L3

Decimals

A decimal is a way of representing fractions or parts of a whole using powers of 10. The decimal point separates the whole number part from the fractional part.

Examples:

- 0.5 is the same as 1/2.
- 2.75 is the same as $2\frac{3}{4}$ or 11/4 .

Decimals are often used in measurements, money, and other real-world situations.

Operations with Decimals:

- Addition/Subtraction: Align the decimal points and perform the operation.
- Multiplication: Multiply normally, then place the decimal in the result by counting the decimal places in the numbers being multiplied.
- Division: Move the decimal to make the divisor a whole number and then divide.

Percentages

A percentage is a fraction with a denominator of 100. It represents "parts per hundred." The symbol used is "%".

Examples:

- 50% means 50/100 or 0.5.
- 25% means 25/100 or 0.25.

To convert between percentages, decimals, and fractions:

- **Percentage to Decimal**: Divide by 100 (e.g., 75% = 0.75).
- **Decimal to Percentage**: Multiply by 100 (e.g., 0.35 = 35%).
- **Percentage to Fraction**: Write the percentage as a fraction over 100 and simplify (e.g., 80% = 80/100 = 4/5).

Example of Percentage:

If you scored 80 out of 100 on a test, you got an 80%.

Now, try another one, here you need to find 20% of 240.

How can you find it ?

So, To find percentage of any number you can follow the rule:

Percentage Value=(Percentage/100)×Total

Percentage Value=(20/100)×240

=48

So, 20% of 240 is 48.

Ratios

A ratio compares two or more quantities, showing how much of one thing there is compared to another. It can be written as a:b, where a and b are the quantities being compared.

Example:

If there are 4 apples and 6 oranges, the ratio of apples to oranges is 4:6, which can be simplified to 2:3.

How to Work with Ratios:

1. Simplify the ratio by dividing both terms by their greatest common factor (GCF).
2. **Scaling**: Ratios can be scaled up or down by multiplying or dividing both terms by the same number.

Example:

In a classroom, the ratio of boys to girls is 3:2. If there are 15 boys, there must be:

$3/2=15/x$

$\Rightarrow x=10$

So, there are 10 girls.

Rates

A rate is a specific kind of ratio that compares two quantities with different units. Common rates include speed (distance per time), price (cost per item), and other similar comparisons.

Examples:

- **Speed**: If you drive 120 miles in 2 hours, your rate (or speed) is 60 miles per hour (mph).
- **Price**: If 5 apples cost $10, the rate is $2 per apple.

Unit Rates:

A unit rate is when the rate is expressed as a quantity per 1 unit. For example, if a car travels 300 miles in 5 hours, the unit rate for speed is:

300 miles/5 hours=60 miles per hour.