

GS FOUNDATION
BATCH FOR CSE (2023-24)
ACE CSAT - BOOKLET - 16
TARGET PRELIMS 2023: CSAT
QUANTITATIVE APTITUDE: 9 PROFIT AND LOSS

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1) IMPORTANT TERMS:

Cost price (CP): The price at which the article is purchased.

Selling price (SP): It is the price at which the article is sold

If $CP > SP$ then there's a loss and **Loss = CP – SP**

If $SP > CP$ then there's a profit in the transaction and **Profit = SP – CP**

Q.1 If cost price of a watch is 3000 and selling price is 5000, what is the profit?

Percentage profit = (profit/CP) *100

Percentage Loss = (loss/CP) *100

Q.2 If cost price of a watch is 3000 and selling price is 5000, what is the percentage profit?

Q.3 Anu bought a dozen bangles for Rs. 84 and sold for Rs.10 per piece. Find percentage gain for Anu?

Q.4 Sumit bought a motorcycle for 60,000 and sold it for 48,000. Find the loss per cent.

Q.5 A mobile phone is sold for 5300 at a gain of 6%. Find its cost price.

Q.6 Himanshu bought a camera for 25,000 and sold it at a loss of 10% to Pushkar. Find the price at which the camera was sold to Pushkar.

Q.7 Nishant sells his guitar at a profit of 20%. If he had bought it for 10% less and sold for 40 less, he would have gained 25%. Find the cost price of the guitar.

Q. 8 A shopkeeper gains the selling price of 20 pens by selling 100 pens. Find his gain per cent.

2) FINDING SELLING PRICE FROM GAIN % OR LOSS %

SP = (100 + percentage profit) *CP/100

SP = (100 + percentage loss) *CP/100

3) FINDING CP FROM PROFIT %

CP = (100 * SP)/ (100 +percentage profit)

Q. Find cost of a watch if a profit of 10% was made while selling it at Rs. 5000.

CSE 2020: A person bought a car and sold it for Rs. 3,00,000. If he incurred a loss of 20%, then how much did he spend to buy the car?

(a) Rs. 3,60,000

(b) Rs. 3,65000

(c) Rs. 3,70,000

(d) Rs. 3,75,000

4) ARTICLE SOLD AT TWO DIFFERENT SELLING PRICES:

Note: cost price is same for both articles.

$$\frac{\text{Sale Price 1}}{100 + \text{percentage profit 1}} = \frac{\text{Sale Price 2}}{100 + \text{percentage profit 2}}$$

Q. If a man sells his book for Rs. 720, he would have 25% loss. At what price must he sell it to gain 25%?

Here same article is sold at two selling prices leading to different profits (25 and -25)

CSE 2020: Q.As a result of 25% hike in the price of rice per kg, a person is able to purchase 6 kg less rice for Rs. 1,200. was the original price of rice per kg?

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

5) TWO ARTICLES SOLD AT SAME PRICE WITH PROFIT % ON FIRST = LOSS % ON SECOND

Will there be overall profit or loss in the transaction? – LOSS

Loss = (percentage profit/10)²%

Q. A man sold his two watches for Rs. 240 each. On one he gains 20% profit and on other he incurs loss of 20%. What is his overall gain or loss in this transaction?

- SP is same for both

Overall loss of 4% - total loss = 4% of 480

CSE 2014: If Sohan, while selling two goats at the same price, makes a profit of 10% on one goat and suffers a loss of 10% on the other

- (a) he makes no profit and no loss.
- (b) he makes a profit of 1%.
- (c) he suffers a loss of 1%.
- (d) he suffers a loss of 2%.

6) MARKED PRICE AND DISCOUNT

Marked is the price a merchant marks as a price for the item and then provides certain discount on it. The discounted price is the actual selling price in such a case.

