 = \text{Rs } 7,200$

Total expenditure during the next 8 months =  $2,000 \times 8 = \text{Rs } 16,000$

Saving = Rs 5,600

Total of expenditure and saving (equal to income the year) =  $7,200 + 16,000 + 5,600 = \text{Rs } 28,800$

Average monthly income =  $28,800 / 12 = \text{Rs } 2,400$

**Ques 3.** The average of 5 numbers is 9 and the average of the last three numbers is 5. Find the average of the first two numbers.

**Ans 3.** Sum of 5 numbers =  $9 \times 5 = 45$

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Sum of last three numbers = 15

The average of 1st two numbers =  $45 - 15/2 = 30/2 = 15$ .

**Ques 4.** A certain company employed 600 men and 400 women and the average wage was 2.55 per hour. If a woman got 50 paise less than a man, what were their wages per hour?

- (a) Man Rs 3.00, Woman Rs 2.50
- (b) Man Rs 3.50, Woman Rs 3.00
- (c) Man Rs 2.75, Woman Rs 2.25
- (d) Man Rs 3.25, Woman Rs 2.75

**Ans 4.** Man = Rs 2.75, woman = Rs 2.25

Hint: Let a man's wage per hour be  $x$ .

Woman's wage per hour =  $x - \frac{1}{2}$

$$\therefore \frac{600x + 400(x - \frac{1}{2})}{1000} = 2.25$$

**Ques 5.** A man went uphill with a speed of 20 km.p.h. and came downhill with a speed of 30 km p.h. The average speed for his journey was

- (a) 25 km. p.h.
- (b)  $22 \frac{1}{2}$  km. p.h.
- (c) 24 km. p.h.
- (d)  $25 \frac{1}{2}$  km. p.h.

**Ans 5.** 24 km.p.h.

Hint: Average Speed =  $\frac{2xy}{x+y}$

**Ques 6.** A ship sails out to a mark at the rate of 10 km per hour and sails back at the rate of 15 km per hour. What is its average rate of sailing?

- (a) 10 km. p.h.
- (b) 12 km. p.h.
- (c) 15 km. p.h.
- (d) 11 km. p.h.

**Ans 6.** 12 km. p.h.

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**Ques 7.** One third of a certain journey was covered at a rate of 25 km per hour, one fourth at the rate of 30 km per hour and the rest at the rate of 50 km per hour. The average speed for the whole journey is

- (a)  $33 \frac{1}{3}$  km/hr
- (b)  $66 \frac{1}{3}$  km/hr
- (c)  $36 \frac{1}{6}$  km/hr
- (d)  $63 \frac{1}{3}$  km/hr

**Ans 7.**

$$33 \frac{1}{3} \text{ km/hr.}$$

Hint: Average Speed

$$= \frac{\text{Total distance travelled}}{\text{Total time taken}}$$

**Ques 8.** Monica's average expenses for 4 days is Rs 6.0. She spent Rs 7.70 on first day, Rs 6.30 on second day. If she spent 10 on third day, How much did she spend on the 4th day?

- (a) Rs 2
- (b) Rs 3
- (c) Rs 4
- (d) Rs 0

**Ans 8.** Rs 0

Hint : Required Amount

$$= 24 - (7.70 + 6.30 + 10)$$

**Ques 9.** The average age of A and B is 20 years. If C were to replace A, the average would be 19 and if C were to replace B, the average would be 21. The ages of A, B and C are (in years)

- (a) 22, 17, 16
- (b) 22, 18, 20
- (c) 30, 18, 15
- (d) 23, 17, 15

**Ans 9.** 22, 18, 20

Hint :  $A + B = 2 \times 20$

$$C + B = 2 \times 19$$

$$A + C = 2 \times 21$$

**Ques 10.** The average age of a board of 8 trustees remains the same as it was 3 years ago, when one of them is replaced by a new member. The new member is younger than the trustee in whose place he has been replaced by

