NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

Module 01: Computational Thinking Problem Solving Techniques (Real Life Examples)

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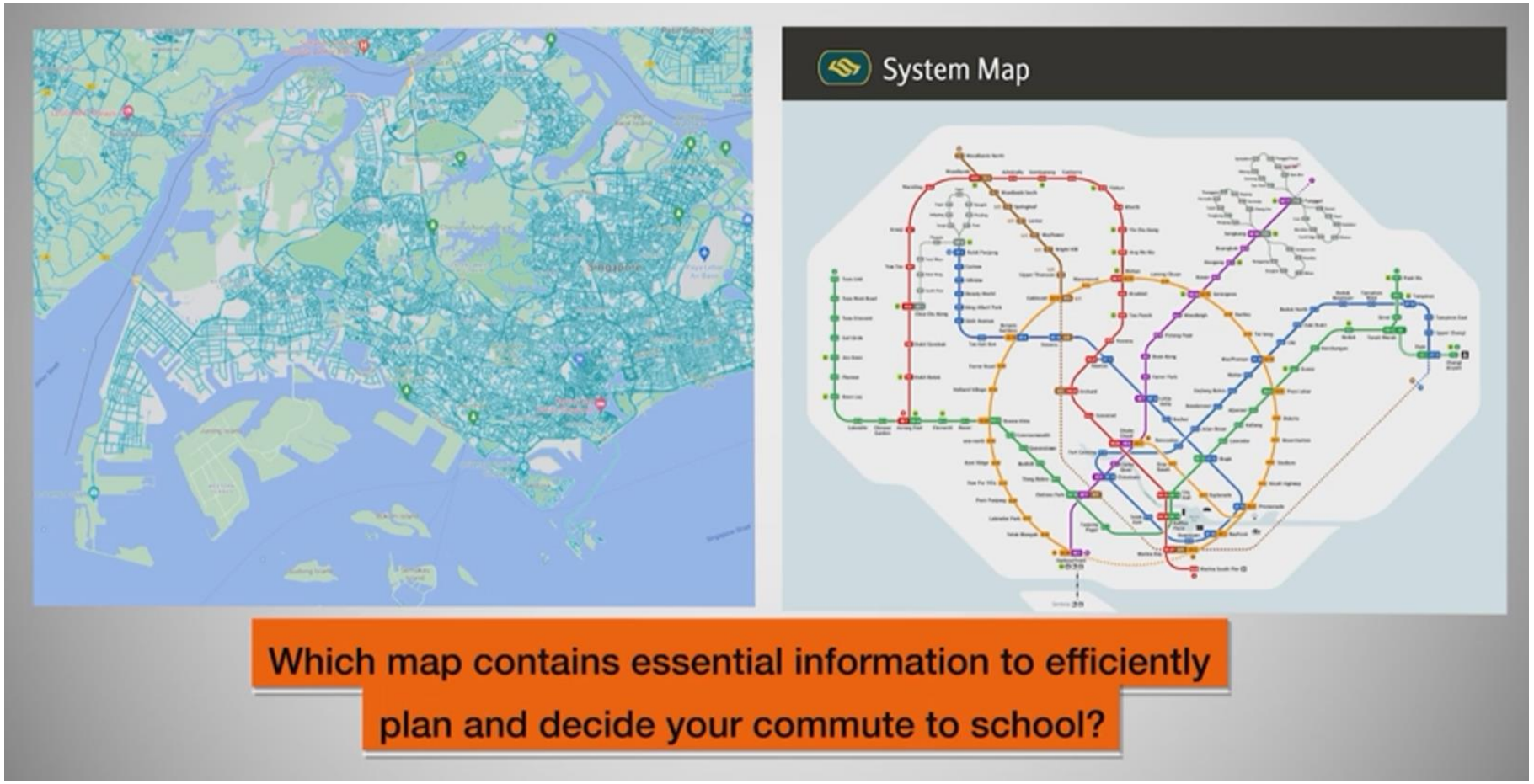
Abstraction - Example



