GENERAL APTITUDE

Trainer : Sujata Mohite

Email:sujata.mohite@sunbeaminfo.com

Profit & Loss

- **Basics**

Profit (Gain) = (S.P – C.P)

Loss =(C.P – S.P)

% gain = (Gain / C.P) x 100

% loss = (Loss / C.P) x 100

- **Multipliers to find S.P**

In Case of Profit   :   S.P. = C.P. x **(100 +%gain)/100**

In Case of Loss   :   S.P. = C.P. x **(100 - %loss)/100**

i.e For sale at 25% profit   S.P. = 125 % of C.P.

        For sale at 25% loss   S.P. = 75% of C.P.

Profit & Loss

Q. A man bought certain no of oranges at the rate of 5 for Rs 4 and sold them at the rate of 4 for Rs 5. Find his overall profit/loss percentage?

A. 25.5% Pr   B. 36.5% Pr   C. 56.2% Pr   D. 64.5% Pr

Soln

Cost Price   Selling Price

Oranges→	Rs	Oranges→	Rs
5 →	4	4 →	5
20 →	16	20 →	25

SP>CP, so profit

P% = (SP –CP)/CP x 100

$\quad$ = (25-16)/16 x 100

$\quad$ = 225/4 = 56.20%

Ans C

Cost Price   Selling Price

Oranges→	Rs	Oranges→	Rs
5 →	4	4 →	5
1 →	$\frac{4}{5}$	1 →	$\frac{5}{4}$

SP>CP, so profit

P% = (SP –CP)/CP x 100

$$= \frac{\left(\frac{5}{4} - \frac{4}{5}\right)}{\frac{4}{5}} \times 100 \quad = \frac{\left(\frac{9}{20}\right)}{\frac{4}{5}} \times 100$$

$$= 225/4 = 56.20\%$$

Profit & Loss

Q. A man bought a horse & carriage together for Rs 15600 & sold them together, the horse at 36% profit & the carriage at 15% loss. If selling price of both is equal. Find the cost of the carriage?

A.6000   B. 7600   C. 3600   D. 9600

- **Soln**

- Let CP of horse be H & Carriage be C $\rightarrow$ H+C= 15600

- SP of both is equal

- So, comparing the CPs

- 136H/100   = 85C/100

- H   = 5C/8

- 5C/8 + C   = 15600

- 13C/8   = 15600

- C   = 1200 x 8

- C   = 9600

Ans: D

Profit & Loss

Q. If selling price is doubled, the profit triples. Find the profit %.

A. $66\frac{2}{3}$ %   B. 100%   C. $105\frac{1}{3}$ %   D. 120%

Soln:

Let, CP = C , SP=S

As they ask profit % , we know profit = SP – CP

As per given,

3(S-C) = 2S-C

3S -3C = 2S-C

S = 2C

But, Profit = S –C = 2C – C = C

Profit % = $\frac{profit}{CP}$ x 100 = $\frac{C}{C}$ x 100 = 100%

Ans : B

Profit & Loss

Q. A shopkeeper sells his goods at 20% profit and to make an extra profit he gives only 800 gm per kg. Find his profit %

A. 25% Pr   B. 33.33% Pr   C. 50% Pr   D. 25% Ls

Soln

CP	SP	Profit
100	120	20
80	120	40

% Profit   = 40/80 x 100

= 1/2 x 100

= 50%

Ans C

Alligation

Q. A person blends two varieties of tea , one cost Rs. 160/kg and other cost Rs. 200/kg in the ratio 5 : 4. He sells the blended variety at Rs.192/kg. Find the profit %.

