Tips, Formulae and Shortcuts for Profit, Loss and Discount

By

CRACKU.IN

Cracku Tip 1 – Profit, Loss and Discount

- Profit, Loss and Discount is very important topic for CAT and significant number of questions are asked from this topic every year.
- The number of concepts in these topics is limited and most of the problems can be solved by applying the formulae directly
- This document covers various formulas, tips and shortcuts of Profit, Loss and Discount topic.

Cracku Tip 2 – Profit, Loss and Discount

- **Cost Price**

The amount paid to purchase an article or the cost of manufacturing an article is called Cost Price (C.P)

- **Selling Price**

The price at which a product is sold is called Selling price (S.P)

- **Marked Price**

The price at which an article is marked is called Marked price (M.P)

Cracku Tip 3 – Profit, Loss and Discount

- If S.P>C.P, then Profit or Gain, P = S.P – S.P
- If C.P>S.P, then Loss, L = C.P – S.P
- % Profit or Gain percentage or Profit Percentage = $\frac{\text{Profit}}{\text{C.P}} \times 100$
- %Loss = $\frac{\text{Loss}}{\text{C.P}} \times 100$
- Discount = M.P – S.P (If no discount is given, then M.P = S.P)
- %Discount = $\frac{\text{Discount}}{\text{M.P}} \times 100$

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Cracku Tip 4 – Profit, Loss and Discount

- Total increase in price due to two subsequent increases of X% and Y% is (X+ Y+ $\frac{XY}{100}$)%
- If two items are sold at same price, each at Rs. x, one at a profit of P% and other at a loss of P% then there will be overall loss of $\frac{P^2}{100}$ %

The absolute value of loss = $\frac{2P^2x}{100^2-P^2}$

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Cracku Tip 5 – Profit, Loss and Discount

- If C.P of two items is same, and by selling of each item he earned p% profit on one article and p% loss on another, then the there will be no loss or gain.

- If a trader professes to sell at C.P but uses false weight, then

$$\text{Gain\%} = \frac{\text{Difference}}{\text{True Weight}} \times 100\%$$

difference represents the difference in claimed weight and true weight; claimed weight $>$ true weight

Cracku Tip 6 – Profit, Loss and Discount

- S.P = $\left(\frac{100 + \text{Profit}\%}{100}\right)$ C.P (If S.P > C.P)
- S.P = $\left(\frac{100 - \text{Loss}\%}{100}\right)$ C.P (If S.P < C.P)
- C.P = $\frac{100 \times \text{S.P}}{100 + \text{Profit}\%}$ (If S.P > C.P)
- C.P = $\frac{100 \times \text{S.P}}{100 - \text{Loss}\%}$ (If S.P < C.P)

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Cracku Tip 7 – Profit, Loss and Discount

- Buy x get y free, then the %discount = $\frac{y}{x+y} \times 100$.

  (here x+y articles are sold at C.P of x articles.)

- When there are two successive discounts of a% and b% are given then the,

$$\text{Resultant discount} = \left(a + b - \frac{a*b}{100}\right)$$

- If C.P of x article is equal to the selling price of y articles then the,

$$\text{Resultant profit \% or loss \%} = \frac{y-x}{y} \times 100$$

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Profit Loss & Discount Questions for CAT

Questions

Instructions

Directions for the following two questions: Shabnam is considering three alternatives to invest her surplus cash for a week. She wishes to guarantee maximum returns on her investment. She has three options, each of which can be utilized fully or partially in conjunction with others.

Option A: Invest in a public sector bank. It promises a return of +0.10%.

Option B: Invest in mutual funds of ABC Ltd. A rise in the stock market will result in a return of +5%, while a fall will entail a return of – 3%.

Option C: Invest in mutual funds of CBA Ltd. A rise in the stock market will result in a return of – 2.5%, while a fall will entail a return of + 2%.

Question 1

The maximum guaranteed return to Shabnam is

A 0.25%

B 0.10%

C 0.20%

D 0.15%

E 0.30%

Answer: C

Video Solution

Explanation:

Let a, b and c be the percentages of amount invested in options A, B and C respectively => a + b + c = 100

Return attained if there is a rise in the stock market => 0.001a + 0.05b - 0.025c

Return attained if there is a fall in the stock market => 0.001a - 0.03b + 0.02c

Maximum guaranteed return is attained when both are equal because it is indifferent to rise and fall in the market.

