

Unit-2

Tax and Money Exchange

$$\text{Vat amount} = \text{Vat \% of SP}$$

$$\text{SP with vat} = \text{SP} + \text{vat \% of SP}$$

$$\text{Vat \%} = \frac{\text{vat amount}}{\text{SP}} \times 100\%$$

Exercise - 2.1

General section

- 2.a. Write the formula to find amount of vat.

Soln,

$$\text{vat amount} = \text{vat \% of SP}$$

- b. Write the formula to calculate vat percent.

Soln,

$$\text{vat \%} = \frac{\text{vat amount}}{\text{SP}} \times 100\%$$

c. Write the relation to find selling price with the given rate of vat percent.

Soln,

$$SP =$$

2a. Find the selling price with vat from the given table below:

S.No.	SP without vat	Vat %	SP with vat
(i)	Rs 1500	13%	Rs. 1695
(ii)	Rs 7,200	13%	Rs. 8236
(iii)	Rs 25,00	15%	Rs. 2875

b. Find the selling price without vat from the table

S.No	SP with vat	Vat %	SP without vat
(i)	Rs. 1958	10%	Rs. 1780
(ii)	Rs. 5,685	13%	Rs. 4500
(iii)	Rs. 36,160	13%	Rs. 32000

3a. The cost of a mobile set is Rs 18,000. If Mrs. Sharma purchased it with 13% vat. how much did she pay for it.

Soln,

$$SP \text{ without vat} = \text{Rs } 18,000$$

$$\text{Vat} = 13\%$$

$$SP \text{ with vat} = SP + \text{vat \% of SP}$$

$$= 18,000 + \frac{13}{100} \times 18000$$

$$= \text{Rs } 20340$$

b. A family had dinner in a restaurant. If the cost of the dinner was Rs 2,500. How much did the family pay with 10% service charge and 13% vat?

Soln..

$$\text{Cost} = \text{Rs } 2,500$$

Service charge = 10%.

Vat = 13%.

We know,

$$\text{Service charge amount} = \frac{10}{100} \times 2500$$

$$= \text{Rs } 250$$

Also,

$$\begin{aligned} \text{Cost with vat} &= (\text{cost with service charge}) + 13\% \text{ of } (\text{cost with service charge}) \\ &= (2500 + 250) + \frac{13}{100} \times (2500 + 250) \\ &= \text{Rs } 3107.5 \end{aligned}$$

4.a. The cost of an article with 13% vat is Rs 5,424. Find its cost without vat.

Soln..

Vat = 13%.

$$\text{SP with vat} = \text{Rs } 5,424$$

Let SP without vat be Rs 'x'

We know,

$$\text{SP with vat} = \text{SP} + \text{vat \% of SP}$$

$$\text{or } 5424 = x + \frac{13}{100} \times x$$

$$\text{or } 5424 = \frac{113x}{100}$$

$$\text{or, } x = \frac{5424}{113} = \text{Rs } 4800$$

b. Mr. Rai purchased a watch for Rs 8,625 with 15% vat. Find the cost of the watch without vat and also calculate the vat amount.

Soln,

SP with vat = Rs 8,625

Vat% = 15%.

Let SP without vat be 'x'

We know,

SP with vat = SP + Vat% of SP

$$\text{On } 8,625 = x + \frac{15}{100} \times x$$

$$\text{On } 862500 = 115x$$

$$\text{On } x = \frac{862500}{115}$$

$$\therefore x = 7500$$

\therefore SP without vat is Rs 7500

Also,

$$\begin{aligned}\text{Vat amount} &= \text{SP with vat} - \text{SP without vat} \\ &= 8625 - 7500 \\ &= \text{Rs } 1125\end{aligned}$$

c. A woman bought a television for Rs 22,600 with 13% vat. How much did she pay for the tax?

Soln,

SP with vat = Rs 22,600

Vat% = 13%.

Vat amount = ?

We know,

SP with vat = SP + Vat% of SP

$$\text{On } 22,600 = \text{SP} + \frac{13}{100} \times \text{SP}$$

$$or, 22,60000 \times 113 = SP$$

$$or, SP = 2260000 \\ 113$$

$$\therefore SP = Rs 20,000$$

Also,

$$\text{vat amount} = SP \text{ with vat} - SP \text{ without vat}$$

$$= 22,600 - 20,000$$

$$= 2600$$

\therefore The vat amount is Rs 2600.

