Glossary

antecedent The sentence on the left side of a conditional.

argument a connected series of sentences, divided into premises and conclusion.

atomic sentence A sentence used to represent a basic sentence; a single letter in TFL, or a predicate symbol followed by names in FOL.

biconditional The symbol ↔, used to represent words and phrases that function like the English phrase "if and only if"; or a sentence formed using this connective..

complete truth table A table that gives all the possible truth values for a sentence of TFL or sentences in TFL, with a line for every possible valuation of all atomic sentences.

completeness A property held by logical systems if and only if tt-valid implies p-valid.

conclusion the last sentence in an argument.

conclusion indicator a word or phrase such as "therefore" used to indicate that what follows is the conclusion of an argument.

conditional The symbol →, used to represent words and phrases that function like the English phrase "if …, then …"; a sentence formed by using this symbol.

conjunct A sentence joined to another by a conjunction.

conjunction The symbol &, used to represent words and phrases that function like the English word "and"; or a sentence formed using that symbol.

connective A word or phrase used to modify a sentence, or a word or phrase used to combine two sentences into a more complex sentence.

consequent The sentence on the right side of a conditional.

contingent sentence A sentence that is neither a necessary truth nor a necessary falsehood; a sentence that in some situations is true and in others false.

contradiction (of TFL) A sentence that has only Fs in the column under the main logical operator of its complete truth table; a sentence that is false on every valuation.

disjunct A sentence joined to another by a disjunction.

disjunction The connective $\vee$, used to represent words and phrases that function like the English word "or" in its inclusive sense; or a sentence formed by using this connective.

equivalence (in TFL) A property held by pairs of sentences if and only if the complete truth table for those sentences has identical columns under the two main logical operators, i.e., if the sentences have the same truth value on every valuation.

invalid A property of arguments that holds when it is possible for the premises to be true without the conclusion being true; the opposite of valid.

joint consistency (in TFL) A property held by sentences if and only if the complete truth table for those sentences contains one line on which all the sentences are true, i.e., if some valuation makes all the sentences true.

joint possibility A property possessed by some sentences when they can all be true at the same time.

logical validity (in TFL) A property held by arguments if and only if the complete truth table for the argument contains no rows where the premises are all true and the conclusion false, i.e., if no valuation makes all premises true and the conclusion false.

main connective The last connective that you add when you assemble a sentence using the recursive definition..

metalanguage The language logicians use to talk about the object language. In this textbook, the metalanguage is English, supplemented by certain symbols like metavariables and technical terms like "valid.".

metavariables A variable in the metalanguage that can represent any sentence in the object language..

necessary equivalence A property held by a pair of sentences that must always have the same truth value.

necessary falsehood A sentence that must be false.

necessary truth A sentence that must be true.

negation The symbol ¬, used to represent words and phrases that function like the English word "not".

object language A language that is constructed and studied by logicians. In this textbook, the object languages are TFL and FOL..

premise a sentence in an argument other than the conclusion.

premise indicator a word or phrase such as "because" used to indicate that what follows is the premise of an argument.

proof A sequence of sentences. The first sentences of the sequence are assumptions; these are the premises of the argument. Every sentence later in the sequence follows from earlier sentences by one of the rules of TFL. The final sentence of the sequence is the conclusion of the argument.

provable equivalence A property held by pairs of statements if and only if there is a derivation which takes you from each one to the other one.

provable inconsistency Sentences are provably inconsistent iff a contradiction can be derived from them.

scope A property of connectives. The sentence or subsentence for which that connective is the main logical operator.

sentence of TFL A string of symbols in TFL that can be built up according to the recursive rules given on p. 52.

sound A property of arguments that holds if the argument is valid and has all true premises.

soundness A property held by logical systems if and only if p-valid implies tt-valid.

symbolization key A list that shows which English sentences are represented by which atomic sentences in TFL.

tautology A sentence that has only Ts in the column under the main logical operator of its complete truth table; a sentence that is true on every valuation.

theorem A sentence that can be proved without any premises.

truth value One of the two logical values sentences can have: True and False.

valid A property of arguments where it is impossible for the premises to be true and the conclusion false.

valuation An assignment of truth values to particular atomic sentence of TFLs.