Reasoning Logically with "if" and "then"

$P \rightarrow Q$

P

$\overline{}$

Q

if today is Tues, then it is a weekday

today is Tues.

Therefore: it is a weekday

$P \rightarrow Q$

Q

$\overline{???}$

if today is Tues, then it is a weekday

it is a weekday.

I do NOT know the day based on this

$P \rightarrow Q$

$\neg P$

$\overline{???}$

if today is tues, then it is a weekday

today is not tues.

I do NOT know if it is a weekday based on this

$P \rightarrow Q$

$\neg Q$

$\overline{}$

$\neg P$

if today is tues, then it is a weekday

it is NOT a weekday.

Therefore it cannot be tues.