

CHAPTER-7

FINANCIAL ARITHMETICS

Students Learning Outcomes

After studying this chapter, students will be able to:

- Explain property tax and general sales tax.
- Solve tax-related problems.
- Explain profit and markup.
- Find the rate of profit/markup per annum.
- Solve real life problems involving profit/markup.
- Define zakat and ushr.
- Solve problems related to zakat and ushr.

SOLVED EXERCISE 7.1

1. Calculate the price that a customer has to pay for each article general. Sale Tax imposed on it.

(i) Football = Rs. 800

Amount of sale Tax = $800 \times 16\% = 800 \times \frac{16}{100} = \text{Rs. } 128$

Total Amount = $800 + 128 = \text{Rs. } 928$

(ii) Rackets = Rs. 1250

Amount of sale Tax = $1250 \times 16\% = 1250 \times \frac{16}{100} = \text{Rs. } 200$

Total Amount = $1250 + 200 = \text{Rs. } 1450$

(iii) Hockey = Rs. 1650

Amount of sale Tax = $1650 \times 16\% = 1650 \times \frac{16}{100} = \text{Rs. } 264$

Total Amount = $1650 + 264 = \text{Rs. } 1914$

(iv) Bat = Rs. 2100

Amount of sale Tax = $2100 \times 16\% = 2100 \times \frac{16}{100} = \text{Rs. } 336$

Total Amount = $2100 + 336 = \text{Rs. } 2436$

2. Find the property Tax on a property worth Rs. 948000 at the rate of 1.5%.

Solution:

Worth of the property = Rs. 948000

Tax rate = 1.5%

Property Tax = $948000 \times \frac{1.5}{100} = \text{Rs. } 14220$

3. Hair paid the property tax of Rs. 2,068 at the rate of 0.8%. Find the worth of property.

Solution:

$$\text{Property Tax} = \text{Rs. } 2068$$

$$\text{Tax rate} = 0.8\%$$

$$\text{Worth of property} = ?$$

$$0.8\% \text{ of the worth of property} = \text{Rs. } 2068$$

$$1\% \text{ of the worth of property} =$$

$$100\% \text{ of the worth of property} = \left(\frac{2068}{0.8} \times 100 \right) = \text{Rs. } 258500$$

4. Property Tax Rs. 18720 was paid when the worth of property is Rs. 1560,000. Find the percentage of property Tax.

Solution:

$$\text{Property Tax} = \text{Rs. } 18720$$

$$\text{Worth of property} = \text{Rs. } 1560,000$$

$$\text{Percentage of property Tax} = \frac{18720}{1560,000} \times 100 = 1.2\%$$

5. The price of a toy including 5% general sales tax is Rs.945. Find the original price of the toy.

Solution:

$$\text{Suppose original price} = x$$

$$\text{GST} = 0.05 \times x = 0.05x$$

$$\text{Price after including GST} = x + 0.05x = 1.05x$$

$$\therefore 1.05x = 945$$

$$x = \frac{945}{1.05} = 900$$

$$x = \text{Rs. } 900$$

6. Find the property tax on a property of Rs.650,000 at the rate of 1.8%.

Solution:

$$\text{Worth of property} = \text{Rs. } 650,000$$

$$\text{Property Tax rate} = 1.8\%$$

$$\text{Property Tax} = 650,000 \times \frac{1.8}{100} = 650,000 \times 0.018 = \text{Rs. } 11700$$

7. Farah paid the property tax of Rs. 9,240 at the rate of 2%. Find the worth of her property.

Solution:

$$\text{Property Tax} = \text{Rs. } 9240$$

$$\text{Tax rate} = 2\%$$

$$\text{Worth of property} = ?$$

$$2\% \text{ of the worth of property} = \text{Rs. } 9240$$

$$1\% \text{ of the worth of property} = \left(\frac{9240}{2} \right)$$

$$100\% \text{ of the worth of property} = \left(\frac{9240}{2} \times 100 \right) = \text{Rs. } 462000$$

8. The price of a bicycle is Rs.6, 480 inclusive 8% GST. What is the original price of the bicycle?

Solution:

Suppose Price before tax = x

$$\text{GST} = 8\% \times x = \frac{8}{100} \times x = 0.08x$$

$$\text{Price after tax} = x + 0.08x = 1.08x$$

$$\therefore 1.08x = 6480$$

$$x = \text{Rs. } 6000$$

SOLVED EXERCISE 7.2

1. Find the missing quantities by using the formula.

	Markup	Principal	Time Period	Markup rate
(i)	Rs.120	Rs. 500	2 years	12%
(ii)	Rs. 205	Rs.2562.50	1 years	8%
(iii)	Rs. 528	Rs. 1,650	10 years	3.2%
(iv)	Rs. 350	Rs. 3, 500		2.5%
(v)	Rs.3750	Rs. 100,000	3 years	1.25%
(vi)	Rs. 1, 050	Rs.4667	5 years	4.5%