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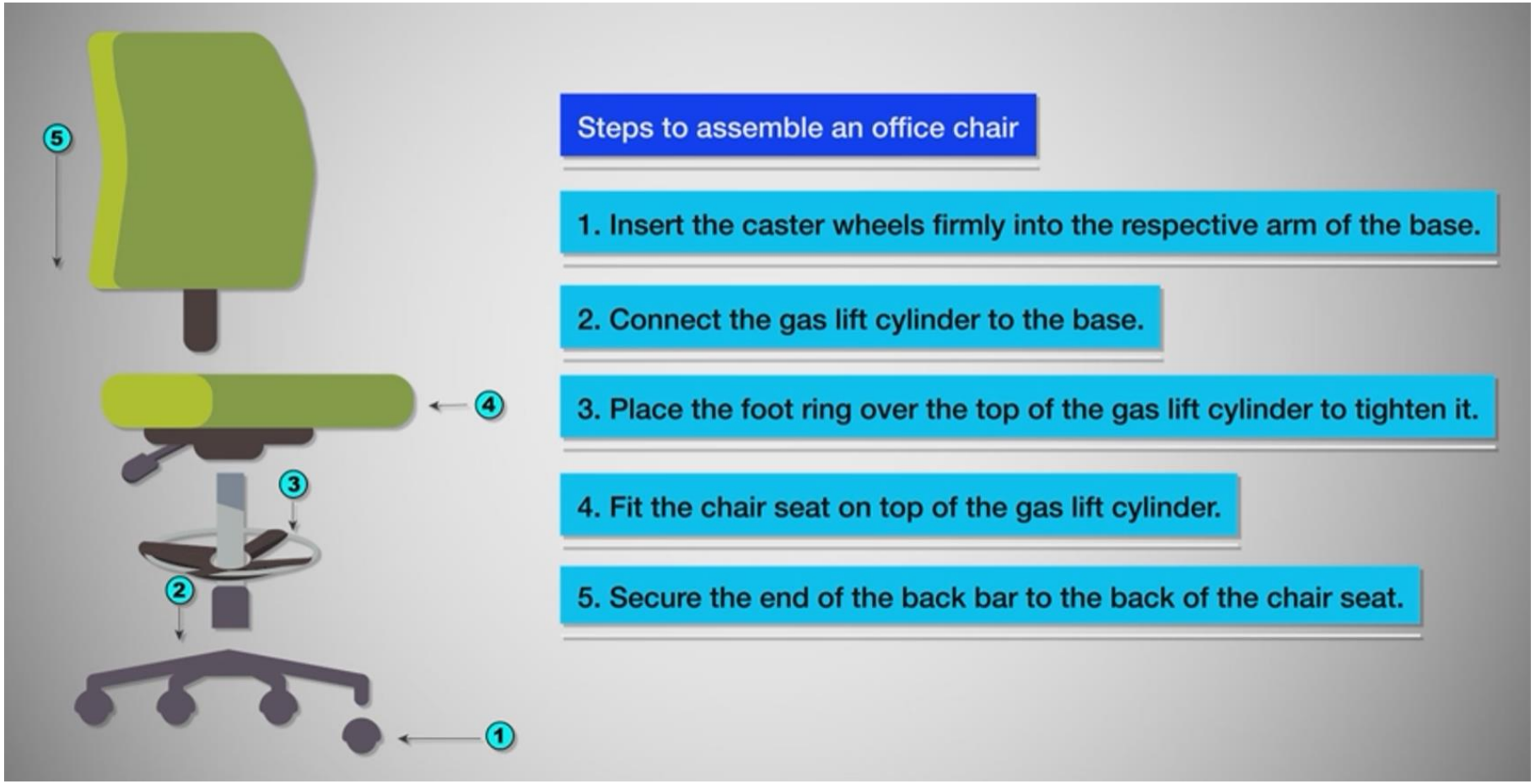
Algorithm - Example



