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

Combination

Q. A merchant has 1000 kg of sugar, part of which he sells at 8% profit and rest at 18% profit. he gains 14% on the whole. What is the quantity sold at 18% profit ?

A. 300 kg   B. 700 kg   C. 600 kg   D. 400 kg

Ans : C

Combination

Q. A man has 80 pens. He sells some of these at 15% profit and the rest at 10% loss. Overall he gets a profit of 10%. Find how many pens were sold at 15% profit ?

A. 16   B. 64   C. 40   D. 72

Ans: B

Mixtures & 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 %.

A. 6%   B. 8%   C. 7%   D. 9%

Soln :

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

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

5m -800 = 800 -4m

9m = 1600

m = $\frac{1600}{9}$
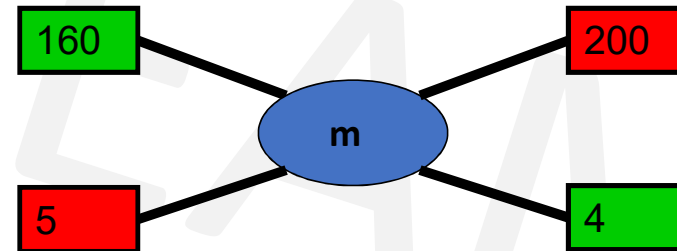
SP=Rs.192(given) , CP =mean price

cheaper price   dearer price

160   m   200

5   4

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

$= \frac{192 - \frac{1600}{9}}{\frac{1600}{9}} = \frac{1728 - 1600}{1600} = \frac{128}{16} = 8\%$ **Ans: B**

Profit & Loss(Assignment)

If gain is half of SP, the gain percentage is _____?

A. 50%   B. 33.33%   C. 25%   D. 100%

Soln:

we know profit = SP – CP

As per given,

1/2SP = SP-CP

CP = SP – 1/2SP

SP = 2CP

But, Profit = SP –CP = 2CP– CP= CP

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

Ans : D

Profit & Loss(Assignment)

Q. If the cost price of 6 pencils is equal to the selling price of 5 pencils, then the gain per cent is

A. 10%   B. 20%   C. 15%   D. 25%

Soln:

Let the cost price of one pencil be Rs.1.
CP of 5 pencils =Rs. 5

CP of 6 pencils =Rs. 6

as, SP of 5 pencils = CP of 6 pencils

SP of 5 pencils = Rs.6
if, SP >CP so it's a profit
profit = SP − CP
= 6 − 5
= 1
Profit % = profit/cp x 100

      = 1/5 x100

      = 20%

SP=CP + gain
6 times CP is equal to 5 times SP

6CP=5SP
6CP=5(CP + gain)
6CP=5CP+5gain
CP=5 gain

Gain % = gain/CP x100
      = 1/5 x 100
      = 20%

Ans: B

Profit & Loss(Assignment)

Q. Ram bought 1600 eggs at the rate of Rs. 3.75 per dozen. He sold 900 of them at 2 eggs for Rs. 1 and the remaining at 5 eggs for Rs. 2. Find his loss or gain per cent.

A. 4%   B. 45%   C. 42%   D. 46%

Ans: D

Price of 12 eggs = Rs. 3.75
Price of 1 egg = 3.75/12 = Rs.0.3125
Price of 1600 eggs = Rs. (0.3125 × 1600) = Rs.500
CP of eggs = Rs. 500
Selling price of 2 eggs = Rs. 1
Selling price of 900 eggs =
Selling price of 5 eggs = Rs. 2
Selling price of remaining (1600 - 900 = 700) eggs
Total SP of eggs = Rs. 450 + 280 = Rs.730.
SP > CP   → profit/gain
Gain = SP – CP = Rs. 730 - 500 = Rs. 230.
%Gain = 230/500 x100 = 46%

Profit & Loss(Assignment)

Q. A shopkeeper purchases 11 sword for Rs.10 and sells them at the rate of 10 sword for Rs. 11. He earns a profit % of?

A. 11%   B. 15%   C. 20%   D. 21%

Ans: D

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. By selling 100 pencils, a shopkeeper gains the selling price of 20 pencils. His gain per cent is

