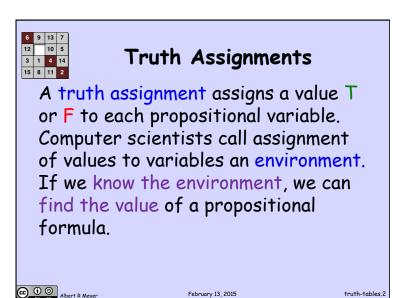
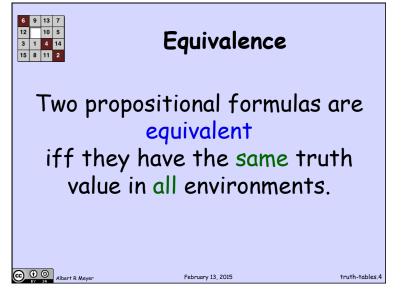


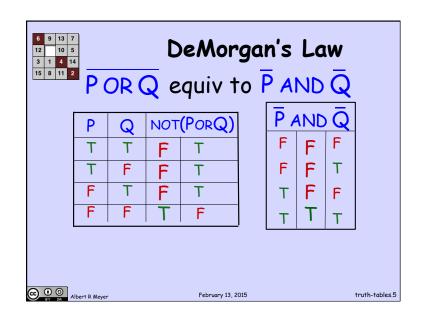
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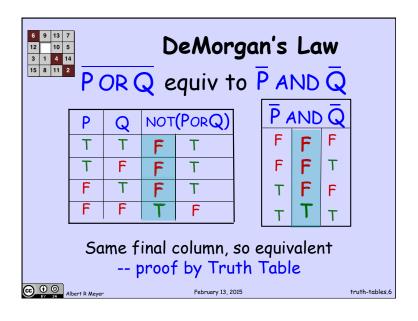
truth-tables 3

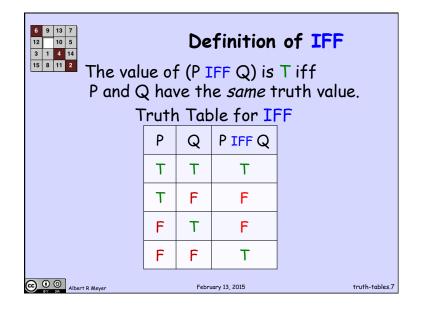
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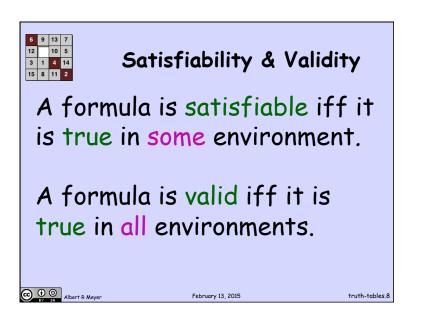














Satisfiability & Validity

satisfiable: P, NOT(P)

not satisfiable: (P AND NOT(P))
valid: (P OR NOT(P))

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truth-tables.10



Equivalence & Validity

G and H are equivalent exactly when (G IFF H) is valid

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Verifying Valid, Satisfiable

Truth table size doubles with each additional variable
--exponential growth. Makes truth tables impossible when there are hundreds of variables.
(In current digital circuits, there are millions of variables.)



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truth-tables.12



Fast Test for SAT?

The P = NP? question is equivalent to asking if there is an "efficient" (polynomial rather than exponential time) procedure to check satisfiability (SAT).

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truth-tables,13



SAT versus VALID

To check that G is valid, can check that NOT(G) is not satisfiable. So checking for one is equally difficult (or easy) as checking for the other.



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truth-tables.14