

CHAPTER-7

Comparing Quantities

2MARK Q&A:

Exercise 7.1

1. Find the ratio of the following:

(a) Speed of a cycle 15 km per hour to the speed of a scooter 30 km per hour.

(b) 5 m to 10 km

(c) 50 paise to ₹ 5

Solution:

a) Ratio of the speed of the cycle to the speed of the scooter = $15/30 = \frac{1}{2}$
= 1:2

b) Since 1 km = 1000 m

$$5\text{m}/10\text{ km} = 5\text{ m}/(10 \times 1000)\text{m} = 5/10000 = 1/2000 = 1:2000$$

The required ratio is 1:2000

c) Since, ₹1 = 100 paise

$$50\text{ paise}/₹5 = 50/(5 \times 100) = 50/500 = 1/10 = 1:10$$

The required ratio is 1:10

2. Convert the following ratio to percentages:

a) 3:4

b) 2:3

Solution:

$$\text{a) } 3:4 = \frac{3}{4} = \frac{3}{4} \times 100\% = 0.75 \times 100\% = 75\%$$

$$\text{b) } 2:3 = \frac{2}{3} = \frac{2}{3} \times 100\% = 0.666 \times 100\% = 66.66\% = 66\frac{2}{3}\%$$

3. 72% of 25 students are good in mathematics. How many are not good in mathematics?

Solution:

It's given that 72% of 25 students are good in mathematics

So, the percentage of students who are not good in mathematics = $(100 - 72)\%$

$$= 28\%$$

Here, the number of students who are good in mathematics = $\frac{72}{100} \times 25 = 18$

Thus, the number of students who are not good in mathematics = $25 - 18 = 7$

[Also, $28\% \text{ of } 25 = \frac{28}{100} \times 25 = 7$]

Therefore, 7 students are not good in mathematics.

4. A football team won 10 matches out of the total number of matches they played. If their win percentage was 40, then how many matches did they play in all?

Solution:

Let the total number of matches played by the team be x .

Given that the team won 10 matches and the winning percentage of the team was 40%.

$$\Rightarrow 40/100 \times x = 10$$

$$40x = 10 \times 100$$

$$40x = 1000$$

$$x = 1000/40$$

$$= 100/4$$

$$= 25$$

Therefore, the team played 25 matches.

5. If Chameli had ₹600 left after spending 75% of her money, how much did she have in the beginning?

Solution:

Let the amount of money which Chameli had, in the beginning, be x

Given that, after spending 75% of ₹ x , she was left with ₹600

$$\text{So, } (100 - 75)\% \text{ of } x = ₹600$$

$$\text{Or, } 25\% \text{ of } x = ₹600$$

$$25/100 \times x = ₹600$$

$$x = ₹600 \times 4$$

$$= ₹2400$$

Therefore, Chameli had ₹2400 in the beginning.

6. If 60% of people in the city like cricket, 30% like football and the remaining like other games, then what per cent of the people like other games? If the total number of people is 50 lakhs, find the exact number who like each type of game.

Solution:

Percentage of people who like other games = $(100 - 60 - 30)\%$

$$= (100 - 90)\%$$

$$= 10\%$$

Total number of people = 50 lakhs

So,

Number of people who like cricket = $60/100 \times 50 = 30$ lakhs

Number of people who like football = $30/100 \times 50 = 15$ lakhs

Number of people who like other games = $10/100 \times 50 = 5$ lakhs

Exercise 7.2

1. A man got a 10% increase in his salary. If his new salary is ₹1,54,000, find his original salary.

Solution:

Let the original salary be x

Given that, the new salary is ₹1,54,000

Original salary + Increment = New salary

Given that the increment is 10% of the original salary

So, $(x + 10/100 \times x) = 154000$

$$x + x/10 = 154000$$

$$11x/10 = 154000$$

$$x = 154000 \times 10/11$$

$$= 140000$$

Therefore, the original salary was ₹1,40,000.

2. On Sunday, 845 people went to the zoo. On Monday, only 169 people went. What is the per cent decrease in the number of people visiting the zoo on Monday?