0.001a + 0.05b - 0.025c = 0.001a - 0.03b + 0.02c

=> 0.08b = 0.045c => 16b = 9c

Let's put the values for a, b and c that satisfy the above equation.

b = 9, c = 16, a = 75 => return = 0.125

b = 18, c = 32, a = 50 => return = 0.15

b = 27, c = 48, a = 25 => return = 0.175

b = 36, c = 64, a = 0 => return = 0.2

Hence, the maximum guaranteed return is 0.2%

Question 2

What strategy will maximize the guaranteed return to Shabnam?

A 100% in option A

B 36% in option B and 64% in option C

C 64% in option B and 36% in option C

D 1/3 in each of the three options

E 30% in option A, 32% in option B and 38% in option C

Answer: B

Video Solution

Explanation:
Let a, b and c be the percentages of amount invested in options A, B and C respectively => a + b + c = 100

Return attained if there is a rise in the stock market => 0.001a + 0.05b - 0.025c

Return attained if there is a fall in the stock market => 0.001a - 0.03b + 0.02c

Maximum guaranteed return is attained when both are equal because it is indifferent to rise and fall in the market.

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b = 9, c = 16, a = 75 => return = 0.125

b = 18, c = 32, a = 50 => return = 0.15

b = 27, c = 48, a = 25 => return = 0.175

b = 36, c = 64, a = 0 => return = 0.2

Hence, the maximum guaranteed return is 0.2% and it is attained when 36% is invested in option B and 64% is invested in option C.

Instructions
For the following questions answer them individually

Question 3

The owner of an art shop conducts his business in the following manner: every once in a while he raises his prices by X%, then a while later he reduces all the new prices by X%. After one such updown cycle, the price of a painting decreased by Rs. 441. After a second up-down cycle the painting was sold for Rs. 1,944.81. What was the original price of the painting?

A Rs. 2,756.25

B Rs. 2,256.25

C Rs. 2,500

D Rs. 2,000

Answer: A

Video Solution

Explanation:
Let the price of the painting be P
One cycle of price increase and decrease reduces the price by $x^2/100 * P = 441$
Let the new price be N => $P - x^2/100 * P = N$
Price after the second cycle = $N - x^2/100 * N$ = 1944.81
=> $(P - x^2/100 * P)(1 - x^2/100) = 1944.81$
=> $(P - 441)(1 - 441/P) = 1944.81$
=> $P - 441 - 441 + 441^2/P = 1944.81$
=> $P^2 - (882 + 1944.81)P + 441^2 = 0$
=> $P^2 - 2826.81P + 441^2 = 0$
From the options, the value 2756.25 satisfies the equation.
So, the price of the article is Rs 2756.25

Question 4

In a stockpile of products produced by three machines M1, M2 and M3, 40% and 30% were manufactured by M1 and M2 respectively. 3% of the products of M1 are defective, 1% of products of M2 defective, while 95% of the products of M3 are not defective. What is the percentage of defective in the stockpile?

A 3%

B 5%

C 2.5%

D 4%

Answer: A

Video Solution

Explanation:
Let's say total products maufactured by M1, M2 and M3 are 100.

So M1 produced 40, M2 produced 30 and M3 produced 30

Defective pieces for M1 = $\frac{120}{100}$

Defective pieces for M2 = $\frac{30}{100}$

Defective pieces for M3 = $\frac{150}{100}$

So total defective pieces are $\frac{150+30+120}{100} = \frac{300}{100}$ = 3% of total products.

Question 5

Gopal went to a fruit market with certain amount of money. With this money he can buy either 50 oranges or 40 mangoes. He retains 10% of the money for taxi fare. If he buys 20 mangoes, then the number of oranges he can buy is

A 25

B 18

C 20

D None of these

Answer: C

Video Solution

Explanation:
Let's say total money was x rs.
So cost price of 40 mango will be = x ;
Hence cost price of 20 mangoes will be = $\frac{x}{2}$
Taxi fare = $\frac{10x}{100}$
Total expense = $\frac{x}{2} + \frac{10x}{100} = \frac{6x}{10}$
Remaining money = $\frac{4x}{10}$
Cost price of 1 orange will be = $\frac{x}{50}$
Hence in $\frac{4x}{10}$ rs. 20 oranges can be purchased.

