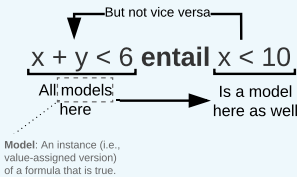
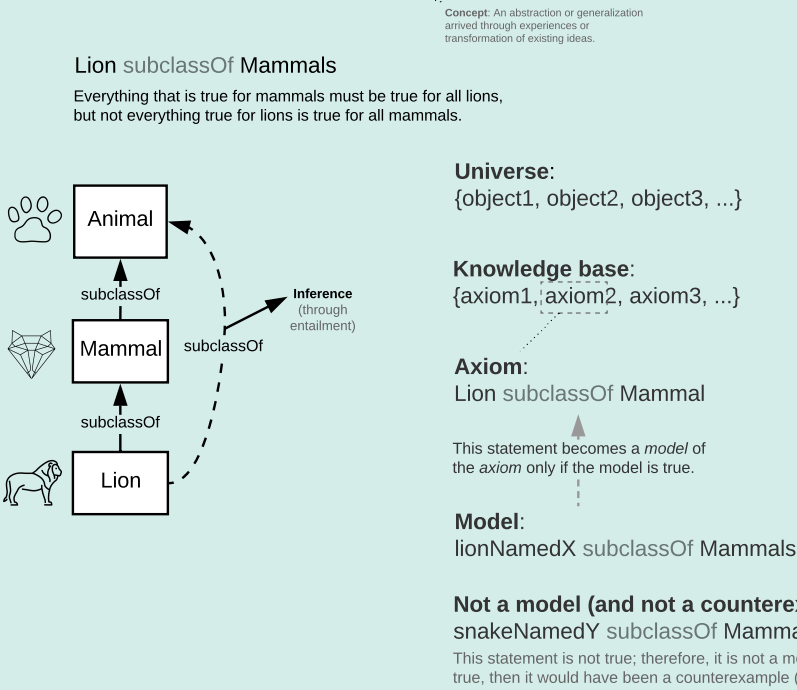


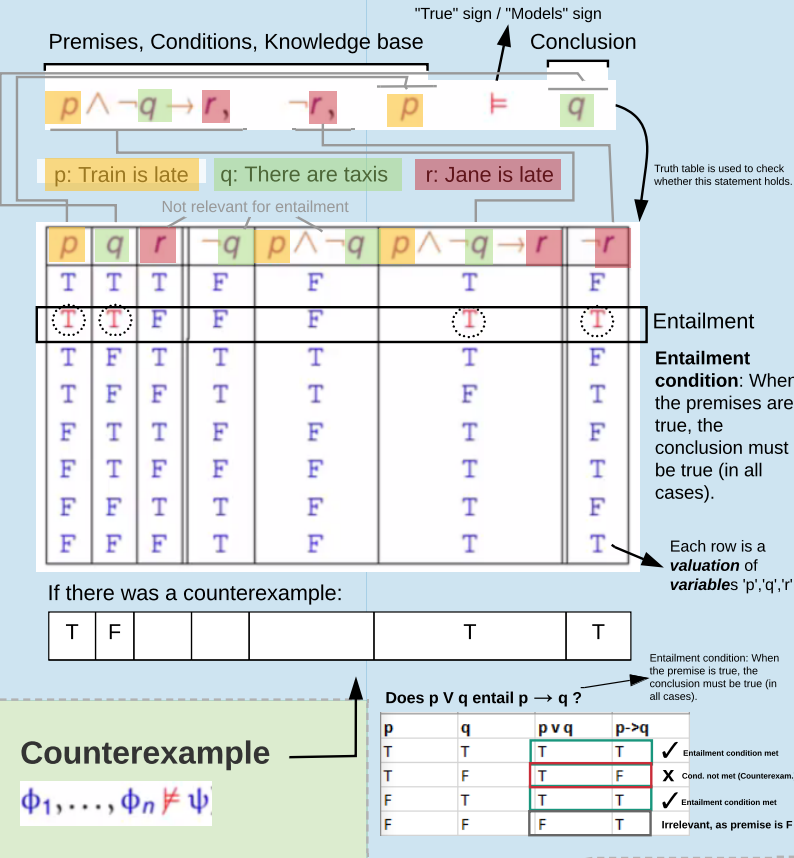
Entailment in Arithmetic Formulas



Entailment in Concept Hierarchies



Entailment in Propositional Logic



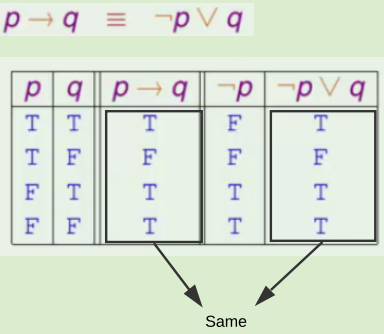
Truth Table

Not all lines in a truth table make sense. Establishing validity is to ascertain which ones do.

