Name:_____ Section 8th __ 9th____ Grade:_____<-- instructor use

1. Give purely symbolic definitions of the three languages on the "Languages and Prefixes" slide

    *

    *

    *

2. What three properties must an equivalence relation satisfy?
       a)
       b)
       c)

3. For a given prime integer p, is $R_p = \{(a, b): a, b \in \mathbb{N} \land \exists k \in \mathbb{Z}(a - b = kp)\}$ an equivalence relation? Explain.

4. If $L_1 = \{a^n: n \geq 0\}$ and $L_2 = \{b^n : n \geq 0\}$, what is $L_1 L_2$?

    What is L_1*?

5. What are two standard ways of algorithmically defining an infinite set?
       *

*

6. When is a (propositional) wff a *tautology*? **(did not get to this question in Section 2 in 201220)**

7. When we say a set of inference rules is *sound*, what do we mean?

8. What is a predicate?

    Give an example of a predicate application with no free variables

                                    with one or more free variables

9. When is a first-order wff a *sentence* (statement)?

10. Give an example of a model for $\exists x \, (\forall y \, (xy = 0))$

11. From $\{ \forall t(p(t) \rightarrow q(t)), \forall t(q(t) \rightarrow r(t)), \neg r(C)\}$, prove $\neg p(C)$. Give reasons for your steps.

12. Tell your instructor about anything from today's session (or from the course so far) that you found confusing or still have a question about. If none, please write "None". Continue on the back if needed.