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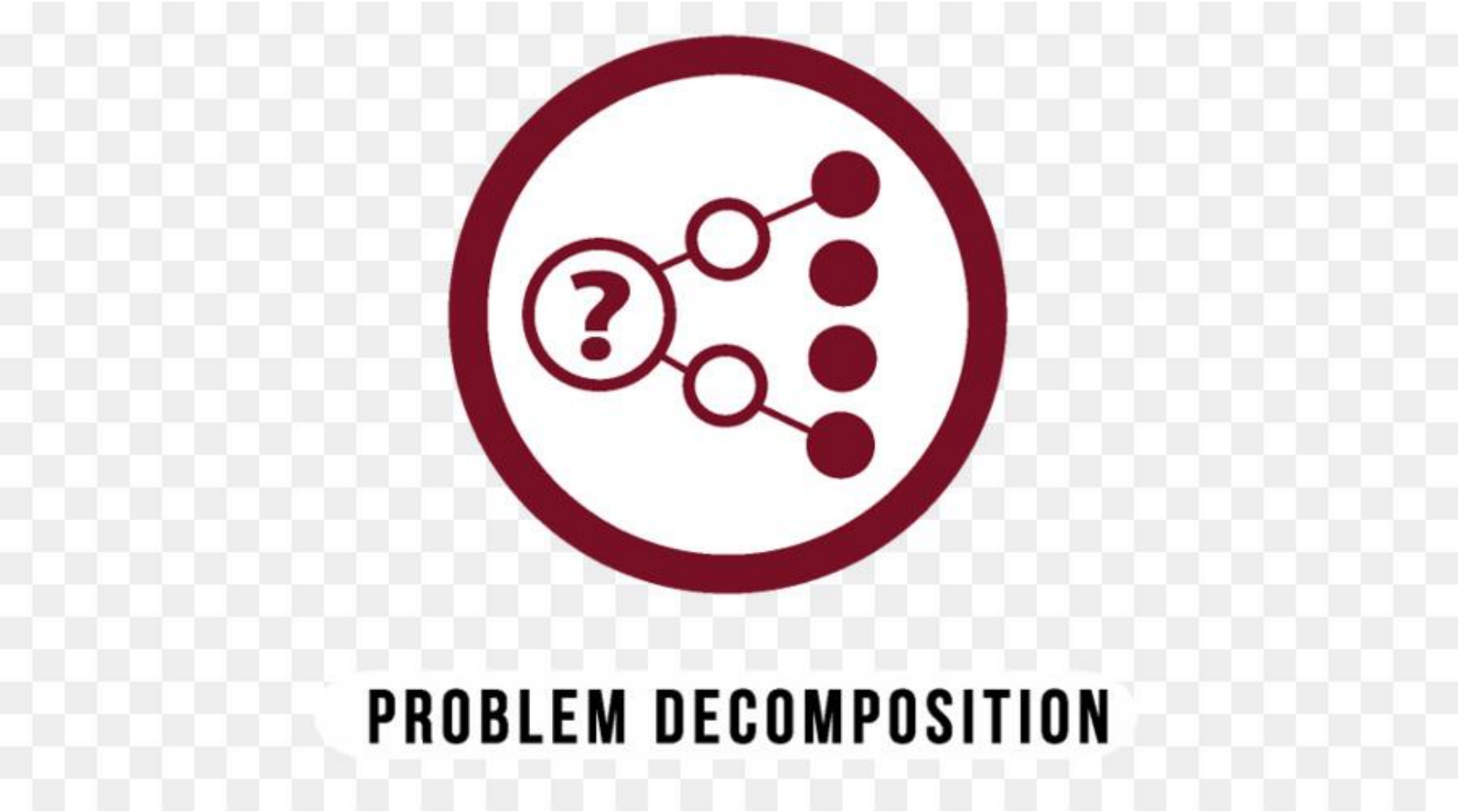
Decomposition - Example



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Pattern Recognition - Example

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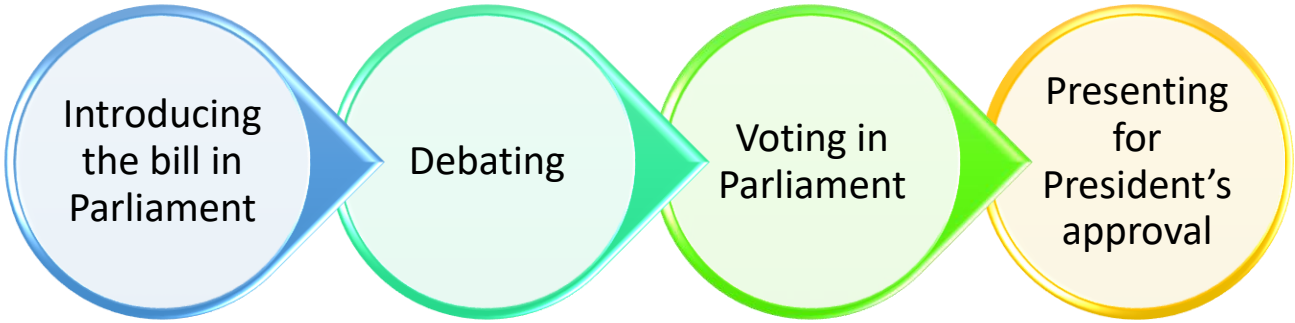
Abstraction in Arts

- Art, when viewed as a form of abstractions of real world, has been created since stone age
- Symbols have been used a form of communication between past and present

Algorithms in Legal Settings

- Official processes in legislative system with usages including
  - Assist in maintaining consistency
  - Reducing bias
- E.g., Process of creating a law:



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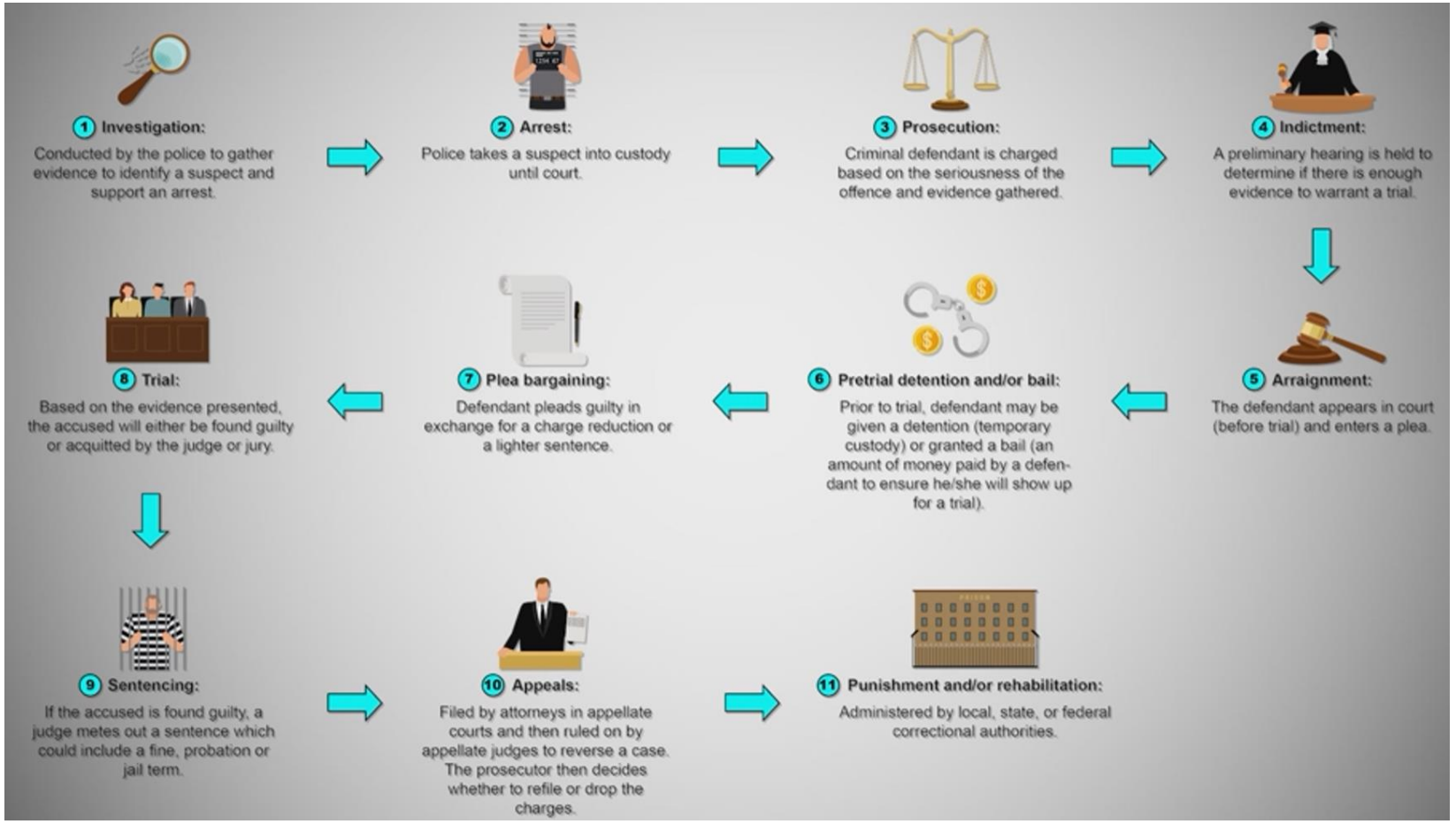
Prosecution Process viewed as an Algorithm



