by Natalie - Thursday, 1 September 2011, 4:15 PM

A quiz question asks to identify the number of atomic statements in the argument. However, given the correct answer, I think the question is meant to be asking to identify the number of compound statements instead.

by Norva Lo - Sunday, 4 September 2011, 5:07 PM

I have checked the quiz question. The answer which is currently set to be correct is indeed correct. Can you explain why you think that might actually be incorrect?

by Natalie - Friday, 2 September 2011, 1:46 PM

I must have my definitions mixed up or don't fully understand what an atomic statement is. I thought they were atomic statements because they only state one fact. So in the question which I've copied and pasted below, the statements that I have underlined are the ones I thought were atomic. Which is 3 all together and I assumed the other 4 were compound ones.

"John is a pianist only if he has big hands. But John has big hands only if he has long fingers. So, if John is a pianist, then he has long fingers. However, **John is not a pianist**. For either John has a piano at home or he is not a pianist. **But he has no piano at home**. **So, John does not have long fingers.**"

by Norva Lo - Friday, 2 September 2011, 2:27 PM

I think you have not quite understood what "atomic statement" means. First, statements in the form ~A are not atomic (or simple) statements. So, "John is not a pianist" is not an atomic statement, for example. Rather, it is "John is a pianist" that is an atomic statement. For any atomic statement A, its negation ~A is a compound (or complex) statement.

Second, statements in the form A → B is a compound/complex statement, where the antecedent A and consequent B are simpler statement. Now, is the antecedent and consequent themselves atomic/simple statements? It all depends on whether they can logically be analyzed in terms of even simpler statements. If not, then they are atomic/simple. (Please check the definition of "atomic/simple statement" in Lecture 9.)

Example: Consider the conditional "If I am a man or I am a woman, then I am a human being". The antecedent in this case is "I am a man or I am a woman", which can be further analyzed in terms of the simpler statement "I am a man", and the simpler statement "I am a woman". So, the antecedent is a complex statement. But the consequent "I am a human being" cannot be further analyzed in terms of simpler statements, so it is an atomic statement.

You should apply the same reasoning to the quiz question. Remember "A only if B" (e.g. "John is a pianist only if he has big hands") is a compound statement, analyzable in terms of the simpler statement A, and the simpler statement B, where A and B might each be atomic statements - depending on whether they can be further analyzed in terms of even simpler statements. If not, then they are atomic statement.

by Natalie - Friday, 2 September 2011, 3:24 PM

Thanks for clearing that up. Makes much more sense now :)

Difference/Similarity between RAA and Slippery Slope Argument

by Norva Lo - Monday, 1 October 2012, 5:17 PM

Compare the argument form of **RAA** (Lecture 10) and the argument form of **Slippery Slope Argument** (Lecture 7).

6. ***Reductio Ad Absurdum*** **(RAA)**

A : B (**absurdity**, from A) — valid -- ~A

(d) Slippery Slope (Domino Effect) **Event A - via a causal chain of events - would lead to a disastrous event B.** -- **We should not let event A occur.**

.Lecture 10 (slides 6, 7, 8).......... Lecture 7 (slide 8)

(a) Are arguments in the form of RAA valid?

(b) Are arguments in the form of Slippery Slope Argument valid?

(c) In the light of your answers to (a) and (b) above, what are the major differences between RAA and Slippery Slope Argument?

(d) What is the major similarity between RAA and Slippery Slope Argument?

Hint: Compare Lecture 10 (slides 6, 7, 8) and Lecture 7 (slide 8).

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Re: Difference/Similarity between RAA and Slippery Slope Argument

by Christie - Wednesday, 3 October 2012, 12:05 AM

A) Arguments in the form of RAA are valid as the absurdity is used to conclude that the original assumption is incorrect.

B) Arguments in the form of Slippery Slope are normally not valid as there is no ~~real~~ [logically necessary] relationship between the events considered within its arguments. However when an argument using its form uses a chain reaction that is likely to occur it does not commit the fallacy.

C) One major difference between RAA and Slippery slope is that one ~~in~~[s] valid whilst the other is not. Secondly, Slippery slope uses ~~an unlikely explanation~~ [causal chain of events] to conclude that an original event should not [be allowed to] occur. This is used to support what we want to prove. RAA on the other hand is based on an assumption of the opposite of what we would like to prove then by showing [a claim/theory logically leads to a] ~~it~~ contradict[ion]~~s itself~~ we can therefore support our own (opposite) theory.

D) The major similarity between the two is they both contain premises that are [supposed to lead to] absurd / false [/ unwanted consequences].

(Edited by Norva Lo - original submission Tuesday, 2 October 2012, 04:45 PM)

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Re: Difference/Similarity between RAA and Slippery Slope Argument

by Norva Lo - Friday, 5 October 2012, 7:23 PM

Your answer and explanation are very quite good indeed!

