Intermediate Logic
Homework #16
(Due: 2/5/2013)

Read pages 31-37 in the *Intermediate Logic* text. Define the following as explained in the text. (It may be easier to define some of these terms <u>after</u> you have completed the exercises, as you will be more proficient with these concepts.)

- Proposition –

- Simple proposition –

- Compound proposition –

- Logical operator –

- Propositional constant –

- Propositional variable –

- Negation –

- Conjunction –

- Disjunction –

Exercise 6 (from page 33 of the text).

What are the two main differences between propositional constants and propositional variables?

1. _____

_____

2. _____

_____

Use the simple proposition, 'We have seen God,' to create the following:

3. A truth-functional proposition _____

    _____

4. A proposition which is *not* truth-functional _____

    _____

Circle S is the given proposition is simple. Circle C if it is compound.

5. The Lord will cause your enemies to be defeated before your eyes.   S   C

6. There is a way that seems right to a man but in the end it leads to death.   S   C

7. The fear of the Lord is the beginning of wisdom.   S   C

8. If we confess our sins then He is faithful to forgive us our sins.   S   C

9. It is false that a good tree bears bad fruit and a bad tree bears good fruit.   S   C

10. The Kingdom of God is not a matter of talk but of power.   S   C

Exercise 7 (from page 37)

Given: **J** means *Joseph went to Egypt.*   **F** means *There was a famine.*
            I means *Israel went to Egypt.*   **S** means *The sons of Israel became slaves.*

Translate the following symbolic propositions into standard English statements.

1. F • I _____

2. ~J v S _____

    _____

Symbolize the following compound propositions:

3. Joseph and Israel went to Egypt. _____

4. Israel did not go to Egypt. _____

5. Israel went to Egypt but his sons became slaves. _____

6. Either Joseph went to Egypt or there was a famine. _____

7. Joseph and Israel did not both go to Egypt. _____

8. Neither Joseph nor Israel went to Egypt. _____

9. Joseph and Israel went to Egypt; however, there was a famine and the sons of Israel became slaves. _____

10. Israel went to Egypt; but either Joseph did not go to Egypt or there was a famine. _____

Cranium Calisthenics

The Lady or the Tiger?[*]

On the first day, there were three trials. In all three, the king explained to the prisoners that each of the two rooms contained either a lady or a tiger, but it could be that there were tigers in both rooms, or ladies in both rooms, or then again, maybe one room contained a lady and the other room a tiger. The first prisoner chose the door with the lady, and left quite contented and unharmed.

The Second Trial: The king pointed to the signs on the doors of the rooms:

I		II
AT LEAST ONE OF THESE ROOMS CONTAINS A LADY		A TIGER IS IN THE OTHER ROOM

"Are the statements on the signs true?" asked the second prisoner.

"They are either both true or both false," replied the king.

Which door would you choose, and <u>why</u>?

* *The Lady or the Tiger? And other Logic Puzzles*, by Raymond Smullyan. Random House, Inc. 1982