

Lecture-09 : (Partnership & LCM, HCF)

Important Vocabulary

Additional = অতিরিক্ত বা আরো	Invest = বিনিয়োগ করা
Afterwards = পরবর্তী	Partner = অংশীদার
Altogether = একত্রে	Pasture = চারণভূমি
Annual = বার্ষিক	Profit = মুনাফা বা সুদ
Approximate = প্রায়	Proportion = সমানুপাত
Capital = পুঁজি বা আসল	Ratio = অনুপাত
Charity = দান	Remainder = অবশিষ্ট
Contribute = অবদান রাখা	Rent = ভাড়া করা
Distribute = বন্টন করা	Respective = সম্পর্কিত
Divided = ভাগ করে দেয়া	Rest of = বাকি
Duration = স্থায়িত্ব	Subscribe = চাঁদা দেয়া
Estimate = হিসাব করা	Thrice = তিনগুণ
Exceed = অতিক্রম করা	Whereas = যেখানে বা পক্ষান্তরে
Grazed = ঘাস খাওয়ানো	Withdraw = ফেরত নেয়া
Initially = প্রাথমিকভাবে	Yield = উৎপন্ন করা

Teacher's Work: Partnership (MCQ)

Profit Related

01. In a business A and C invested amounts in the ratio 2 : 1 whereas A and B invested amounts in the ratio 3:2. If their annual profit be Tk 157300, then B's share in the profit is- [Janata Bank (EO)-2017 + Combined 4 Banks (Offi-Cash)-2018]
- a) Tk. 24,200 b) Tk. 36,300
c) Tk. 72,000 d) Tk. 48,400
02. P and Q started a business in the ratio of 2 : 3. After 2 years P left the business but Q continued. After 3 years he had a profit of Tk. 26000. What was the profit of P? [BB-AD: 20-10-23]
- a) Tk. 8000 b) Tk. 15600
c) Tk. 18000 d) No Profit

Join After Few Days

03. A and B started a partnership business investing some amount in the ratio of 3: 5. C joined them after six months with as amount equal to that of B. In what proportion should the profit at the end of the first year be distributed among A, B and C?
- a) 3 : 5 : 2 b) 3 : 5 : 5
c) 6 : 10 : 5 d) Cannot be determined

Investment Related

04. Three partners shared the profit in a business in the ratio 5:7:8. They had partnered for 14 months, 8 months and 7 months respectively. What was the ratio of their investments? [Combined 5 Banks (Cash)-2019 + Combined 8 Bank (SO)-2019]
- a) 5 : 7 : 8 b) 20 : 49 : 64
c) 38 : 28 : 21 d) None of these

Time Related

05. A and B start a business with initial investment in the ratio 12:11 and their annual profit were in the ratio 4:1. If A invested the money for 11 months, B invested the money for? [Rupali Bank (SO)-2019]
- a) 2 b) 3 c) 6 d) 4

Miscellaneous

06. In a partnership, A invests $\frac{1}{6}$ of the capital for $\frac{1}{6}$ of the time, B invests $\frac{1}{3}$ of the capital for $\frac{1}{3}$ of the time and C, the rest of the capital for the whole time. Out of a profit of Tk. 4600, B's share is
- a) 803 b) 840 c) 200 d) 800

Teacher's Work: Partnership (Written)

07. A and B started a business with the capital Tk. 3000 and Tk. 4000 After 8 months, A invested Tk. 2500 more in the business and 7 months after, total profit Tk. 980. Find the share of each. [BKB (Cash)-2018]
08. A, B and C enter into partnership. A invests 3 times as much as B invests and B invests two-third of what C invests. At the end of the year, the profit earned is Tk. 6600. What is the share of B? [Uttara Bank (PO)-2017 + Pubali Bank (Cash)-2017 + Sonali Bank (Off)-2018 + Sadharan Bima (JO)-2017]
09. Shakil started a business investing Tk. 25000 in 2009. In 2010, he invested an additional amount of Tk. 10000 and Raihan joined him with an amount of Tk. 35000. In 2011, Shakil invested another additional amount of Tk. 10000 and Jafor joined them with an amount of Tk. 35000. What will be Raihan's share in profit of Tk. 150000 earned at the end of 3 years from the start of the business in 2009? [BB (Cash Off)-2017]
10. A and B started a business with initial investments in the respective ratio of 18: 7. After four months from the start of the business, A invested Tk. 2000 more and B invested Tk. 7000 more. At the end of one year, if the profit was distributed among them in the ratio of 2:1 respectively. What was the total initial investment with which A and B started the business? [Sonali Bank (Off: FF-quota) 2019 + Pubali Bank (JO)-2019]
11. A, B and C started a business by investing Tk. 24000, Tk. 32000 and Tk. 18000 respectively. A and B are active partners and get 15% and 12% of total profit and remaining profit is to be distributed among them in the ratio of their investment. If C got total Tk. 65700 as profit, what was the total amount of profit? [Combined 4 Banks (Officer)-2019]