Instructions

Ghosh Babu has a certain amount of property consisting of cash, gold coins and silver bars. The cost of a gold coin is Rs. 4000 and the

cost of a silver bar is Rs. 1000. Ghosh Babu distributed his property among his daughters equally. He gave to his eldest daughter gold coins worth 20% of the total property and Rs. 25000 in cash. The second daughter was given silver bars worth 20% of the remaining property and Rs. 50000 cash. Among the third and fourth daughters, he distributed the remaining gold and silver bars equally both together accounting each for 20% of the property remaining after the previous distribution. He also gave the third and fourth daughters Rs. 25000 more than what the second daughter had received in cash.

Question 6

The amount of property in gold and silver possessed by Ghosh Babu is

A 2,25,000

B 2,75,000

C Rs. 4,25,000

D None of these

Answer: B

Video Solution

Explanation:
The total property consists of cash, gold coins and silver bars.
And ghosh babu gave equal parts to 4 daughters, hence they should have 25% of total property each.
As eldest daughter possess gold coins as 20% worth of total property, so 25000 cash should be equal to 5% of total property.
So total property will be = $\frac{25000\times100}{5}$ = 500000
Hence property amounting only gold coins and silver bars will be = Total property - Total Cash
i.e. = 500000 - (25000 + 50000 + 75000 + 75000)
= 2,75,000

Question 7

Total property of Ghosh Babu (in Rs.lakh) is

A 5.0

B 7.5

C 10.0

D 12.5.

Answer: A

Video Solution

Explanation:
The total property consists of cash, gold coins and silver bars.
And ghosh babu gave equal parts to 4 daughters, hence they should have 25% of total property each.
As eldest daughter possess gold coins as 20% worth of total property, so 25000 cash should be equal to 5% of total property.
So total property will be = $\frac{25000\times100}{5}$ = 500000

Question 8

If the ratio of the gold to silver bars that Ghosh Babu had is 7:27, the number of silver bars he has is

A 90

B 60

C 75

D 135

Answer: D

Video Solution

Explanation:
Let the number of gold bars be 7a and the number of silver bars be 27a.
The total value of the gold and silver bars is 500000 - 225000 = 275000
Therefore, 4000*7a + 1000*27a = 275000
Or, 55000a = 275000
Or, a = 5

Therefore the number of silver bars with Ghosh Babu is 27a = 135

Instructions
For the following questions answer them individually

Question 9

Instead of a metre scale, a cloth merchant uses a faulty 120 cm scale while buying, but uses a faulty 80 cm scale while selling the same cloth. If he offers a discount of 20%, what is his overall profit percentage?

A 20%

B 25%

C 40%

D 15%

Answer: A

Video Solution

Explanation:
Let's say the cost of the cloth is x rs per metre. Because of the faulty meter, he is paying x for 120 cms when buying.

So cost of 100 cms = 100x/120.

He is selling 80 cms for x, so selling price of 100cms of cloth is 100x/80.

discount = 20%

so the effective selling price is .8*100x/80= x

profit = SP-CP= x - 100x/120 = x/6

Profit % = x/6 divided by 100x/120 = 20%

Question 10

The cost of diamond varies directly as the square of its weight. Once, this diamond broke into four pieces with weights in the ratio 1 : 2 : 3 : 4. When the pieces were sold, the merchant got Rs. 70,000 less. Find the original price of the diamond.

A Rs. 1.4 lakh

B Rs. 2 lakh

C Rs. 1 lakh

D Rs. 2.1 lakh

Answer: C

Video Solution

Explanation:

Let the original weight of the diamond be equal to $10k$. So, after breaking into 4 pieces, the parts of the diamond weight $k, 2k, 3k, 4k$

The price of the diamond varies directly in proportion to the weight. Let us assume, the $P = C * W^2$ where C is a constant and W is the weight of the diamond.