I have made some improvements to it in BLUE.

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Modus Ponens (MP)

by Norva Lo - Monday, 1 October 2012, 4:40 PM

The argument **form** of **Modus Ponens** (MP) is as follows:

$A \to B$
A

B

Note: A and B are both place holders:

- Each place holder can stand for either an atomic formula or a compound formula.
- Exactly the same formula occupies all the positions marked by a particular place holder.

Example #1: When $A = p$, $B = q$, we have the following argument in the form of Modus Ponens:

$p \to q$
p
----
q

Example #2: When $A = p$, $B = q \,\&\, r$, we have the following argument in the form of Modus Ponens:

$p \to (q \,\&\, r)$
p

$q \,\&\, r$

Example #3: When $A = {\sim}p$, $B = {\sim}p$, we have the following argument in the form of Modus Ponens:

${\sim}p \to {\sim}p$
${\sim}p$

${\sim}p$

(a) Suppose $A = p \to q$, $B = r$. What argument in the form of Modue Ponens will we have?

(b) Suppose $A = p \,\&\, q$, $B = r \vee s$. What argument in the form of Modue Ponens will we have?

(c) Suppose $A = {\sim}p$, $B = q \,\&\, (r \vee s)$. What argument in the form of Modue Ponens will we have?

(d) Give an example of your own for an argument in the form of Modue Ponens. Also separately state what formula occupies the A-positions, and what formula occupies the B-positions, in the argument.

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Re: Modus Ponens (MP)

by Catherine - Monday, 1 October 2012, 4:05 PM

Hello, here are my answer to the question above. :)

a)
$(p \to q) \to r$
$p \to q$
————————
r

b)
$(p \,\&\, q) \to (r \vee s)$
$p \,\&\, q$
————————
$r \vee s$

c)
$\sim p \to \{q \,\&\, (r \vee s)\}$
$\sim p$
————————
$q \,\&\, (r \vee s)$

d)
$\sim(p \vee q) \to (r \,\&\, s)$
$\sim(p \vee q)$
————————
$r \,\&\, s$

The formula in the A-position is: $\sim(p \vee q)$.
The formula in the B-position is: $r \,\&\, s$.

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Re: Modus Ponens (MP)

by Norva Lo - Tuesday, 2 October 2012, 9:19 PM

Perfect!

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Argument Form 2

by Norva Lo - Monday, 22 October 2012, 8:44 PM

$g \rightarrow \sim(h \,\&\, g)$
$\sim(h \,\&\, g)$
----
g

(a) What **argument form** does the above argument have?

(b) Provide an **explanation** for your answer to part (a).

(c) Is the argument form identified in part (a) a **valid** argument form?

Hint: Understanding the discussion question called "Hypothetical Syllogism (HS)" and its solution posted in the Discussion Forum for Week 10 will help you answer parts (a) and (b) of this question here.

| Reply

Re: Argument Form 2

by Joshua - Thursday, 1 November 2012, 5:56 PM

$g \rightarrow \sim(h \,\&\, g)$
$\sim(h \,\&\, g)$
----
g

(a) The above argument has the argument form Affirming the Consequent.
(b) In the above argument, g should be imagined as A, and ~(h & g) as B.
Below is the standard form and symbolisation for Affirming the Consequent.

A ---> B
B

A

(c) The argument form identified in part (a), Affirming the Consequent, is not a valid argument form.

| Reply

Re: Argument Form 2

by Norva Lo - Friday, 2 November 2012, 5:30 PM

Perfect!

| Reply

Disjunctive Syllogism (DS)

by Norva Lo - Monday, 1 October 2012, 5:19 PM

The argument **form** of **Disjunctive Syllogism** (DS) is as follows:

```
A v B
~A
--------
B
```

Note: A and B are both place holders:

- Each place holder can stand for either an atomic formula or a compound formula.
- Exactly the same formula occupies all the positions marked by a particular place holder.

Example #1: When A = p, B = q, we have the following argument in the form of Disjunctive Syllogism:

```
p v q
~p
-------
q
```

Example #2: When A = p & q, B = r, we have the following argument in the form of Disjunctive Syllogism:

```
(p & q) v r
~(p & q)
-------------
r
```

Example #3: When A = ~p, B = ~q, we have the following argument in the form of Disjunctive Syllogism:

```
~p v ~q
~~p
----------
~q
```

(a) Suppose A = p, B = q → r. What argument in the form of Disjunctive Syllogism will we have?

(b) Suppose A = ~p, B = q & r. What argument in the form of Disjunctive Syllogism will we have?

(c) Suppose A = p v ~q, B = ~(r v s). What argument in the form of Disjunctive Syllogism will we have?

(d) Give an example of your own for an argument in the form of Disjunctive Syllogism. Also separately state what formula occupies the A-positions, and what formula occupies the B-positions, in the argument.

