

# Part 1: Formal Logic

## Logical Connectives III

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We introduce **material implication** and **material equivalence**:

$P$	$Q$	$P \rightarrow Q$
$T$	$T$	$T$
$T$	$F$	$F$
$F$	$T$	$T$
$F$	$F$	$T$

$P$	$Q$	$P \leftrightarrow Q$
$T$	$T$	$T$
$T$	$F$	$F$
$F$	$T$	$F$
$F$	$F$	$T$

We observe that

$$P \rightarrow Q \iff Q \vee \neg P,$$

$$P \leftrightarrow Q \iff (P \wedge Q) \vee (\neg P \wedge \neg Q).$$

**Questions?**