A) 25   B) 20   C) 15   D) 12

Ans: A

SP −CP =gain here gain = SP of 20 pencils

S.P. of 100 pencils − C.P. of 100 pencils = S.P. of 20 pencils
S.P. of 80 pencils = C.P. of 100 pencils

Let C.P. of 1 pencil = Rs. 1
 S.P. of 80 pencils = Rs. 100

 C.P. of 80 pencils = Rs. 80

 Profit % = $\frac{100-80}{80}$ ×100 = 25%

Profit & Loss(Assignment)

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

- **Soln**
- Let CP of horse be H & Carriage be C → 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(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

Profit & Loss(Assignment)

Q. A man buys a cycle for Rs. 1400 and sells it at a loss of 15%. What is the selling price of the cycle?

A. Rs. 1090   B. Rs. 1160   C. Rs. 1190   D. Rs. 1202

Ans: C

Profit & Loss(Assignment)

Q. 100 oranges are bought at the rate of Rs. 350 and sold at the rate of Rs. 48 per dozen. The percentage of profit or loss is:

A. 14 2/7% gain   B. 15% gain   C. 14 2/7% loss   D. 15 % loss

Ans: A

Profit & Loss(Assignment)

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

Probability

- How likely an event is supposed to happen.

- Probability = $\dfrac{\text{Favourable outcome}}{\text{Total number of outcomes}}$

- AND → multiply(x) e.g:- 1green and 1 blue ball in a box

- OR → Add (+) e.g:- 1 red or 1 blue ball in a box

- 1 bag has 3 balls, what is the probability of you picking up 2 balls?

    - $3C_2 = \dfrac{3 \times 2}{1 \times 2} = 3$

Total no. of balls
the bag contains

0ut of which how many balls
We need to choose
(tells number of times 3 has to be reduces)

Probability = $\dfrac{\text{Favourable outcome}}{\text{Total number of outcomes}}$

Points to Remember

- The **probability** of an event will not be less **than** 0.

- This is because 0 is impossible (sure that something will not happen).

- The **probability** of an event will not be **more than 1**. This is because **1** is certain that something will happen.

- The probability of an event is **a number** describing the chance that the event will happen.

- An event that is certain to happen has a probability of 1.

- An event that cannot possibly happen has a probability of 0.

- If there is a chance that an event will happen, then its probability is between 0 & 1.

Probability

- **Atleast** – min to max

- Eg:- 2 bags out of 3

       ↓   ↓

     min   max

So various probabilities to be done is 2 and 3

- **Atmost** - max to min

- Eg:- A bag has 3 balls out of which probability to pick up 2 balls

                                      ↓

                         atmost 2 → max 2 , 1 , 0 (min)

Probability

Q. A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?

A. 10/21   B. 11/21   C. 2/7   D. 5/7

- **Soln-**

- Total balls = 2+3+2 =7 balls in the bag

- None = blue (neglect whichever color is written after none)

- Draw =2 balls

- Probability $= \dfrac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \dfrac{2R \ \text{or} \ (1R \text{ and } 1\,G) \text{ or } 2G}{7_{C_2}} = \dfrac{2C_2 + (2C_1 \times 31) + 3C_2}{7_{C_2}} = \dfrac{10}{21}$

Ans : A

Probability

Q. In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green?

A. 1/3   B. ¾   C. 7/19   D. 8/21   E. 9/21

Soln:

- Total balls = 8+7+6 = 21 balls in the box

- Neither red nor green means only blue

- Draw =1 ball

- Probability $= \dfrac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \dfrac{1 blue\ out\ of\ total\ 7}{21C_1} = \dfrac{7C_1}{21C_1} = \dfrac{7}{21} = \dfrac{1}{3}$

Ans: A

Probability

Q. In a class, there are 15 boys and 10 girls. Three students are selected at random. The probability that 1 girl and 2 boys are selected, is:

A. 21/46 B. 25/117 C. 1/50 D. 3/25

Soln:

- Total students = 15 + 10 =25 students in a class
- Draw =3 students

$$\text{Probability} = \frac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \frac{10C_1 \times 15C_2}{25C_3} = \frac{21}{46}$$

