Quiz 8/10 Answers

COGS 526

1. **[2pt]** What is the difference between the notions `declarative sentence` and `proposition`? Illustrate your answer with an example.

   Declarative sentence is a linguistic entity, a grammatical sentence in a specific natural language that makes an assertion. A proposition is an abstract entity, the meaning expressed by a declarative sentence. A proposition is the bearer of truth-value.

   Consider two different declarative sentences:

   (a) S_1: "The sun is a star." (English sentence)
   (b) S_2: "Le soleil est une étoile." (French sentence)

   While S_1 and S_2 are two distinct linguistic objects ($S_1 \neq S_2$), they both express the same single proposition (P) that the object known as the sun is classified as a star.

   The proposition P possesses the truth value (True), regardless of the language used to express it.

2. **[1pt]** Given a set of n number of propositions. How many different arguments that make use of all n propositions can be formed?

   An argument is defined as a structure where a non-empty set of premises $\mathcal{P}$ logically entails a single conclusion C. Given a set of n propositions, we can designate exactly one proposition as the conclusion and the remainder as premises. The number of ways to choose a single conclusion from a set of n propositions is n.

   $$\text{Number of Arguments} = \binom{n}{1} = n$$