Material implication may refer to:

a. Material conditional, a logical connective

b. Material implication (rule of inference), a rule of replacement for some propositional logic

a. The material conditional (also known as [material implication](https://en.wikipedia.org/wiki/Material_implication_(rule_of_inference)), material consequence, or simply implication, implies, or conditional) is a [logical connective](https://en.wikipedia.org/wiki/Logical_connective) (or a [binary operator](https://en.wikipedia.org/wiki/Binary_operator)) that is often symbolized by a forward arrow "". The material conditional is used to form [statements](https://en.wikipedia.org/wiki/Statement_(logic)) of the form *p*→*q* (termed a *conditional statement*) which is read as "if *p* then *q*". Unlike the English construction "if...then...", the material conditional statement *p*→*q* does not specify a [causal relationship](https://en.wikipedia.org/wiki/Causal_relationship) between *p* and *q*. It is merely to be understood to mean "if *p* is true, then *q* is also true" such that the statement *p*→*q* is false only when *p* is true and *q* is false.  The material conditional only states that *q* is true when (but not necessarily only when) *p* is true, and makes no claim that *p* causes *q*.

The material conditional is also symbolized using:

1.𝑝 ⊃ 𝑞 (Although this symbol may be used for the superset symbol in [set theory](https://en.wikipedia.org/wiki/Set_theory).);

2.𝑝 ⇒ 𝑞 (Although this symbol is often used for [logical consequence](https://en.wikipedia.org/wiki/Logical_consequence) (*i.e.,* logical implication) rather than for material conditional.)

3.C𝑝𝑞 (using [Łukasiewicz notation](https://en.wikipedia.org/wiki/Polish_notation#Polish_notation_for_logic))

With respect to the material conditionals above:

*·p* is termed the [antecedent](https://en.wikipedia.org/wiki/Antecedent_(logic)) of the conditional, and

*·q* is termed the [consequent](https://en.wikipedia.org/wiki/Consequent) of the conditional.

Conditional statements may be nested such that either or both of the antecedent or the consequent may themselves be conditional statements. In the example "(*p*→*q*)→(*r*→*s*)", meaning "if the truth of *p* implies the truth of *q*, then the truth of *r* implies the truth of *s*), both the antecedent and the consequent are conditional statements.

In [classical logic](https://en.wikipedia.org/wiki/Classical_logic) *p*→*q* is [logically equivalent](https://en.wikipedia.org/wiki/Logical_equivalence) to (*pq*) and by [De Morgan's Law](https://en.wikipedia.org/wiki/De_Morgan%27s_Law) logically equivalent to *pq*. Whereas, in [minimal logic](https://en.wikipedia.org/wiki/Minimal_logic) (and therefore also intuitionistic logic) *pq* only [logically entails](https://en.wikipedia.org/wiki/Logical_consequence) (*pq*); and in [intuitionistic logic](https://en.wikipedia.org/wiki/Intuitionistic_logic) (but not minimal logic) *pq* entails *pq*.

b. In [propositional logic](https://en.wikipedia.org/wiki/Propositional_logic),material implication is a [valid](https://en.wikipedia.org/wiki/Validity) [rule of replacement](https://en.wikipedia.org/wiki/Rule_of_replacement) that allows for a [conditional statement](https://en.wikipedia.org/wiki/Material_conditional) to be replaced by a [disjunction](https://en.wikipedia.org/wiki/Logical_disjunction) in which the [antecedent](https://en.wikipedia.org/wiki/Antecedent_(logic)) is [negated](https://en.wikipedia.org/wiki/Negation). The rule states that *P* implies *Q* is [logically equivalent](https://en.wikipedia.org/wiki/Logical_equivalence) to not*-P or Q* and can replace each other in [logical proofs](https://en.wikipedia.org/wiki/Formal_proof).

*PQPQ*

Where "" is a [metalogical](https://en.wikipedia.org/wiki/Metalogic) [symbol](https://en.wikipedia.org/wiki/Symbol_(formal)) representing "can be replaced in a proof with."

The material implication rule may be written in [sequent](https://en.wikipedia.org/wiki/Sequent) notation:

(*PQ*) (*PQ*)

Where is a metalogical symbol meaning that (*PQ*) is a [syntactic consequence](https://en.wikipedia.org/wiki/Logical_consequence) of (*PQ*) in some logical system; or in [rule form](https://en.wikipedia.org/wiki/Rule_of_inference):

*PQ*

*PQ*

where the rule is that wherever an instance of "*PQ*" appears on a line of a proof, it can be replaced with "*PQ*"; or as the statement of a truth-functional [tautology](https://en.wikipedia.org/wiki/Tautology_(logic)) or [theorem](https://en.wikipedia.org/wiki/Theorem) of propositional logic:

(*PQ*) (*PQ*)

Where P and Q are propositions expressed in some [formal system](https://en.wikipedia.org/wiki/Formal_system).