01. Find the smallest number of oranges that can be distributed completely among 4, 6, 10 or 18 children.
a) 16 b) 60 c) 240 d) 180
02. Find the minimum number of pencil that can be distributed equally among 12 & 20 people.
a) 12 b) 42 c) 45 d) 84
03. What is the greatest number that divides into 84, 144 or 18 without any remainder?
a) 18 b) 12 c) 24 d) 6
04. Find the smallest number which when divided by 3, 6, 9 gives the remainder 2, but there is no remainder when divided by 8.
a) 112 b) 152 c) 176 d) 192
05. What is the smallest number of apples that can be distributed equally among 4, 6, 9 or 15 students having a surplus of two apples each time?
a) 422 b) 362 c) 182 d) 62
06. Find the smallest number which when divided by 18 and 24 will have a remainder of 4 and 10 respectively?
a) 56 b) 52 c) 58 d) 54
07. Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together? [Exim Bank Ltd. Cash (Offi)-2013]
a) 4 b) 10 c) 15 d) 18
08. The L.C.M. of two numbers is 48. The numbers are in the ratio 2 : 3. The sum of the numbers is- [PKB (SO)-2014 + Agrani Bank (SO)-2017]
a) 28 b) 40 c) 32 d) 64

Partnership

Illustrative Questions

01. A, B and C started a business by investing Tk 120000, Tk. 135000 and Tk. 150000 respectively. Find the share of each, out of an annual profit of Tk. 56700.

Sol. Ratio of shares of A, B and C = Ratio of their investments

$$= 120000 : 135000 : 150000 = 8 : 9 : 10$$

$$\therefore \text{A's share} = \text{Tk.} \left(56700 \times \frac{8}{27} \right) = \text{Tk.} 16800;$$

$$\text{B's share} = \text{Tk.} \left(56700 \times \frac{9}{27} \right) = \text{Tk.} 18900;$$

$$\text{C's share} = \text{Tk.} \left(56700 \times \frac{10}{27} \right) = \text{Tk.} 21000$$

02. A, B and C start a business each investing Tk. 20000. After 5 months A withdrew Tk. 5000, B withdrew Tk. 4000 and C invests Tk. 6000 more. At the end of the year, a total profit of Tk. 69900 was recorded. Find the share of each.

Sol. Ratio of the capitals of A, B and C
 $= 20000 \times 5 + 15000 \times 7 : 20000 \times 5 + 16000 \times 7 : 20000 \times 5 + 26000 \times 7$
 $= 205000 : 212000 : 282000 = 205 : 212 : 282.$

$$\therefore \text{A's share} = \text{Tk.} \left(69900 \times \frac{205}{699} \right) = \text{Tk.} 20500;$$

$$\text{B's share} = \text{Tk.} \left(69900 \times \frac{212}{699} \right) = \text{Tk.} 21200;$$

$$\text{C's share} = \text{Tk.} \left(69900 \times \frac{282}{699} \right) = \text{Tk.} 28200.$$

03. A, B and C enter into a partnership with capitals in the ratio $\frac{7}{2} : \frac{4}{3} : \frac{6}{5}$. After 4 months A increases his share of capital by 50%. If at the end of the year the total profit earned is Tk 2430, find the share of each in the profit.

Sol. Ratio of capitals = $\frac{7}{2} : \frac{4}{3} : \frac{6}{5} = \left(\frac{7}{2} \times 30 \right) : \left(\frac{4}{3} \times 30 \right) : \left(\frac{6}{5} \times 30 \right) = 105 : 40 : 36.$

Let the initial capitals of A, B and C be Tk. 105 x, Tk. 40 x and Tk. 36 x respectively.