Solution:

Given that on Sunday, 845 people went to the zoo, and on Monday, 169 people went to the zoo.

$$\text{Decrease in the number of people} = 845 - 169 = 676$$

Thus,

Percentage decrease = (Decrease in the number of people/Number of people who went to the zoo on Sunday) x 100%

$$= (676/845 \times 100)\%$$

$$= 80\%$$

3. A shopkeeper buys 80 articles for ₹ 2,400 and sells them for a profit of 16%. Find the selling price of one article.

Solution:

Given that the shopkeeper buys 80 articles for ₹ 2,400

$$\text{Cost of one article} = 2400/80 = ₹ 30$$

$$\text{Profit percentage} = 16\%$$

$$\text{Profit percentage} = \text{Profit/C.P.} \times 100$$

$$16 = \text{Profit}/30 \times 100$$

$$\text{Profit} = (16 \times 30)/100$$

$$= ₹ 4.8$$

Therefore, the selling price of one article = C.P. + Profit

$$= ₹ (30 + 4.80)$$

$$= ₹ 34.80$$

4. The cost of an article was ₹ 15,500. ₹ 450 was spent on its repairs. If it is sold for a profit of 15%, find the selling price of the article.

Solution:

The total cost of an article = Cost + Overhead expenses

$$= ₹15500 + ₹450$$

$$= ₹15950$$

Profit percentage = 15%

Profit percentage = Profit/C.P. x 100

$$15 = \text{Profit}/15950 \times 100$$

$$\text{Profit} = (15 \times 15950)/100$$

$$= 2392.50$$

Therefore, the selling price of the article = C.P. + Profit

$$= ₹(15950 + 2392.50)$$

$$= ₹18342.50$$

5. A VCR and TV were bought for ₹ 8,000 each. The shopkeeper made a loss of 4% on the VCR and a profit of 8% on the TV. Find the gain or loss per cent on the whole transaction.

Solution:

C.P. of a VCR = ₹ 8000

The shopkeeper made a loss of 4 % on VCR

This means if C.P. is ₹ 100, then S.P. is ₹ 96.

When C.P. is ₹ 8000,

$$\text{S.P.} = (96/100 \times 8000) = ₹ 7680$$

C.P. of a TV = ₹ 8000

The shopkeeper made a profit of 8 % on TV.

This means that if C.P. is ₹ 100, then S.P. is ₹ 108.

When C.P. is ₹ 8000,

$$\text{S.P.} = (108/100 \times 8000) = ₹ 8640$$

$$\text{Total S.P.} = ₹ 7680 + ₹ 8640 = ₹ 16320$$

$$\text{Total C.P.} = ₹ 8000 + ₹ 8000 = ₹ 16000$$

Since, total S.P. > total C.P. \Rightarrow profit

$$\text{Profit} = ₹ 16320 - ₹ 16000 = ₹ 320$$

$$\text{Profit \% on the whole transaction} = \text{Profit/Total CP} \times 100$$

$$= 320/16000 \times 100$$

$$= 2\%$$

Therefore, the shopkeeper had a gain of 2% on the whole transaction.

6. During a sale, a shop offered a discount of 10% on the marked prices of all the items. What would a customer have to pay for a pair of jeans marked at ₹ 1450 and two shirts marked at ₹ 850 each?

Solution:

$$\text{Total marked price} = ₹ (1,450 + 2 \times 850)$$

$$= ₹ (1,450 + 1,700)$$

$$= ₹ 3,150$$

Given that, the discount percentage = 10%

$$\text{Discount} = ₹ (10/100 \times 3150) = ₹ 315$$

Also, Discount = Marked price – Sale price

$$₹ 315 = ₹ 3150 - \text{Sale price}$$

$$\therefore \text{Sale price} = ₹ (3150 - 315)$$

$$= ₹ 2835$$

Therefore, the customer will have to pay ₹ 2,835.

7. A milkman sold two of his buffaloes for ₹ 20,000 each. On one, he made a gain of 5% and on the other, a loss of 10%. Find his overall gain or loss.