Therefore, the original price is $C * 10k * 10k = 100k^2 * C$
The new weight is $Ck^2 + C(2k)^2 + C(3k)^2 + C(4k)^2 = 30k^2C$

The decrease in the price equals 70,000. So, $100k^2C - 30k^2C = 70000$

Or, $k^2C = 1000$

Therefore the original price = $100k^2C = 100000$

Question 11

Once I had been to the post office to buy five-rupee, two-rupee and one-rupee stamps. I paid the clerk Rs. 20, and since he had no change, he gave me three more one-rupee stamps. If the number of stamps of each type that I had ordered initially was more than one, what was the total number of stamps that I had when I left the post office?

A 10

B 9

C 12

D 8

Answer: A

Video Solution

Explanation:

As shopkeeper gave 3 one-rupee change for 20 rs. change, Buyer must have ordered for a total of 17 rs. stamps.
Now buyer ordered for at least more than 1 stamp for each type
Hence the minimum he bought was:

2 stamp for 5 rupees = 10 rs.
2 stamp for 2 rupees = 4 rs.
2 stamp for 1 rupee = 2 rs.

For the total to be seventeen, the buyer must have purchased 3 one rupee stamps.
And 3 one rupee stamps were also there as changes given by shopkeeper.
So total number of stamps = 2+2+(3+3) = 10

Question 12

I sold two watches for Rs. 300 each, one at the loss of 10% and the other at the profit of 10%. What is the percentage of loss(-) or profit(+) that resulted from the transaction?

A (+)10

B (-)1

C (+)1

D (-)10

Answer: B

Video Solution

Explanation:
Selling price of first watch = 300
Profit = 10%
cost price = $\frac{300}{1.1}$
Selling price of second watch = 300
Loss = 10%
cost price = $\frac{300}{0.9}$

Total selling price of transaction= 600
Total cost price of transaction = $300(\frac{10}{11} + \frac{10}{9}) = 600(\frac{100}{99})$
Loss = $600(\frac{100}{99} - 1)$
%loss = $(600(\frac{100}{99} - 1)) \div (600(\frac{100}{99})) \times 100 = 1$

Question 13

After allowing a discount of 11.11%, a trader still makes a gain of 14.28%. At how many percentage above the cost price does he mark on his goods?

A 28.56%

B 35%

C 22.22%

D None of these

Answer: A

Video Solution

Explanation:
Let's say cost price is 100
gain = 14.28
selling price = 114.28
Marked price = x(say)
So $x - \frac{11.11x}{100} = \frac{8x}{9} = 114.28$
Or $x = 128.52$
So marked price is 28.52% more than cost price.

Question 14

A dealer buys dry fruits at Rs. 100, Rs. 80 and Rs. 60 per kilogram. He mixes them in the ratio 3 : 4 : 5 by weight, and sells at a profit of 50%. At what price per kilogram does he sell the dry fruits?

A Rs. 80

B Rs. 100

C Rs. 95

D None of these

Answer: D

Video Solution

Explanation:
Let's say he buy fruits of weights 3 kg., 4kg., 5 kg.
Total kilograms of dry fruits $= 3 + 4 + 5 = 12$

Overall cost price $= 3 \cdot 100 + 4 \cdot 80 + 5 \cdot 60 = 300 + 320 + 300 = 920$

So cost price per kg. $= \frac{300 + 320 + 300}{12} = \frac{920}{12}$

Selling price = $\frac{920}{12} \times \frac{3}{2}$ = 115 per kg (Since Profit is 50%)

Hence answer will be D.

Question 15

A man earns x% on the first Rs. 2,000 and y% on the rest of his income. If he earns Rs. 700 from income of Rs. 4,000 and Rs. 900 from Rs. 5,000 of income, find x%.

A 20%

B 15%

C 25%

D None of these

Answer: B

Video Solution

Explanation:
He earns x% on first 2000 and y% on rest of his income.

So on 4000 rs. , he will earn as follows:

$2000\frac{x}{100} + 2000\frac{y}{100}$ = 700

Or $x + y = 35$

Similarly on 5000 rs. ,he will earn 900 as follows:

$2000\frac{x}{100} + 3000\frac{y}{100} = 900$

Or $20x + 30y = 900$

On solving above equations, we will get value of x = 15

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Question 16

A yearly payment to the servant is Rs. 90 plus one turban. The servant leaves the job after 9 months and receives Rs. 65 and a turban. Then find the price of the turban.

