13 Profit – Loss

Let's discuss.

Details of Pranav's shopping for his stall :

Vegetables –	₹ 70
Butter –	₹ 25
Bread –	₹ 45
Masala –	₹ 14
Miscellaneous –	₹ 20

Total ---------

The amount Pranav gained through his sales : ₹ 160

How much did Pranav spend in all?
Why is he so disappointed?

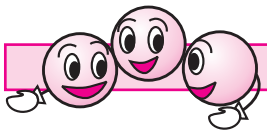
Details of Sarita's shopping for her stall :

Plates –	₹ 20
Spoons –	₹ 10
Chutney –	₹ 30
Puffed rice –	₹ 50
Onions –	₹ 20
Miscellaneous –	₹ 60

Total ---------

Amount Sarita gained by selling : ₹ 230

How much did Sarita spend on her bhel?
Why does Sarita look so happy?



Let's discuss.

If Sarita had bought twice as much, would she have gained twice as much?

What should Pranav do the next time he sets up a stall to sell more pav bhaji and make more gains?

Let's learn.

Profit and Loss

People do various kinds of jobs to earn money. Shopkeepers sell articles that people need. They buy things from wholesale traders in large quantities at lower rates. It costs less than the printed price. When they sell things in retail, i.e., in smaller quantities, they charge a greater amount. If the selling price is more than the amount paid for it, there is a gain. It is called a **profit**. Sometimes, an article is sold for less than the amount paid for it while buying. The damage, in that case, is called a **loss**.

Now I know –

If the selling price is less than the cost price, there is a loss.
Loss = Cost price – Selling price

If the selling price is more than the cost price, there is a profit.
Profit = Selling price – Cost price

Example : Hamidbhai bought bananas worth 2000 rupees and sold them all for 1890 rupees. Did he make a profit or a loss? How much was it?

He bought bananas for ₹2000.

Hence,

Cost price = ₹2000

Selling price = ₹1890

Cost price is greater than selling price. Therefore, Hamidbhai suffered a loss.

Loss = Cost price – Selling price

= 2000 – 1890

= ₹110

∴ Hamidbhai suffered a loss of ₹110 in this transaction.

Example : Harbhajan Singh bought 500 kg of rice for 22000 rupees and sold it all at the rate of ₹48 per kg. How much profit did he make?

The cost price of 500 kg rice is ₹22000.

Selling price of 500 kg of rice is

= 500 × 48 = ₹24000

Selling price is greater than cost price. Therefore, there is a profit.

Profit = Selling price – Cost price

= 24000 – 22000

= ₹2000

∴ In this transaction, Harbhajan Singh made a profit of ₹2000.

Practice Set 31

1. The cost price and selling price are given in the following table. Find out whether there was a profit or a loss and how much it was.

Ex.	Cost price (in ₹)	Selling price (in ₹)	Profit or Loss	How much?
1.	4500	5000		
2.	4100	4090		
3.	700	799		
4.	1000	920		

2. A shopkeeper bought a bicycle for ₹3000 and sold the same for ₹3400. How much was his profit?
3. Sunandabai bought milk for ₹475. She converted it into yoghurt and sold it for ₹700. How much profit did she make?
4. The Jijamata Women's Saving Group bought raw materials worth ₹15000 for making chakalis. They sold the chakalis for 22050 rupees. How much profit did the WSG make?
5. Pramod bought 100 bunches of methi greens for ₹400. In a sudden downpour, 30 of the bunches on his handcart got spoilt. He sold the rest at the rate of ₹5 each. Did he make a profit or a loss? How much?
6. Sharad bought one quintal of onions for ₹2000. Later he sold them all at the rate of ₹18 per kg. Did he make a profit or incur a loss? How much was it?
7. Kantabai bought 25 saris from a wholesale merchant for ₹10000 and sold them all at ₹460 each. How much profit did Kantabai get in this transaction?

Total Cost price and Profit or Loss

At Diwali, in a certain school, they undertook a 'Design a Diya' project. They bought 1000 diyas for ₹1000 and some paint for ₹200. To bring the diyas to the school, they spent ₹100 on transport. They sold the painted lamps at ₹2 each. Did they make a profit or incur a loss?

Cost price of diyas ₹1000 and selling price ₹2000. So, profit was ₹1000.

- Is Anju right?
- What about the money spent on paints and transport?
- How much money was actually spent before the diyas could be sold?