Selling Price = Marked price – Discount

If a merchant gets p% profit on item then

Selling price = (1 + p%) * Cost price = Marked price – Discount

If discount is given as d% of marked price,

SP = (1+p%) CP = (1-d%) MP

Q. The printed price of a watch is 16,000 and it has been sold by Rohit for 13,600. Find the rate of discount at which Rohit has sold the watch.

Q. Chinmay offers a discount of 10% on the printed price of his Jacket to Abhyodaya and still is able to make 20% profit. If the printed price of the jacket is 1,200, then find the cost price of the jacket.

CSE 2020: A shop owner offers the following discount options on an article to a customer:

1. Successive discounts of 10% and 20%, and then pay a service tax of 10%.
 2. Successive discounts of 20% and 10%, and then pay a service tax of 10%.
 3. Pay a service tax of 10% first, then successive discounts of 20% and 10%. Which one of the following is correct?
- (a) 1 only is the best option for the customer.
(b) 2 only is the best option for the customer.
(c) 3 only is the best option for the customer.
(d) All the options are equally good for the customer.

7) FALSE SCALE:

Shopkeeper uses false scale to sell his goods. Value of scale is in reality lower than true scale. Hence consumer gets less quantity of good than promised. Shopkeeper sells these goods at profit. So, in net effect shopkeeper doubly benefits – he earns profit by selling at higher price than cost price and he benefits due to false scale effect.

Let 'G' be shopkeeper's net percentage profit and let 'p%' be the percentage profit at which shopkeeper sells the item.

Then:

$$(100 + G) / (100 + p) = \text{true scale weight} / \text{false scale weight}$$

Q. A dishonest shopkeeper says he sells his products at cost price but uses 900gm for each Kg as false weight. Find his percentage gain?

8) SIMPLE AND COMPOUND INTEREST

Interest is the cost of borrowing money, where the borrower pays a fee to the lender for the loan. The interest, typically expressed as a percentage, can be either simple or compounded. Simple interest is based on the principal amount of a loan or deposit. In contrast, compound interest is based on the principal amount and the interest that accumulates on it in every period. Simple interest is calculated only on the principal amount of a loan or deposit, so it is easier to determine than compound interest.

$$\text{Simple Interest} = \frac{P \times R \times T}{100};$$

P is principal amount, R is rate of interest, T is number of years amount is invested

Compound interest accrues and is added to the accumulated interest of previous periods; it includes interest on interest, in other words. The formula for compound interest is:

$$CI = P\left(1 + \frac{R}{100}\right)^T - P$$

Where, P is principal amount; R is rate of interest in percentage; T is number of years amount is invested

$$Amount = P\left(1 + \frac{R}{100}\right)^T$$

Q. Balbir takes a loan of Rs 10000 from the SBI for a period of one year. The given rate of interest is 10% per annum. Find the interest and the amount he has to pay at the end of one year.

Q. The count of a certain breed of bacteria was found to increase at the rate of 5% per hour. What will be the growth of bacteria at the end of 3 hours if the count was initially 6000?

Q. The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 4% per annum is Re. 1. The sum (in Rs.) is

Q. What is the difference between the compound interests on Rs. 5000 for 1.5 years at 4% per annum compounded yearly and half-yearly?

- A. Rs. 2.04
- B. Rs. 3.06
- C. Rs. 4.80
- D. Rs. 8.30

NOTE: Rule of 72:

The Rule of 72 is a quick, useful formula that is popularly used to estimate the number of years required to double the invested money at a given annual rate of return.

Years To Double: 72 / Expected Rate of Return

To calculate the time period an investment will double, divide the integer 72 by the expected rate of return.

The Rule of 72 applies to cases of compound interest, not simple interest. Simple interest is determined by multiplying the daily interest rate by the principal amount and by the number of days that elapse between payments. Compound interest is calculated on both the initial principal and the accumulated interest of previous periods of a deposit.

