

§1.2 Applications of propositional logic

1. Translating English Sentences.

A or B but not both
 \oplus

$P \rightarrow Q$
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 P only if Q

Example: How can this English sentence be translated into a logical expression

a =

"You can access the Internet from Campus only if you are a computer science major or you are not a freshman."

(Conditional)

(Disjunction)

$\neg f$

$$a \rightarrow (c \vee \neg f)$$

"You cannot ride the roller coaster if you are under 4 feet tall unless you are older than 16 years old"

$\neg P$

$O =$

$P \rightarrow Q$
 read: Q unless $\neg P$.

If you are ≤ 16 years old, then you can not ride the roller coaster if you are under 4 feet tall.

$$\neg O \rightarrow (u \rightarrow \neg R)$$