(i) Markup =
Principal = Rs. 500,
Time period = 2 years, mark up rate = 12%
Markup = Rs. 120

(ii) Markup = Rs. 205, Principal = ?
Time period = 1 year, Mark rate = 8%
Markup =
205 =
 $205 \times 100 = 8P$
 $8P = 205 \times 100$

$$P = \frac{205 \times 100}{8} = \text{Rs. } 2562.5$$

(iii) Markup = Rs. 528, Principles = Rs.1650
Time period = 10 year, Markup rate = ?

$$\begin{aligned}\text{Markup} &= \\ 528 &= \\ R &= 3.2\%\end{aligned}$$

$$\begin{aligned}\text{(iv) Markup} &= \text{Rs. 350} \\ \text{Principles} &= \text{Rs. 3500} \\ \text{Time period} &= ?, \text{ Markup rate} = 2.5\% \\ \text{Markup} &= \\ 350 &= \\ T &= \end{aligned}$$

$$\begin{aligned}\text{(v) Markup} &= ? \\ \text{Principles} &= 100,000 \\ \text{Time period} &= 3 \text{ years} \\ \text{Markup rate} &= 1.25\%\end{aligned}$$

$$\begin{aligned}\text{(vi) Markup} &= 1050 \\ \text{Principles} &= ? \\ \text{Time period} &= 5 \text{ years} \\ \text{Markup rate} &= 4.5\% \\ \text{Markup} &= \\ 1050 &= \\ P &= = \text{Rs. 4666.66} = \text{Rs. 4667}\end{aligned}$$

2. Adnan bought 96 eggs at the rate of Rs.40 per dozen and sold at the rate of Rs.4 per egg. Find the percentage of profit, if 3 eggs were rotten.

Solution:

$$\text{Cost price} = \text{Rs. 320}$$

$$\begin{aligned}3 \text{ eggs Rotlen so total eggs sold are 93. Hence sale Revenue is} \\ = 93 \times 4 = \text{Rs. 372}\end{aligned}$$

$$\text{Gain} = 372 - 320 = \text{Rs. 52}$$

$$\% \text{ profit} = \times 100$$

$$\% \text{ profit} = 16.25\%$$

3. If 16% profit on a mobile set is Rs. 832. Find the cost price of the mobile set.

Solution:

$$\text{Amount of Profit} = \text{cost price} \times \% \text{ of profit}$$

$$832 = \text{cost price} \times 16\%$$

$$832 = \text{C.P} \times \frac{16}{100}$$

$$\frac{832 \times 100}{16} = \text{C.P}$$

$$\text{Cost price} = \text{Rs. 5200}$$

4. Zia bought an out of order clock for Rs.750 and got it repaired for Rs.425. What should be the selling price of the clock if Zia wants to earn 25% profit.

Solution:

$$\begin{aligned}\text{Cost price} &= 750 + 425 = \text{Rs. } 1175 \\ \text{profit} &= 25\% \\ \text{Sale price} &= ? \\ \text{Sale price} &= (100\% + 25\%) \times 1175 \\ &= 125\% \times 1175 = \text{Rs. } 1468.75\end{aligned}$$

5. Find the markup on a principal amount of Rs. 75,500 at the rate of 9% per annum for 4 years.

Solution:

$$\begin{aligned}\text{Markup} &= ? = \text{Principal} = \text{Rs. } 75,500 \\ \text{Rate} &= 9\%, \text{ Time period} = 4 \text{ year} \\ \text{Markup} &= \text{Rs. } 27180\end{aligned}$$

6. Ujala bought a car for Rs.280,000 and spent Rs. 12,000 more on it. What should be the selling price if she wants to get 7.5% profit?

Solution:

$$\begin{aligned}\text{Cost price} &= 280,000 + 12000 = \text{Rs. } 292000 \\ \text{Profit} &= 7.5\% \\ \text{Sale price} &= ? \\ \text{Sale price} &= (100\% + 7.5\%) \times 292000 \\ &= 107.5\% \times 292000 = \text{Rs. } 313900\end{aligned}$$

7. Khushi bought a computer for Rs. 100,000 and paid a markup of Rs, 25,000 for 2 years. What markup rate did she pay?

Solution:

$$\begin{aligned}\text{Cost price} = P &= \text{Rs. } 100,000 \\ \text{Markup} &= 25,000 \\ \text{Time period} &= 2 \text{ years} \\ \text{Markup rate} &= ? \\ \text{Markup} &= \\ 25000 &= , \\ \text{Rate} &= 12.5\%\end{aligned}$$

