GIRLS' HIGH SCHOOL AND COLLEGE, PRAYAGRAJ

SESSION : 2020-2021

CLASS- 8 (A,B,C,D,E)

SUBJECT- MATHEMATICS

Worksheet : 05

INSTRUCTIONS : Parents kindly ensure that the student understands the given examples to solve the questions that follow. Students can also refer to class 7 or 8 Maths book or internet.

CHAPTER – PERCENT AND PERCENTAGE

Meaning of Percent: Percent means for every hundred denoted by the symbol %

Meaning of Percentage: A fraction, whose denominator is 100 is called percentage and the numerator of such a fraction is called the rate percent.

$$\frac{8}{100} = 8 \text{ Percent, 8 out of 100}$$

Example – 1

Evaluate : 16 % of 150 – 25 % of 84 + 8 % of 550

Solution : $\frac{16}{100}$ x $150 - \frac{25}{100}$ x $84 + \frac{8}{100}$ x 550

$\Rightarrow$ $24 - 21 + 44 = $ **47 Answer**

Q.1-Evaluate – (i) 55% of 160 + 24% of 50 – 36% of 150

(ii) 9.3% of 500 – 4.8% of 250 – 2.5% of 240

Example – 2

Evaluate : Find 36 is what percent of 144

Solution : The required percent $= \frac{36}{144}$ x 100 % = **25 % Answer**

Q.2-Find - (i) 45 is what percent of 54 ?

(ii) 2.7 is what percent of 18 ?

Example – 3: 80 is 32 % of a certain number. Find the number.

Solution : 32 % of a certain number = 80

$\Rightarrow$ $\frac{32}{100}$ x the number = 80

$\Rightarrow$ The required number = 80 x $\frac{100}{32}$

= **250 Answer**

Q.3-Find (i) 252 is 35 % of a certain number, find the number.

(ii) If 14% of a number is 315, find the number.

Example – 4: To find the percentage change in a quantity 30 to 32.

Solution :

$$\text{Percentage Change} = \frac{Change\ in\ quantity}{Original\ quantity} \times 100$$

Change in quantity = 32 – 30 = 2

$$= \frac{2}{30} \times 100 = \mathbf{6\frac{2}{3}\%}\ \textbf{Answer}$$

Q.4- Find the percentage change in each case.

(I)   18 g to 22.5 g

(II)   Rs. 400 to Rs. 840

(III)   80 to 100

(IV)   6.25 to 7.50

(V)   100 to 80

Example – 5: A man spends 65% of his salary and saves Rs. 525 per month. Find his monthly salary.

Solution : The man spends 65% of his salary

He saves (100 - 65)% = 35 % of his salary

The man saves Rs. 35 of his salary = 100

The man saves Rs. 1 of his salary $= \frac{100}{35}$

The man saves Rs. 525 of his salary $= \frac{100}{35} \times 525$

$$= 1500$$

Man's monthly salary = **Rs. 1500 Answer**

Q.5-Solve – (I) Out of 800 oranges, 50 are found rotten. Find the percentage of good oranges.

(II) A Man spends 87 % of his salary if he saves Rs. 325. Find the salary.

(III) A cistern contains 5 thousand litres of water. If 6 % water is leaked. Find how much litres of water would be left in the cistern.

(IV) Vikas spent 78% of his salary and saved Rs. 5,500. Find his salary.

Example 6 : A number 4.0 to wrongly read as 4.48 find the percentage error.

Solution :   Error = 4.48 – 4.0 = .48

$$\text{Percentage error} = \frac{Error}{Original\ number} \times 100$$

$$= \frac{0.48}{4.0} \times 100\ \% = \mathbf{12\%}\ \textbf{Answer}$$

Q.6-Solve – (I) A Number 3.625 is wrongly read as 3.265, find the percentage error.

(II) A Number 5.78 x 10^3 is wrongly written as 5.87 x 10^3. Find the percentage error.

Example 7 : The number 5000 is first decreased by 10% and then increased by 20%. Find the resulting number.

Solution : The resulting number = The original number x $\left(1 - \frac{10}{100}\right)$ x $\left(1 + \frac{20}{100}\right)$

$$= 5000 \text{ x } \frac{90}{100} \text{ x } \frac{120}{100}$$

$$= \textbf{5400 Answer}$$

Q.7-Solve (I) The number 20,000 is first increased by 30% then decrease by 20%. Find the resulting number.

(II) The number 8,000 is first increased by 20 % and then decreased by 20%. Find the resulting number.

(III) The number 12,000 is first decreased by 25% and then increased by 25%. Find the resulting number.

Example 8 : Find the percentage change in the cost of an article which first increases by 20% and then decreases by 8%.

Solution : If initial value of the article is Rs. 100

$$\text{Its final value} = \text{Rs. } 100 \text{ x } \left(1 + \frac{20}{100}\right) \left(1 - \frac{8}{100}\right)$$

$$= 100 \text{ x } \frac{120}{100} \text{ x } \frac{92}{100}$$

$$= \text{Rs } 110.40$$

Percentage Change (Increase) = (110.40 – 100) %

$$= \textbf{10.40\% Answer}$$

Q.8-Solve (I) The cost of an article is first increased by 20% and then decreased by 30%. Find the percentage change in the cost of the article.