(Hint: Find the C.P. of each)

Solution:

$$\text{S.P. of each buffalo} = ₹ 20,000$$

The milkman made a gain of 5% while selling one buffalo

This means if C.P. is ₹ 100, then S.P. is ₹ 105.

C.P. of one buffalo = $100/105 \times 20000$

= ₹ 19,047.62

Also, the second buffalo was sold at a loss of 10%

This means if C.P. is ₹ 100, then S.P. is ₹ 90

∴ C.P. of other buffalo = $100/90 \times 20000$

= ₹ 22222.22

Total C.P. = ₹ 19047.62 + ₹ 22222.22 = ₹ 41269.84

Total S.P. = ₹ 20000 + ₹ 20000 = ₹ 40000

Loss = ₹ 41269.84 – ₹ 40000 = ₹ 1269.84

Therefore, the overall loss of milkman was ₹ 1,269.84

8. The price of a TV is ₹ 13,000. The sales tax charged on it is at the rate of 12%. Find the amount that Vinod will have to pay if he buys it.

Solution:

On ₹ 100, the tax to be paid = ₹ 12

Here, on ₹ 13000, the tax to be paid will be = $12/100 \times 13000$

= ₹ 1560

Required amount = Cost + Sales Tax

= ₹ 13000 + ₹ 1560

$$= ₹ 14560$$

Therefore, Vinod will have to pay ₹ 14,560 for the TV.

9. Arun bought a pair of skates at a sale where the discount given was 20%. If the amount he pays is ₹ 1,600, find the marked price.

Solution:

Let the marked price be x

$$\text{Discount percent} = \text{Discount/Marked Price} \times 100$$

$$20 = \text{Discount}/x \times 100$$

$$\text{Discount} = 20/100 \times x$$

$$= x/5$$

Also,

$$\text{Discount} = \text{Marked price} - \text{Sale price}$$

$$x/5 = x - ₹ 1600$$

$$x - x/5 = 1600$$

$$4x/5 = 1600$$

$$x = 1600 \times 5/4$$

$$= 2000$$

Therefore, the marked price was ₹ 2000.

10. I purchased a hair dryer for ₹ 5,400, including 8% VAT. Find the price before VAT was added.

Solution:

The price includes VAT

So, 8% VAT means that if the price without VAT is ₹ 100,

Then, the price including VAT will be ₹ 108

When price including VAT is ₹ 108, original price = ₹ 100

When price including VAT is ₹ 5400, original price = ₹ $(100/108 \times 5400)$

= ₹ 5000

Therefore, the price of the hair dryer before the addition of VAT was ₹ 5,000.

5MARK Q&A:

Exercise 7.3

1. Calculate the amount and compound interest on

(a) ₹ 10,800 for 3 years at $12\frac{1}{2}$ % per annum compounded annually.

Solution:

Principal (P) = ₹ 10,800

Rate (R) = $12\frac{1}{2}$ % = $25/2$ % (annual)

Number of years (n) = 3

$$\text{Amount (A)} = P(1 + R/100)^n$$

$$= 10800(1 + 25/200)^3$$

$$= 10800(225/200)^3$$

$$= 15377.34375$$

$$= ₹ 15377.34 \text{ (approximately)}$$

$$\text{C.I.} = A - P = ₹ (15377.34 - 10800) = ₹ 4,577.34$$

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(b) ₹ 18000 for 2½ years at 10% per annum compounded annually.

Solution:

Principal (P) = ₹ 18,000

Rate (R) = 10% annual

Number of years (n) = 2½

The amount for 2 years and 6 months can be calculated by calculating the amount for 2 years using the compound interest formula, then calculating the simple interest for 6 months on the amount obtained at the end of 2 years.