Soln :

cheaper price   dearer price

$$\frac{x}{y} = \frac{d-m}{m-c}$$

$$\frac{5}{4} = \frac{200-m}{m-160}$$

5m -800 = 800 -4m

9m = 1600

$$m = \frac{1600}{9}$$

SP=Rs.192(given) , CP =mean price

Profit% = $\frac{SP-CP}{CP}$ x 100

$$= \frac{192 - \frac{1600}{9}}{\frac{1600}{9}} = \frac{1728 - 1600}{1600} = \frac{128}{16} = 8\%$$

Profit & Loss(Assignment)

Q. **A bookseller sells 84 books at the cost of 72 books. Find his profit or loss%**

A. **14.28%** **B. 28.24%** **C. 20.4%** **D. 12.86%**

Ans : A

Profit & Loss(Assignment)

Q. A vendor bought 6 oranges for Re 10 and sold them at 4 for Re 6. Find his loss or gain percent.

A. 8% gain   B. 10% gain   C. 8% loss   D. 10% loss

Ans: D

Profit & Loss(Assignment)

Q. A shopkeeper sells his goods at 10% loss but uses a weight of 750gms instead of 1kg. Find profit %

A. 20% Pr   **B. 14.28% Pr**   **C. 30% Pr**   **D. 25% Ls**

Ans: A

Profit & Loss(Assignment)

Q. A fruit seller buys oranges at 4 for Rs. 3 and sells them at 3 for Rs. 4. Find its profit percent.

A. 43.75% Pr   B. 77.7% Pr   C. 75% Pr   D. 65.7% Ls

Ans: B

Interest

If P = Principal, R = Rate of interest, N = Time in years, I = Interest, A = Amount

Then **A = P + I**

Simple Interest

S.I. = (P x R x N) / 100

Basic principal remains constant.

S.I. is good example of AP(Arithmetic Progression)

Compound Interest

A = P (1+ R/100)^T   T = periods of compounding,

C.I. = A – P   R = rate for compounding period

Basic principal keeps on increasing as we get interest on interest.

C.I. is good example of GP(Geometric Progression)

Interest

Q. Find the simple interest on Rs. 5200 for 2 years at 6% per annum.

A.Rs. 450   B.Rs. 524   C.Rs. 600   D.Rs. 624

- P = Principal Amount

- T = Time period

- R = Rate of Interest

- I = $\frac{PNR}{100}$

- I = $\frac{5200 \text{ x } 6 \text{ x } 2}{100}$

- I = Rs. 624

- **Ans : D**

Interest

Q. Rs. 1200 is lent out at 5% per annum simple interest for 3 years. Find the amount after 3 years.

A.Rs.1380   B.Rs.1290   C.Rs.1470   D.Rs.1200   E.Rs.1240

- **Soln:**

- A = P + I

- $A = 1200 + \dfrac{PNR}{100}$

- $A = 1200 + \dfrac{1200 \times 5 \times 3}{100}$

- A = Rs. 1380

- **Ans : A**

Interest

Q. Find the rate of interest if the amount after 2 years of simple interest on a capital of Rs. 1200 is Rs. 1440.

A.8%   B.9%   C.10%   D.11%   E.12%

- Amount,A=Rs.1440

- Principal,P=Rs.1200

- I = A – P

- I=Rs.(1440−1200)=240

- $R = \frac{240 \times 100}{1200 \times 2} = 10\%$

- **Ans C**

Interest

Q. What is the difference between the simple interest on a principal of Rs. 500 being calculated at 5% per annum for 3 years and 4% per annum for 4 years?

A.Rs. 5   B.Rs. 10   C.Rs. 20   D.Rs. 40   E. None of these

$SI_1 = P\ N_1 R_1/100$

$$= \frac{500 \times 3 \times 5}{100} = \text{Rs. 75}$$

$SI_2 = P\ N_2 R_2/100$

$$= \frac{500 \times 4 \times 4}{100} = \text{Rs. 80}$$

Difference = 80 – 75 = Rs. 5

OR

500 == 15% ↑ ⇒ 575 (1st case)
500 == 16% ↑ ⇒ 580 (2nd case)
difference = 80 -75 = Rs. 5

Ans : A

Interest

Q. A sum of money placed at simple interest doubles itself in 8 years. Find the rate of interest

A. 8% p.a.   B. 10% p.a.   C. 15% p.a.   D. 12.5% p.a.

Soln:

Amount=Principal+Simple interest

Amount = 2P

A = P + I

 I = A - P

I = 2P-P = P, N=8 yrs

I = (PxRxN)/100

P = (PxRx8)/100

R = 100/8 = 12.5%

Ans D

Interest

Q. P =Rs. 2000, R =10%, N =2yrs , Find A and CI

Soln:

$A = 2000(1 + \frac{10}{100})^2$

$= 2000(\frac{110}{100})^2$

$= 2000(\frac{121}{100})$

= Rs. 2420

CI = 2420 – 2000 = Rs. 420

2000 →10% =200

    10%   10%

2000 ⟶ 2200 ⟶ 2420

CI = 2420 – 2000 = 420

Interest

Q. P =Rs. 4000, R =20% per annum, N =6months.Find CI computed quarterly.

Soln:

N =6months(2 quarterly)

rate(R) = 20 % per annum = 5 % quarterly

After every 3 months CI will be calculated.

by 5%=200   by 5%=210

4000 $\longrightarrow$ 4200 $\longrightarrow$ 4410
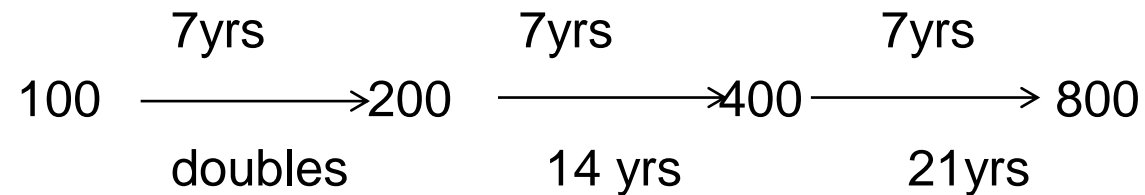
I = 4410 -4000

= Rs. 410

Interest

Q. A sum of money placed at compound interest doubles in 7 years. In how many years the principal becomes-

       a. 4 times of itself

       b. 8 times of itself

Soln:

Let initial value be 100

```
        7yrs              7yrs              7yrs
100 ──────────→200 ──────────→400 ──────────→ 800
        doubles          14 yrs            21yrs
```

a. In 14yrs

b. In 21 yrs

     OR

100------->200 in 7 years
200------->400 in again 7 years then,
400------->800 in 7 years again, thus
the time becomes= 7+7+7= 21 years.

Interest

Q. Difference between Compound interest & simple interest on a sum placed at 8% p.a. compounded annually for 2 years is Rs 128. Find the sum

- A.20000   B. 24000   C. 26000   D. 15000

- Soln:

- Let the principal be P = Rs. 100.

- time N = 2 years, rate of interest R = 8% per annum

- simple interest = PNR/100=$\frac{100*8*2}{100}$ =Rs. 16

- CI (for 2 years)

-         8%   8%

- 100 $\longrightarrow$ 108 $\longrightarrow$ 116.64

-             16.64

 P   SI   CI   Diff

100   16   16.64   0.64

- 0.64 - >   100

- 128   ->   ?

- $\frac{12800}{0.64}$ = Rs. 20000

Interest

Q. Difference between Compound interest & simple interest on a sum placed at 8% p.a. compounded annually for 2 years is Rs 128. Find the sum

- A.20000   B. 24000   C. 26000   D. 15000
- Soln:
- Let the principal be P = Rs. 100.
- time N = 2 years, rate of interest R = 8% per annum
- simple interest =   PNR/100=$\frac{100*8*2}{100}$ =Rs. 16
- compound amount= P(1+R/ 100)^N
- = 100*(1+$\frac{8}{100}$) ^2 = 100 * ($\frac{108}{100}$)^2 = 100($\frac{11664}{10000}$)=$\frac{11664}{100}$ = 116.64
- compound interest = compound amount – principal
- C.I = A - P
      =116.64-100=Rs. 16.64
- the difference between the compound interest and simple interest = 16.64-16.00 = Rs. 0.64
-         0.64   - >   100
-         128   ->   ?
- = $\frac{128*100}{0.64}$ = 20000
- Thus, the sum is Rs. 20000.

- **Ans : A**

Interest(Assignment)

Q. A sum fetched a total simple interest of Rs. 7056 at the rate of 8 percent per year in 7 years. What is the sum?

A. Rs 12600   **B) Rs 15120**   **C) Rs 10080**   **D) Rs 7560**

Ans : A

Q. A sum of money placed at compound interest doubles itself in 4 years. In how many years will it amount to 8 times?

A. 9 years   **B. 8 years**   **C. 27 years**   **D. 12 years**

Ans: D

Interest(Assignment)

Q. Difference between Compound interest & simple interest on a sum placed at 20% per annum compounded annually for 2 years is Rs. 72. Find the sum.