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- (a) 24 years
  - (b) 26 years
  - (C) 47 years
  - (d) 32 years
- Ans 10.** 24 years

## Equations

**Ques 1.**

If  $x:y = 3:4$ , find the value of  $\left(\frac{6x+9y}{6x-2y}\right)$

**Ans 1.**

Given expression =  $\frac{6x+9y}{6x-2y}$

Dividing numerator and denominator by  $y$ :

$$\text{Given expression} = \frac{6\left(\frac{x}{y}\right)+9}{6\left(\frac{x}{y}\right)-2} = \frac{6 \times \frac{3}{4} + 9}{6 \times \frac{3}{4} - 2} = \frac{\frac{9}{2} + 9}{\frac{9}{2} - 2} = \frac{27}{5}$$

**Ques 2.** What number should be subtracted from each of the numbers 18, 24, 28, 38, so that the remainders may be in proportion?

**Ans 2.** Let the number be  $x$ .

$$\therefore \frac{18-x}{24-x} = \frac{28-x}{38-x}$$

$$\Rightarrow \frac{18-x}{6} = \frac{28-x}{10} \quad \left[ \text{If } \frac{a}{b} = \frac{c}{d} \text{ then } \frac{a}{b-a} = \frac{c}{d-c} \right]$$

$$\text{or } 180 - 10x = 168 - 6x$$

$$\text{or } 4x = 12$$

$$x = 3$$

**Ques 3.** The average age of three girls is 24 years. If their ages are in the ratio of 5 : 6 : 7, find the age of the youngest girl.

**Ans 3.** Let the respective ages of the three girls be  $5x$ ,  $6x$  and  $7x$

$$\therefore 5x + 6x + 7x = 24 \times 3 = 72 \text{ years}$$

$$\Rightarrow 18x = 72$$

$$\text{or } x = 4$$

$$\therefore \text{Age of the youngest girl} = 5x = 5 \times 4 = 20 \text{ years.}$$

**Ques 4.** X, Y and Z share a sum of money in the ratio of 11 : 13 : 16. If Z receives Rs 25 more than X, then Find the total money shared.

**Ans 4.** Let the respective shares of X, Y and Z be Rs  $11x$ ,  $13x$  and  $16x$  respectively

$$\text{Total money} = 11x + 13x + 16x = 40x$$

$$\text{Now. } 16x - 11x = 25$$

$$\Rightarrow x = 5$$

$$\therefore \text{Total money shared} = \text{Rs } 200.$$

**Ques 5.** The speeds of three cars are in the ratio of 3 : 4 : 5 find the ratio of the time taken by them to travel the same distance.

**Ans 5.** As distance is constant, time is inversely proportion to speed.

$$\therefore \text{Required ratio} = \frac{1}{3} : \frac{1}{4} : \frac{1}{5} = \frac{1}{3} \times 60 : \frac{1}{4} \times 60 : \frac{1}{5} \times 60$$

$$= 20 : 15 : 12.$$

**Ques 6.** An alloy is to contain copper and nickel in the ratio of 3 : 7. Find the amount (in kg) of copper required to be melted with 28 kg of nickel to form the alloy.

**Ans 6.**

$$\frac{\text{Weight of Copper}}{\text{Weight of Nickel}} = \frac{3}{7}$$

$$\therefore \text{Weight of Copper} = \frac{3}{7} \times 28 = 12 \text{ kg.}$$



**Ques 7.** The ratio of income of A to that of B is 7 : 5 and the expenditure of A to that of B is 3 : 2 . If, at the end of the year, each saves Rs. 500, find the income of A.