A Rs. 10

B Rs. 15

C Rs. 7.50

D Cannot be determined

Answer: A

Video Solution

Explanation:
Let's say price of turban is x.

So total price for 12 months will be = $90 + x$

total price for 9 months = $\frac{(90+x)\times 9}{12} = (65 + x)$

By solving above equation, we will get value of x= 10.

Question 17

Ravi invests 50% of his monthly savings in fixed deposits. Thirty percent of the rest of his savings is invested in stocks and the rest goes into Ravi's savings bank account. If the total amount deposited by him in the bank (for savings account and fixed deposits) is Rs 59500, then Ravi's total monthly savings (in Rs) is

Answer:70000

Video Solution

Explanation:
Let his total savings be 100x.

He invests 50x in fixed deposits. 30% of 50x, which is 15x is invested in stocks and 35x goes to savings bank.

It is given 85x = 59500

x = 700

Hence, 100x = 70000

Question 18

If a seller gives a discount of 15% on retail price, she still makes a profit of 2%. Which of the following ensures that she makes a profit of 20%?

A Give a discount of 5% on retail price.

B Give a discount of 2% on retail price.

C Increase the retail price by 2%.

D Sell at retail price.

Answer: D

Video Solution

Explanation:
Let the retail price be M and cost price be C.

Given,

0.85 M = 1.02 C

M = 1.2 C

If he wants 20% profit he has to sell at 1.2C, which is nothing but the retail price.

Question 19

Suppose, C1, C2, C3, C4, and C5 are five companies. The profits made by Cl, C2, and C3 are in the ratio 9 : 10 : 8 while the profits made by C2, C4, and C5 are in the ratio 18 : 19 : 20. If C5 has made a profit of Rs 19 crore more than C1, then the total profit (in Rs) made by all five companies is

A 438 crore

B 435 crore

C 348 crore

D 345 crore

Answer: A

Video Solution

Explanation:
Given,

C1 : C2 : C3 = 9 : 10 : 8 ... i

C2 : C4 : C5 = 18 : 19 : 20 ... ii

Let's multiply i by 9 and ii by 5

C1 : C2 : C3 = 81 : 90 : 72

C2 : C4 : C5 = 90 : 95 : 100

Therefore, C1 : C2 : C3 : C4 : C5 = 81 : 90 : 72 : 95 : 100

Given,

100x - 81x = 19

x = 1

Hence, total profit = 100 + 95 + 72 + 90 + 81 = 438

Question 20

In a market, the price of medium quality mangoes is half that of good mangoes. A shopkeeper buys 80 kg good mangoes and 40 kg medium quality mangoes from the market and then sells all these at a common price which is 10% less than the price at which he bought the good ones. His overall profit is

A 6%

B 8%

C 10%

D 12%

Answer: B

Video Solution

Explanation:
Let the cost of good mangoes be 2x per kg. The cost of medium mangoes be x per kg.

CP of good mangoes = 160x

CP of medium mangoes = 40x

His selling price = 0.9*2x = 1.80x

Therefore, total revenue generated by selling all the mangoes = 120*1.8x = 216x

Hence, the profit % = $\frac{16x}{200x} * 100$ = 8%

Question 21

If Fatima sells 60 identical toys at a 40% discount on the printed price, then she makes 20% profit. Ten of these toys are destroyed in fire. While selling the rest, how much discount should be given on the printed price so that she can make the same amount of profit?

A 30%

B 25%

C 24%

D 28%

Answer: D

Video Solution

Explanation:
Let the cost price be C and the marked price be M.

Given,

0.6 M = 1.2 C

M = 2C

CP of 60 toys = 60C

Now only 50 are remaining.

Hence,

M (1 - d) * 50 = 72C

1- d = 0.72

d = .28

Hence 28%

Question 22

The manufacturer of a table sells it to a wholesale dealer at a profit of 10%. The wholesale dealer sells the table to a retailer at a profit of 30% Finally, the retailer sells it to a customer at a profit of 50%. If the customer pays Rs 4290 for the table, then its manufacturing cost (in Rs) is

A 1500

B 2000

C 2500

D 3000

Answer: B

Video Solution

Explanation:
Let the manufacturing price of the table = x
Hence the price at which the wholesaler bought from the manufacturer = $1.1 \times x$
The price at which the retailer bought from the wholesaler = $1.3 \times 1.1 \times x$
The price at which the customer bought from the retailer = $1.5 \times 1.3 \times 1.1 \times x$
$1.5 \times 1.3 \times 1.1 \times x = 4290$
=> x = 2000

Question 23

Mayank buys some candies for Rs 15 a dozen and an equal number of different candies for Rs 12 a dozen. He sells all for Rs 16.50 a dozen and makes a profit of Rs 150. How many dozens of candies did he buy altogether?

