Continued Product (Multiplication)

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A continued product in multiplication refers to multiplying several numbers together in a series. Each result becomes the next factor to multiply with, forming a chain of multiplication.

Example:

If we multiply 2 × 3 × 4, we multiply 2 by 3, then the result is multiplied by 4:

(2 × 3) × 4 = 6 × 4 = 24

Steps to Multiply a Continued Product

1. Start by multiplying the first two numbers in the series
2. Multiply the result with the next number in the series
3. Continue multiplying until all numbers have been used
4. Write the final product as the result

Properties of Continued Product

Commutative Property: The order in which numbers are multiplied does not affect the product. Example: 2 × 3 × 4 = 4 × 3 × 2

Associative Property: The grouping of numbers does not change the result. Example: (2 × 3) × 4 = 2 × (3 × 4)

Multiplicative Identity: Multiplying by 1 does not change the product. Example: 4 × 1 = 4

Example 1:

Question: Multiply 2 × 3 × 5

Solution:

Step 1: Multiply 2 × 3 = 6

Step 2: Multiply 6 × 5 = 30

Answer: 2 × 3 × 5 = 30

Example 2:

Question: Multiply $\frac{1}{4} \times \frac{2}{5} \times \frac{3}{2}$

Solution:

Step 1: Multiply the numerators: 1 × 2 × 3 = 6

Step 2: Multiply the denominators: 4 × 5 × 2 = 40

Step 3: The product is $\frac{6}{40}$, which simplifies to $\frac{3}{20}$

Answer: $\frac{1}{4} \times \frac{2}{5} \times \frac{3}{2} = \frac{3}{20}$

Summary Points

- Continued product means multiplying numbers in a sequence, one after another
- Multiplying fractions follows the same rule: multiply numerators and denominators
- Commutative and associative properties help us rearrange numbers for easier multiplication
- Multiplying by 1 does not change the result
- The continued product makes multiplying more than two numbers easy and organized