

5.2.1. Names and Predicates: Construction and Translation Problems

A. For each of the strings of symbols below, decide whether it a **formal sentence** according to the rules of our revised construction rules listed here.

Revised Construction Rules (*First Draft*)

Atomic Sentences:

- A1. Sentence letters are atomic sentence
- A2. A predicate letter followed by a name letter is an atomic sentence.

Formal Sentences:

- 1. Atomic sentences are formal sentences.
- 2. If \bullet is a formal sentence, then $\sim\bullet$ is a formal sentence.
- 3. If \bullet and \blacktriangle are formal sentences, then $(\bullet \wedge \blacktriangle)$ is a formal sentence.
- 4. If \bullet and \blacktriangle are formal sentences, then $(\bullet \vee \blacktriangle)$ is a formal sentence.
- 5. If \bullet and \blacktriangle are formal sentences, then $(\bullet \rightarrow \blacktriangle)$ is a formal sentence.

1. $(GA \vee HA)$

2. $\sim BA$

3. $(A \wedge P)$

4. HAB

5. $(P \rightarrow MC)$

B. Using the following translation keys, **translate** the English sentences into our (revised) formal language.

A: Trixie

B: Suki

C: Rex

D: Kitty

E: Neko

G: ____ is a gambler

H: ____ is a logician

I: ____ like logic

J: ____ plays poker

K: ____ is fat

L: ____ is furry

M: ____ is a cat

1. Trixie is a gambler, but Rex isn't.
2. Suki is neither a gambler nor a logician.
3. If Rex is a logician, then he likes logic.
4. Although Kitty doesn't play poker, she is a gambler.

5a. Neko is fat and Neko is a cat.

5b. Neko is a cat who is fat.

5c. Neko is a fat cat.

6a. Rex isn't furry, and he isn't a cat.

6b. Rex isn't a furry cat.

6c. It's not the case that Rex is both furry and a cat.

C. Translate the following English arguments into the formal language (showing the **translation key** used).

(1)

1. Neko is fat and Neko is furry and Neko is a cat.

\therefore Neko is a fat furry cat.

(2)

1. Jack is a surfer who drinks coffee.

\therefore Jack is a coffee-drinking surfer.

(3)

1. Jack is either a coffee-drinking surfer, or one that drinks tea.

\therefore Jack is a surfer, and is either a coffee-drinker or a tea drinker.

(4)

1. Jack isn't a coffee-drinking logician.

\therefore Jack doesn't drink coffee.

(Q: Which, if any, of these arguments seem valid?)