A 50

B 30

C 25

D 45

Answer: A

Video Solution

Explanation:
Let the number of dozens of candies he bought of each variety be x
Hence total cost = 12x + 15x = 27x
Total selling price = 16.50*2x = 33x
Profit = 33x - 27x = 6x
Given 6x = 150 => x = 25
Hence he bought 50 dozens of candies in total

Question 24

A shopkeeper sells two tables, each procured at cost price p, to Amal and Asim at a profit of 20% and at a loss of 20%, respectively. Amal sells his table to Bimal at a profit of 30%, while Asim sells his table to Barun at a loss of 30%. If the amounts paid by Bimal and Barun are x and y, respectively, then (x – y) / p equals

A 1

B 1.2

C 0.50

D 0.7

Answer: A

Video Solution

Explanation:
CP of the table at which the shopkeeper procured each table = p

It is given that shopkeeper sold the tables to Amal and Asim at a profit of 20% and at a loss of 20%, respectively

The selling price of the tables = 1.2p and 0.8p to Amal and Asim respectively.

Amal sells his table to Bimal at a profit of 30%

So, CP of the table by Bimal (x)= 1.2p*1.3 = 1.56p

Asim sells his table to Barun at a loss of 30%

So, CP of the table by Barun (y)= 0.7*0.8p = 0.56p

(x-y)/p = (1.56p-0.56p)/p = p/p=1

Question 25

Mukesh purchased 10 bicycles in 2017, all at the same price. He sold six of these at a profit of 25% and the remaining four at a loss of 25%. If he made a total profit of Rs. 2000, then his purchase price of a bicycle, in Rupees, was

A 6000

B 8000

C 4000

D 2000

Answer: C

Video Solution

Explanation:
Let the cost of each bicycle= 100b

CP of 10 bicycles = 1000b

It is given that he sold six of these at a profit of 25% and the remaining four at a loss of 25%

SP of 10 bicycles = 125b*6+75b*4

=1050b

Profit = 1050b-1000b =50b

50b=2000

CP = 100b = 4000

Question 26

The income of Amala is 20% more than that of Bimala and 20% less than that of Kamala. If Kamala's income goes down by 4% and Bimala's goes up by 10%, then the percentage by which Kamala's income would exceed Bimala's is nearest to

A 31

B 29

C 28

D 32

Answer: A

Video Solution

Explanation:
Assuming the income of Bimla = 100a, then the income of Amala will be 120a.

And the income of Kamala will be 120a*100/80=150a

If Kamala's income goes down by 4%, then new income of Kamala = 150a-150a(4/100) = 150a-6a=144a

If Bimla's income goes up by 10 percent, her new income will be 100a+100a(10/100)=110a

=> Hence the Kamala income will exceed Bimla income by (144a-110a)*100/110a=31

Question 27

Meena scores 40% in an examination and after review, even though her score is increased by 50%, she fails by 35 marks. If her post-review score is increased by 20%, she will have 7 marks more than the passing score. The percentage score needed for passing the examination is

A 60

B 80

C 70

D 75

Answer: C

Video Solution

Explanation:
Assuming the maximum marks =100a, then Meena got 40a

After increasing her score by 50%, she will get 40a(1+50/100)=60a

Passing score = 60a+35

Post review score after 20% increase = 60a*1.2=72a

=>Hence, 60a+35+7=72a

=>12a=42 =>a=3.5

=> maximum marks = 350 and passing marks = 210+35=245

=> Passing percentage = 245*100/350 = 70

Question 28

On selling a pen at 5% loss and a book at 15% gain, Karim gains Rs. 7. If he sells the pen at 5% gain and the book at 10% gain, he gains Rs. 13. What is the cost price of the book in Rupees?