5.a. If the cost of an item with vat is Rs 1356 and without vat is Rs 1,200. find the vat rate.

Soln.,

$$SP \text{ with vat} = Rs 1356$$

$$SP \text{ without vat} = Rs 1,200$$

Now,

$$\text{vat amount} = SP \text{ with vat} - SP \text{ without vat}$$

$$= 1356 - 1200$$

$$= Rs 156$$

Now,

$$\text{vat \%} = \frac{\text{vat amount}}{SP \text{ without vat}} \times 100\%$$

$$= \frac{156}{1200} \times 100$$

$$= 13\%$$

b) A customer purchased a bicycle for Rs 10,716 with vat. If its cost without vat is Rs 9,400. calculate the vat rate.

Soln.,

$$\text{Selling price with vat} = Rs 10,716$$

Selling price without vat = Rs 9,400

Now,

$$\begin{aligned}\text{vat amount} &= \text{SP with vat} - \text{SP without vat} \\ &= \text{Rs } 10,716 - 9400 \\ &= \text{Rs } 1316\end{aligned}$$

Also,

$$\begin{aligned}\text{vat percent} &= \frac{\text{vat amount}}{\text{SP without vat}} \times 100\% \\ &= \frac{1316}{9400} \times 100\%\end{aligned}$$

\therefore The vat percent is 14%.

Creative Section

6a. A shopkeeper purchased a laptop for Rs 40,000 and sold at a profit of 20% to a customer. How much did the customer pay for it with 13% vat?

Soln,

Initial cost price = Rs 40,000

Profit = 20%.

Vat = 13%.

Now,

$$\begin{aligned}\text{Cost after profit} &= 40,000 + \frac{20}{100} \times 40,000 \\ &= \text{Rs } 48,000\end{aligned}$$

Again,

$$\begin{aligned}\text{Cost after vat} &= 48000 + \frac{13}{100} \times 48000 \\ &= \text{Rs } 54,240\end{aligned}$$

\therefore The customer pay Rs 54,240.

b A retailer bought an electric fan store for Rs 12,500 and fixed its price to make 20% profit. How much should a customer pay for it with 13% vat?

Soln,

Cost of electric fan = Rs 12,500

Profit = 20%.

Vat = 13%.

Now,

fixed price = CP + P% of CP

$$= 12,500 + \frac{20}{100} \times 12500$$

$$= \text{Rs } 23,750$$

Again,

$$\text{Cost after vat} = \text{Rs } 23,750 + \frac{13}{100} \times 23750$$

$$= \text{Rs } 23750 + 3087.5$$

$$= \text{Rs } 25,537.5$$

∴ The customer should pay Rs 25,537.5.

7.a. A trader purchased a camera for Rs 20,000 and marked its price to make 25% profit. If he sold it for Rs 27,500 with vat, calculate vat rate.

Soln,

Cost price without vat = Rs 20,000

SP with vat = Rs 27,500

Profit = 25%.

Now

$$\text{Cost after profit} = \text{Rs } 20,000 + \frac{25}{100} \times 20,000$$

$$= \text{Rs } 25,000$$

$$\begin{aligned}
 \text{VAT amount} &= \text{SP with VAT} - \text{cost without VAT after profit} \\
 &= \text{Rs } 27,500 - \text{Rs } 25,000 \\
 &= \text{Rs } 2500
 \end{aligned}$$

Also,

$$\begin{aligned}
 \text{VAT percent} &= \frac{2500}{25000} \times \frac{100\%}{25000} \times 100\% \\
 &= 10\%
 \end{aligned}$$

∴ The VAT percent is 10%.

- b. A wholesaler purchased an electric item for Rs 50,000 and sold it to a retailer at 5% profit. If the retailer purchased it for Rs 59,325 with VAT. find the VAT percent.

Soln,

Cost of electric item = Rs 50,000

Profit = 5%.