Then, ratio of profits

$$= [105x \times 4 + (150\% \text{ of } 105x) \times 8] : (40x \times 12) : (36x \times 12)$$

$$= 1680 : 480 : 432 = 35 : 10 : 9$$

$$\therefore \text{A's share} = \text{Tk.} \left(2430 \times \frac{35}{54} \right) = \text{Tk.} 1575; \text{ b's share} =$$

$$\text{Tk.} \left(2430 \times \frac{10}{54} \right) = \text{Tk.} 450;$$

$$\text{C's share} = \text{Tk.} \left(2430 \times \frac{9}{54} \right) = \text{Tk.} 405.$$

04. Two persons A and B take a field on rent. A put on it 21 horses for 3 months and 15 cows for 2 months; B puts 15 cows for 6 months and 40 sheep for $7\frac{1}{2}$ months. If, in one day, 3 horses eat as much as 5 cows eat and 6 cows as much as 10 sheep, what part of the rent should A pay?

Sol. 6 cows = 10 sheep \Rightarrow 1 cow = $\frac{5}{3}$ sheep.

$$3 \text{ horses} = 5 \text{ cows} \Rightarrow 1 \text{ horse} = \frac{5}{3} \text{ cows} = \left(\frac{5}{3} \times \frac{5}{3} \right)$$

$$\text{sheep} = \frac{25}{9} \text{ sheep.}$$

∴ Ratio of shares of A and B

$$= \left[\left(21 \times \frac{25}{9} \times 3 \right) + \left(15 \times \frac{5}{3} \times 2 \right) \right] : \left[\left(15 \times \frac{5}{3} \times 6 \right) + \left(40 \times \frac{15}{2} \right) \right]$$

$$= 225 : 450 = 1 : 2.$$

Hence, part of the rent paid by A = $\frac{1}{3}$.

05. A, B and C took a house on rent for one year for Tk. 13824. They remained together for 4 months and then C left the house. After 5 more months, B also left the house. How much rent should each pay?

Sol. Monthly rent = Tk. $\left(\frac{13824}{12} \right)$ = Tk. 1152.

Rent for first 4 months = Tk. (1152×4) = Tk. 4608.

It is to be divided equally among A, B and C.

∴ Share of each = Tk. $\left(\frac{4608}{3} \right)$ = Tk. 1536.

Rent for next 5 months = Tk. (1152×5) = Tk. 5760.

It is to be divided equally between A and B.

∴ Share of each = Tk. $\left(\frac{5760}{2} \right)$ = Tk. 2880.

Rent for last 3 months = Tk. (1152×3) = Tk. 3456.

It is to be paid by A only.

∴ Total rent paid by A = Tk. $(1536 + 2880 + 3456)$ = Tk. 7872.

Total rent paid by B = Tk. $(1536 + 2880)$ = Tk. 4416.

Total rent paid by C = Tk. 1536.

06. A, B and C are partners in a business. A, whose money has been used for 4 months, claims $\frac{1}{8}$ of the profit. B, whose money has been used for 6 months, claims $\frac{1}{3}$ of the profit. C had invested Tk. 1560 for 8 months. How much money did A and B contribute?

Sol. Let the total profit be Tk. x.

Then, A's share = Tk. $\frac{x}{8}$; B's share = Tk. $\frac{x}{3}$;

C's share = Tk. $\left(x - \frac{x}{8} + \frac{x}{3} \right)$ = Tk. $\left(x - \frac{11x}{24} \right)$ = Tk. $\left(\frac{13x}{24} \right)$

∴ Ratio of shares of A, B and C = $\frac{x}{8} : \frac{x}{3} : \frac{13x}{24} = 3 : 8 : 13$.

Suppose A invested Tk. y for 4 months and B invested Tk. z for 6 months.

Then, $\frac{y \times 4}{1560 \times 8} = \frac{3}{13} \Rightarrow 52y = 37440 \Rightarrow y = 720$.

And, $\frac{z \times 6}{1560 \times 8} = \frac{8}{13} \Rightarrow 78z = 99840 \Rightarrow z = 1280$.

Hence A's contribution = Tk. 720; B's contribution = Tk. 1280.