A 95

B 85

C 80

D 100

Answer: C

Video Solution

Explanation:
Assuming the cost price of pen = 100p and the cost price of book = 100b

So, on selling a pen at 5% loss and a book at 15% gain, net gain = -5p+15b = 7 1

On selling the pen at 5% gain and the book at 10% gain, net gain = 5p+10b = 13 2

Adding 1 and 2 we get, 25b=20

Hence 100b= 20*4=80,

C is the answer.

Question 29

A person spent Rs 50000 to purchase a desktop computer and a laptop computer. He sold the desktop at 20% profit and the laptop at 10% loss. If overall he made a 2% profit then the purchase price, in rupees, of the desktop is

Answer:20000

Video Solution

Explanation:
Let the price of desktop and laptop be x,y respectively.

Given,

x+y=50000...(i)

12.x+0.9y=50000(1.02)=51000...(ii)

(ii)-0.9(i) gives

0.3x=6000=> x=20000.

Question 30

In a group of people, 28% of the members are young while the rest are old. If 65% of the members are literates, and 25% of the literates are young, then the percentage of old people among the illiterates is nearest to

A 62

B 55

C 59

D 66

Answer: D

Video Solution

Explanation:

Let 'x' be the strength of group G. Based on the information, $0.65x$ constitutes of literate people {the rest $0.35x$ = illiterate}

Of this $0.65x$, 75% are old people =(0.75)0.65x old literates. The total number of old people in group G is $0.72x$ {72% of the total}. Thus, the total number of old people who are illiterate = $0.72x - 0.4875x = 0.2325x$. This is $\frac{0.2325x}{0.35x} \times 100 \approx 66\%$ of the total number of illiterates. Hence, Option D is the correct answer.

Question 31

In the final examination, Bishnu scored 52% and Asha scored 64%. The marks obtained by Bishnu is 23 less, and that by Asha is 34 more than the marks obtained by Ramesh. The marks obtained by Geeta, who scored 84%, is

A 357

B 417

C 439

D 399

Answer: D

Video Solution

Explanation:

Let the total marks be 100x

Marks obtained by Bishnu = 52x

Marks obtained by Asha = 64x

Marks obtained by Ramesh = 52x+23

Marks obtained by Ramesh = 64x-34

=> 52x+23 = 64x-34

=> x = $\frac{19}{4}$

Marks obtained by Geeta =84x = 84*19/4 = 399

Question 32

A man buys 35 kg of sugar and sets a marked price in order to make a 20% profit. He sells 5 kg at this price, and 15 kg at a 10% discount. Accidentally, 3 kg of sugar is wasted. He sells the remaining sugar by raising the marked price by p percent so as to make an overall profit of 15%. Then p is nearest to

A 22

B 35

C 25

D 31

Answer: C

Video Solution

Explanation:

Let the cost price of 1kg of sugar = Rs 100

The total cost price of 35 kg = Rs3500

Marked up price per kg = Rs 120

GIven, the final profit is 15% => Final SP of 35 kg = 3500 *1.15 = Rs 4025

First 5 kg's are sold at 20% marked up price => $SP_1 = 5 \cdot 100 \cdot 1.2$ = Rs 600

Next 15 kgs are sold after giving 10% discount => $SP_2 = 15 \cdot 100 \cdot 1.2 \cdot 0.9 = 1620$

3kgs of sugar got wasted

=> 23 kg of sugar was sold at Rs (600 +1620) = Rs 2220

Remaining 12kg should be sold at Rs 4025 - 2220 = Rs1805

=> SP of 1kg = 1805/12 $\simeq 150$

Hence, the seller should further mark up by $\frac{(150-120)}{120} \cdot 100 = 25\%$

Question 33

Anil buys 12 toys and labels each with the same selling price. He sells 8 toys initially at 20% discount on the labeled price. Then he sells the remaining 4 toys at an additional 25% discount on the discounted price. Thus, he gets a total of Rs 2112, and makes a 10% profit. With no discounts, his percentage of profit would have been

A 50

B 60

C 54

D 55

Answer: A

Video Solution

Explanation:

Let the CP of the each toy be "x". CP of 12 toys will be "12x". Now the shopkeeper made a 10% profit on CP. This means that

12x(1.1)= 2112 or x=160 . Hence the CP of each toy is ₹160.