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Re: Disjunctive Syllogism (DS)

by Hannah - Tuesday, 2 October 2012 9:10 PM

(a)

p v (q→r)
~p

(q→r)

(b)

~p v (q&r)
~~p

(q&r)

(c)

(pv~q) v (~(rvs)) [Comments: The outer pair of brackets in 2nd disjunct is not needed.]
~(pv~q)

(~(rvs)) [Comments: Again, the outer pair of brackets is not needed.]

(d)

~~t v w
~~~t
------------
w

A = ~~t
B = w

(Edited by Norva Lo - original submission Tuesday, 2 October 2012, 1:06 PM)

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### Re: Disjunctive Syllogism (DS)

*by Norva Lo - Wednesday, 3 October 2012, 9:10 PM*

Very good!

Please see my comments in RED above.

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~~~

Conjunction (Conj.)

by Norva Lo - Monday, 1 October 2012, 9:16 PM

The argument **form** of **Conjunction** (Conj.) is as follows:

A		**A**
B		**B**
--------	**or**	**--------**
A & B		**B & A**

Note: A and B are both place holders:

- Each place holder can stand for either an atomic formula or a compound formula.
- Exactly the same formula occupies all the positions marked by a particular place holder.

Example #1: When A = p, B = q, we have the following argument in the form of Conjunction:

p
q
----
p & q

Example #2: When A = p v q, B = r & ~s, we have the following argument in the form of Conjunction:

p v q
r & ~s

(p v q) & (r & ~s)

Example #3: When A = p → q, B = p, we have the following argument in the form of Conjunction:

p → q
p

(p → q) & p

(a) Suppose A = p → q, B = ~q. What argument in the form of Conjunction will we have?

(b) Suppose A = p → q, B = q → r. What argument in the form of Conjunction will we have?

(c) Suppose A = (p & q) v r, B = ~(p & q). What argument in the form of Conjunction will we have?

(d) Give an example of your own for an argument in the form of Conjunction. Also separately state what formula occupies the A-positions, and what formula occupies the B-positions, in the argument.

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Re: Conjunction (Conj.)

by Ketty - Tuesday, 2 October 2012, 12:57 AM

(a)
p → q
~q

(p → q) & ~q

(b)
p → q
q → r

(p → q) & (q → r)

(c)
(p & q) v r
~(p & q)

{(p & q) v r} & ~(p & q)

(d)

j v k
~j → l

(j v k) & (~j → l)

A-position = j v k
B-position = ~j → l

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Re: Conjunction (Conj.)

by Norva Lo - Tuesday, 2 October 2012, 3:01 AM

Perfect!

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Hypothetical Syllogism (HS)

by Norva Lo - Monday, 1 October 2012, 5:19 PM

The argument **form** of **Hypothetical Syllogism** (HS) is as follows:

A → B
B → C

A → C

Note: A, B and C are all place holders:

- Each place holder can stand for either an atomic formula or a compound formula.
- Exactly the same formula occupies all the positions marked by a particular place holder.

Example #1: When A = p, B = q, C = r & s, we have the following argument in the form of Hypothetical Syllogism:

p → q
q → (r & s)
----
p → (r & s)

Example #2: When A = ~p, B = ~q, C = ~(r & s), we have the following argument in the form of Hypothetical Syllogism:

~p → ~q
~q → ~(r & s)

~p → ~(r & s)

Example #3: When A = p, B = ~q, C = p, we have the following argument in the form of Hypothetical Syllogism:

p → ~q
~q → p
----
p → p

(a) Suppose A = p, B = q, C = r. What argument in the form of Hypothetical Syllogism will we have?

(b) Suppose A = p & q, B = p, C = p v q. What argument in the form of Hypothetical Syllogism will we have?

(c) Suppose A = ~p, B = ~p v ~q, C = ~(p & q). What argument in the form of Hypothetical Syllogism will we have?

(d) Give an example of your own for an argument in the form of Hypothetical Syllogism. Also separately state what formula occupies the A-positions, what formula occupies the B-positions, and what formula occupies the C-positions, in the argument.

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Re: Hypothetical Syllogism (HS)

by Ketty - Tuesday, 2 October 2012, 12:40 AM

(a)
$p \to q$
$q \to r$

$p \to r$

(b)
$(p \& q) \to p$
$p \to (p \vee q)$

$(p \& q) \to (p \vee q)$

(c)
$\sim p \to (\sim p \vee \sim q)$
$(\sim p \vee \sim q) \to \sim(p \& q)$

$\sim p \to \sim(p \& q)$

(d)

$j \to k$
$k \to l$

$j \to l$

A-position = j
B-position = k
C-position = l

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Re: Hypothetical Syllogism (HS)

by Norva Lo - Tuesday, 2 October 2012, 3:03 AM

Perfect again!   Well done.

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