Ans : A

Probability

Q. What is the probability of getting a sum 5 from two throws of a dice?

A. 1/9   B. 1/8   C. 1/7   D. 1/6

Soln-

Dice =6 faces = 6 possibilities

So in two throws of dice, total possibilities = **6 x 6= 36**

Sum =5,so favourable outcomes are - { (1,4), (4,1) , (2,3) , (3,2) }

Probability = $\dfrac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \dfrac{4}{36} = \dfrac{1}{9}$

Ans : A

Probability

Q. Three unbiased coins are tossed. What is the probability of getting utmost two heads?

A. ¾   B. ¼   C. 3/8   D. 7/8

- **Soln-**
- Total possibilities = {TTT, TTH, THT, HTT, THH, HTH, HHT, HHH}
- Event of getting utmost 2 heads = max 2H or 1H or 0H
- Possibility of getting 2 H = {TTT, TTH,THT, HTT, THH, HTH, HHT}
- Probability = $\dfrac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \dfrac{7}{8}$

Ans: D

Probability

- A Standard deck of playing cards consist of 52 cards, among them there are 4 subgroups/suits –
- The four suits with there names , symbols and color –

1. The suit of Hearts   ♥ ⟶   13 cards

                 26 red cards

2. The suit of Diamonds   ♦ ⟶   13 cards

3. The suit of Clubs   ♣ ⟶   13 cards

                 26 black cards
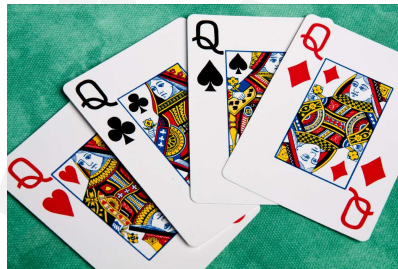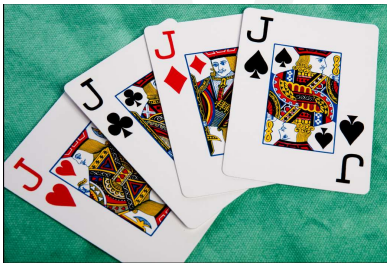
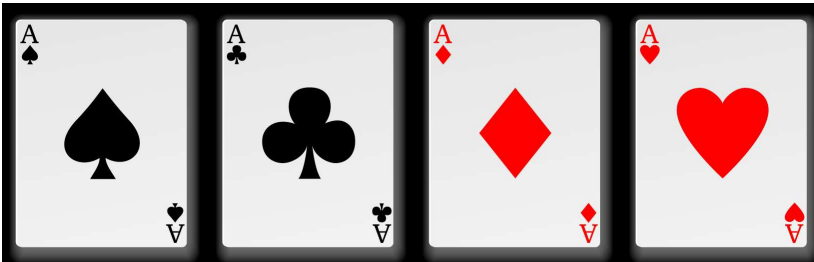4. The suit of Spades   ♠ ⟶   13 cards