- How much actual profit was made in this project of colouring diyas and selling them? Besides purchases, money has to be spent on things like transport, porterage, octroi, etc.

  When this expenditure is added to the basic purchase, we get the total cost price.

Let's learn.

In trading, all expenses incurred on an article before it can be sold have to be added to the cost price of the article. That is called the total cost price of the article.

Think about it.

A farmer sells what he grows in his fields. How is the total cost price calculated? What does a farmer spend on his produce before he can sell it? What are the other expenses besides seeds, fertilizers and transport?

Example : Sambhajirao bought a machine from a factory for ₹80000. He paid the octroi tax of ₹1600 and spent ₹800 on transport besides ₹300 on porterage. He sold the machine for one lakh rupees. How much was his profit?

Total expenses while buying the machine

= Cost of machine + Octroi + Transport + Porterage

= 80000 + 1600 + 800 + 300

= ₹82700

That is, total cost price is ₹82700.

Profit = Selling price − Total cost price

= 100000 − 82700

= ₹17300

Sambhajirao made a profit of ₹17300 in this transaction.

Example : Javedbhai bought 35 electric mixers for ₹4300 each. To transport them to the shop, he spent ₹2100. If he expects to make a profit of ₹21000, at what price should he sell each mixer?

Cost price of one mixer ₹4300.

Hence cost price of 35 mixers = 4300 × 35 = ₹150500

Total cost price = cost of mixers + cost of transport

= 150500 + 2100

= ₹ 152600

Javedbhai wants a profit of 21000 rupees.

∴ Hence, amount expected on selling

= 152600 + 21000

= ₹ 173600

Selling price of 35 mixers = ₹ 173600

∴ Selling price of one mixer = 173600 ÷ 35

= ₹ 4960

Javedbhai should sell every mixer for ₹ 4960.

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35) 173600
  - 140
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Practice Set 32

1. From a wholesaler, Santosh bought 400 eggs for ₹ 1500 and spent ₹ 300 on transport. 50 eggs fell down and broke. He sold the rest at ₹ 5 each. Did he make a profit or a loss? How much?
2. Abraham bought goods worth ₹ 50000 and spent ₹ 7000 on transport and octroi. If he sold the goods for ₹ 65000, did he make a profit or a loss? How much?
3. Ajit Kaur bought a 50 kg sack of sugar for ₹ 1750, but as sugar prices fell she had to sell it at ₹ 32 per kg. How much loss did she incur?
4. Kusumtai bought 80 cookers at ₹ 700 each. Transport cost her ₹ 1280. If she wants a profit of ₹ 18000, what should be the selling price per cooker?
5. Indrajit bought 10 refrigerators at ₹ 12000 each and spent ₹ 5000 on transport. For how much should he sell each refrigerator in order to make a profit of ₹ 20000?
6. Lalitabai sowed seeds worth ₹ 13700 in her field. She had to spend ₹ 5300 on fertilizers and spraying pesticides and ₹ 7160 on labour. If, on selling her produce, she earned ₹ 35400 what was her profit or her loss?

Let's learn.

Profit Percent, Loss Percent

When determining the percentage of profit or loss, it is compared with the cost price. When we say that the profit or the loss was 10%, we mean that the profit or the loss is 10 rupees if the total cost price is taken to be 100 rupees.

Example : Abbas bought vegetables worth ₹400 and sold them for ₹650. Balbir bought fruits for ₹300 and sold them for ₹500. Whose transactions were more profitable?

Abbas made a profit of ₹250 and Balbir's profit was ₹200. However, the cost price for each of them was different. To compare, we shall have to find out the percentages of the profits.

Let us suppose Abbas made A% and Balbir made B% profit.

Let us find the ratios of profit to cost price, express those ratios in two forms, obtain equations and solve them.

$$\frac{A}{100} = \frac{250}{400}$$

$$\frac{A}{100} \times 100 = \frac{250 \times 100}{400}$$

$$A = \frac{250}{4} = \frac{125}{2} = 62\frac{1}{2}$$

$$\frac{B}{100} = \frac{200}{300}$$

$$\frac{B}{100} \times 100 = \frac{200 \times 100}{300}$$

$$B = \frac{200}{3} = 66\frac{2}{3}$$

$\therefore$ Balbir's transactions were more profitable.

Example : Seema bought vegetables for ₹800 and, paying ₹40 for transport, brought them to her shop. On selling the vegetables, she got ₹966.

