

Next week:

Quiz on entailment,
relevance, independence

* The correct Definition
of Valid/Invalid

Suppose an argument
has an inconsistent set
of premises (not every

premise can be true)

? Is the argument valid
or invalid?

can not
be
det.

INVALID

VALID

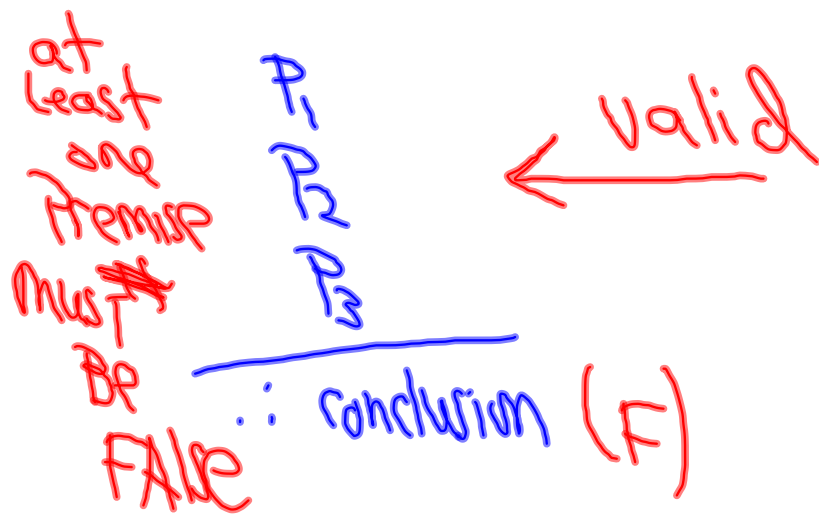
Possible To have
all True Premises
(and)

Possible to have
a False conclusion

VALID (A)
Invalid (or B)

True/False (C)

Inference (valid/Invalid)



VAID:
IF All Premises are
True then its conclusion
MUST BE True

IF All Premises Are True
All Premises \neq are True.

P	T	
$\neg P$	F	
P	T	.

∴ Conclusion F

- a) valid
- b) invalid
- c) can't be Determined

1. Let p be, “The capital of Arizona is Phoenix” and let q be “January has 31 days”.
2. Let p be, “The Mississippi river is free from ice” and let q be “Today is May 8”.

3. Let p be, “Mary is a grandmother of 10” and let q be “At least one of Mary’s children has children”.
4. Let p be, “Tom’s favorite color is green” and let q be “John owns a green truck”.
5. Let p be, “The maximum driving distance from Tucson to Phoenix is 100 miles, and John drove the entire way in less than 2 hours” and let q be “John drove an average of 50 miles per hour between Tucson and Phoenix”.
6. Let p be, “The book has a total of 237 pages” and let q be “The book weighs more than 6 ounces”.
7. Let p be, “Mary knows every world Capital” and let q be “Mary knows the capital of French Guyana”.
8. Let p be, “27 out of 30 students graduated in May” and let q be “The tally of monthly traffic accidents increased in October by 3%”.
9. Let p be, “If John gets a raise, then he will buy a new car, and he did get a raise” and let q be “John bought a new car”.
10. Let p be, “John bought a new car” and let q be “If John gets a raise, then he will buy a new car, and he did get a raise”.

11. If p entails q , then q entails p .
12. If q is relevant to p , then p is relevant to q .
13. If q is logically independent of p , then p is logically independent of q .
14. p entails q if it is impossible for q to be false and p to be true.
15. Since our choice of letters to represent propositions is arbitrary, we can let p stand for one proposition, and a different proposition at the same time. (hint: what would happen to our definitions if this were allowed?)
16. Not all sentences in English are propositions.
17. Propositions are sentences which are either true or false.
18. Given three propositions p , q , and r , it may be the case that neither p or q alone entail r , but taken together they do. In other words, it may be the case that p does not entail r , and q does not entail r , but p and q together entail r .

19. If two statements are logically independent, then both p and q can be false.
20. If p entails q , then both p and q can be false.

2) \supset
If the television is not working, then we will watch the show at Jims.
We did not watch the show at Jims
Therefore the television is working.

1. IF P , then q
2. not q

 \therefore NOT P

\supset
"VALID
modus Tollens"

MUACID

INDUCTION:

Suppose X is observed to exhibit a certain Pattern/Property over many instances, then we inductively conclude the same pattern will continue.

(Patterns observed in the Past are considered to be reasonably thought to continue in the Future)

IN Tucson it has been over 90°F For every recorded 4th of July For 100 years.

\therefore This 4th of July it will over 90° in Tucson

My car has never
Failed to start

∴ Therefore my car will
Start this time