**Ans 7.** Let the income of A and B be  $7x$  and  $5x$

Let the expenditure of A and B be  $3y$  and  $2y$

$$\therefore 7x - 3y = \text{Rs } 500 \dots (i)$$

$$\text{and } 5x - 2y = \text{Rs } 500 \dots (ii)$$

Multiplying equation (i) and (ii) by 2 and 3 respectively and subtracting, we get  $x = 500$

$$\therefore \text{income of A} = 7 \times 500 = \text{Rs } 3500.$$

**Ques 8.** Rs 200 contained in a box consists of one rupee, 50 paise and 25 paise coins in the ratio of 3 : 4 : 5 Find the number and value of 50 paise coins.

**Ans 8.** Value of 1 Re coins : Value of 50 paise coins : Value of 25 paise coins

$$= 3 : \frac{4}{2} : \frac{5}{4} = 12 : 8 : 5$$

$$\therefore \text{Value of 50 Paise Coins} = \frac{8}{12+8+5} \times \text{Rs } 200 = \text{Rs } 64$$

$$\therefore \text{No. of 50 Paise Coins} = 64 \times 2 = 128.$$

**Ques 9.** 40% of a man's daily output is equal to 60% of a second man's daily output. If the first man turns out 1440 toys everyday, the second man's output in terms of number of toys is

- (a) 960
- (b) 1000
- (c) 840
- (d) 900

**Ans 9.** (a) 960

**Ques 10.** 24 liters of a mixture contain milk and water in the ratio of 1 : 5 . If 6 liters of the mixture are replaced by 6 liters of milk, the ratio of milk to water in the new mixture will be

- (a) 3 : 5
- (b) 3 : 4
- (c) 5 : 6
- (d) 2 : 3

**Ans 10.** 3 : 5

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# Time and Work

**Ques 1.**

Randhir is  $1\frac{1}{2}$  times faster than Sudhir . If Randhir can complete a piece of work in 20 Days , how long will it take for both Randhir and Sudhir to complete the same piece of work ?

**Ans 1.**

Randhir and Sudhir, both would take  $\frac{\frac{3}{2} \times 20}{\frac{3}{2} + 1}$  days i.e. 12 days

**Ques 2.** A can do a job in 24 days , B in 9 days and C in 12 days. B and C together start the work but leave after 3 days . How much time was taken by A to complete the remaining work ?

**Ans 2.**

(B+C)'s 3 days' work =  $3 \left( \frac{1}{9} + \frac{1}{12} \right) = \frac{7}{12}$   
Remaining  $\frac{5}{12}$  of the work was done by A alone.  
 $\frac{5}{12}$  of the work is done by A in  $\frac{5}{12} \times 24$  or 10 days.

**Ques 3.** Ram is thrice as good a workman as Sham and is therefore able to finish a piece of work in 60 days less than B. Find the time in which they can do it, working together?

**Ans 3.**

Required time =  $\frac{3 \times 60}{3-1}$  days =  $22\frac{1}{2}$  days.

**Ques 4.**

If half of the plastering of a wall is done on the first day by a group of workers and one-fourth of the remaining on the second day, find the area of the wall , given that the work gets finished after plastering remaining 45 m<sup>2</sup> of the wall .

**Ans 4.**

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Let the area of the wall be  $A \text{ m}^2$ .  
 $\therefore$  Area of the wall remaining to be plastered after  
 2 days  $= \frac{3}{4} \times \frac{1}{2} \times A \text{ m}^2$   
 Or  $\frac{3A}{8} = 45 \Rightarrow A = 120$   
 Hence, area of the wall is  $120 \text{ m}^2$ .

**Ques 5.**

9 men and 12 boys finish a job in 12 days. 12 men and 12 boys finish it in 10 days . In how many days will 10 men and 10 boys finish the job ?

- (a) 8 days
- (b) 10 days
- (c) 12 days
- (d) None of these

**Ans 5.** (c) 12 days

$$\text{Hint} = 9M + 12B = \frac{1}{12} ; 12M + 12B = \frac{1}{10} .$$

Here M and B give the one day's work of a man a boy respectively.

