

1 Jack is looking at Anne. Anne is looking at George. Jack is married. George is single.
Is a married person looking at a single person? (yes) (no) (cannot be determined)

After trying the question, scroll down to the solution.

§ yes. If Anne is single, then married Jack is looking at single Anne. If Anne is married, then married Anne is looking at single George. Either way, a married person is looking at a single person, although we don't know which married person is looking at which single person.

The question does not ask for formalization, and that's good, because in Chapter 0 we haven't yet seen how to formalize. But for later reference, we can formalize the problem as follows. Let j be a binary variable meaning “Jack is married”, let a be a binary variable meaning “Anne is married”, and let g be a binary variable meaning “George is married”. We are given j and $\neg g$. We are asked $j \wedge \neg a \vee a \wedge \neg g$. We calculate:

$$\begin{aligned}
 & j \wedge \neg a \vee a \wedge \neg g && \text{use the given information} \\
 = & \top \wedge \neg a \vee a \wedge \top && \text{symmetry} \\
 = & \top \wedge \neg a \vee \top \wedge a && \text{base law twice} \\
 = & \neg a \vee a && \text{symmetry} \\
 = & a \vee \neg a && \text{law of excluded middle} \\
 = & \top
 \end{aligned}$$

There are logicians who use “constructive logic”, which does not include the Completion Rule. As a result, they do not have the law of excluded middle. So they cannot make the above calculation. So those logicians would answer “cannot be determined”.