

Midterm #1 - Review

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Concepts

- **Statement** >> A sentence used to make a claim
 - **Property**: True/False (This distinguishes them from sentences)
 - Most basic concept of CT
 - Also called: assertions or propositions
- Other types of sentences
 - Proposition
 - Socrates is a man
 - Command
 - Be a man, Socrates
 - Question
 - Is Socrates a man?
 - Expression of Volition
 - Oh, that Socrates were a man
- **Sets** of Propositions
 - Propositions can be combined in groups or set
 - **Property**: Consistent or Inconsistent
 - **Consistent**:
 - A set is consistent only if all the propositions are possibly true at the same time
 - Cannot contradict one another
 - **Inconsistent**:
 - Propositions are true and false, they contradict one another
- **Inference** >> Logical relation between thoughts that occurs when one thought supports or justifies or makes it reasonable to believe another thought
 - Thought follows from another
 - Example.,
 - Socrates is a man therefore, he is mortal
- **Argument** >> Set of statements that claims that one or more of those statements (premises) support or justify or make it reasonable to believe that another of those statements (conclusion) is true.
 - **Property**: Logical Strength
 - **Logically Strong**:
 - When premises, if true, actually provide support for, justify, or make it reasonable to believe the conclusion is true
 - Features:
 - Is possible for a logically strong argument to have false premises
 - Matter of degree between inductive and deductive arguments
 - **Logically Weak**:

- Premises do not support the conclusion
 - **Property: Soundness**
 - Means by which arguments can be assessed
 - When an argument is logically strong and has true premises
 - Types of Arguments
 - **Inductive Argument** >> Claims that the truth of its premises makes the truth of its conclusion probable
 - Inductive strength vs. Inductive weakness (same as logical strength)
 - **Deductive Argument** >> Claims that the truth of its premises guarantees the truth of its conclusion
 - Deductive validity vs. Deductive invalidity (same as logical strength)

Short Hand

- **p** >> proposition
- **~p** >> negation

Standard Form

- Argument
 - Line up premise, draw a line under the last premise & conclude
 - Example.,
 - All men are mortal.

Socrates is a man.

Socrates is mortal.

- When writing arguments in **standard form** we can label premises and conclusions
 - P1: Socrates is a man.

P2: All men are mortal.

C: Socrates is a man.

Laws of Logic

1. **Law of Non-Contradiction** >> Impossible for both a proposition and its negation to be true at the same time
2. **Law of the excluded middle / Law of Bivalence** >> Every proposition must be true or false
 - If "**Socrates** is a man" is true, then its negation, "Socrates is not a man," must be false

Disjunctive Syllogism

- **Disjunction** >> Complex proposition
 - Has form:
 - **either p or q**
 - Either you had white milk or chocolate milk
 - $P \text{ \& } q$ are disjuncts (simple propositions) of the disjunction *Either p or q*
 - Either p or q.

Not-p ($\sim p$).

Therefore, q.

Reductio ad Absurdum

- Way to show that a proposition is false, by showing that a contradiction follows it
- Anatomy
 - Assume: p

Derive a contradiction: q & ~q

Conclusion: p is false (By Reductio ad Absurdum: Law of Non-Contradiction)

Conclusion: ~p is true (Law of the Excluded Middle)

- Example.,
 - Demonstrate that the proposition... "Socrates is an Olympian God" is false.
 - Assume: P1: Socrates is an Olympian God.

P2: Olympian Gods are immortal

P3: Socrates died in 399 B.C.

C1: Therefore, Socrates is immortal (by P2) & mortal (P3)

>> ***CONTRADICTION**

C2: Therefore, the statement "Socrates is an Olympian God" is false

>> **The law of Non-Contradiction** states that contradictions cannot be true. Therefore, any proposition that implies that Socrates is an Olympic God is false

- Example.,
 - Demonstrate that the proposition... "Socrates is an Olympian God" is false.
 - Assume: P1: Socrates is an Olympian God

P2: Olympian Gods are immortal

P3: Socrates died in 399 B.C.