First, the amount for 2 years has to be calculated

$$\text{Amount, A} = P(1 + R/100)^n$$

$$= 18000(1 + 1/10)^2$$

$$= 18000(11/10)^2$$

$$= ₹ 21780$$

By taking ₹ 21780 as principal, the S.I. for the next $\frac{1}{2}$ year will be calculated

$$\text{S.I.} = (21780 \times \frac{1}{2} \times 10)/100$$

$$= ₹ 1089$$

Hence, the interest for the first 2 years = ₹ (21780 – 18000) = ₹ 3780

And, interest for the next $\frac{1}{2}$ year = ₹ 1089

$$\text{Total C.I.} = ₹ 3780 + ₹ 1089$$

$$= ₹ 4,869$$

Therefore,

$$\text{Amount, } A = P + \text{C.I.}$$

$$= ₹ 18000 + ₹ 4869$$

$$= ₹ 22,869$$

(c) ₹ 62500 for $1\frac{1}{2}$ years at 8% per annum compounded half yearly.

Solution:

$$\text{Principal (P)} = ₹ 62,500$$

Rate = 8% per annum or 4% per half-year

Number of years = $1\frac{1}{2}$

There will be 3 half-years in $1\frac{1}{2}$ years

$$\text{Amount, } A = P(1 + R/100)^n$$

$$= 62500(1 + 4/100)^3$$

$$= 62500(104/100)^3$$

$$= 62500(26/25)^3$$

$$= ₹ 70304$$

$$\text{C.I.} = A - P = ₹ 70304 - ₹ 62500 = ₹ 7,804$$

(d) ₹ 8000 for 1 year at 9% per annum compound half yearly.

(You can use the year-by-year calculation using S.I. formula to verify)

Solution:

Principal (P) = ₹ 8000

Rate of interest = 9% per annum or 9/2% per half-year

Number of years = 1 year

There will be 2 half-years in 1 year

Amount, $A = P(1 + R/100)^n$

$$= 8000(1 + 9/200)^2$$

$$= 8000(209/200)^2$$

$$= 8736.20$$

$$\text{C.I.} = A - P = ₹ 8736.20 - ₹ 8000 = ₹ 736.20$$

(e) ₹ 10000 for 1 year at 8% per annum compounded half yearly.

Solution:

Principal (P) = ₹ 10,000

Rate = 8% per annum or 4% per half-year

Number of years = 1 year

There are 2 half-years in 1 year

Amount, $A = P(1 + R/100)^n$

$$= 10000(1 + 4/100)^2$$

$$= 10000(1 + 1/25)^2$$

$$= 10000(26/25)^2$$

$$= ₹ 10816$$

$$\text{C.I.} = A - P = ₹ 10816 - ₹ 10000 = ₹ 816$$

2. Kamala borrowed ₹ 26400 from a Bank to buy a scooter at a rate of 15% p.a. compounded yearly. What amount will she pay at the end of 2 years and 4 months to clear the loan?

(Hint: Find A for 2 years with interest compounded yearly and then find S.I. on the 2nd year amount for 4/12 years.)

Solution:

Principal (P) = ₹ 26,400

Rate (R) = 15% per annum

Number of years (n) = 2 4/12

The amount for 2 years and 4 months can be calculated by first calculating the amount for 2 years using the compound interest formula, then calculating the simple interest for 4 months on the amount obtained at the end of 2 years.

First, the amount for 2 years has to be calculated

$$\text{Amount, } A = P(1 + R/100)^n$$

$$= 26400(1 + 15/100)^2$$

$$= 26400(1 + 3/20)^2$$

$$= 26400(23/20)^2$$

$$= ₹ 34914$$

By taking ₹ 34,914 as principal, the S.I. for the next $1/3$ years will be calculated

$$\text{S.I.} = (34914 \times 1/3 \times 15)/100 = ₹ 1745.70$$

$$\text{Interest for the first two years} = ₹ (34914 - 26400) = ₹ 8,514$$

$$\text{And interest for the next } 1/3 \text{ year} = ₹ 1,745.70$$

$$\text{Total C.I.} = ₹ (8514 + ₹ 1745.70) = ₹ 10,259.70$$

$$\text{Amount} = P + \text{C.I.} = ₹ 26400 + ₹ 10259.70 = ₹ 36,659.70$$

3. Fabina borrows ₹ 12,500 at 12% per annum for 3 years at simple interest, and Radha borrows the same amount for the same time period at 10% per annum, compounded annually. Who pays more interest, and by how much?