**Ques 6.** A piece of work which could be finished in 9 days was finished 3 days earlier after 10 more men joined .The number of men employed was

- (a) 18
- (b) 20
- (c) 22
- (d) 24

**Ans 6.** (b) 20

Hint :  $9x = 6 ( x + 10)$

**Ques 7.**

If A,B and C together can finish a piece of work in 4 Days , A alone in 12 days and B in 18 Days, then C alone can do it in

- (a) 21 days
  - (b) 15 days
  - (c) 12 days
-

(d) 9 days

**Ans 7.** (d) 9 days

**Ques 8.**

A can do half of a piece of work in one day whereas B can do full, B can do half the work as C in one day. Ratio of their efficiencies is

(a) 4 : 2 : 1

(b) 2 : 4 : 1

(c) 2 : 1 : 4

(d) 1 : 2 : 4

**Ans 8.** 1 : 2 : 4

Hint : Ratio of their efficiencies = Ratio of the amount of work they do in one day .

**Ques 9.**

If 5 men or 9 boys can do a piece of work in 15 days then 10 men 12 boys can finish the same work in

(a)  $4\frac{1}{2}$

(b) 9 days

(c) 18 days

(d) 36 days

**Ans 9.**

(a)  $4\frac{1}{2}$  days  
Hint: 1 man in 1 day does  $\frac{1}{15 \times 5}$  of the work  
1 boy in 1 day does  $\frac{1}{15 \times 9}$  of the work

**Ques 10.**

Some persons can do a piece of work in 12 Days . Two times the number of these persons will do half of that work in

(a) 3 days

(b) 4 days

(c) 6 days

(d) 12 days

**Ans 10.** (a) 3 days

Hint: Use the formula :  $M_1 D_1 W_2 = M_2 D_2 W_1$

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# Partnership

## Ques 1.

Ramu started a business with Rs 2100 and was joined by Sham with Rs 3600 afterwards . After how many months did Sham join , If the profits at the end of the year are shared equally ?

**Ans 1.** Suppose Sham joined after X months . Then sham's money remained for ( 12 - x ) months.

$$\begin{aligned} \therefore 2100 \times 12 &= 3600(12-x) \\ \text{or } 3600x &= 43200 - 25200 \quad \text{or } x = \frac{18000}{3600} = 5 \end{aligned}$$

So, Sham joined after 5 months .

## Ques 2.

A,B and C enter into partnership by making investments in the ratio 3 : 5: 7 . After a year , C invests another Rs 337600 while A withdraws Rs 45600 . The ratio of investments then changes to 24 : 59 : 167 . How much does A invest initially ?

**Ans 2.** Let initial investment be 3x, 5x and 7x rupees.

$$\begin{aligned} (3x - 45600) : 5x : (7x + 337600) &= 24 : 59 : 167 \\ \therefore \frac{3x - 45600}{5x} &= \frac{24}{59} \quad \text{or } x = 47200 \\ \text{Initial investment of A} &= \text{Rs } (47200 \times 3) = \text{Rs } 141600. \end{aligned}$$

## Ques 3.

P and Q invest in a business in the ratio 3 : 2 . If 5% of the total profit goes to charity and P's share is Rs 912, find the total profit

**Ans 3.** Let the total profit be P.

$$\therefore \text{resultant total profit} = P - \frac{5P}{100} = \frac{19P}{20}$$

$$\text{or } \frac{19P}{20} \times \frac{3}{5} = 912$$

$$\Rightarrow 57P = 912 \times 100$$

$$\therefore P = \text{Rs } 1600.$$

**Ques 4.**

P and Q start a business with initial investments in the ratio of 13:8 . Their corresponding annual profits are in the ratio of 7:5 . If P invested his money for 7 months, find the time period for which Q invested his money.