p	q	r	$\neg q$	$p \vee \neg q$	$p \vee \neg q \rightarrow r$
T	T	T	F	T	T
T	T	F	F	T	F
T	F	T	T	T	T
T	F	F	T	T	F
F	T	T	F	F	T
F	T	F	F	F	T
F	F	T	T	T	T
F	F	F	T	T	F

e.g., Train is late (p), and there are no taxis (-q), but in one case Jane is late (r) and in the other she is not late.

Equivalence



Tautology

p	q	$q \rightarrow p$	$p \rightarrow (q \rightarrow p)$
T	T	T	T
T	F	T	T
F	T	F	T
F	F	T	T

Contradiction

p	q	$p \rightarrow q$	$\neg q$	$p \wedge \neg q$	$(p \rightarrow q) \wedge (p \wedge \neg q)$
T	T	T	F	F	F
T	F	F	T	T	F
F	T	T	F	F	F
F	F	T	T	F	F

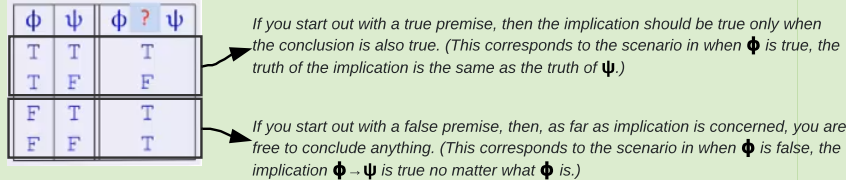
Exclusive 'OR'

$\phi$	$\psi$	$\phi \oplus \psi$
T	T	F
T	F	T
F	T	T
F	F	F

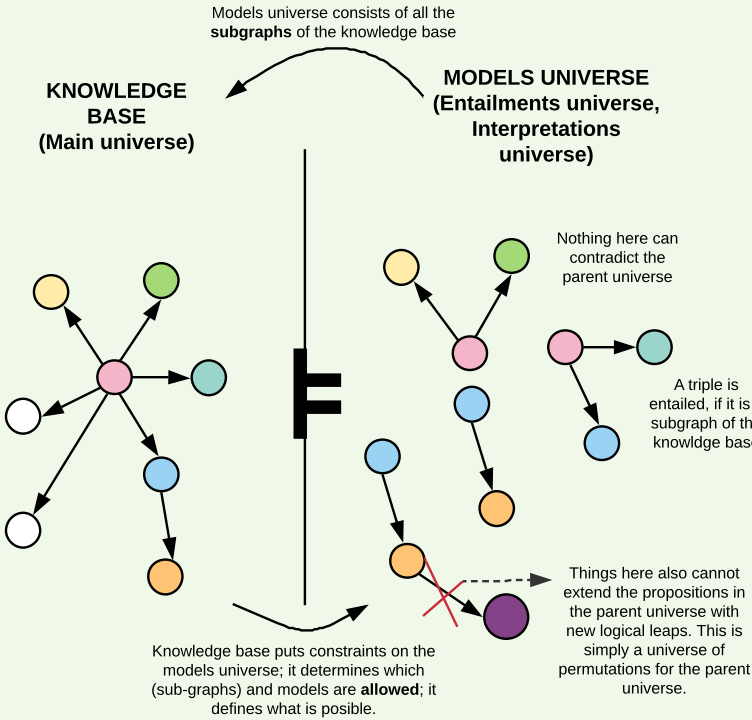
Disjunction ('OR')

$\phi$	$\psi$	$\phi \vee \psi$
T	T	T
T	F	T
F	T	T
F	F	F

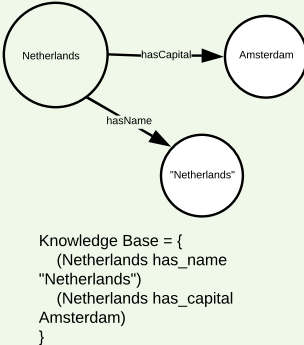
Implication



ENTAILMENT IN SIMPLE GROUNDED GRAPHS



KNOWLEDGE BASE (Main universe)



MODELS UNIVERSE (Entailments universe, Interpretations universe)