Solution:

Interest paid by Fabina = $(P \times R \times T)/100$

$$= (12500 \times 12 \times 3)/100$$

$$= 4500$$

Amount paid by Radha at the end of 3 years = $A = P(1 + R/100)^n$

$$A = 12500(1 + 10/100)^3$$

$$= 12500(110/100)^3$$

$$= ₹ 16637.50$$

$$C.I. = A - P = ₹ 16637.50 - ₹ 12500 = ₹ 4,137.50$$

The interest paid by Fabina is ₹ 4,500 and by Radha is ₹ 4,137.50

Thus, Fabina pays more interest

$$₹ 4500 - ₹ 4137.50 = ₹ 362.50$$

Hence, Fabina will have to pay ₹ 362.50 more.

4. I borrowed ₹ 12000 from Jamshed at 6% per annum simple interest for 2 years. Had I borrowed this sum at 6% per annum compound interest, what extra amount would I have to pay?

Solution:

$$P = ₹ 12000$$

$$R = 6\% \text{ per annum}$$

$$T = 2 \text{ years}$$

$$\text{S.I.} = (P \times R \times T)/100$$

$$= (12000 \times 6 \times 2)/100$$

$$= ₹ 1440$$

To find the compound interest, the amount (A) has to be calculated

$$\text{Amount, } A = P(1 + R/100)^n$$

$$= 12000(1 + 6/100)^2$$

$$= 12000(106/100)^2$$

$$= 12000(53/50)^2$$

$$= ₹ 13483.20$$

$$\therefore \text{C.I.} = A - P$$

$$= ₹ 13483.20 - ₹ 12000$$

$$= ₹ 1,483.20$$

$$\text{C.I.} - \text{S.I.} = ₹ 1,483.20 - ₹ 1,440$$

$$= ₹ 43.20$$

Therefore, the extra amount to be paid is ₹ 43.20.

5. Vasudevan invested ₹ 60000 at an interest rate of 12% per annum compounded half yearly. What amount would he get

(i) after 6 months?

(ii) after 1 year?

Solution:

$$(i) P = ₹ 60,000$$

$$\text{Rate} = 12\% \text{ per annum} = 6\% \text{ per half-year}$$

$$n = 6 \text{ months} = 1 \text{ half-year}$$

$$\text{Amount, } A = P(1 + R/100)^n$$

$$= 60000(1 + 6/100)^1$$

$$= 60000(106/100)$$

$$= 60000(53/50)$$

$$= ₹ 63600$$

(ii) There are 2 half-years in 1 year

$$\text{So, } n = 2$$

$$\text{Amount, } A = P(1 + R/100)^n$$

$$= 60000(1 + 6/100)^2$$

$$= 60000(106/100)^2$$

$$= 60000(53/50)^2$$

$$= ₹ 67416$$

6. Arif took a loan of ₹ 80,000 from a bank. If the rate of interest is 10% per annum, find the difference in amounts he would be paying after 1½ years if the interest is

(i) Compounded annually

(ii) Compounded half yearly

Solution:

(i) $P = ₹ 80,000$

$$R = 10\% \text{ per annum}$$

$$n = 1\frac{1}{2} \text{ years}$$

The amount for 1 year and 6 months can be calculated by first calculating the amount for 1 year using the compound interest formula, then calculating the simple interest for 6 months on the amount obtained at the end of 1 year.

First, the amount for 1 year has to be calculated

$$\text{Amount, } A = P(1 + R/100)^n$$

$$= 80000(1 + 10/100)^1$$

$$= 80000 \times 11/100$$

$$= ₹ 88000$$

By taking ₹ 88,000 as principal, the S.I. for the next ½ year will be calculated as

