Section A

Q1. Express the following ratio as percentages: 17 : 20

Answer:

17: 20 = $\frac{17}{20}$ x 100%

= 17 x 5% = 85%

Q2. If $16\frac{2}{3}$ % of a number is 25, find the number.

Answer: Let the number be x

$\therefore 16\frac{2}{3}$ % of x = 25

⇨ $\frac{50}{3}$ % of x = 25

⇨ $\frac{50}{3}$ x $\frac{1}{100}$ of x = 25

⇨ x = $\frac{25\ x\ 3\ x\ 100}{100}$

⇨ x = 150

Hence the number is 50.

Q3. Increase the number 60 by 30% .

Answer:

New number = $\left(1 + \frac{30}{100}\right)$ of 60 [130 /100 = 13/10 (upon cancelling zero)]

⇨ $\frac{13}{10}$ x 60 = 78

Q4. What number when increased by 15% becomes 299?

Answer: Let the original number be x

Then, a new number = $\left(1 + \frac{15}{100}\right)$ of the original number

⇨ 299 = $\left(\frac{20+3}{20}\right)$ x X

⇨ 299 = $\frac{23}{20}$ x X

⇨ **x =** $\frac{299\ x\ 20}{23}$

⇨ x = 13 x 20 = 260

Q5. Pratibha reduced her weight by 15%. If now she weighs 59.5 kg, what was her earlier weight?

Answer:

Pratibha reduced her weight = 15 %

And her present weight = 59.5 kg

Let her original weight = 100

∴ Reduced weight = 100 – 15 = 85%

$\therefore 85\%$ of her original weight $= 59.5$ kg

$\therefore$ Her original weight $= \frac{59.5\ \ x\ 100}{85}$ kg $= 0.7$ x $100 = 70$ kg

Q6. A notebook is marked at ₹30. Find the price a student pays for a dozen notebooks if he gets a 15% discount.

Answer:

The marked price of one notebook = ₹ 30

Marked price of one dozen notebooks = ₹ 30 x 12 = ₹ 360

Discount = 15%

Amount of discount = 15% of MP

⇨ 15% of ₹ 360

⇨ ₹ $\left(\frac{15}{100}\ \text{x}\ 360\right)$

⇨ ₹ $\left(\frac{15}{10}\ \text{x}\ 36\right)$

⇨ ₹ $\left(\frac{3}{2}\ \text{x}\ 36\right)$

⇨ 3 x 18 = ₹ 54

Hence the student pays = ₹ 360 - ₹ 54 = ₹ 306

Q7. Balanced diet should contain 12% of proteins, 25% of fats and 63% of carbohydrates. If a child needs 2600 calories in this food daily, find in calories the amount of each of these in his daily food intake.

Answer:

The given details are,

Amount of calorie daily needed = 2600 calorie

Amount of protein needed = 12% of 2600

$= \left(\frac{12}{100}\right) \times 2600 = 312$ calorie

Amount of fats needed = 25% of 2600

$= \left(\frac{25}{100}\right) \times 2600 = 650$ calorie

Amount of carbohydrate needed = 63% of 2600

$= \left(\frac{63}{100}\right) \times 2600 = 1638$ calorie

∴ The number of calories required in protein is 312 calories, fat is 650 calories, and carbohydrates are 1638 calories

Q8. On increasing the price of an article by 16%, it becomes ₹ 1479. What was its original price?

Answer: Let the original price of an article = ₹ x

∴ 1479 = $\left(1 + \frac{16}{100}\right)$ of the original price.

⇨ ₹ 1479 = $\left(\frac{100 + 16}{100}\right)$ x ₹ x

⇨ 1479 = $\frac{116}{100}$ X ₹ x

⇨ $\frac{116\,x}{100} = 1479$

⇨ $x = \frac{1479\,x\,100}{116} = \frac{1479\,x\,25}{29}$

⇨ x = 51 x 25

⇨ x = 1275

Hence the original price of an article = ₹ 1275

Section B

Q9. A motorist traveled 122 kilometers before his first stop. If he had 10% of his journey to complete, how long was the total ride?