Cost price for retailer = Rs 59,325

Now,

Cost of electric item after profit = CP + 5% of CP

$$\begin{aligned}
 &= 50,000 + \frac{5}{100} \times 50000 \\
 &= \text{Rs } 52,500
 \end{aligned}$$

Now Also,

$$\begin{aligned}
 \text{VAT amount} &= \text{cost for retailer} - \text{cost after profit} \\
 &= 59,325 - 52,500 \\
 &= \text{Rs } 6825
 \end{aligned}$$

Again,

$$\begin{aligned}
 \text{VAT percent} &= \frac{\text{VAT amount}}{\text{CP after profit}} \times 100\% \\
 &= \frac{6825}{52,500} \times 100\%
 \end{aligned}$$

2. ~~Rs~~ 23.1.

∴ The vat percent is 13%.

8.a. The cost of an article is Rs 10,000 and it is sold at some profit. If a customer bought it for Rs 12,430 with 13% vat, calculate the profit of the article.

Soln.,

Cost of article = Rs 10,000

SP with vat = Rs 12,430

Vat = 13%.

Let SP without vat be Rs 'x'

Now,

SP with vat = SP + Vat% of SP

$$\text{or } 12,430 = x + \frac{13}{100} \times x$$

$$\text{or, } x = 1243000$$

$$113$$

$$\therefore x = \text{Rs } 11,000 \text{ or } \text{Rs } 11,000$$

Also,

Profit amount = SP without vat - cost of article

$$= \text{Rs } 11,000 - 10,000$$

$$= \text{Rs } 1000$$

Also,

$$\text{Profit \%} = \frac{\text{Profit amount}}{\text{cost of article}} \times 100\%$$

$$= \frac{1000}{10,000} \times 100\%$$

$$= 10\%$$

∴ The profit of the article is 10%.

b. A shopkeeper bought an electric item for Rs 5,000 and sold it to a customer for Rs 5,085 with 13% vat. Find his/her profit or loss percent.

Soln,

Cost of electric item = Rs 5,000

SP with vat = Rs 5,085

Vat = 13%.

Let the SP without vat be Rs 'x'.

We know,

SP with vat = SP + VAT% of SP

$$\text{or } 5,085 = x + \frac{13}{100} \times x$$

$$\text{or } 5,085 = 113x$$

$$\text{or } x = \text{Rs } 4500$$

\therefore SP without vat = Rs 4500

Again,

Profit/Loss amount = SP without vat - Cost of item

$$= 4500 - 5,000$$

$$= -500$$

\therefore Loss = Rs 500

Also,

Loss percent = $\frac{\text{Loss}}{\text{CP}} \times 100\%$.

$$= \frac{500}{5000} \times 100\%$$

$$= 10\%$$

\therefore The loss percent is 10%.

Q.a. A shopkeeper bought a sunglasses and sold it at a profit of 20% to a customer. If the customer paid Rs 22,696 for it with 13% vat, at what price did he buy it.

Soln,

Let x be the cost of shopkeeper sunglasses for shopkeeper.

Profit% = 20%

SP before vat = $x + 20\% \text{ of } x$

$$= x + \frac{20}{100} \times x$$

$$= \frac{12x}{100}$$

$$= \frac{6x}{5}$$

Vat = 13%

$$\text{SP with vat} = \frac{6x}{5} + \frac{13}{100} \times \frac{6x}{5}$$

$$\text{or } 22696 = \frac{300x + 39x}{250}$$

$$\text{or, } x = \frac{5424000}{339}$$

$$\therefore x = \text{Rs } 16,000$$

∴ The shopkeeper brought at Rs 16,000.

- b. A retailer sold an article to customer at a loss of 10%. The customer purchased it for Rs 25,425 including 13% vat. Calculate the cost price of that the article for the retailer.

Soln,

Let the cost of article for retailer be Rs ' x '.

NoSS = 10%.

$$\text{SP without vat} = x - \frac{10}{100} \times x$$

$$= \frac{113x}{100} - \frac{9x}{100}$$

Vat = 13%.