Did she make a profit or a loss? What was the percentage?

Let us first find out total cost price.

Total cost price = cost of vegetables + transport charges

= 800 + 40

= ₹ 840

Profit = Selling price − total cost price

= 966 − 840

= ₹ 126

Let us suppose the percent profit was y. We shall express the ratio of profit to total cost price in two forms, obtain an equation and solve it.

$$\frac{y}{100} = \frac{126}{840}$$

$$\frac{y}{100} \times 100 = \frac{126}{840} \times \frac{100}{1}$$

$$y = 15$$

$\therefore$ Seema made a profit of 15%.

Practice Set 33

1. Maganlal bought trousers for ₹400 and a shirt for ₹200 and sold them for ₹448 and ₹250 respectively. Which of these transactions was more profitable?
2. Ramrao bought a cupboard for ₹4500 and sold it for ₹4950. Shamrao bought a sewing machine for ₹3500 and sold it for ₹3920. Whose transaction was more profitable?

3. Hanif bought one box of 50 apples for ₹400. He sold all the apples at the rate of ₹10 each. Was there a profit or a loss? What was its percentage?

Let's learn.

Using given information to frame and solve word problems based on percent profit or loss.

Information : Cost price ₹23500, transport ₹1200, tax ₹300, selling price ₹24250.

Problem

- Joseph bought a machine for ₹ 23500. He paid ₹ 1200 for transport and ₹ 300 as tax. If he sold it to a customer for ₹ 24250, what was his percent profit or loss?

Total cost price of machine
= 23500 + 1200 + 300
= ₹25000

Selling price = ₹24250

Cost price greater than selling price. Therefore, loss.

Loss = Cost price − Selling price
= 25000 − 24250
= 750

Joseph suffered a loss of ₹750.

Supposing loss was N%, write the ratio of loss to total cost price in two forms, obtain an equation and solve it.

$$\frac{N}{100} = \frac{750}{25000}$$

$$\therefore \frac{N}{100} \times 100 = \frac{3}{100} \times 100$$

$$\therefore \quad N = 3$$

$\therefore$ Loss = 3%

Information : ₹700, 18 articles, ₹18900

Problem

- Saritaben bought 18 chairs each at ₹700 and sold them all for ₹18900. What was the percentage of her profit or loss?

Cost price of one chair ₹700.

$\therefore$ Cost price of 18 chairs
= 700 × 18 = ₹12600

Total selling price of all chairs, ₹18900

Selling price more than cost price. Therefore, profit.

Profit = Selling price − Cost price
= 18900 − 12600
= 6300

Saritaben made a profit of ₹6300.

Supposing profit was N%. We write the ratio of profit to cost price in two forms, obtain an equation and solve it.

$$\frac{N}{100} = \frac{6300}{12600}$$

$$\therefore \frac{N}{100} \times 100 = \frac{63}{126} \times 100$$

$$\therefore \quad N = \frac{63 \times 100}{126}$$

$$\therefore \quad N = 50$$

$\therefore$ Profit was 50%.

Practice Set 34

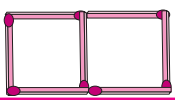
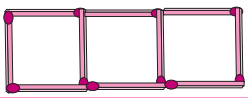
✸ Using the figures given below, frame problems based on profit percent or loss percent and solve the problems.

1. Cost price ₹1600, selling price ₹2800.
2. Cost price ₹2000, selling price ₹1900.
3. Cost price of 8 articles is ₹1200 each, selling price ₹1400 each.
4. Cost price of 50kg grain ₹2000, Selling price ₹43 per kg.
5. Cost price ₹8600,
   transport charges ₹250,
   porterage ₹150,
   selling price ₹10000
6. Seeds worth ₹20500,
   labour ₹9700,
   chemicals and fertilizers ₹5600,
   selling price ₹28640.

Project :

- Relate instances of profit and loss that you have experienced. Express them as problems and solve the problems.
- Organise a fair. Gain the experience of selling things/trading. What was the expenditure on preparing or obtaining the goods to be sold? How much were the sales worth? Write a composition about it or enact this entire transaction.

Maths is fun!

Number of squares				
Number of sticks	4	7	10	

Arpita used 4 matchsticks to make a square. Then she took 3 more sticks and arranged them to make 2 squares. Another 3 sticks helped her to make 3 squares. How many sticks are needed to make 7 such squares in the same way? How many sticks are needed to make 50 squares?