Probability
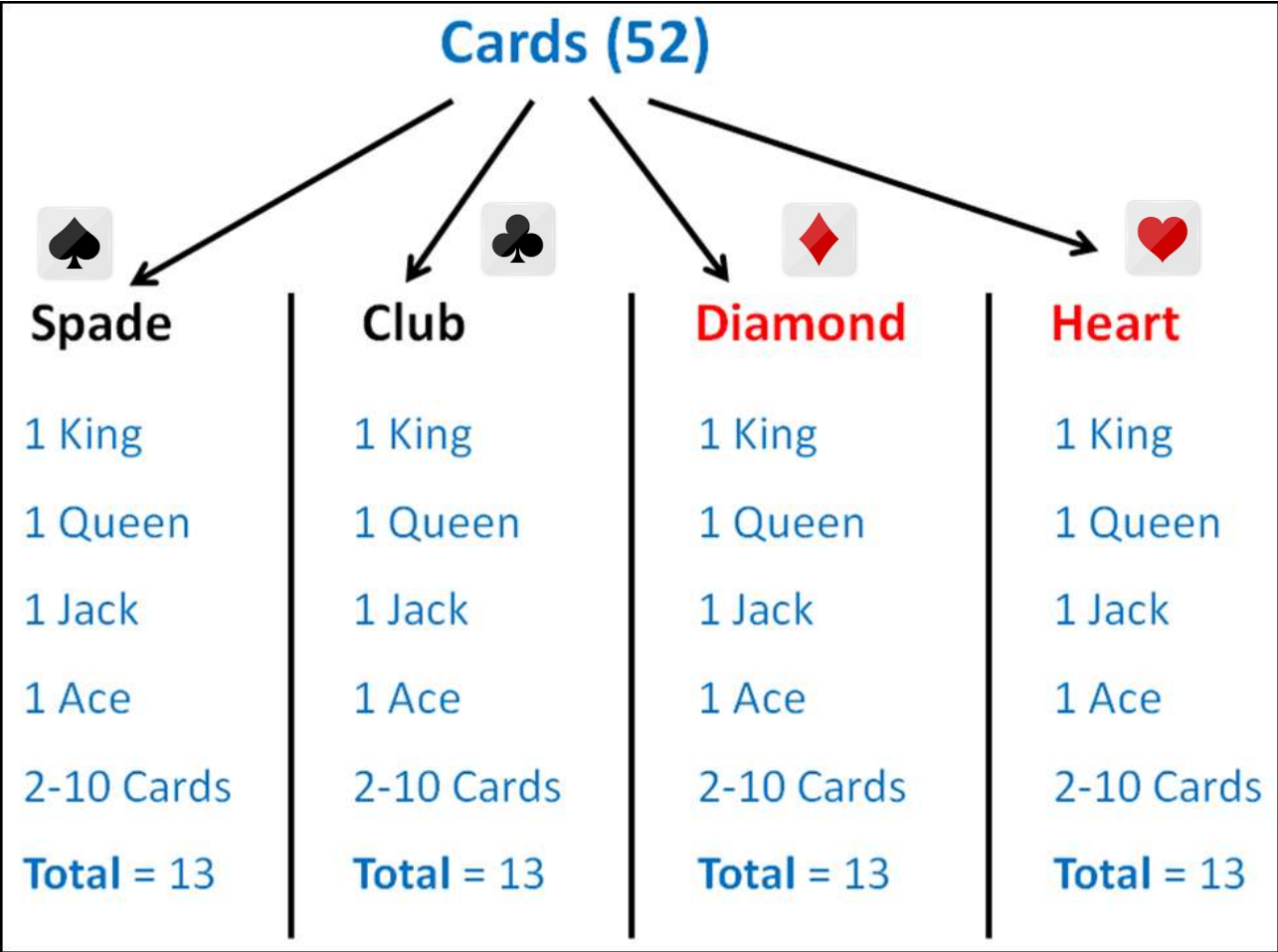
Probability

- King, Queen and Jack (or Knaves) are **face cards**. So, there are **12 face cards** in the deck of 52 playing cards.

- **Jokers** are not normally considered to be **face cards**

- **Aces**

- There are 4 Aces in every deck, 1 of every suit.

Probability

Q. From a pack of 52 cards, two cards are drawn together at random. What is the probability of both the cards being kings?

A. 1/15   B. 25/57   C. 35/256   D. 1/221

- **Soln-**
- **Total cards in a pack =52**
- Total kings in a pack = 4
- Drawn =2

- Probability = $\dfrac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \dfrac{4_{C_2}}{52_{C_2}} = \dfrac{1}{221}$

Ans : D

Probability

Q. Out of 450 students of a school 325 play football,175 play cricket and 50 neither play football nor cricket. How many students play both football and cricket?

A. 50   B. 75   C. 100   D. 225

Soln:

- A∪B is used for the set that contains those elements that are either in A or in B, or in both.
- A∩B is used for the largest set which contains all the elements that are common to both the sets.
- **n(A∩B) = n(A) + n(B) − n(A∪B)   → addition theorem of probability.**
- Total students who play either Cricket or football or both cricket and football
- = n(A∪B) = 450 – 50 = 400
- students who play cricket, n(A) = 325 and students who play football, n(B) = 175
- Students who play both football and Cricket = n(A∩B) = 325 + 175 – 400 = 100
- **Ans: C**

Probability(Assignment)

Q. Two dice are rolled. Find the probability of getting a sum of 8 or 11 on both the dices.

A. 5/36   B. 9/36   C. 7/36   D. 11/36

Ans: C

- Favorable outcomes for sum of 8 or 11 on both the dices are-
- (2,6),(3,5),(4,4),(5,3),(6,2),(5,6),(6,5)
- Number of favorable outcomes = 7
- Probability = $\frac{7}{36}$

Probability(Assignment)

A man tossed two dice. What is the probability that the total score is a prime number?

