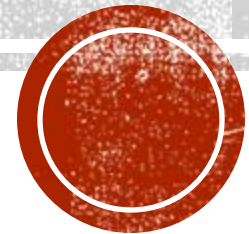


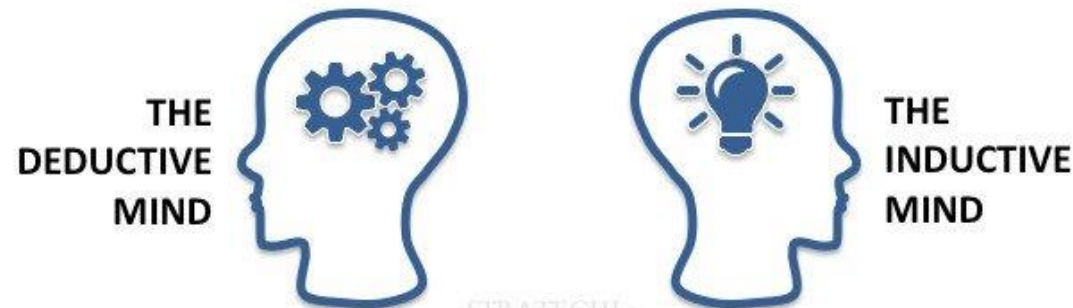
# UNIT C

Deduction VS Induction



# DEDUCTIVE VS INDUCTIVE

- Two main types of arguments: Deductive and Inductive
- Deductive: an argument in which the arguer claims/intends that it is **impossible** for the conclusion to be false *given that* the premises are true
  - i.e. the conclusion is claimed to **follow necessarily** from the premises.
- Inductive: an argument in which the arguer claims that it is **improbable** that the conclusion be false *given that* the premises are true.
  - i.e. the conclusion is claimed to follow only **probably** from the premises.
- Deductive arguments involve **necessary reasoning**
- Inductive arguments involve **probabilistic reasoning**.
- **Difference:** the **strength** of the argument's inferential claim is what distinguishes the two.



# HOW TO TELL APART?

- There are 3 criteria that influence our decision about this claim:
- 1) The occurrence of special indicator words like “probably” vs “certainly”
- 2) The **actual strength** of the inferential link between the premises and the conclusion – in other words, does the conclusion follow with 100% probability?
- 3) The **form or style** of the argumentation that the arguer uses (e.g. does the argument go from general to specific?)
- Note: The first test is the least indicative of the three. **So if it conflicts with the other two tests, ignore it.**



# STRENGTH OF INFERENTIAL LINK

- Deductive: where the conclusion follows **necessarily**, i.e. with 100% probability from the premises  
OR  
**impossible** for the premises to be true and the conclusion to be false
- Inductive: where the conclusion follows **probably** from the premises  
OR  
**improbable** for the premises to be true and the conclusion to be false



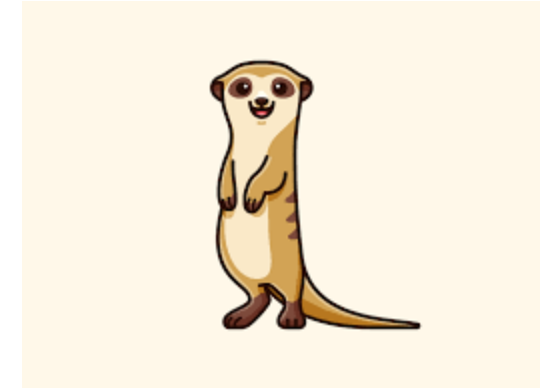
# DEDUCTIVE OR INDUCTIVE?

- Eg 1

The meerkat is closely related to the suricat.

The suricat thrives on beetle larvae.

Therefore, the meerkat thrives on beetle larvae.



- Eg 2

The meerkat is a member of the mongoose family.

All members of the mongoose family are carnivores.

Therefore, it follows that the meerkat is a carnivore.