Now let the SP of each toy be "m". Now he sold 8 toys at 20% discount. This means that 8m(0.8) or 6.4m

He sold 4 toys at an additional 25% discount. 4m(0.8)(0.75)=2.4m Now 6.4m+2.4m=8.8m=2112 or m=240

Hence CP= 160 and SP=240. Hence profit percentage is 50%.

Question 34

Amal purchases some pens at ₹ 8 each. To sell these, he hires an employee at a fixed wage. He sells 100 of these pens at ₹ 12 each. If the remaining pens are sold at ₹ 11 each, then he makes a net profit of ₹ 300, while he makes a net loss of ₹ 300 if the remaining pens are sold at ₹ 9 each. The wage of the employee, in INR, is

Answer:1000

Video Solution

Explanation:
Let the number of pens purchased be n. Then the cost price is 8n. The total expenses incurred would be 8n+W, where W refers to the wage.

Then SP in the first case = $12 \times 100 + 11 \times (n - 100)$

Given profit is 300 in this case: 1200+11n-1100-8n-W=300 =>3n-W = 200

In second case: 1200+9n-900-8n-W=-300 (Loss). => W-n = 600.

Adding the two equations: 2n = 800

n = 400.

Thus W = 600 + 400 = 1000

Question 35

Raj invested ₹ 10000 in a fund. At the end of first year, he incurred a loss but his balance was more than ₹ 5000. This balance, when invested for another year, grew and the percentage of growth in the second year was five times the percentage of loss in the first year. If the gain of Raj from the initial investment over the two year period is 35%, then the percentage of loss in the first year is

A 5

B 15

C 17

D 10

Answer: D

Video Solution

Explanation:
Raj invested Rs 10000 in the first year. Assuming the loss he faced was x%.

The amount after 1 year is 10,000*(1 - x/100). = 10000 - 100*x.

Given the balance was greater than Rs 5000 and hence x < 50 percent.

When Raj invested this amount in the second year he earned a profit which is five times that of the first-year percentage.

Hence the amount after the second year is : (10000 - 100x)(1+ $\frac{(5 \cdot x)}{100}$).

Raj gained a total of 35 percent over the period of two years and hence the 35 percent is Rs 3500.

Hence the final amount is Rs 13,500.

(10000 - 100x)(1+ $\frac{(5 \cdot x)}{100}$) = 13,500

$(100 + 5 \cdot x) \cdot (100 - x) = 13500$

10000 - 100*x +500*x - 5*x^2 = 13500.

$5x^2 - 400x + 3500 = 0$

Solving the equation the roots are :

x = 10, x = 70.

Since x < 50, x = 10 percent.

Question 36

Anil, Bobby, and Chintu jointly invest in a business and agree to share the overall profit in proportion to their investments. Anil's share of investment is 70%. His share of profit decreases by ₹ 420 if the overall profit goes down from 18% to 15%. Chintu's share of profit increases by ₹ 80 if the overall profit goes up from 15% to 17%. The amount, in INR, invested by Bobby is

A 2000

B 2400

C 2200

D 1800

Answer: A

Video Solution

Explanation:

Let the amount invested by Anil Bobby and Chintu be x, y, and z.

Considering x+y+z = 100*p.

Given Anil's share was 70 percent = 70*p.

As per the information provided :

His share of profit decreases by ₹ 420 if the overall profit goes down from 18% to 15%.

Since the profits are distributed in the ratio of their investments :

With a 3% decrease in the profits the value of profit earned by A decreased by Rs 420 which was 70 percent of the total invested.

Hence for all three of them would be combinedly losing $(420) \cdot \binom{10}{7} = 600$

Hence 3 percent profit was equivalent to Rs 600.

The initial investment is equivalent to Rs 20000.

This is the total amount invested.

Chintu's profit share increased by Rs 80 when the profit percentage increased by 2 %. A 2 percent increase in profit is equivalent to Rs 20000*2/100 = Rs 400.

Of which Rs 80 is earned by Chintu which is 20% of the total Rs 400.

Hence he invested 20% of the total amount.

Bobby invested the other 10 percent.

10 percent of Rs 20000 = Rs 2000

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