

Proving If-Then Statements

Formal
Logic

Using Truth Tables

“If the worker hasn’t learned, then the instructor hasn’t taught.”

Hypothesis p: if the worker hasn’t learned

Conclusion q: then the instructor hasn’t taught

Symbolically $p \rightarrow q$

In Words “if p, then q”

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“If the worker hasn’t learned, then instructor hasn’t taught.”
is True if:

p	q	$p \rightarrow q$
True	True	True
True	False	False
False	True	True
False	False	True

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p	q	$p \rightarrow q$
if the worker hasn't learned	then the instructor hasn't taught	False
if the worker hasn't learned	then the instructor has taught	True
if the worker has learned	then the instructor hasn't taught	True
if the worker has learned	then the instructor has taught	False

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$p \rightarrow q$	Rationale
False	workers may not learn for reasons other than that the instructor has not taught
True	workers may not learn though an instructor has taught
True	workers can learn if an instructor has not taught
False	workers may not learn if an instructor has taught

The Statement : "If the worker hasn't learned, then instructor hasn't taught" is FALSE

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