



SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)
COIMBATORE-35



DEPARTMENT OF AEROSPACE ENGINEERING

19GET275 – VQAR 1

UNIT -1 QUANTITATIVE ABILITY I

1. Concept of Percentage:

By a certain percent, we mean that many hundredths.
Thus, x percent means x hundredths, written as $x\%$.

To express $x\%$ as a fraction: We have, $x\% = \frac{x}{100}$.

$$\text{Thus, } 20\% = \frac{20}{100} = \frac{1}{5}$$

To express $\frac{a}{b}$ as a percent: We have, $\frac{a}{b} = \left(\frac{a}{b} \times 100 \right)\%$.

$$\text{Thus, } 4 = \left(\frac{4}{1} \times 100 \right)\% = 25\%$$

2. Percentage Increase/Decrease:

If the price of a commodity increases by $R\%$, then the reduction in consumption so as not to increase the expenditure is:

$$\left[\frac{R}{(100 + R) \times 100} \right]\%$$

If the price of a commodity decreases by $R\%$, then the increase in consumption so as not to decrease the expenditure is:

$$\left[\frac{R}{(100 - R) \times 100} \right]\%$$

3. Results on Population:

Let the population of a town be P now and suppose it increases at the rate of $R\%$ per annum, then:

1. Population after n years = $P \left(1 + \frac{R}{100} \right)^n$



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2. Population n years ago =
$$\frac{P}{\left(1 + \frac{R}{100}\right)^n}$$

4. Results on Depreciation:

Let the present value of a machine be P . Suppose it depreciates at the rate of $R\%$ per annum. Then:

1. Value of the machine after n years =
$$P \left(1 - \frac{R}{100}\right)^n$$

2. Value of the machine n years ago =
$$\frac{P}{\left(1 - \frac{R}{100}\right)^n}$$

3. If A is $R\%$ more than B , then B is less than A by
$$\left[\frac{R}{(100 + R) \times 100}\right]\%$$
.

4. If A is $R\%$ less than B , then B is more than A by
$$\left[\frac{R}{x \times 100}\right]\%$$



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1. A batsman scored 110 runs which included 3 boundaries and 8 sixes. What percent of his total score did he make by running between the wickets?

45%

$45\frac{5}{11}\%$

$54\frac{6}{11}\%$

55%

Answer: Option

Explanation:

Number of runs made by running = $110 - (3 \times 4 + 8 \times 6)$

= $110 - (60)$

= 50.

$$\therefore \text{Required percentage} = \left(\frac{50}{110} \times 100 \right) \% = 45\frac{5}{11}\%$$

2. Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. The marks obtained by them are:

- 39, 30
- 41, 32
- 42, 33
- 43, 34
- **Answer:** Option

• **Explanation:**

- Let their marks be $(x + 9)$ and x .

Then, $x + 9 = \frac{56}{100}(x + 9 + x)$



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- $\Rightarrow 25(x + 9) = 14(2x + 9)$
- $\Rightarrow 3x = 99$
- $\Rightarrow x = 33$
- So, their marks are 42 and 33.

3.A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had:

- 588 apples
- 600 apples
- 672 apples
- 700 apples
- **Answer:** Option
- **Explanation:**
- Suppose originally he had x apples.
- Then, $(100 - 40)\%$ of $x = 420$.

$$\Rightarrow \frac{60}{100} x = 420$$

$$\Rightarrow x = \left(\frac{420 \times 100}{60} \right) = 700.$$

4.What percentage of numbers from 1 to 70 have 1 or 9 in the unit's digit?

- 1
- 14
- 20



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- 21
- **Answer:** Option
- **Explanation:**
- Clearly, the numbers which have 1 or 9 in the unit's digit, have squares that end in the digit 1. Such numbers from 1 to 70 are 1, 9, 11, 19, 21, 29, 31, 39, 41, 49, 51, 59, 61, 69.
- Number of such number =14

$$\therefore \text{Required percentage} = \left(\frac{14}{70 \times 100} \right) \% = 20\%.$$

5.If A = $x\%$ of y and B = $y\%$ of x , then which of the following is true?

- A is smaller than B.
- A is greater than B
- Relationship between A and B cannot be determined.
- If x is smaller than y , then A is greater than B.
- None of these
- **Answer:** Option
- **Explanation:**

$$x\% \text{ of } y = \left(\frac{x}{100 \times y} \right) = \left(\frac{y}{100 \times x} \right) = y\% \text{ of } x$$

- $\therefore A = B.$



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What is Percentage?

Percentage is the representation of value expressed as a fraction of 100.

Ex: 25 % means 25/100, similarly 50 % means 50/100, Here 25 and 50 are the parts of whole number 100.

we can use the formula to find out the percentage of any value is given

below. $\text{Percentage} = \frac{\text{Part value}}{\text{Whole value}} \times 100$

$\frac{h}{100} \times 100$

Some examples are given below to understand percentage in a better way-

Example (1): Mr. John scored 30 runs out of total score of the team 150 runs. Find the percentage score of Mr. John?

Solution: Mr. John scored 30 runs out of 150 runs means $\frac{30}{150}$, then $\text{Percentage Value} = \frac{30}{150} \times 100 = 20\%$

Example (2): Mr. John scored 20 % runs out of total score of the team 150 runs. Find the runs scored by of Mr. John?

Solution: Mr. John scored 20 % runs means $\frac{20}{100}$, then runs scored by Mr. John out of total 150 runs = $\frac{20}{100} \times 150 = 30$ runs

Conversion of fraction value into percent value:

Multiply the fraction value by 100 for converting a fraction value into percent value, Some examples are given below to understand the conversion-

Example (1): Conversion of fraction value $\frac{1}{4}$ into percent, $= \frac{1}{4} \times 100 = 25\%$

Example (2): Conversion of fraction value $\frac{2}{5}$ into percent, $= \frac{2}{5} \times 100 = 40\%$

Conversion of percent value into fraction value:

Divide the percent value by 100 for converting a percent value into fraction value, Some examples are given below to understand the conversion-

Example (1): Conversion of percent value 20 % into fraction value, $= \frac{20}{100} = \frac{1}{5}$

Example (2): Conversion of percent value 10 % into fraction value, $= \frac{10}{100} = \frac{1}{10}$