A. 5/12   B. 5/14   C. 5/20   D. 5/24

- **Soln-**

- **Dice =6 faces = 6 possibilities**

- 2 Dice = 6 x 6 = 36 possibilities

- Sum = prime number

- So favourable outcomes are - { (1,1), (1,2) , (1,4), (1,6) , (2,1) , (2,3) , (2,5) , (3,2) , (3,4) , (4,1) , (4,3) , (5,2) , (5,6) , (6,5) , (6,1) }

- Probability = $\dfrac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \dfrac{15}{36} = \dfrac{5}{12}$

Ans : A

Probability(Assignment)

Q. A brother and sister appear for an interview against two vacant posts in an office. The probability of the brother's selection is 1/5 and that of the sister's selection is 1/3. What is the probability that one of them is selected?

A. 1/5   B. 2/5   C. 1/3   D) 2/3

Soln: -

(brother is selected and sister is not selected) OR (brother is not selected and sister is selected)

$$\text{Probability} = \frac{1}{5} \times \frac{2}{3} + \frac{4}{5} \times \frac{1}{3}$$

$$= \frac{6}{15}$$

$$= \frac{2}{5}$$

Ans: B

sister not selected = 1 – prob. of sister selected

$$= 1 - \frac{1}{3}$$

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

brother not selected = 1 – prob. of brother selected

$$= 1 - \frac{1}{5}$$

$$= \frac{4}{5}$$

Probability(Assignment)

Q. Probability of occurrence of event A is 0.5 and that of event B is 0.2. the probability of occurrence of both A and B is 0.1. what is the probability that none of A and B occur?

A. 0.4   B. 0.5   C. 0.2   D. 0.1

Soln:

probability of sure event = 1

- Given P(A) = 0.5 and P(B) = 0.2

- P(A or B) = P(A ∪ B) = P(A) + P(B) – P(A ∩ B)

$$= 0.5 + 0.2 – 0.1 = 0.6$$

- And P(neither A nor B) = P(A' ∩ B') = 1 – P(A ∪ B) = 1 – 0.6 = 0.4.

Ans: A

- Note: P(A∪B) = P(A) + P(B) - P(A∩B)

- This is also known as the addition theorem of probability.

Probability(Assignment)

Q. A bag contains 4 white, 5 red and 6 blue balls. Three balls are drawn at random from the bag. The probability that all of them are red, is?

A. 1/22 B. 3/22 C. 2/91 D. 2/77

Ans : C

Probability(Assignment)

Q. What is the probability of getting a sum 9 from two throws of a dice?

A. 1/6   B. 1/8   C. 1/9   D. 1/12

Ans : C

Probability(Assignment)

Q. A bag contains 6 black and 8 white balls. One ball is drawn at random. What is the probability that the ball drawn is white?

A. ¾   B. 4/7   C. 1/8   D. 3/7

Ans : B

Probability(Assignment)

Q. A bag contains 6 blue balls, 3 white balls and 4 green balls. If two balls are drawn at random what is the possibility that they are not of the same color?

A. 6/13   B. 7/13   C. 9/13   D. 10/13

- **Ans: C**

Probability(Assignment)

Q. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is a face card (Jack, Queen and King only)?

A. 1/13

B. 1/4

C. 3/13

D. 9/52

Ans: C

Probability(Assignment)

Q. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is not a face card (Jack, Queen and King only)?

A. 5/13   B. 10/13   C. 1/13   D. 1/26

Ans: B

Probability(Assignment)

Q. A basket contains 6 apples ,4 pears and 3 oranges. If two fruits are picked up at random, what is the probability that both are pears?