**Ans 4.** Suppose Q invested money for a period of x months .

$$\therefore \frac{13 \times 7}{8 \times x} = \frac{7}{5}$$

$$\Rightarrow 8x = 65$$

$$\therefore x = 8 \text{ months}$$

Or Q invested money for a period of about 8 months.

**Ques 5.**

P and Q entered into partnership with capitals in the ratio of 4 : 5 . After 3 months , P withdrew 1/4th of the capital and Q withdrew 1/5th of the capital . The profit at the end of the year was trs 60000. Find the share of P in the profit .

**Ans 5.** Let the capitals of P and Q be 4x and 5x respectively .

$$\begin{aligned} \text{Ratio of P's and Q's share of Profit} &= \\ &= (4x \times 3) + \left(\frac{3}{4} \times 4x \times 9\right) : (5x \times 3) + \left(\frac{4}{5} \times 5x \times 9\right) \\ &= 39 : 51 \end{aligned}$$

$$\therefore \text{P's share} = \frac{39}{90} \times 60000 = \text{Rs. } 26000.$$

**Ques 6.**

A and B put in Rs 300 and Rs 400 respectively into a business . A reinvests into the business his share of the first year's profit of Rs 210 whereas B does not .In what should they divide the second year's profit ?

(a) 39 : 40

(b) 40 : 39

(c) 3 : 4

(d) 39 : 49

**Ans 6.** (a) 39:40

Hint : A's share of first year's profit

$$= \frac{3}{7} \times 210 = \text{Rs } 90$$

$$\text{Required ratio} = (300 + 90) : 400$$

**Ques 7.**

A and B entered into partnership , investing Rs 3000 and Rs 2000 respectively . A was the sleeping partner . At the end of one month, both got Rs 150 each. What was B's remuneration for his work ?

- (a) Rs 60
- (b) Rs 50
- (c) Rs 40
- (d) Rs 30

**Ans 7.** Rs 50

Hint : Let John's capital be Rs x.

$$\frac{150}{150-x} = \frac{3}{2}$$

**Ques 8.**

The ratio of investments of two partners P and Q is 7 : 5 and the ratio of their profits is 7 : 10. If P invested the money for months , Find for how much time did Q invest the money.

- (a) 7 months
- (b) 10 months
- (c) 9 months
- (d) 11 months

**Ans 8** 10 months

Series is an important chapter for competitive exams. In every exam you will find at least 5 questions from this chapter. Today I am sharing 10 questions that are repeated in the exams.

## Series

**Ques 1.**

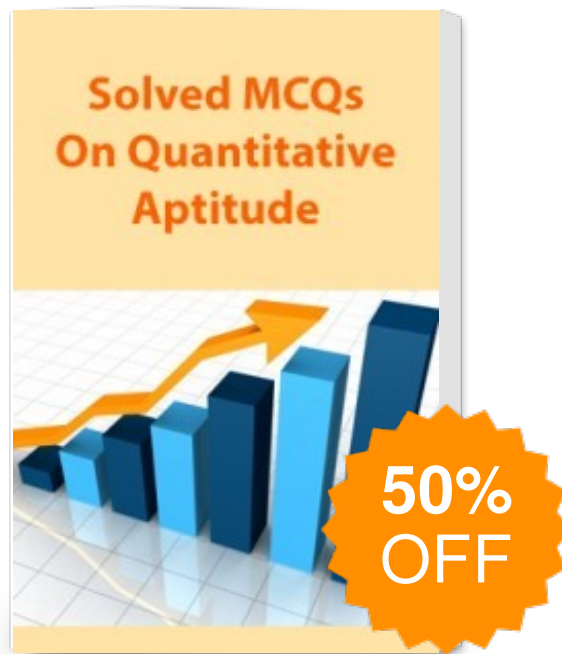
8 , 10 , 6 , 4 , 3 , ?

- (a) 8
- (b) 2
- (c) 3.5
- (d) 2.5

**Ans 1.** The difference between the numbers is reduced by half at each step.

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