SOLVED EXERCISE 7.3

1. An amount of Rs.62,480 remained with Nosheen for a complete year. How much Zakat will she pay?

Solution:

$$\text{Total saving} = \text{Rs.}62480$$

$$\text{Rate of Zakat} = 2.5\%$$

$$\text{Amount of Zakat} = ?$$

$$\text{Amount of Zakat} = 62480 \times 2.5\% = 62480 \times \frac{2.5}{100} = \text{Rs.}1562$$

2. Saba paid Rs.2,250 as Zakat. What is the worth of her wealth?

Solution:

$$2.5\% \text{ of Saba wealth} = \text{Rs. } 2250$$

$$1\% \text{ of Saba wealth} = 2250/2.5 = 900$$

$$100\% \text{ of Saba wealth} = 900 \times 100 = \text{Rs. } 90000$$

3. Nadeem paid Rs.6,075 as Zakat. How much wealth did he have?

Solution:

$$2.5\% \text{ of Nadeem wealth} = \text{Rs. } 6075$$

$$1\% \text{ of Nadeem wealth} = 6075/2.5$$

$$100\% \text{ of Nadeem wealth} = (6075/2.5) \times 100 = 2430 \times 100 = \text{Rs. } 243000$$

4. Saleem earned Rs. 114,700 from a rice crop and paid Usher at the rate of 5%. What amount did he pay as Usher?

Solution:

$$\text{Total Amount} = \text{Rs. } 114,700$$

$$\text{Rate of Usher} = 5\%$$

$$\text{Amount of Usher} = ?$$

$$\text{Amount of Usher} = 114700 \times 5\% = \text{Rs. } 5735$$

5. Nabeel sold apples for Rs.398160 and paid 10% as Usher. Find the amount of Usher.

Solution:

$$\text{Total Amount} = \text{Rs. } 398160$$

$$\text{Rate of Usher} = 10\%$$

$$\text{Amount of Usher} = ?$$

$$\text{Amount of Usher} = 398160 \times 10\% = \text{Rs. } 39816$$

6. Shama's annual saving is Rs. 222,000. What is the amount of Zakat to be paid by her?

Solution:

$$\text{Total Amount} = 222,000 \text{ Rs.}$$

$$\text{Rate of Zakat} = 2.5\%$$

$$\text{Amount of Zakat} = ?$$

$$\text{Amount of Zakat} = 222,000 \times 2.5\% = 222000 \times (2.5/100)$$

= Rs. 5550

7. Nahal paid Rs.7895 as Ushr at the rate of 10%. What amount did she earn?

Solution:

Rate of Usher = 10%
 10% of earn amount = Rs. 7895
 1% of earn amount = $7895/10$
 100% of earn amount = $(7895/10) \times 100 = \text{Rs. } 78950$

8. Calculate the amount payable as Usher by a farmer who earned Rs.88,460. Find the amount of usher if the rate of Usher is 5%.

Solution:

Total amount = Rs. 88460
 Rate of Usher = 5%
 Amount of Usher = $88460 \times 5\%$
 $= 88460 \times \frac{5}{100} = \text{Rs. } 4423$

SOLVED REVIEW EXERCISE 7

1. Answer the following questions.

(i) What is meant by the tax?

Answer:

A tax is a fee charged on the public at the rate fixed by a government to run its affairs.

(ii) Define the general sales tax.

Answer:

The tax a buyer pays to the seller at the time of buying things is called general sales tax.

(iii) What is the difference between profit and markup?

Answer:

A profit means what we have earned after selling a thing. Principle amount at a fix rate over a certain period of time. (markup =)

(iv) What rate of Zakat has Islam fixed?

Answer: 2.5%

(v) What is Usher?

Answer:

Usher is an Islamic tax on agriculture products.

2. Fill in the blanks.

(i) The tax which is received on a property is called the property tax.

(ii) The tax a buyer pays to the seller at the time of buying things is called General Sales Tax.

(iii) An amount added to a cost price to calculate the sale price is called a Gain.

- (iv) Zakat and Ushr are levied as ordered in the Holy Quran and Sunnah.
- (v) A markup is an amount added to the cost price to calculate the sale price.

3. Tick (✓) the correct answer.

(i) Ushr means:

- (a) one-fourth (b) one-fifth
(c) one-eighth (d) ✓ one-tenth

(ii) The tax which a buyer pays to the seller is called:

- (a) ✓ GST (b) property tax
(c) Zakat (d) Ushr

(iii) An amount that we earn after selling a thing is called:

- (a) tax (b) ✓ profit (c) markup (d) Ushr

(iv) Islam has fixed the rate of Zakat:

- (a) ✓ 2.5% (b) 5% (c) 7.5% (d) 10%

(v) In case a piece of land watered by artificial means, the Ushr will be:

- (a) 2.5% (b) 4% (c) ✓ 5% (d) 10%