Answer: The given details are,

Motorist total distance traveled before first stop = 122 km

Journey completed at first stop = 10 %

Let us consider the total ride to be traveled to be 'x' km

So, by calculating

$\frac{x}{100} \times 10 = 122$

By cross multiplying we get,

$\frac{x}{100} = \frac{122}{100}$

$x = \frac{(122\,x\,100)}{100}$

= 1220 km

∴ The motorist's total ride is 1220 km

Q10. Mohan's income is Rs 15500 per month. He saves 11% of his income. If his income increases by 10%, then he reduces his savings by 1%, how much does he save now?

Answer:

Mohan's monthly income is = Rs 15500

Mohan's savings is = 11% of 15500

= 15500 × $\frac{11}{100}$ = Rs 1705

Monthly income increases by = 10%

New monthly income is = 15500 + $\frac{10}{100}$ × 15500

= 15500 + 1550

= Rs 17050

When savings reduced by 1% will result in = 11 – 1 = 10% of 17050

New savings = $\left(\frac{10}{100}\right)$ × 17050 = Rs 1705

∴ Savings are Rs 1705, which remains the same even after increment.

Q11. Rs 3500 is to be shared among three people so that the first person gets 50% of the second, who in turn gets 50% of the third. How much will each of them get?

Answer:

We know that the total money to be shared is = Rs 3500

Let us consider third person get = Rs x

So, the second person gets (50% of the third) = 50% of x

= 50/100 × x

= Rs $\frac{x}{2}$

Now, first-person get (50% of second) = 50% of $\frac{x}{2}$

= $\frac{50}{100} \times \frac{x}{2}$

= Rs $\frac{x}{4}$

We know that,

$\frac{x}{4} + \frac{x}{2}$ + x = 3500

by taking 4 as LCM

$\frac{x+ 2x+4x}{4}$ = 3500

By cross multiplying

x + 2x + 4x = 3500 × 4

7x = 14000

x = $\frac{14000}{7}$ = 2000

∴ Each of the person gets,

First-person $\left(\frac{x}{4}\right)$ gets = $\frac{x}{4} = \frac{2000}{4}$ = Rs 500

Second person $\left(\frac{x}{2}\right)$ gets = $\frac{x}{2} = \frac{2000}{2}$ = Rs 1000

Third person (x) gets = x = Rs 2000

Q12. Increase the price of ₹ 200 by 10% and then decrease the new price by 10%. Is the final price the same as the original one?

Answer:

Rate of increase = 10 %

Rate of decrease = 10 %

Price of an article = ₹ 200

Increased price = ₹ 200 x $\frac{100 + 10}{100}$ = ₹ 200 x $\frac{110}{100}$ = ₹ 220

Now decreased price

= ₹ 220 x $\frac{100-10}{100}$ = ₹ 220 x $\frac{90}{100}$ = ₹ 198

No, the final price is not the same as the original price.

Q13. A candidate who gets 36 % marks in an examination fails by 24 marks but another candidate, who gets 43% marks, gets 18 more marks than the minimum pass marks. Find the maximum marks and the percentage of pass marks.

Answer:

Let the maximum marks = x

Then, the first candidate secured marks = 36 % of x

⇨ $\frac{36}{100}$ X $X = \frac{36x}{100}$

Another candidate secured marks

⇨ 43 % of x

⇨ $\frac{43}{100}$ X X

⇨ $\frac{43x}{100}$

Qualifying marks are the same for both candidates.

Then according to the question,

⇨ $\frac{36x}{100}$ + 24 = $\frac{43x}{100}$ - 18

⇨ 24 + 18 = $\frac{43x}{100}$ - $\frac{36x}{100}$

⇨ 42 = $\frac{43x-36x}{100}$

⇨ 42 = $\frac{7x}{100}$

⇨ x = 42 x $\frac{100}{7}$

⇨ x = 6 x 100 = 600

Hence maximum marks = 600

The first candidate secured marks = $\frac{36}{100}$ x 600 = 36 x 6 = 216

Then qualifying marks = 216 + 24 = 240

Percentage of qualifying marks

⇨ $\left(\frac{240}{600}\ x\ 100\right)\%$

⇨ $\left(\frac{240}{6}\right)\%$

⇨ 40 %