A. Rs. 2400   B.Rs. 8400   C. Rs.1800   D.Rs. 900

Ans : C

Interest(Assignment)

Q. What is the simple interest on a sum of Rs. 700 if the rate of interest for the first 3 years is 8% per annum and for the last 2 years is 7.5% per annum?

A.Rs. 269.5   B.Rs. 283   C.Rs. 273   D.Rs. 280   E. None of these

Ans: C

Interest(Assignment)

Q. A man borrowed total Rs 2500 at Simple interest from two money lenders. He paid interest at 12% p.a. to one and 14% p.a. to the other. The total interest paid for the year was Rs.326. How much did he borrow at 14%?

A. Rs 1000　　　　　B. Rs 1200　　　C. Rs 1300　　　　　D. Rs 1500

Ans: C

Interest

Q. Rs.2100 is lent at compound interest of 5% per annum for 2 years. Find the amount after two years.

- A.Rs. 2300   B.Rs. 2315.25   C.Rs. 2310   D.Rs. 2320   E. None of these

- **Soln:**

- $A = P (1+ R/100)^T$

- $A = 2100(1+5/100)^2$

- $A = 2100 \times [105/100]2$

- $A = \dfrac{2100 \text{ x } 11025}{10000}$

- Amount, A=Rs.2315.25

- **Ans : B**

Time & Work

- Work (Effort) = Manpower x time.

- If A can do a piece of work in x days then work done by A in one day is equal to 1/x of the entire work.

- If A is twice as good a workman as B then A will take half the time taken by B to do a same piece of work.

- If number of people to do a certain work is increased (or decreased) the time taken to do the same work will decrease (or increase)

Time & Work

Q.A, B & C can complete a certain work in 10, 12 & 15 days respectively. If all of them work together in how many days will the work get completed?
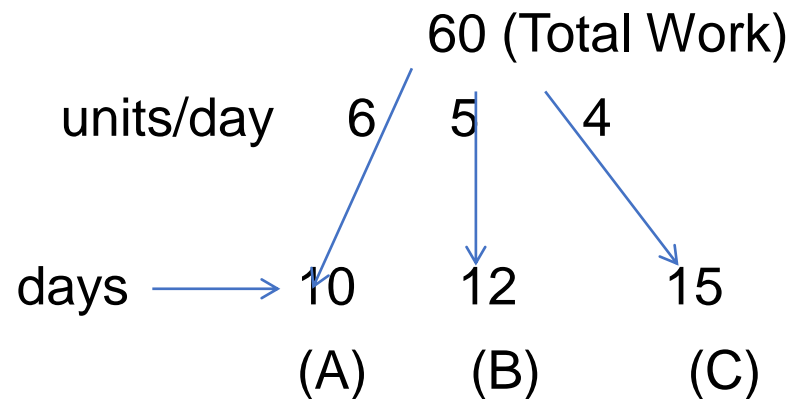
Time & Work

Q. A, B & C can complete a certain work in 10, 12 & 15 days respectively. If all of them work together in how many days will the work get completed?

Soln:

We know, Total work = Days x units/day

LCM(10,12,15) = 60

60 (Total Work)

units/day   6   5   4

days ⟶ 10   12   15

(A)   (B)   (C)

In one day, A+B+C = 6+5+4 = 15units

So to complete TW = 60 units, days = ?

days = $\frac{60}{15}$ = 4.   So 4 days are needed to complete the work.
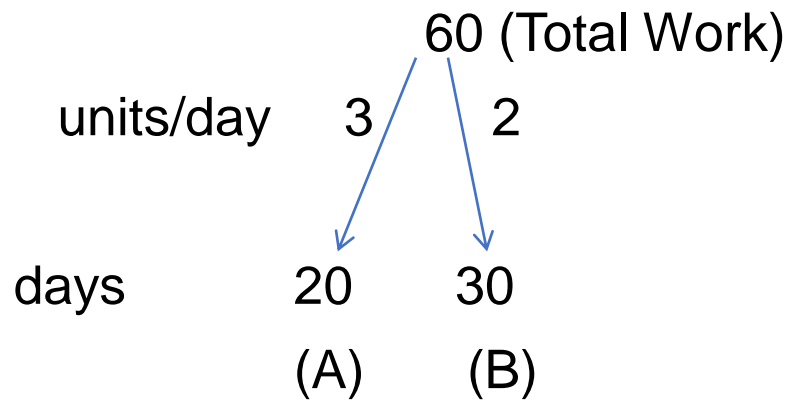
Time & Work

