

# 47.1 Scientific Inquiry



Summarize main points from each video.

Video Title / topic \_\_\_\_\_

Video Title / topic \_\_\_\_\_

Video Title / topic \_\_\_\_\_

# Topic Introduction



**Summarize your understanding of each paragraph.**

Scientific inquiry is a type of investigation. Scientists try to find explanations for their observations. They hope to gain more knowledge. They try to find testable explanations. A testable explanation is one that can be done over and over again.

Wikipedia describes it like this: “Scientific inquiry generally aims to obtain knowledge in the form of testable explanations that scientists can use to predict the results of future experiments.”

Using scientific inquiry, scientists can use their knowledge to predict results of experiments. They can even predict the results (or, outcomes) of future experiments. Sometimes predictions turn out different than expected. That’s okay. That’s a part of the process.

Remember that no theory can ever be considered final. Using scientific inquiry, “problematic evidence” might be discovered. If such evidence is found, a new theory may be proposed. Or, scientists might suggest modifications to the previous theory.

# Read/Summarize Text



1. Read the passage.
2. Underline key expressions in each sentence.
3. Re-write each word (or expression) you underlined.
4. Summarize the passage.

*Elements of the scientific method.*

The scientific method is an iterative, cyclical process. Information is continually revised. It improves our knowledge. It uses these elements (*or, categories*) of work:

- **Characterizations** (*observations, definitions, and measurements of the subject of inquiry*)
- **Hypotheses** (*theoretical, hypothetical explanations of observations and measurements of the subject*)
- **Predictions** (*inductive and deductive reasoning from the hypothesis or theory*)
- **Experiments** (*tests of all of the above*)

[https://en.wikipedia.org/wiki/Scientific\\_method#Scientific\\_inquiry](https://en.wikipedia.org/wiki/Scientific_method#Scientific_inquiry)

*Re-write words you underlined*

\_\_\_\_\_

\_\_\_\_\_

*Using a complete sentence, summarize or rephrase the passage*

\_\_\_\_\_

# Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

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## History of scientific method

The history of scientific method considers changes in the methodology of scientific inquiry, as distinct from the history of science itself. The development of rules for scientific reasoning has not been straightforward; scientific method has been the subject of intense and recurring debate throughout the history of science, and eminent natural philosophers and scientists have argued for the primacy of one or another approach to establishing scientific knowledge.

Despite the disagreements about approaches, scientific method has advanced in definite steps. Some of the most important scientist/influencers of the scientific method include the following people in history:

- Aristotle
- Epicurus
- Ibn al-Haytham
- Abū Rayhān al-Bīrūnī
- Roger Bacon
- René Descartes
- Galileo Galilei
- Isaac Newton
- Charles Sanders Peirce
- Karl Popper

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**For students:** This subject is especially important for young people and students. Today, there is a lot of “pseudoscience” presented in social media and other forms of media.

Pseudoscience – *or, junk science* – can have the appearance of being real science.

For example, an actor might wear a white lab coat in an advertisement. The advertisement might make some claims that “*sound*” scientific, but those claims have not undergone the rigor of testable and repeatable outcomes required in scientific inquiry.

Watchfulness and awareness in the difference between science and junk science will serve you well.