A. 4/13   B. 1/13   C. 2/13   D. 3/26

Ans: B

Partnership

Q.A started business with Rs. 45,000 and B joined afterwards with 30,000. If the profit at the end of a year was divided in the ratio 2 : 1 respectively, then B would have joined A for business after.

A. 1 month   B. 2 months   C. 3 months   D. 4 months

Soln:

- Capital of A = Rs. 45,000   Capital of B = Rs. 30,000

- Ratio of P1:P2=2:1

- using formula,

- $\dfrac{C1T1}{C2T2} = \dfrac{P1}{P2}$

- In this type , the time period is 12 months i.e. one year

- $\dfrac{45000 \times 12}{30000 \times T2} = \dfrac{2}{1}$

- T2=9

- B would join business after (12 - 9) = 3 months

- **Ans: C**

Partnership

Q. If 4 (A's capital) = 6 (B's capital) = 10 (C's capital), then out of a profit of Rs. 4650, C will receive ____

A) Rs.700   B) Rs.800   C) Rs.900   D) Rs.1000

Soln:

4A = 6B = 10C

A= 10/4C = 5/2C   and   B = 10/6C = 5/3C

    A   +   B   + C = 4650

   5/2C + 5/3C + C = 4650

           C = 900

Share of C or C will receive Rs.900

Ans: C

Partnership

Q. A, B & C enter into a partnership with total of Rs 8,200. A's capital is Rs 1000 more than B's & Rs 2000 less than C's. What is B's share of annual profit of Rs 2,460?

A. Rs 1320   B. Rs 720   C. Rs 420   D. Rs 520

Ans: C

Partnership(Assignment)

Q. A started a business by investing Rs. 32000. After 4 months B joined him with some investments. At the end of the year the total profit was divided in the ratio 6:5. How much capital was invested by B?

A. Rs. 30,000   B. Rs. 28000   C. Rs. 40000   D. Rs. 19000

Ans: C

Partnership(Assignment)

Q. Three persons stared a placement business with a capital of Rs. 3000. B invests Rs. 600 less than A and C invests Rs. 300 less than B. What is B's share in a profit of Rs. 886 ?

A. Rs. 443

B. Rs. 354.40

C. Rs. 265.80

D. Rs. 177.20

Ans: C

Partnership(Assignment)

Q. Anand and Deepak started a business investing Rs.22,500 and Rs.35,000 respectively. Out of a total profit of Rs. 13,800. Deepak's share is

A. Rs 9600   B. Rs 8500   C. Rs 8450   D. Rs 8400

Ans: D

Ratio of their shares-

= 22500 : 35000

=   9 : 14

Deepak's share = Rs.(13800×14/23)

                      = Rs. 8400

Partnership(Assignment)

Q. A started a business with Rs. 21,000 and is joined afterwards by B with Rs. 36,000. After how many months did B join if the profits at the end of the year are divided equally?

A. 4   B. 5   C. 6   D. 7

Ans: B

- Capital of A = Rs. 21000   Capital of B = Rs. 36000

- Ratio of P1:P2=1:1

- **using formula,**

- $$\frac{C1T1}{C2T2} = \frac{P1}{P2}$$

- In this type , the time period is 12 months i.e. one year

- $$\frac{21000 \times 12}{36000 \times T2} = \frac{1}{1}$$

- T2=7

- B would join business after (12 - 7) = 5 months

Partnership(Assignment)

Q. A,B,C subscribes Rs. 50000 for a buisness. A subscribes Rs. 4000 more than B and B Rs. 5000 more than C. Out of a total profit of Rs. 35000, A receives :

A. Rs. 8400

B. Rs. 11900

C. Rs. 13600

D. Rs. 14700

Ans: D

Partnership(Assignment)

- Three partners A , B , C start a business . B's Capital is four times C's capital and twice A's capital is equal to thrice B's capital. If the total profit is Rs 16500 at the end of a year ,Find out B's share in it.

- A. Rs. 4000   B. Rs. 5000   C. Rs. 6000   D. Rs. 7000

- **Ans: C**

- A : B = 3 : 2

- B : C = 4 : 1

- A:B:C = 12:8:2(using inverted N)

- A:B:C = 6:4:1

Share of B = 16500 x 4/11 = 6000/-