(II) The cost of an article is first decreased by 25% and then further decreased by 40%. Find the percentage change in the cost of the article.

Example 9 : In an examination, 30 percent candidates failed in English, 35 percent failed in Mathematics and 27 percent failed in both the subjects, Find :
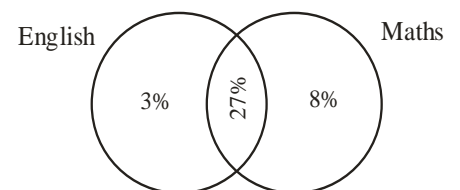
    (I) Percentage of total failed
    (II) Percentage of total passed
    (III) The total number of candidates; if 248 passed in both.

Solution : (i) Since, failed only in English = 30% - 27% = 3%

      Failed only in mathematics = 35% - 27% = 8%

      and failed in both = 27%

∴   Total failed = 3% + 8% + 27% = **38% Answer**

(ii) Total Passed = (100 – 38)% = **62% Answer**

(iii) Since, 62% of the candidates = 248

$\Rightarrow \quad \dfrac{62}{100}$ x No. of candidates = 248

$\Rightarrow \quad$ **No. of candidates** = 248 x $\dfrac{100}{62}$ = **400 Answer**

Q.9- Solve (I) In a combined test in English and Physics; 36% candidates failed in English; 28% failed in Physics and 12% in both; find :

    i. The percentage of passed candidates

    ii. The total number of candidates appeared if 208 candidates have failed.

(II) In a combined test in Maths and Chemistry; 84% candidates passed in Maths; 76% in Chemistry and 8% failed in both. Find :

    i. The percentage of failed candidates

    ii. If 340 candidates passed in the test; then how many appeared ?

(III) In an examination, 35% of the students failed in English, 30% failed in Sanskrit and 15% failed in both subject. Find :

    i. The percentage of students who passed in both subjects and

    ii. The total number of students if 400 students passed in both subjects.

Example 10 : A's income is 10 percent more than B's; how much percent is B's income less than A's ?
Solution :

Let B's income = Rs. 100

then,   A's income = Rs 100 + 10% of Rs. 100

$$= \text{Rs } 100 + \dfrac{10}{100} \text{ x Rs } 100 = \text{Rs } 110$$

if A's income is Rs 110, B's income = Rs 10 less than A   [Rs (110 – 100)]

if A's income = Rs 1, B's = Rs $\dfrac{10}{100}$ less than A

and, if A's income = Rs 100, B's is Rs $\dfrac{10}{100}$ x 100 less than A

$\Rightarrow \quad$ **B's income is $\dfrac{100}{11}$ % less i.e. $9\dfrac{1}{11}$ % less than A's. (Answer)**

Q.10-Solve (I) A's income is 25% more than B's. Find, B's income is how much percent less than A's.

    (II) Mona is 20% younger than Neetu. How much percent is Neetu older than Mona ?

(III) A's salary is 50% higher than B's. By what percent is B's salary lower than A's ?

(IV) A's salary is 5% lower than B's. By what percent is B's salary higher than A's ?

Example 11 : A number decreased by 18% becomes 410. Find the number.

Solution : Let the number be 100.

Since, decrease in number = 18% of 100 = 18.

∴ After decrease, the number becomes = 100 – 18 = 82.

Applying unitary method :

When the decreased number = 82, the original number = 100

⇒ When the decreased number = 1, the original number = $\dfrac{100}{82}$

and, When the decreased number = 410,

the original number = $\dfrac{100}{82}$ x 410 = **500 Answer**

Q.11-Solve (I) A number increased by 15% becomes 391. Find the number.

(II) A number decreased by 23% becomes 539. Find the number.

Example 12 : Two numbers are respectively 10% and 25% more than a third number, what percent is the first of the second ?

Solution : Let the third number be 100.

∴ The first number = 100 + 10% of 100 = 110

and, the second number = 100 + 25% of 100 = 125

∴ The first no. as the percent of the second = $\dfrac{110}{125}$ x 100% = **88% (Answer)**

Q.12- Solve (I) Two numbers are respectively 20 percent and 50 percent more than a third number. What percent is the second of the first ?

(II) Two numbers are respectively 20 percent and 50 percent of a third number. What percent is the second of the first ?

(III) Two numbers are respectively 30 percent and 40 percent less than a third number. What percent is the second of the first ?

Example 13 : A number increased by 30% becomes 150. Find the number.

Solution :

> If a number is decreased by x%,
>
> the new number = $\left(\dfrac{100-x}{100}\right)$ x the original number
>
> and, if a number is increased by x%,
>
> the new number = $\left(\dfrac{100+x}{100}\right)$ x the original number

∴ The new number = $\dfrac{100+30}{100}$ x 150

⇒ = $\dfrac{130}{100}$ x 150

= **195 Answer**

Q.13-Solve : (i) Increase 180 by 25%

    (ii) Decrease 140 by 18%

    (iii) Increase 250 g by 7.5%

    (iv) Decrease 90 by 90%

    (v) Decrease 550 L by 36%

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