# FORM/STYLE OF ARGUMENT

- In general...
- **Deductive**: the content of the conclusion is **not** intended to “go beyond” the content of the premises
- **Inductive**: the content of the conclusion **is** in some way intended to “go beyond” the content of the premises
- This then affects the form or style of the argument that each type can take.



# DEDUCTIVE ARGUMENTS: EXAMPLES

- An argument that goes from general rules to a specific case
- An argument based on mathematics
- An argument from definition

- Eg 1  
All men are mortal  
Socrates is a man  
Therefore, Socrates is mortal

- Eg 2  
 $2+2=1+1+1+1=4$



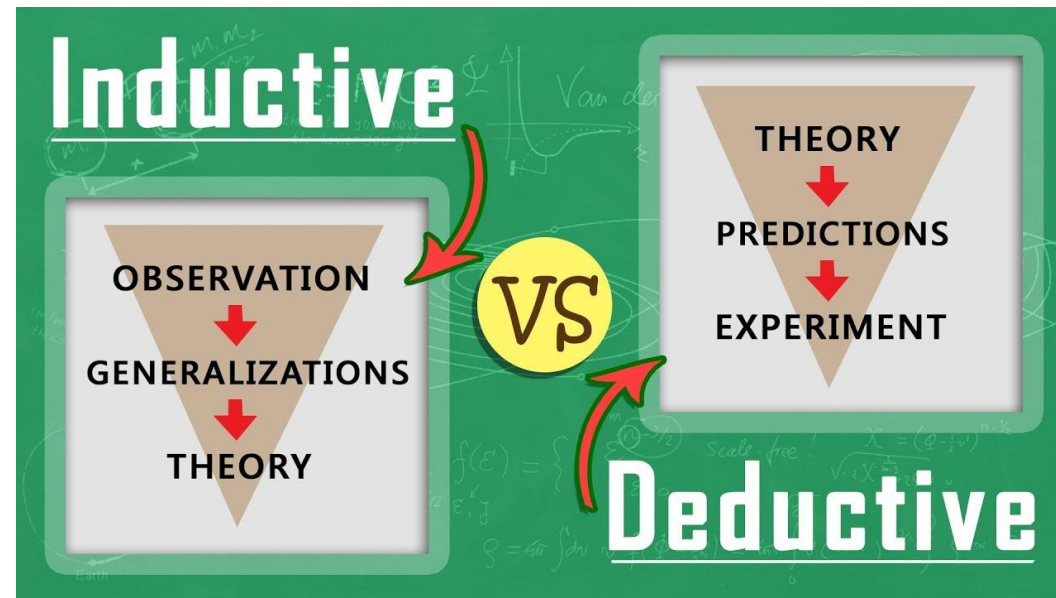
# INDUCTIVE ARGUMENTS: EXAMPLES

- An argument that goes from specific instances to general rules
- Predictions about the future (based on our knowledge of the past or present)
- Arguments from analogy (depends on similarity between two things)
- Inductive generalizations (eg. the use of statistical probability to show that as 3 oranges selected from a crate were sweet, the rest of the oranges in that crate are also sweet)
- Arguments from authority (based on something that an expert or an authority said)
- Causal inferences (proceeds from knowledge of a cause to a claim about an effect, or vice versa)
- Scientific findings that draw a general conclusion based on a study with a limited sample size



# SCIENCE: INDUCTIVE OR DEDUCTIVE?

- Depends!
- If discovering a law of nature from limited sampling – inductive
- If predicting a result from a hypothesis - deductive



# **HOMEWORK**

- Exercise B in lecture notes
- Determine whether the following arguments are best interpreted as being inductive or deductive. Also state the criteria you use in reaching your decision:
  - the presence of indicator words
  - the nature of the inferential link between the premises and the conclusion
  - the form / style of the argumentation.



# LET'S DO A FEW TOGETHER

- 1) No email messages are eloquent creations. Some love letters are eloquent creations. Therefore, some love letters are not email messages.
- 2) Paying off terrorists in exchange for hostages is not a wise policy since such action will only lead them to take more hostages in the future