$$\text{S.I.} = (P \times R \times T)/100$$

$$= (88000 \times 10 \times \frac{1}{2})/100$$

$$= ₹ 4400$$

$$\text{Interest for the first year} = ₹ 88000 - ₹ 80000 = ₹ 8000$$

$$\text{And interest for the next } \frac{1}{2} \text{ year} = ₹ 4,400$$

$$\text{Total C.I.} = ₹ 8,000 + ₹ 4,400 = ₹ 12,400$$

$$A = P + \text{C.I.} = ₹ (80000 + 12400)$$

$$= ₹ 92,400$$

(ii) The interest is compounded half yearly

$$\text{Rate} = 10\% \text{ per annum} = 5\% \text{ per half-year}$$

There will be three half-years in $1\frac{1}{2}$ years

$$\text{Amount, } A = P(1 + R/100)^n$$

$$= 80000(1 + 5/100)^3$$

$$= 80000(105/100)^3$$

$$= ₹ 92610$$

$$\text{Thus, the difference between the amounts} = ₹ 92,610 - ₹ 92,400 = ₹ 210$$

7. Maria invested ₹ 8,000 in a business. She would be paid interest at 5% per annum compounded annually. Find

(i) The amount credited against her name at the end of the second year

(ii) The interest for the 3rd year

Solution:

(i) $P = ₹ 8,000$

$R = 5\%$ per annum

$n = 2$ years

Amount, $A = P(1 + R/100)^n$

$= 8000(1 + 5/100)^2$

$= 8000(105/100)^2$

$= ₹ 8820$

(ii) The interest for the next year, i.e. the third year, has to be calculated. By taking ₹ 8,820 as principal, the S.I. for the next year will be calculated.

$S.I. = (P \times R \times T)/100$

$= (8820 \times 5 \times 1)/100$

$= ₹ 441$

8. Find the amount and the compound interest on ₹ 10,000 for 1½ years at 10% per annum, compounded half yearly. Would this interest be more than the interest he would get if it was compounded annually?

Solution:

$$P = ₹ 10,000$$

$$\text{Rate} = 10\% \text{ per annum} = 5\% \text{ per half-year}$$

$$n = 1\frac{1}{2} \text{ years}$$

There will 3 half-years in 1½ years

$$\text{Amount, } A = P(1 + R/100)^n$$

$$= 10000(1 + 5/100)^3$$

$$= 10000(105/100)^3$$

$$= ₹ 11576.25$$

$$\text{C.I.} = A - P$$

$$= ₹ 11576.25 - ₹ 10000$$

$$= ₹ 1,576.25$$

The amount for 1 year and 6 months can be calculated by first calculating the amount for 1 year using the compound interest formula, then calculating the simple interest for 6 months on the amount obtained at the end of 1 year.

$$\text{Amount, } A = P(1 + R/100)^n$$

$$= 10000(1 + 10/100)^1$$

$$= 10000(110/100)$$

$$= ₹ 11000$$

By taking ₹ 11,000 as the principal, the S.I. for the next $\frac{1}{2}$ year will be calculated as

$$\text{S.I.} = (P \times R \times T)/100$$

$$= (11000 \times 10 \times \frac{1}{2})/100$$

$$= ₹ 550$$

So, the interest for the first year = ₹ 11000 – ₹ 10000 = ₹ 1,000

Hence, Total compound interest = ₹ 1000 + ₹ 550 = ₹ 1,550

So the difference between two interests = 1576.25 – 1550 = 26.25

Therefore, the interest would be 26.25 more when compounded half yearly than the interest when compounded annually.

9. Find the amount which Ram will get on ₹ 4,096, if he gave it for 18 months at $12\frac{1}{2}$ per annum, interest being compounded half-yearly.

Solution:

$$P = ₹ 4,096$$

$$R = 12\frac{1}{2} \text{ per annum} = \frac{25}{2} \text{ per annum} = \frac{25}{4} \text{ per half-year}$$

$$n = 18 \text{ months}$$

There will be 3 half-years in 18 months

$$\text{Therefore, amount } A = P(1 + R/100)^n$$

$$= 4096(1 + 25/(4 \times 100))^3$$

$$= 4096 \times (1 + 1/16)^3$$

$$= 4096 \times (17/16)^3$$

$$= ₹ 4913$$

Therefore, the required amount is ₹ 4,913.