07. A, B and C are partners in a business. Their shares are in the proportion of $\frac{1}{3} : \frac{1}{4} : \frac{1}{5}$. A withdraws half of his capital after 15 months and after another 15 months, a profit of Tk. 4340 is divided. The share of C is

Sol. Ratio of initial investments = $\frac{1}{3} : \frac{1}{4} : \frac{1}{5} = 20 : 15 : 12$.

Let their initial investments be 20x, 15x and 12x respectively.

A : B : C = $(20x \times 15 + 10x \times 15) : (15x \times 30) : (12x \times 30)$
= $450x : 450x : 360x = 5 : 5 : 4$.

∴ C's share = Tk. $\left(4340 \times \frac{4}{14} \right)$ = Tk. 1240.

08. In partnership, A invests $\frac{1}{6}$ of the capital for $\frac{1}{6}$ of the time, B invests $\frac{1}{3}$ of the capital for $\frac{1}{3}$ of the time and C, the rest of the capital for the whole time. Out of a profit of Tk. 4600; B's share is-

Sol. Suppose A invest Tk. $\frac{x}{6}$ for $\frac{y}{6}$ months.

Then, B invests Tk. $\frac{x}{3}$ for $\frac{y}{3}$ months.

C invests $\left[x - \left(\frac{x}{6} + \frac{x}{3} \right) \right]$, i.e, Tk. $\frac{x}{2}$ for y months.

∴ A : B : C = $\left(\frac{x}{6} \times \frac{y}{6} \right) : \left(\frac{x}{3} \times \frac{y}{3} \right) : \left(\frac{x}{2} \times y \right)$

= $\frac{1}{36} : \frac{1}{9} : \frac{1}{2} = 1 : 4 : 18$.

Hence, B's share = Tk. $\left(4600 \times \frac{4}{23} \right)$ = Tk. 800.

09. A, B and C jointly thought of engaging themselves in a business venture. It was agreed that A would invest Tk. 6500 for 6 months; B, Tk. 8400 for 5 months and C, Tk. 10,000 for 3 months. A wants to be the working member for which he was to receive 5% of the profits. The profit earned was Tk. 7400. Calculate the share of B in the profit.

Sol. For managing, A receives = 5% of Tk. 7400 = Tk. 370.

Balance = Tk. $(7400 - 370)$ = Tk. 7030.

Ratio of their investments = $(6500 \times 6) : (8400 \times 5) : (1000 \times 3)$

= $3900 : 42000 : 3000 = 13 : 14 : 10$.

∴ B's share = Tk. $\left(7030 \times \frac{14}{37} \right)$ = Tk. 2660.

10. A, B and C enter into a partnership. A contributes one-third of the capital while B contributes as much as A and C together contribute. If the profit at the end of the year amounts to Tk. 900, what would C receive?

Sol. Let total capital = Tk. x. Then, A's capital = Tk. $\left(\frac{x}{3}\right)$

$$\text{B's capital} = (\text{A} + \text{C})\text{'s capital} \Rightarrow 2 (\text{B's capital}) \\ = (\text{A} + \text{B} + \text{C})\text{'s capital} = \text{Tk. } x$$

$$\Rightarrow \text{B's capital} = \text{Tk. } \left(\frac{x}{2}\right).$$

$$\text{C's capital} = \text{Tk. } \left[x - \left(\frac{x}{3} + \frac{x}{2}\right)\right] = \text{Tk. } \frac{x}{6}.$$

$$\therefore \text{A} : \text{B} : \text{C} = \frac{x}{3} : \frac{x}{2} : \frac{x}{6} = 2 : 3 : 1.$$

$$\text{So, C's share} = \text{Tk. } \left(900 \times \frac{1}{6}\right) = \text{Tk. } 150.$$

11. A started a business with Tk. 21000 and is joined afterwards by B with Tk. 36000. After how many months did B join if the profits at the end of the year are divided equally?

Sol. Suppose B joined after x months.

$$\text{Then } 21000 \times 12 = 36000 \times (12-x)$$

$$\Rightarrow 36x = 180 \Leftrightarrow x = 5.$$

Hence, B joined after 5 months.

$$\text{Then, } \frac{85000 \times 12}{42500 \times x} = \frac{3}{1} \text{ or } x = \frac{85000 \times 12}{42500 \times 3} = 8.$$

So, B joined for 8 months.

