Problem 1.

Suppose that x and y are variables, and our language includes the symbol = and constant symbols c and d. Show the sentence $c = d \rightarrow d = c$ is satisfied by every structure (for this language) and every variable assignment.

> Let v be a variable assignment. There are two possibilities for $\overline{v}(c = d)$:
>
> (i) $\overline{v}(c = d) = T$ This implies that $v(c) = v(d)$, so it follows that $v(d) = v(c)$ and $\overline{v}(d = c) = T$. Therefore, $\overline{v}(c = d \rightarrow d = c) = T$.
>
> (ii) $\overline{v}(c = d) = F$ This implies that $v(c) \neq v(d)$. However, our sentence now reads $\overline{v}(F \rightarrow (d = c))$, which is satisfied.

Questions

I was somewhat confused when the textbook talks about "the translation of ϕ determined by $\mathfrak{A}$" (page 83). Is it akin to the equivalence of ϕ in $\mathfrak{A}$, or is there additional nuance that I am missing?