10. The population of a place increased to 54000 in 2003 at a rate of 5% per annum

(i) find the population in 2001

(ii) what would be its population in 2005?

Solution:

(i) It's given that population in the year 2003 = 54,000

$$54,000 = (\text{Population in 2001}) (1 + 5/100)^2$$

$$54,000 = (\text{Population in 2001}) (105/100)^2$$

$$\text{Population in 2001} = 54000 \times (100/105)^2$$

$$= 48979.59$$

Therefore, the population in the year 2001 was approximately 48,980

$$(ii) \text{Population in 2005} = 54000(1 + 5/100)^2$$

$$= 54000(105/100)^2$$

$$= 54000(21/20)^2$$

$$= 59535$$

Therefore, the population in the year 2005 would be 59,535.

11. In a laboratory, the count of bacteria in a certain experiment was increasing at the rate of 2.5% per hour. Find the bacteria at the end of 2 hours if the count was initially 5,06,000.

Solution:

The initial count of bacteria is given as 5,06,000

Bacteria at the end of 2 hours = $506000(1 + 2.5/100)^2$

$$= 506000(1 + 1/40)^2$$

$$= 506000(41/40)^2$$

$$= 531616.25$$

Therefore, the count of bacteria at the end of 2 hours will be 5,31,616 (approx.).

12. A scooter was bought at ₹ 42,000. Its value depreciated at the rate of 8% per annum. Find its value after one year.

Solution:

Principal = Cost price of the scooter = ₹ 42,000

Depreciation = 8% of ₹ 42,000 per year

$$= (P \times R \times T)/100$$

$$= (42000 \times 8 \times 1)/100$$

$$= ₹ 3360$$

Thus, the value after 1 year = ₹ 42000 – ₹ 3360 = ₹ 38,640.

1MARK Q&A:

Exercise 7.4

Multiple-choice questions and answers

1. If the cost of 5 notebooks is \$20, what is the cost of 10 notebooks at the same rate?

- a) \$10
- b) \$20
- c) \$30
- d) \$40

Answer: c) \$30

2. If a shirt originally costs \$30 and is on sale for 25% off, what is the discounted price?

- a) \$5
- b) \$15
- c) \$22.50
- d) \$25

Answer: c) \$22.50

3. A computer is sold for \$800 after a 20% discount. What was its original price?

- a) \$640
- b) \$720

- c) \$900
- d) \$1000

Answer: d) \$1000

4. If the price of 1 kg of apples is \$2, what is the cost of 3.5 kg of apples?

- a) \$5
- b) \$7
- c) \$10
- d) \$12

Answer: c) \$10

5. You can buy 4 pens for \$12. What is the cost of 8 pens?

- a) \$12
- b) \$16
- c) \$18
- d) \$24

Answer: b) \$16

6. A pair of shoes costs \$60. If you get a 15% discount, how much will you save?

- a) \$6
- b) \$9
- c) \$15
- d) \$30

Answer: b) \$9

7. If a shopkeeper buys a shirt for \$20 and sells it for \$30, what is his profit percentage?

- a) 25%
- b) 30%
- c) 50%
- d) 150%

Answer: a) 25%

8. A mobile phone is priced at \$300 with a 10% discount. What is the discounted price?

- a) \$270
- b) \$30
- c) \$330
- d) \$2700

Answer: a) \$270

9. If the price of 1 kg of rice is \$2.50, what is the cost of 2.5 kg of rice?

- a) \$5
- b) \$6.25
- c) \$10
- d) \$15

Answer: b) \$6.25

10. A book originally costs \$25, and it's on sale for 40% off. What is the final price of the book?

- a) \$10
- b) \$15
- c) \$20
- d) \$30

Answer: c) \$20

11. A store is offering a "Buy 1, Get 1 at 50% off" deal on T-shirts. If you buy two T-shirts, each costing \$20, what is the total cost?

- a) \$20
- b) \$30
- c) \$35
- d) \$40

Answer: c) \$35

12. If you buy a toy for \$15, and you can exchange it for another toy within 7 days, how much will the new toy cost if it is priced at \$25?