12. Swati and Rajni enter into a partnership with their capitals in the ratio 5 : 6. At the end of 7 months Swati withdraws her capital. If they receive the profit in the ratio of 5 : 9, find how long was Rajni's capital used.

Sol. Suppose Swati invested Tk. 5x for 7 months and Rajni invested Tk. 6x for y months. Then,

$$\frac{5x \times 7}{6x \times y} = \frac{5}{9} \Rightarrow 30y = 315 \Rightarrow y = 10\frac{1}{2}.$$

Hence, Rajni's capital was used for $10\frac{1}{2}$ months.

Students' Work

Partnership

01. A, B and C started a business by investing Tk. 1,20,000, Tk. 1,35,000 and Tk. 1,50,000 respectively. Find the share of each, out of an annual profit of Tk. 56,700 [PBL (off)-2016]

Tk. 16800, Tk.18900 and Tk. 21000

02. X, Y and Z invested Tk. 9000, Tk. 7000 and Tk. 6000 respectively in a business where profit will be distributed according to the ratio of their investment. The business made a profit of Tk. 880. If Y uses portion of his share of the profit to repay a personal loan of Tk. 230, then calculate Y's remaining profit balance. [BB (DE/CO)-2012] **50**

03. P and Q invested in a business. The profit earned was divided in the ratio 2:3. If P invested Tk. 40,000, the amount invested by Q is- [Combined 6 Banks & 2FIs (SO)-2019] **Tk. 60000**

04. A, B and C enter into a partnership. A initially invests Tk. 25 lakhs and adds another Tk. 10 lakhs after one year. B initially invests Tk. 35 lakhs and withdraws Tk. 10 lakhs after 2 years and C invests Tk. 30 lakhs. In what ratio should the profits be divided at the end of 3 years? [Meghna Bank (MTO)-2016] **19: 19 : 18**

05. Sumon and Jamal two friends started a business with Tk. 5000 and Tk. 4000 respectively. After 3 months Sumon added Tk. 1000 and simultaneously Dilip joined with them with Tk. 7000. What is the share of profit among them after one year if profit is Tk. 36000? [Janata Bank (IT Officer)-2016]

Tk. 13800, Tk. 9600 and Tk. 12600

06. A, B and C start a business each investing Tk. 20,000. After 5 months A withdrew 5,000, B withdrew Tk. 4,000 and C invests Tk. 6,000 more. At the end of the year, a total profit of Tk. 69,900 was recorded. Find the share of each. [Janata Bank Ltd (AEO)-2015]

Tk. 20500, Tk. 21200 and Tk. 28200

07. A and B entered into partnership with capitals in the ratio 4:5 of the capital. After 3 months A withdrew $\frac{1}{4}$ of his capital and B withdrew $\frac{1}{5}$ his capital. The gain at the end of 10 months was tk. 760. Find the profit of A's share. [Al-Arafah Islami Bank (MTO)-2011]

Tk. 330

08. A,B and C started a business jointly with a total amount of Tk. 28000. A paid Tk. 4500 more than B and B paid Tk. 7000 less than C. If the company made a profit of Tk. 5600, how much profit should C receive? [Al-Arafah Islami Bank (MTO)-2017]

Tk. 2500

09. Mr. X, Mr. Y and Mr. Z started a business with a capital of Tk. 280. Mr. X Paid Tk. 45 more than the amount paid by Mr. Y and Mr. Y paid Tk. 70 less than the amount paid by Mr. Z. If they made a profit of Tk. 56, how will the profit be shared among the partners [Mercantile Bank Ltd.-2004]

Tk. 20, tk. 11 and Tk. 25

10. Rakib, Liton and Pranto started a business jointly with a total amount of Tk. 280. Rakib paid tk. 45 more than Liton and Liton paid Tk. 70 less than Pranto. If the company made a profit of Tk. 56, how much profit should Liton receive? [PKSF (AM)-2009]

Tk. 11

11. Aslam and Babul invested in a business in the ratio 3:2. Assume that 5% of total profit goes to workers' provident fund. If Aslam's share is Tk. 855000, what is the amount of total profit? [Janata Bank (AEO-RC)-2017]

Tk. 15,00,000

12. A, B and C are Partners. 'A' whose money has been in the business for 4 months claims $\frac{1}{8}$ of the profits, 'B' whose money has been in the business for 6 months claims $\frac{1}{3}$ of the profits. If 'C' had Tk. 1560 in the business for 8 months, how much money did A and B contribute to the business? [Sonali Bank (Cash)-2018]