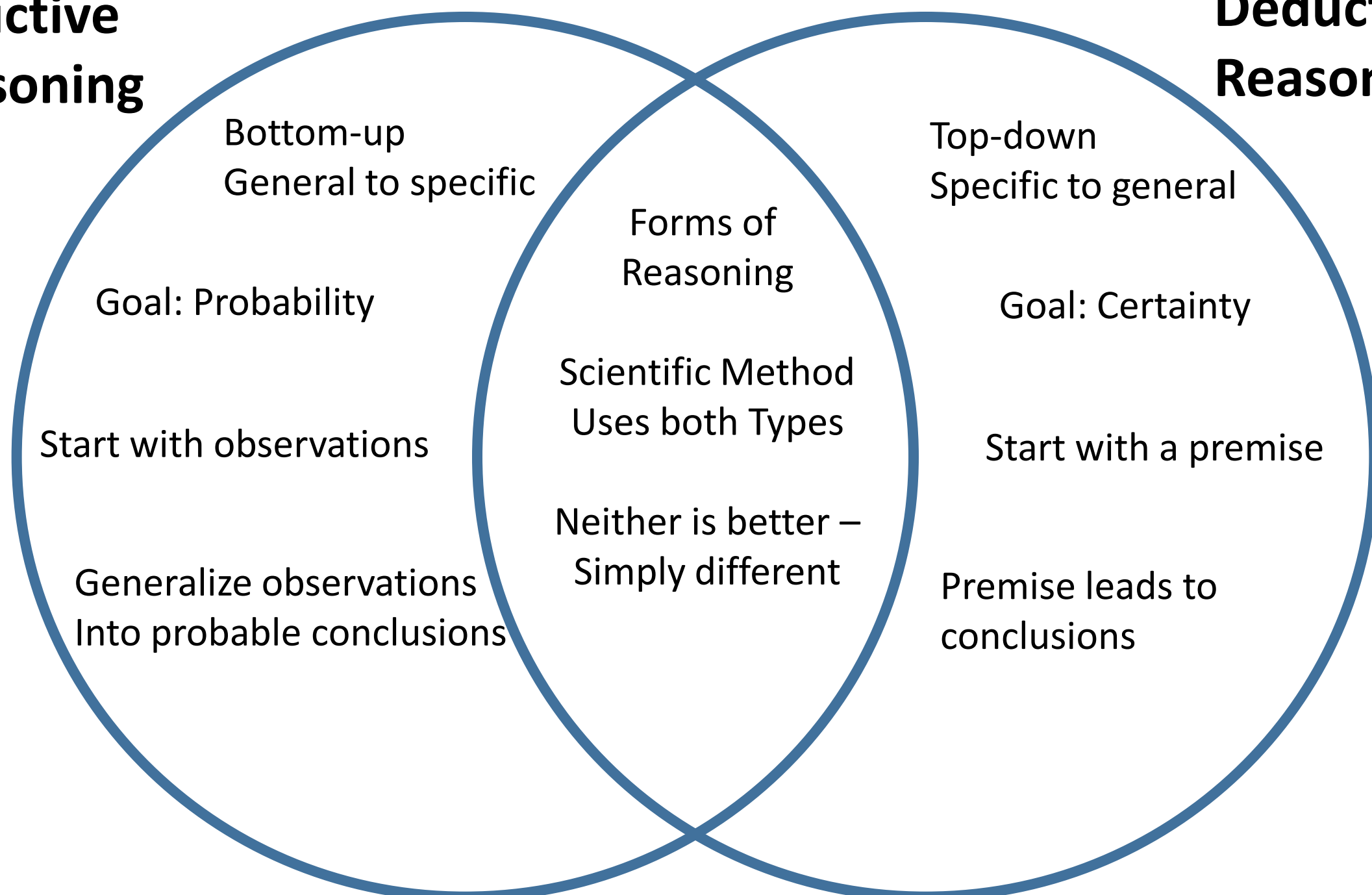
# Draw Illustration



Copy and Label the Illustration in the Space Provided

**Inductive Reasoning**

**Deductive Reasoning**



Adapted from <http://serapisimagenes.blogspot.com/2016/06/inductive-vs-deductive-reasoning-venn.html>