- a) \$10
- b) \$15
- c) \$20
- d) \$25

Answer: a) \$10

13. A store offers a 15% discount on all items. If you buy a pair of shoes for \$60, how much will you pay after the discount?

- a) \$45
- b) \$51
- c) \$55
- d) \$63

Answer: b) \$51

14. If a bag of candy weighs 500 grams and costs \$5, what is the cost of 1 kilogram (kg) of the same candy?

- a) \$5
- b) \$10
- c) \$15
- d) \$20

Answer: b) \$10

15. A store sells mobile phones for \$250 each, but they offer a bulk discount of 10% if you buy two or more phones. If you buy two phones, how much will you pay?

- a) \$225
- b) \$250
- c) \$275
- d) \$500

Answer: a) \$225

16. If a pair of jeans originally costs \$50, and it's on sale for 20% off, what is the discounted price?

- a) \$10
- b) \$20
- c) \$30
- d) \$40

Answer: c) \$40

17. A laptop is priced at \$800, and you can buy it in 12 monthly installments with no interest. How much will you pay each month?

- a) \$50
- b) \$66.67
- c) \$100
- d) \$800

Answer: b) \$66.67

18. If the price of 1 liter of milk is \$2.50, what is the cost of 4 liters of milk?

- a) \$4
- b) \$6
- c) \$8
- d) \$10

Answer: d) \$10

19. A TV originally costs \$500, and you have a coupon for 20% off. How much will you save with the coupon?

- a) \$50
- b) \$100
- c) \$200
- d) \$250

Answer: b) \$100

20. If you buy 3 shirts for \$60 each and get a 10% discount on the total bill, how much will you pay?

- a) \$162
- b) \$180
- c) \$162.90
- d) \$1620

Answer: c) \$162.90

Exercise 7.5

Fill in the blanks

1. If two quantities have the same ratio, they are called _____.

- Answer: Proportional

2. The ratio of 5 hours to 10 hours can be simplified to _____.

- Answer: 1:2

3. A quantity that is expressed as a fraction of 100 is called _____.

- Answer: Percentage

4. A discount of 20% on a \$50 item will result in a price of _____ dollars.

- Answer: \$40

5. The cost of 8 pens is \$24. The cost of 12 pens will be _____ dollars.

- Answer: \$36

6. If a car travels 300 kilometers in 5 hours, its speed is _____ kilometers per hour.

- Answer: 60

7. When a shopkeeper sells an item at a price higher than the marked price, it's called _____.

- Answer: Selling at a profit

8. The profit percent is calculated using the formula: $\frac{\text{profit}}{\text{Cost price}} * 100$. It is expressed in _____.

- Answer: Percentage

Summary

1. Ratio and Proportion:

- Ratio refers to the comparison between two quantities.
- Proportionality signifies that two ratios or fractions are equal.
- For instance, if $a:b = c:d$, then a is to b as c is to d .

2. Percentage:

- Percentage is a way of expressing a fraction or a part out of 100.
- It helps in comparing quantities and understanding relative changes or amounts.
- For example, 25% means 25 out of 100 or one-fourth.

3. Discount and Marked Price:

- A discount is a reduction in the original price of an item.
- The marked price is the initial price of an item before any discounts are applied.

4. Profit and Loss:

- Profit refers to the amount gained after selling a product above its cost price.
- Loss refers to the amount lost when selling a product below its cost price.

5. Simple Interest:

- Simple interest is the interest calculated on the original principal amount.
- It is calculated as $\text{Principal} * \text{Rate} * \text{Time} / 100$.

6. Speed, Distance, and Time:

- Speed is the rate at which an object covers a certain distance in a given time.
- The formula for speed is $\text{Distance} / \text{Time}$.

7. Direct and Inverse Proportions:

- Direct proportionality occurs when two quantities change in the same direction.
- Inverse proportionality occurs when an increase in one quantity leads to a decrease in the other, and vice versa.

8. Applications:

- Comparing quantities is crucial in various real-life scenarios, such as calculating discounts in shopping, understanding profit margins in business, calculating simple interest in banking, and determining speed, distance, and time in travel.