Tk. 720 and Tk. 1280

13. Two friends P and Q started a business investing in the ratio of 5 : 6. R joined them after six months investing an amount equal to that of Q's. At the end of the year, 20% profit was earned which was equal to Tk. 98,000. What was the amount invested by R? [Bangladesh Bank (IT)-2016]

Tk. 210000

14. In a business, Piku invested Tk 6,500 for 6 months; Qazi invested Tk 8,400 for 5 months and Raj invested Tk. 10,000 for 3 months. Piku wants to be the working member, for which he will receive 5% of the profit if the total profit earned is tk 7,400. What is the share of Qazi in the profit? [Jamuna Bank (PO)-2012]

Tk. 2660

15. Four milkmen rented a pasture. A grazed 24 cows for 3 months, B 10 cows for 5 months, C 35 cows for 4 months and D 21 cows for 3 months. If A's share of rent is Tk. 720, find the total rent of the field? [Pubali Bank Ltd (SO-Officer)-2016]

Tk. 3250

Illustrative

HCF & LCM (MCQ)

01. Find the greatest number, which on dividing 1657 and 2037 leaves remainders 6 and 5 respectively.

Sol. The number on dividing 1657 and 2037 leaves remainders 6 and 5 respectively.

Hence, make the dividend completely divisible by the divisor. This is possible, if we subtract remainder from the dividend.

Therefore,

$$1657 - 6 = 1651$$

$$2037 - 5 = 2032$$

H. C. F of 1651 and 2032 is 127.

127 is the common factor.

$$127 \times 13 = 1651$$

Thus by adding 6, we get $1651 + 6 = 1657$

127 is the correct answer.

02. The traffic lights at three different road crossings change after every 40 sec, 72 sec and 108 sec respectively. If they all change simultaneously at 5 : 20 : 00 hours, then find the time at which they will change simultaneously.

Sol. Traffic lights at three different road crossing change after every 40 sec, 72 sec and 108 sec respectively.

Therefore, find the L. C. M of 40, 72 and 108.

$$\text{L. C. M of } 40, 72 \text{ and } 108 = 1080$$

The traffic lights will change again after 1080 seconds = 18 min

The next simultaneous change takes place at 5 : 38 : 00 hrs.

03. Find the least number which when divided by 16, 18, 20 and 2 leaves 4 as remainder in each case, but when divided by 7 leaves no. remainder:

Sol. L. C. M of 16, 18, 20, 25 = 3600. Required number is of the form $3600k + 4$.

Least value of k for which $(3600k + 4)$ is divisible by 7 is $k = 5$

$$\therefore \text{Required number} = (3600 \times 5 + 4) = 18004.$$

04. The least number which should be added to 2497 so that the sum is exactly divisible by 5, 6, 4 and 3 is:

Sol. L. C. M of 5, 6, 4 and 3 = 60. On dividing 2497 by 60, the remainder is 37.

$$\therefore \text{Number to be added} = (60 - 37) = 23$$

05. The greatest number which can divide 1356, 1868 and 2764 leaving the same remainder 12 in each case is:

Sol. Required number = H. C. F of $(1356 - 12)$, $(1868 - 12)$ and $(2764 - 12)$

$$= \text{H. C. F of } 1344, 1856 \text{ and } 2752 = 64$$

06. The H. C. F and L. C. M of two numbers are 11 and 385 respectively. If one number lies between 75 and 125, then that number is:

Sol. Product of numbers = $11 \times 385 = 4235$.

Let the numbers be $11a$ and $11b$.

$$\text{Then, } 11a \times 11b = 4235 \text{ or, } ab = 35$$

Now, co-primes with product 35 are (1, 35) and (5, 7)

So, the numbers are $(11 \times 1, 11 \times 35)$ and $(11 \times 5, 11 \times 7)$

Since one number lies between 75 and 125,

The suitable pair is (55, 77).

Hence, required number = 77

07. The sum of two numbers is 2000 and their L. C. M is 21879. The two numbers are:

Sol. Let the numbers be x and $(2000-x)$.

Then, their L.C.M = $x(2000-x)$.