C1: Therefore, Socrates is immortal (by P2) & mortal (P3)

>> ***CONTRADICTION**

C2: Therefore, the statement "Socrates is an Olympian God" is false (Law of Non-Contradiction)

C3: Therefore, the statement "Socrates is not an Olympian God" is true. (**Law of Excluded Middle**)

Enthymeme

- Argument in which conclusion or one of the premises has been left unstated
- Example., (Premise Unstated)
 - (All men are mortal.)

Socrates is a man.

Therefore, Socrates is mortal.

- Example., (Conclusion unstated)
 - All men are mortal

Socrates is a man.

(Therefore, Socrates is mortal)

Sorites

- Connected Series of arguments in which the conclusion of One argument also serves as the premise for another
- Examples.,
 - P1: All men are mortal.

P2: Socrates is a man

C1 & P3: Therefore, Socrates is mortal.

P4: Mortal men are not Olympian Gods

C2: Therefore, Socrates is not an Olympian God

The Republic

- Characters
 - Thrasymachus
 - Psychological and ethical egoist
 - Self interest >> moral/rational way to live
 - Socrates is challenged to show that his position is false
 - Argument: Justice is good and worth having
 - Plato
 - Devoted life to philosophy
 - Became student of Socrates in late teens
 - After the government executed Socrates he left
 - Socrates
 - Central figure in The Republic
 - Delphic Oracle >> pronounced Socrates wisest man of all
 - Claimed that he knew nothing, and that was his wisdom
 - Sentenced to death in 399 BC >> Impiety & corrupting youth
 - Said he was a sophist
 - The Sophists
 - Teachers of the techniques of persuasion and argument
 - Man is the measure of all things
 - What about Gods? & Standards of right vs. wrong
 - Used reason and argument for honour, fame & money
 - Glaucon
 - Plato's brother
 - Socrates went to the Piraeus with him
 - Adeimantus & Polemarchus catch up with them
 - Go to Polemarchus' house
 - Find Cephalus and Thrasymachus
 - Adeimantus
 - Glaucon's brother (Plato's brother)
 - Noble political connections
 - Polemarchus
 - Son of Cephalus
- Setting

- Port of Athens
- Festival taking place
 - For Thracian goddess
 - Interest in new Gods from exotic east
- Introduction: Book 1
 - Why was confidence in the foundations of their culture weakening?
 - Civil War
 - Athens vs. Other Greek states (lead by Sparta)
 - Athenians had to crowd behind city walls
 - Plague broke out
 - Athens power and wealth declined
- Meeting Cephalus
 - "He was sitting on a sort of cushioned chair, with a wreath on his head, as he had been offering sacrifice in the courtyard." (328c)
 - Significance: Cephalus doesn't doubt tradition
 - Socrates asks Cephalus what it is like to be old
 - Also discuss Cephalus's wealth
 - Cephalus's Traditional views
 - People are rewarded or punished for what they have done during their lifetime
 - In Hades " People who have been in just here must pay the penalty there"
 - As people grow old they fear what will happen to them in the afterlife
 - Because of Hades that he most values his money
 - Wealth has helped avoiding being unjust
- Socrates Questions Cephalus
 - Asks for definition of justice
 - Cephalus's Definition >> Justice is telling the truth and paying your debts" (331c)
 - Uses Reductio ad Absurdum
 - What if a man lends weapons to a man when he is sane, and then asks for them back when he is out of his mind?
- Polemarchus
 - Cephalus leaves to see a sacrifice and hands over the argument to his son Polemarchus to defend his fathers position
 - Reformulates fathers definition >> Justice is benefiting friends and harming enemies
 - Contradicts: Justice is not harmful

Practice Questions...

1. Answer whether each of the following is a statement or not.

1. I went down yesterday to the Piraeus with Glaucon the son of Ariston
 >> Yes it is a statement because a statement is a sentence that is used to make a claim, which is true or false.

1. Are you out of your mind?

>> No this is not a statement because it does not make a claim that is true or false. This is a question, used to ask someone something.