Q. Two persons A & B can complete a work in 20 & 30 days respectively. If both of them start together but A stops after 10 days then how many days will the work last?

A. 7 days   B. 8 days   C. 15 days   D. 10 days

Soln: LCM(20,30) = 60

60 (Total Work)

units/day   3   2

days   20   30

(A)   (B)

A after 10 days, 3 x 10 = 30 units & B after 10 days = 2 x 10 = 20units

Total units =60 , Remaining units = total – A + B(after 10 days)

$$= 60-50=10 \text{units}$$

Days needed to do 10 units work = $\frac{10}{2}$ = 5 days
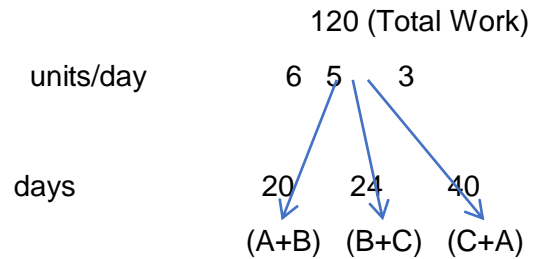
So Total Duration = 10 + 5 = 15 days

Ans: C

Time & Work

Q. Two persons A & B can complete a work in 20 days , B & C can complete it in 24 days & C and A can complete it in 40 days. Find in how many days will B complete the work alone?

A.30 days   B. 40 days   C. 50 days   D. 60 days

- Soln: LCM(20,24,40) = 120

120 (Total Work)

units/day   6 5   3

days   20   24   40

          (A+B)   (B+C)   (C+A)

No of workers

2 x (A+B+C) = 6+5+3 = 14   i.e. 2(A+B+C)'s 1 day work

A + B+C = 14/2 =7

B = 7 – (A+C)

B alone = 7 – 3 = 4 units/day

To find days needed by B = $\dfrac{\text{Total work}}{\text{units/day}}$ = $\dfrac{120}{4}$ = 30 days

So , 30 days are needed by B to complete the work alone.

Ans :A

Time & Work

Q. A & B can do a piece of work in 20 & 16 days respectively. If they work on alternate days each starting with A in how many days was the work completed?
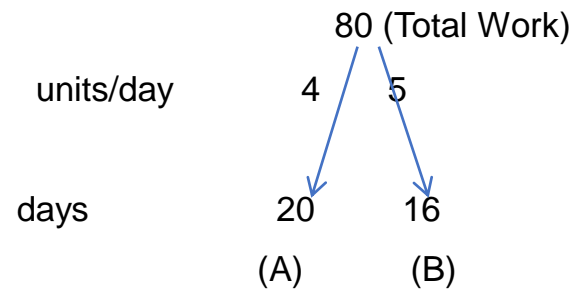
A. 19 days   B. 18 days   C. 16 days   D. 30 days

- Soln: LCM(20,16) = 80

80 (Total Work)

units/day   4   5

days   20   16

      (A)   (B)

- Day 1, A = 4 units

- Day2,   day 1 work added

- B = 5 + 4 = 9units

- 9 units --- 2 days

- 80 units --- ?

- Days = $\frac{80 \times 2}{9}$ = $\frac{160}{9}$ = 17.7777 = 17.78 days

- **Ans B**

Time & Work

- Efficiency = capacity to do work

- Efficiency and time are inversely proportional

- Efficiency $\propto \dfrac{1}{T}$

- Efficiency and work are directly proportional

- Efficiency $\propto$ W

Time & Work

Q. A is twice as efficient as B and completes a certain work in 12 days less than B. In how many days will both of them complete the same work?