9) PYQS

CSE 2023: A principal P becomes Q in 1 year when compounded half-yearly with R% annual rate of interest. If the same principal P becomes Q in 1 year when compounded annually with S% annual rate of interest, then which one of the following is correct?

- (a) $R = S$ (b) $R > S$ (c) $R < S$ (d) $R \leq S$

CSE 2019: Raju has Rs. 9000 with him and he wants to buy a mobile handset; but he finds that he has only 75% of the amount required to buy the handset. Therefore, he borrows 2000 from a friend. Then

- a. Raju still does not have enough amount to buy the handset.
- b. Raju has exactly the same amount as required to buy the handset.
- c. Raju has enough amount to buy the handset and he will have 500 with him after buying the handset.
- d. Raju has enough amount to buy the handset and he will have 1000 with him after buying the handset

CSE 2019: Rakesh had money to buy 8 mobile handsets of a specific company. But the retailer offered very good discount on that particular handset. Rakesh could buy 10 mobile handsets with the amount he had. What was the discount the retailer offered?

- (a) 15%
- (b) 20
- (c) 25%
- (d) 30%

CSE 2019: A shopkeeper sells an article at Rs. 40 and gets X% profit. However, when he sells it at Rs. 20, he faces same percentage of loss. What is the original cost of the article?

- (a) Rs. 10
- (b) Rs. 20
- (c) Rs. 30
- (d) Rs. 40

CSE 2017: Gopal bought a cell phone and sold it to Ram at 10% profit. Then Ram wanted to sell it back to Gopal at 10% loss. What will be Gopal's position if he agreed?

- (a) Neither loss nor gain
- (b) Loss 1%
- (c) Gain 1%
- (d) Gain 0.5%

CSE 2016: A person allows 10% discount for cash payment from the marked price of a toy and still he makes a 10% gain. What is the cost price of the toy which is marked Rs. 770?

- (a) Rs. 610
- (b) Rs. 620

(c) Rs. 630

(d) Rs. 640

10) COMPREHENSION

A global analysis of nitrogen use efficiency—measure of the amount of nitrogen a plant takes in to grow versus what is left behind as pollution—says that using too much fertilizers will lead to increased pollution of waterways and the air. Currently, the global average for nitrogen use efficiency is approximately 0.4, meaning 40 per cent of the total nitrogen added to cropland goes into the harvested crop while 60 per cent is lost to the environment, says a study. More than half of the world's population is nourished by food grown with fertilizers containing synthetic nitrogen, which is needed to produce high crop yields. Plants take the nitrogen they need to grow, and the excess is left in the ground, water and air. This results in significant emissions of nitrous oxide, a potent greenhouse and ozone depleting gas, and other forms of nitrogen pollution, including eutrophication of lakes and rivers and contamination of river water.

Q. Which one of the following statements best reflects the most logical, rational and crucial message implied by the passage?

- (a) An enhanced efficiency of use of nitrogen is imperative for both food production and environment.
- (b) Production of synthetic nitrogen fertilizers cannot be stopped as it will adversely affect global food security.
- (c) Alternatives to crops that require excess of nitrogen should be identified and cultivated. (
- d) Conventional agriculture using synthetic fertilizers should be replaced with agroforestry, agroecosystems and organic farming.

Benefits of good quality school education accrue only when students complete and leave school after having acquired the gateway skills. Like one learns to walk before running, similarly one picks up advanced skills only after picking the basic foundational skills. The advent of the knowledge economy poses new challenges, and one of the severe consequences of having an uneducated workforce will be our inability to keep pace with the global economy. Without a strong learning foundation at the primary level, there can be no improvement in higher education or skill development.

Q. Which one of the following statements best reflects the crux of the passage?

- (a) To become a global power, India needs to invest in universal quality education.
- (b) India is unable to become a global power because it is not focusing or promoting knowledge economy.
- (c) Our education system should focus more on imparting skills during higher education.
- (d) Parents of many school children are illiterate and are unaware of the benefits of quality education