1. No, it is a question.

>> This is a statement because it makes a claim that is true or false

1. Open the pod bay doors, Hal

>> No, this is a command and it is not a statement that is true/false

1. Sheldon is smart

>> Yes this is a statement because it makes a claim that is true/false

1. The Republic study Questions

1. What is the definition of justice given by Cephalus? What is Socrates' objection to this definition? How does Cephalus respond to Socrates' objection?

>> The definition of justice given by Cephalus is to speak the truth and to pay your debts. Socrates rejects this definition and gives the scenario of a friend depositing arms to him, and then he loses his mind and asks for them back. Socrates then says that it would not be just to give him back the weapon (debt) or tell him where it was (speak the truth). Then, Cephalus responds by handing the argument over to his son Polemarchus to argue on his behalf

1. What is Polemarchus's definition? How does he defend it?

>> Polemarchus's definition of justice is that you owe friends help and enemies harm. He defends it by stating that you make alliances with friends and war with the other. He also defends it by discussing money and stating that you would trust a just man with your finances because he will keep your deposit safe as he is just.

1. What is Thrasymachus's definition? What is Socrates' objection to this definition? How does Thrasymachus respond?

>> His definition of justice is that justice is nothing more than the advantage of the stronger, then further states that this isn't really meant to be a definition but a delegitimization of justice. Furthermore he says that just behaviour works to the advantage of other people, not to the person who behaves justly. Socrates then objects that that Thrasymachus is promoting injustice as a virtue, and whoever is most successful in the competition of life has the greatest virtue. He then concludes through a long chain of reasoning that injustice cannot be a virtue because it is contrary to wisdom (which is a virtue). He then argues that justice is the adherence to certain rules which enable the group to act in common. Lastly, he argues that justice is a virtue of the soul, and that justice is desirable because it means health of the soul

1. Answer whether each of the statements is an argument or not

1. It was a bright cold day in April. The clocks were striking 13.

>> Not an argument because it is not a group of statements (Called premises) making claims to support another claim (the conclusion). Because it does not contain a conclusion for the premise, it is not an argument

1. There is a great reason to hope that death is a good thing because either death is a state of utter unconsciousness, or we go to a better place.

>> This is an argument because there are statement(s) making claims (premises) to support another claim (the conclusion)

P1: either death is a state of utter unconsciousness, or we go to a better place

C1: There is a great reason to hope that death is a good thing

1. You should become a vegetarian. Meat is an unhealthy food. Furthermore, animals are sentient creatures that value their life.

>> This is an argument because there are 2 statements making claims (P1 & P2) to support another statement (C1)

P1: Meat is an unhealthy food.

P2: Animals are sentient creatures that value their lives.

C1: You should become a vegetarian

1. You had chocolate milk at dinner last night. You either had white milk or chocolate milk. You did not have white milk.

>> This is an argument because there are 2 statements making claims (P1 & P2) to support another statement (C1)

P1: White milk or chocolate milk

P2: You did not have white milk

C1: You had chocolate milk at dinner last night

1. Are the following statements logically strong?

1. If Ottawa were in France then it would be in Europe. But Ottawa isn't in Europe. Consequently, Ottawa, isn't in France

>> This argument is logically strong because "If Ottawa were in France, then it would be in Europe" & "Ottawa isn't in Europe" actually provide support for the conclusion "Ottawa isn't in Europe" This argument is sound because all of the premises are true

1. Set out premises and conclusions of Socrates refutation of Cephalus's definition of justice in standard form. Identify the important logical details and the laws of logic that are used.

>> Socrates refutes Cephalus's definition by taking the definition of justice which is to speak the truth and pay your debt (P1) and argues against it by stating. Suppose a friend deposits arms with you & then asks for them back when he has lost his mind, should the arms be given back to him? (P2) & should he be told where the weapons are? (P3) No because that would be harmful, and a premise of justice is that

it does not cause harm. Therefore, this can not be the definition of justice due to the law of non-contradiction, which means that all premises must be possible to be true, which is not the case.