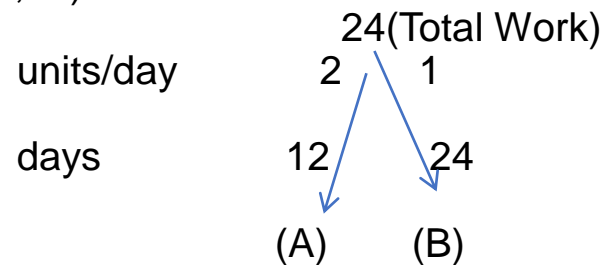A. 6days   B. 8 days   C. 7 days   D. 3days

Soln:

A   B

2x   -   x   = 12

x = 12

As , Efficiency $\propto \frac{1}{T}$ **or**   D*ays ratio is inversely proportional to efficiency ratio.*

A = 12 days and B = 2x = 2 x 12 = 24 days

- LCM(12,24) = 24

24(Total Work)

units/day   2   1

days   12   24

(A)   (B)

A + B = 2 +1 =3 units/day

Days = $\frac{TW}{units/day}$ = $\frac{24}{3}$ = 8 days

Ans B

	A	B
Eff (Ratio)	2	1
Days (Ratio)	1	2
Days	***x-12***	***x***

→ 2(x-12) =x
→ x =24 days
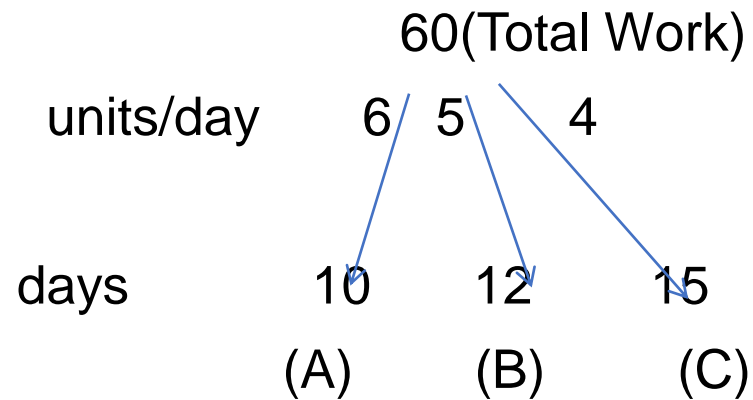→ x – 12 – 24 -12 = 12 days

Time & Work

Q. A, B & C can complete a work in 10, 12 & 15 days respectively. All three together completed the work & they are paid Rs 6000. Find the share of C

A. 3000　　　　　B. 2400　　　　　C. 2000　　　　　D. 1600

- Soln:　　LCM(10,12,15) = 60

60(Total Work)

units/day　　　6　5　　4

days　　　　10　　12　　15

(A)　　　(B)　　　(C)

Together,

(A+B+C) = 6+5+4 = 15 units/day

Total paid amount to (A+B+C) = 6000

$C = \frac{4}{15}$ x 6000

　　= Rs. 1600　　**Ans: D**

Time & Work(Assignment)

Q. Two persons A & B can complete a work in 24 & 30 days respectively. If both of them start together .After how many days should B stop working so that A completes the remaining work in 6 days?

A.7 days   B. 8 days   C. 9 days   D. 10 days

Ans D

Time & Work(Assignment)

Q. Two persons A & B can complete a work in 20 days , B & C can complete it in 30 days while C & A can complete it in 24 days. Find in how many days will B complete the work alone?

A.36 days   B. 48 days   C. 56 days   D. 64 days

Ans B

Time & Work(Assignment)

Q. A is thrice as good a workman as B and can finish a piece of work in 60 days less than B. Find the time to complete the work if both of them work together

A.   20 days   B. 22.5 days   C. 24.5 days   D. 22 days

Ans: B

Time & Work(Assignment)

Q. 2 workers A & B can finish a job in 8 days and 12 days respectively ,after the completion of work they were paid Rs.200. Find share of B.