**Draw (Copy) the Illustration Here**

# Interpret a Graph



Write the title of the graph \_\_\_\_\_

Circle the type of chart this represents

*Bar Chart   Line Chart   Pie Chart   Other*

If applicable,

What does the X-axis represent \_\_\_\_\_

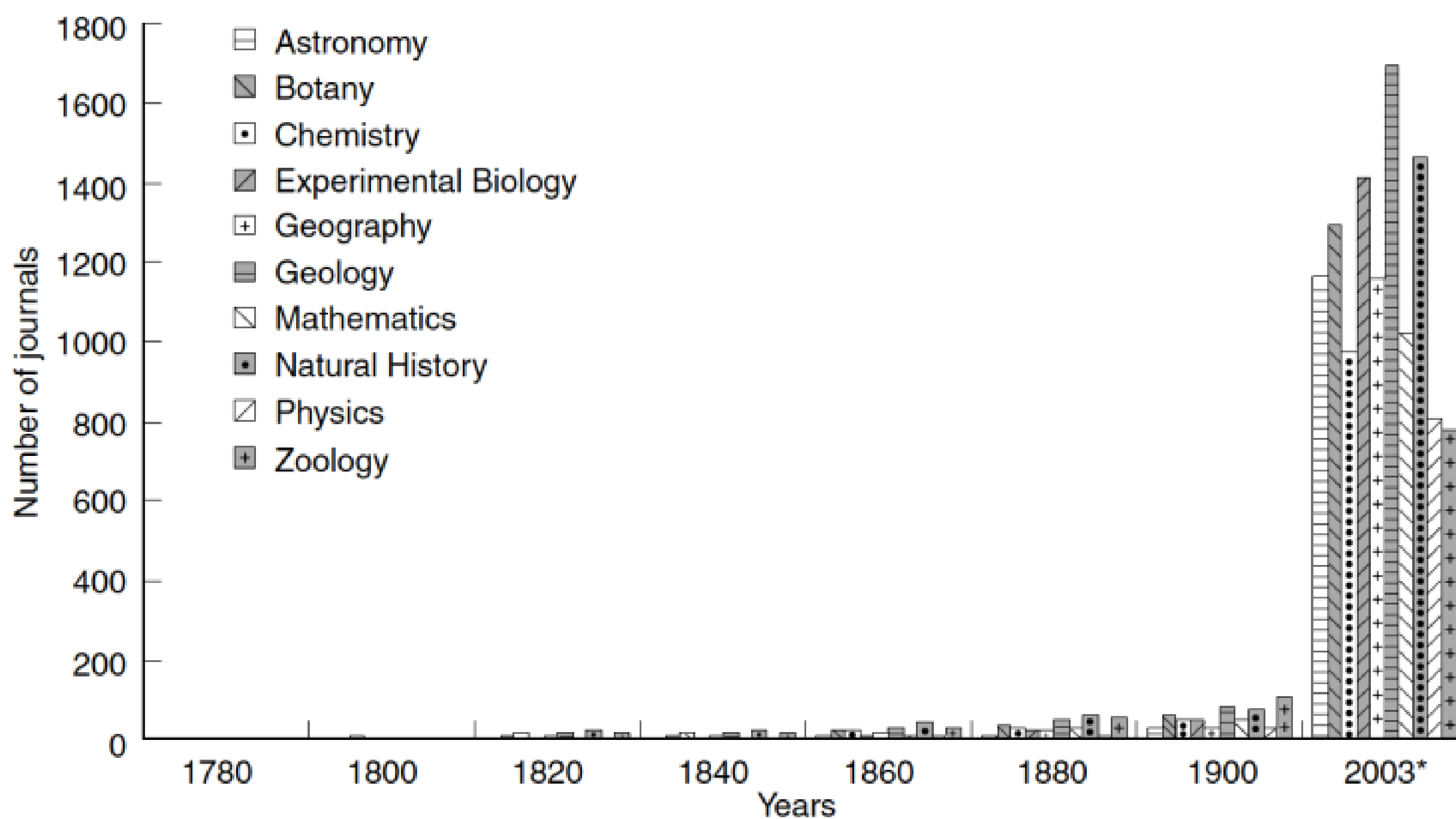
What does the Y-axis imply \_\_\_\_\_

Summarize what this graph represents or conveys

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<https://ourworldindata.org/science-and-research>

Scientific periodicals by subject, 1780–2003



# Show-Off Your Smarts!



## Instructions

- Complete as an individual or small group.
- Discuss your ideas/answers/responses in a small group.
- Select one person to present your responses to the class.

**Using your knowledge of the “scientific inquiry” in your community, complete these prompts.**

Three medical jobs:

- 1.
- 2.
- 3.

Three food-related jobs:

- 1.
- 2.
- 3.

Three animal related jobs:

- 1.
- 2.
- 3.

Three construction jobs:

- 1.
- 2.
- 3.

In what way has scientific inquiry improved (or, changed) the way modern jobs are done? \_\_\_\_\_

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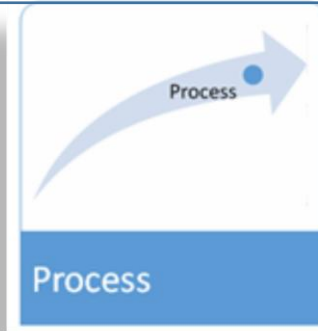
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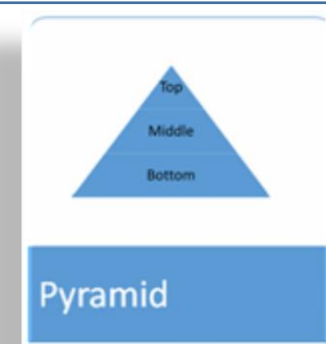
# Make a Poster

In the space provided here, illustrate biodiversity concepts through the use of four diagrams suggested.

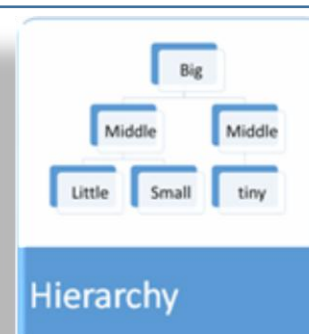
## Process



## Pyramid



## Hierarchy



## Relationship

