Concepts and Formulas

Mathematical Reasoning

Mathematically Acceptable Statements

Consider the following Statement:

“The sum of two prime numbers is always even.”

The given statement can either be true or false since the sum of two prime numbers can be either be an even number or an odd number. Such statements are mathematically not acceptable for reasoning as this sentence is ambiguous. Thus, a sentence is only acceptable mathematically when it is **“Either true or false, but not both at the same time.”** Therefore, the basic entity required for mathematical reasoning is a statement. This is the mathematical statement definition.

Statements in Mathematics

A sentence is called a mathematically acceptable statement if it is either true or false but not both. Whenever we mention a statement here, it is a “mathematically acceptable” statement.

While studying mathematics, we come across many such sentences. Some examples are given as:

Three plus three equals six.

The sum of two positive numbers is positive.

All prime numbers are odd numbers.

Of these sentences, the first two are true, and the third one is false. There is no ambiguity about these sentences. Therefore, they are statements. Also, when a sentence is ambiguous, such a sentence is not acceptable as a statement in mathematics.