A. Rs. 120   B. Rs. 80   C. Rs. 40   D. Rs. 60

Ans: B

Work & Time(Assignment)

Q. A, B & C can do a piece of work in 12, 20, & 30 days respectively. If A is assisted everyday alternately by B & C in how many days was the work completed?
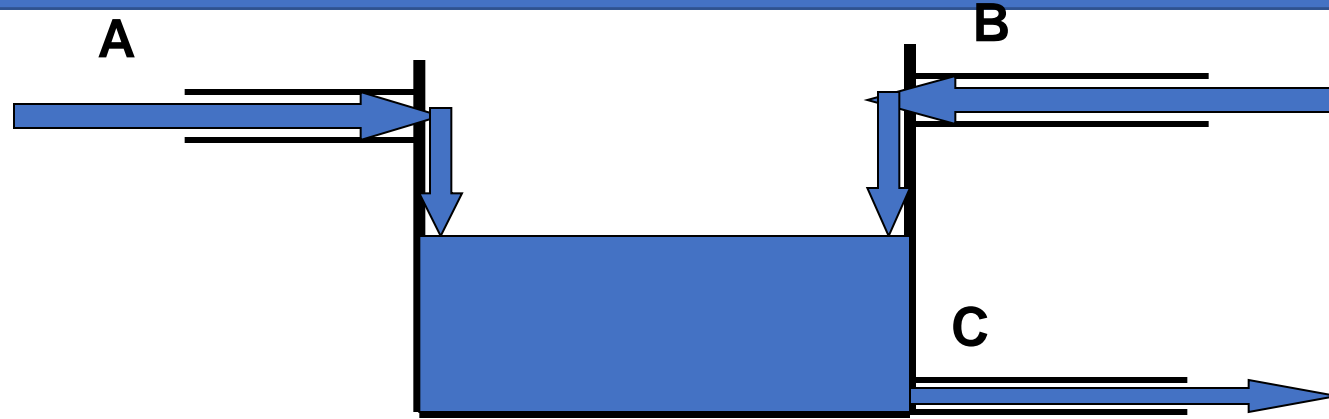
A. 6 days   B. 8 days   C. 7 days   D. 3 days

Ans: B

Pipes & Cisterns

- A cistern may have inlet pipe or outlet pipe.
- Conventionally filling a tank is treated as positive work and emptying a tank as negative work.
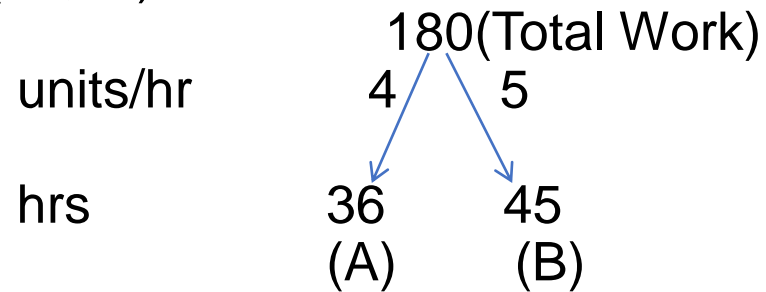- Net work done = (Sum of work done by inlets) – (sum of work done by outlets)

Pipes & Cisterns

Q. Two pipes A and B can fill a tank in 36 hours and 45 hours. If both pipes are opened simultaneously. How much time will it take to fill the tank?

Soln:
- LCM(36,45) = 180

180(Total Work)

units/hr   4   5

hrs   36   45
    (A)   (B)

As both are opened , together , A+B = 4+5 =9 units/hr

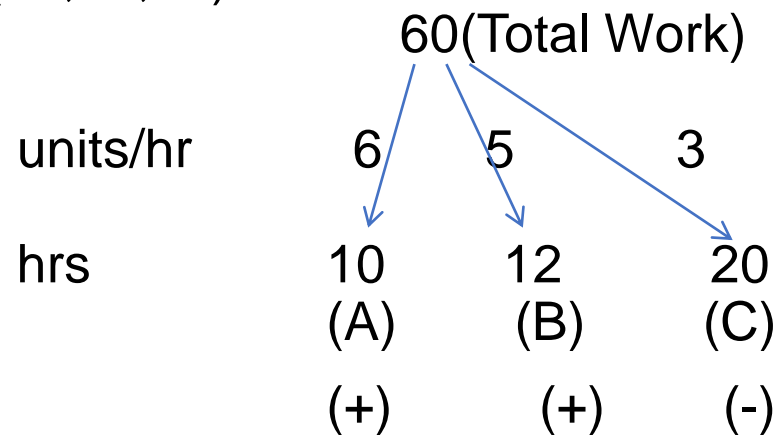For tank to fill = $\frac{180}{9}$ = 20 hours.

