

Some Solutions to Exercise on Predicate Logic Translations

Translate the following sentences into PrL, giving as many formulae as readings the sentence has. For each Noun/Adj/Verb/Prep, use a separate PrL predicate. E.g., no lumping of *student that bought a cat* into one single predicate S!!! Exception: words with hyphens, like **good-at-logic** and **only-if**, are treated as a single unit. (= [QUESTION 9](#) from previous h/o)

- a. Susan introduced Mary to a student that nobody liked.

$$\exists x [S(x) \wedge \neg \exists y L(y,x) \wedge I(s,m,x)]$$

- b. Only-if John has-talked-to every witness will Mary be-satisfied.

$$S(m) \rightarrow \forall x [W(x) \rightarrow T(j,x)]$$

- c. If a student₁ is good-at-logic, he₁ does-well-in-semantic.

QUESTION: Consider and judge the following possibilities:

i. $[\exists x (ST(x) \wedge LOG(x))] \rightarrow SEM(x)$

ii. $\exists x [(ST(x) \wedge LOG(x)) \rightarrow SEM(x)]$

iii. $\forall x [(ST(x) \wedge LOG(x)) \rightarrow SEM(x)]$

iv. $\exists x [ST(x) \wedge (LOG(x) \rightarrow SEM(x))]$

- d. Every student that bought a cat₂ took it₂ to a doctor.

QUESTION: Spell out the specific cat reading and the generic cat reading.

- e. John introduced only MARY to Kate.

$$I(j,m,k) \wedge \forall x [x \neq m \rightarrow \neg I(j,x,k)]$$

That is: $\forall x [x = m \leftrightarrow I(j,x,k)]$

- f. John introduces Mary only to KATE.

$$\forall x [x = k \leftrightarrow I(j,m,x)]$$