Problem Set 1

Name: _____

Due by **the start of class Monday September 30th**. Lateness penalties (as specified on the syllabus) will apply to submissions after that time, unless you supply documentation of an illness or family emergency.

Please either write neatly in dark ink (not pencil) or type.
If you type:

- You will get an exciting stamp of thanks. (It won't say "Thanks". It will be much more exciting.)
- You are welcome to submit your work via e-mail as a PDF.

You may not discuss these questions with anyone else. The work you submit must be your own.

Deductive Analysis

The following arguments are **deductive**. Determine whether each is valid or invalid, and sound or unsound. Remember: if the argument is not valid it is automatically invalid.

Argument	Valid or Invalid? 3 pts each.	Sound or Unsound? 2 points each.
1. Since London is north of Paris and south of Edinburgh, it follows that Paris is south of Edinburgh.		
2. Since the Spanish-American War occurred before the US Civil War, and the US Civil War occurred after the Korean War, it follows that the Spanish-American War occurred before the Korean War.		
3. Since Winston Churchill was English, and Winston Churchill was famous, we may conclude that at least one Englishman was a famous statesman.		
4. The United States Congress has more members than there are days in the year. Therefore, at least two members of Congress have the same birthday.		
5. Chicago is a city in Michigan, and Michigan is a part of the United States. Therefore, Chicago is part of the United States.		

Venn Diagrams:

Use Venn Diagrams to determine whether the following immediate inferences are valid or invalid. Write 'valid' or 'invalid' next to your Venn diagram. Assume the **Modern Interpretation**. State what letters are intended to stand for the subject and predicate on your diagram. **5 points possible per question**.

6.
P: It is false that some lunar craters are volcanic formations.
C: Therefore, no lunar craters are volcanic formations.

7.
P: Some country doctors are altruistic healers.
C: Therefore, some country doctors are not altruistic healers.

8.
P: All stellar constellations are spiral-shaped objects.
C: Therefore, some stellar constellations are spiral-shaped objects.

Convert, Obvert, and Contrapose:

Fill in the blanks in the table below using what you know about the portions that are filled in. If any propositions have an undetermined truth value, use a 'U' to signify that this is the truth value. **20 total possible points**.

Original Proposition	**Original Truth Value**	**Operation/Relation** (2 pts)	**New Proposition** (2 pts)	**New Truth Value** (1 pt)
9. All non-A are B.	T	Contraposition	_____	____
10. Some non-A are not B.	T	Subcontrary	_____	____
11. All non-A are B.	T	Contrary	_____	F
12. Some non-A are non-B.	F	Subcontrary	_____	____
13. All non-A are B.	F	_____	No non-A are non-B.	____
14. Some non-A are non-B.	F	_____	No non-A are non-B.	____
15. No A are non-B.	F	_____	All A are non-B.	____

Proofs:

Use **only** the **Traditiona**l square of opposition (do **not** use conversion, obversion, or contraposition) to prove whether the following arguments are valid or invalid. If the argument is *valid*, then simply say so and provide what relation from the square allows the given conclusion. If the argument is *invalid*, state **(i)** why the conclusion does not follow, **(ii)** what conclusion does follow, and **(iii)** what relation from the square allows the new conclusion. The traditional square is reproduced below.

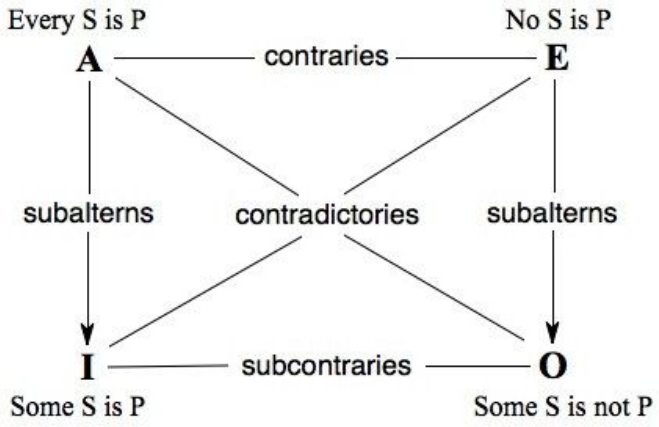

Image taken from: http://plato.stanford.edu/entries/square/

8. It is false that some orthodox psychoanalysts are not individuals driven by a religious fervor. Therefore, it is false that some orthodox psychoanalysts are individuals driven by a religious fervor. (20 pts)

9. It is false that all mainstream conservatives are people who support free legal services for the poor. Therefore, no mainstream conservatives are people who support free legal services for the poor. (20 pts)