SP with vat = SP + vat% of SP

$$\text{or, } 25425 = \frac{90x}{100} + \frac{13}{100} \times \frac{90x}{100}$$

$$\text{or, } 25425 = \frac{90x}{100} + \frac{117x}{1000}$$

$$\text{or, } \frac{1017x}{1000} = 25425000$$

$$\text{or, } x = \frac{25425}{\cancel{1017}}$$

$$\therefore x = \text{Rs } 25000$$

∴ The cost price of article for retailer is Rs 25,000.

10a. A retailer bought purchased a photocopy machine for Rs 1,60,000 from a dealer. He/she spent Rs 2,500 for transportation and Rs 1,500 for the local tax. If the retailer sold it at a profit of Rs 6,000 to a customer, how much did the customer pay for the machine with 13% vat.

Soln,

Cost of machine for retailer = Rs 1,60,000

$$\begin{aligned}\text{Total cost price} &= \text{Rs } 1,60,000 + 2500 + 1,500 \\ &= \text{Rs } 164000\end{aligned}$$

Also,

$$\begin{aligned}\text{SP without vat} &= \text{Rs } 164000 + \text{Rs } 6000 \\ &= \text{Rs } 170000\end{aligned}$$

Also,

SP with 13% vat = SP + vat% of SP

$$= 170000 + \frac{13}{100} \times 170000$$

$$= \text{Rs } 192100$$

∴ The customer pay Rs 192,100 for the photocopy machine.

b. A supplier sold a machine levying 13% vat on Rs 3,20,000 to a retailer. The retailer spent Rs 10,000 for transportation and Rs 5000 for the local tax. He sold it to a customer at 10% profit the profit of Rs 15,000 to a customer, how much did the customer pay for the machine with 13% vat.

Soln,

Cost price for retailer with 13% vat

$$= 320,000 + \frac{13}{100} \times 320,000$$

$$= \text{Rs } 376600 \quad 361600$$

$$\text{Total cost price} = 361600 + 10,000 + 5000$$

$$= \text{Rs } 376600$$

Also,

$$Sp \text{ without vat} = Sp + \text{Profit}$$

$$= \text{Rs } 376600 + 15,000$$

$$= \text{Rs } 391600$$

Again

$$Sp \text{ with 13% vat} = 391600 + \frac{13}{100} \times 391600$$

$$= \text{Rs } 442508$$

\therefore The customer pay Rs 442508 for the machine with 13% vat.

c. A supplier purchased a machine for Rs 2,00,000 and spent Rs 5,000 for transportation and Rs 2,000 for local tax. He sold it to the customer at 10% profit. At what price did the customer purchase the machine with 13% vat?

Soln,

$$\begin{aligned} \text{Total CP for supplier} &= \text{Rs } 200000 + 5,000 + 2,000 \\ &= \text{Rs } 207000 \end{aligned}$$

$$\text{Sp without VAT} = 207000 + \frac{10}{100} \times 207000$$

$$= \text{Rs } 227700$$

Also,

$$\text{Sp with 13% VAT} = 227700 + \frac{13}{100} \times 227700$$

$$= \text{Rs } 257301$$

i. The customer purchase it at Rs 257301.

ii. A wholesaler purchased construction material for Rs 3,50,000 and sold them to a supplier at 5% profit and levying 13% VAT. The supplier spent Rs 2725 for transportation and Rs 2000 for local tax. The supplier sold the material to a customer at 10% profit. How much did the customer pay for the material with 13% VAT?

Soln.

CP for wholesaler = Rs 350,000

CP for supplier = ~~Rs 350~~ without VAT

$$= 350,000 + \frac{5}{100} \times 350000$$

$$= \text{Rs } 367500$$

$$\text{CP for supplier with VAT} = 367500 + \frac{13}{100} \times 367500$$

$$= \text{Rs } 415275$$

$$\text{Total CP for Supplier} = \text{Rs } 415275 + 2725 + 2000$$

$$= \text{Rs } 420000$$

Again,

$$\text{CP for customer without VAT} = 420000 + \frac{10}{100} \times 420000$$

$$= \text{Rs } 462000$$

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$$\text{C.P. for customer with VAT} = \frac{462000 + 13}{100} \times 462000$$

² Rs 522060

i. The customer pay Rs 522060 for the construction material.