Pipes & Cisterns

Q. Two pipes can fill the reservoir in 10 hours and 12 hours respectively. While third pipe empties full tank in 20 hours. If all the three pipes operate simultaneously , how much time will the tank be filled?

Soln:

- LCM(10,12,20) = 60

$$60(\text{Total Work})$$

units/hr	6	5	3
hrs	10	12	20
	(A)	(B)	(C)
	(+)	(+)	(-)

A+B = 6 +5 = 11

As, C empties the tank so, 11 -3 =8 units/hr

Quantity filled in 1 hour if all the pipes are opened together

Time to fill = $\dfrac{\text{TW}}{\text{units/hr}} = \dfrac{60}{8}$ = 15/2 hrs
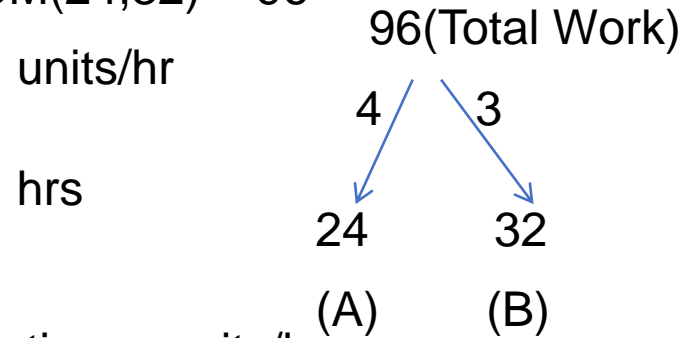
Pipes & Cisterns

Q. Two pipes A and B can fill a tank in 24 minutes and 32 minutes respectively. If both the pipes are opened simultaneously, after how much time should B be closed so that the tank is full in 18 minutes

A . 2 min   B. 4 min   C. 6 min   D.8 min

Soln: LCM(24,32) = 96

96(Total Work)

units/hr

4   3

hrs

24   32

(A)   (B)

WD = time x units/hr

Work done by A alone = 18 x 4=72units

Remaining work =Total units – work done by A
= 96 – 72
=24units

B should be closed after $= \dfrac{24}{3} = 8$ mins.

Ans : D

Pipes & Cisterns

Q. A pump can fill a tank with water in 2 hours. Because of a leak, it took 2 1/3 hours to fill the tank. The leak can drain all the water of the tank in:

A. 4 1/3 hours   B. 7 hours   C. 8 hours   D. 14 hours

- **Soln :**

- Work done $= \dfrac{XY}{Y-X}$ where, X = number of hrs to fill tank , Y = number of hrs to fill tank with leakage

- $2\dfrac{1}{3} = \dfrac{7}{3}$

- Work done $= \dfrac{2 \, x \, \frac{7}{3}}{\frac{7}{3} - 2} = \dfrac{\frac{14}{3}}{\frac{1}{3}} = 14$

- Leak will empty the tank in 14 hours

- **Ans: D**

Pipes & Cisterns(Assignment)

Q. There are 3 pipes attached to a tank A, B & C. A alone can fill the tank in 60 min, B can fill the tank in 45 min & C can empty the full tank in 30 min. If all three pipes are opened together in how much time will the tank be full?

A. 5 hrs   B. 4 hrs   C. 3 hrs   D. 2 hrs

Ans: C

Q. Two pipes A and B can fill a cistern in $37\frac{1}{2}$ minutes and 45 minutes respectively. Both pipes are opened. The cistern will be filled in just half an hour, if B is turned off after:

A. 5 mins   B. 9 mins   C. 10 mins   D. 15 mins

Ans : B

Pipes and Cisterns(Assignment)

Q. Two pipes A & B can fill the cistern in 20 min & 25 min respectively. Both are opened together but at the end of 5 min B is turned off. How much total time will the cistern take to fill up?

A. 5 min　　　　B. 10 min　　　C. 12 min　　　　　D. 16 min

Ans D

THANK YOU