M260 2.3 P. Staley	Valid and Invali	d Arguments
An <u>argument</u> is	s a sequence of	The final
	is called the	The other
are called the _	·	

An argument form is valid means no matter what \_\_\_\_\_ are

substituted for the \_\_\_\_\_, if the resulting

\_\_\_\_\_ are all true then the \_\_\_\_\_\_ is \_\_\_\_\_.

An argument is valid if its \_\_\_\_\_\_.

List the steps in testing an argument for validity.

1	 	 	
2	 	 	
3			
5			

Construct a truth table for the argument form below. Be carefully label the premises and conclusion:

 $p \lor (q \lor r);$ 

~r;

 $\therefore p \lor q$ 

Is the argument form valid?\_\_\_\_\_

Construct a truth table for the argument form:

p→q∨~r;

q→p∧r;

∴p→r

pqr		

Is the argument form valid?\_\_\_\_\_

List the standard rules of inference:

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

Give the rules of inference in symbolic form using p, q, and r for statement variables:

Modus Ponens:

Modus Tollens:

Generalization:

Specialization:

Elimination:

Transitivity:

Division into Cases:

Rule of Contradiction:

Write an example for each of the rules of inference: Modus Ponens:

Modus Tollens:

Generalization:

Specialization:

Elimination:

Transitivity:

Division into Cases:

Rule of Contradiction:

## Inference Example

Where are my glasses?

•a. If my glasses are on the kitchen table, then I saw them at breakfast.

•b. <u>I was reading the newspaper in the living room</u> or <u>I was reading the newspaper in the kitchen.</u>

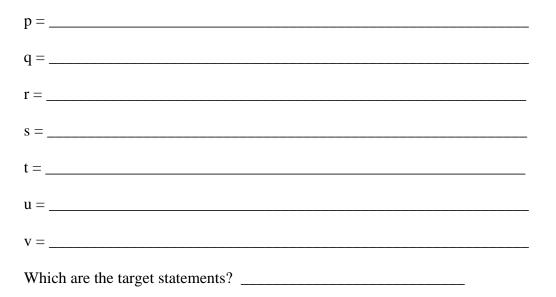
•c. If I was reading the newspaper in the living room, then my glasses are on the coffee table.

•d. I did not see my glasses at breakfast.

•e. If <u>I was reading my book in bed</u>, then <u>my glasses are on the bed table</u>.

•f. If I was reading the newspaper in the kitchen, then my glasses are on the kitchen table

Assign statement variables for the underlined statements:



Express statements a through f in terms of the statement variables:

a	d
b	e
с	f

Identify a given statement, prior argument, or rule of inference to justify each step of the deductive sequence:

•1. p	$\rightarrow$ q	from ( )
	~q	from ( )
	∴ ~p	by
•2.	$s \rightarrow p$	from ( )
	~p	from ( )
	∴ ~s	by
•3. r	√ S	from ( )
	~8	from ( )
	∴ r	by
•4.	$r \rightarrow t$	from ( )
	r	from ( )
	∴ t	by

The converse error argument form:

Make a truth table to illustrate the converse error argument.

Give an example of the converse error:

The inverse error argument form:

Make a truth table to illustrate the inverse error argument.

Give an example of the inverse error:

Contradiction Rule: If the supposition that p is \_\_\_\_\_ leads to a

contradiction then p is \_\_\_\_\_.