So, $x(2000-x) = 21879$

Or, $x^2 - 2000x + 21879 = 0$

Or, $(x-1989)(x-11) = 0$

Or, $x = 1989$ or, $x = 11$

Hence, the numbers are 1989 and 11.

08. Three numbers which are co-prime to each other are such that the product of the first two is 551 and that of the last two is 1073. The sum of the three numbers is:

Sol. Since the numbers are co-prime they contain only 1 as the common factor

Number is common so middle number

Also, the given two products have the middle = H. C. F of 551 and 1073 = 29

First number = $\left(\frac{551}{29}\right) = 19$

Third number = $\left(\frac{1073}{29}\right) = 37$

\therefore Required sum = $(19 + 29 + 37) = 85$

09. The product of two numbers is 4107. If the HCF of these number is 37, then the greater number is:

Sol. Let the number be $37a$ and $37b$.

Then, $37a \times 37b = 4107$ or, $ab = 3$.

Now, co-primes with product 3 are (1, 3)

So, the required numbers are $(37 \times 1, 37 \times 3)$ i.e. (1, 111)

\therefore Greater number = 111

10. N is the greatest number which divides 1305, 4665 and 6905 and gives the same remainder in each case. What is the sum of the digits in N?

Sol. $6905 - 1305 = 5600$

$6905 - 4665 = 2240$

$4665 - 1305 = 3360$

Hence, the greatest number which divides 1305, 4665 and 6905 and gives the same remainder, N

= HCF of 5600, 2240, 3360 = 1120

Sum of digits in N = Sum of digits in 1120 = $1+1+2+0 = 4$

Home Practice

HCF & LCM

01. The greatest number that exactly divides 105, 1001 and 243 is- [কর্ণফুলী গ্যাস এ.ম (সাধারণ) পরীক্ষা - ২০২১]

a) 3 b) 7 c) 11 d) 21

02. What is the smallest number of apples that can be distributed equally (without cutting any apple) among 6, 10, 14 and 18 boys? [BB-AD: 28-10-22]

a) 1260 b) 315 c) 360 d) 630

03. What is the H.C.F of the numbers 36, 54 and 90? [Pubali Bank Ltd. (SO)-2013]

a) 6 b) 9 c) 12 d) 18

04. The highest common factor of 0 and 6 is- [Uttara Bank (Cash)-2017]

a) 0 b) 3 c) Undefined d) 6

05. The H.C.F of two numbers is 11 and their L.C.M is 693. If one of the numbers is 77, find the other. [Janata Bank Ltd. Assistant (EO)-2015]

a) 99 b) 89 c) 79 d) 69

06. The greatest number that exactly divides 105, 1001 and 2436 is: [BB. AD. (G.S)-2014 + PKB (EO) Cash-k2014]

a) 3 b) 7 c) 11 d) 21

07. Find the least number exactly divisible by 12, 15, 20 and 27. [Rupali Bank Ltd. (SO)-2013]

a) 540 b) 430 c) 320 d) 300

08. Which of the following numbers is the least common multiple of the number 2, 3, 4 and 5? [Social Islami Bank Ltd. Officer-2014]

a) 24 b) 30 c) 40 d) 60

09. What will be the least number which when doubled will be exactly divisible by 12, 18, 21 and 30? [Exim Bank Offi-2013]

a) 196 b) 630 c) 1260 d) 2520

10. What is the smallest number of apple that can be distributed equally [Without cutting any apple] among 6, 10, 14 or, 18 boys? [EMBA DU-2011]

a) 1260 b) 315 c) 360 d) 630

11. Six bells start ringing together and ring at intervals of 4, 8, 10, 12, 15 and 20 seconds respectively. How many times will they bring together in 60 minutes? [Mercantile Bank. (MTO)-2015]

a) 15 b) 16 c) 30 d) 33

12. The least number which is a perfect square and divisible by each of the numbers 16, 20 and 24, is: [Meghna Bank (MTO)-2014]

a) 1600 b) 3600 c) 6400 d) 14400

13. Find the largest number of apples not exceeding 1000 which can be divided among 6, 15, 20 or 24 boys? [Exim Bank (TAO)-2018]

a) 960 b) 930 c) 900 d) 870

14. Which of the following is the lowest positive integer divisible by 2, 3, 4, 5, 6, 7, 8 and 9?

a) 15,120 b) 3,024 c) 2,520 d) 1,890