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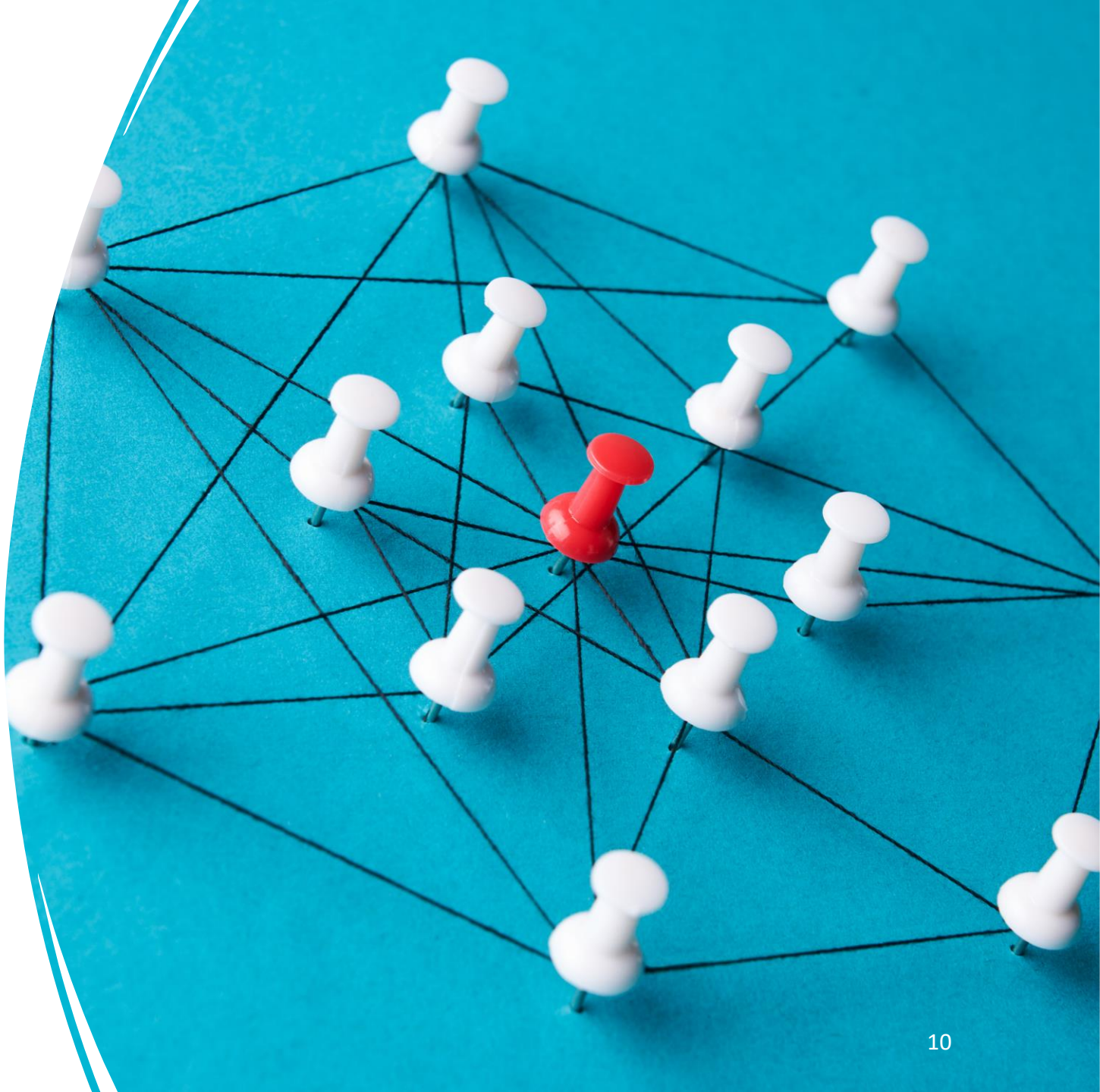
Decomposition – Piggy Bank Example

- How to count coins efficiently?
  - Sort them first, then count

Decomposition – Company Example

Companies have departments and teams, with different functions and power



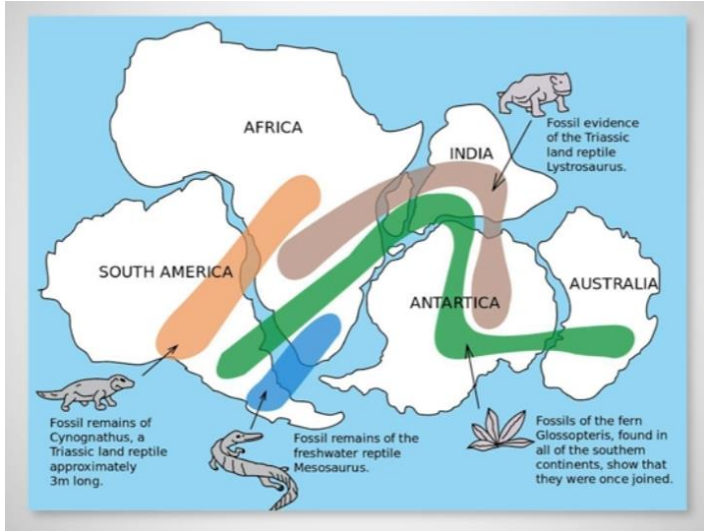
Pattern Recognition – Geology Example

Geology:

- The study of structure, evolution, and dynamics of the Earth and its natural mineral and energy resources.

Pangaea:

- A supercontinent made up of the current 7 continents.



Abstraction in English Language Arts (ELA)

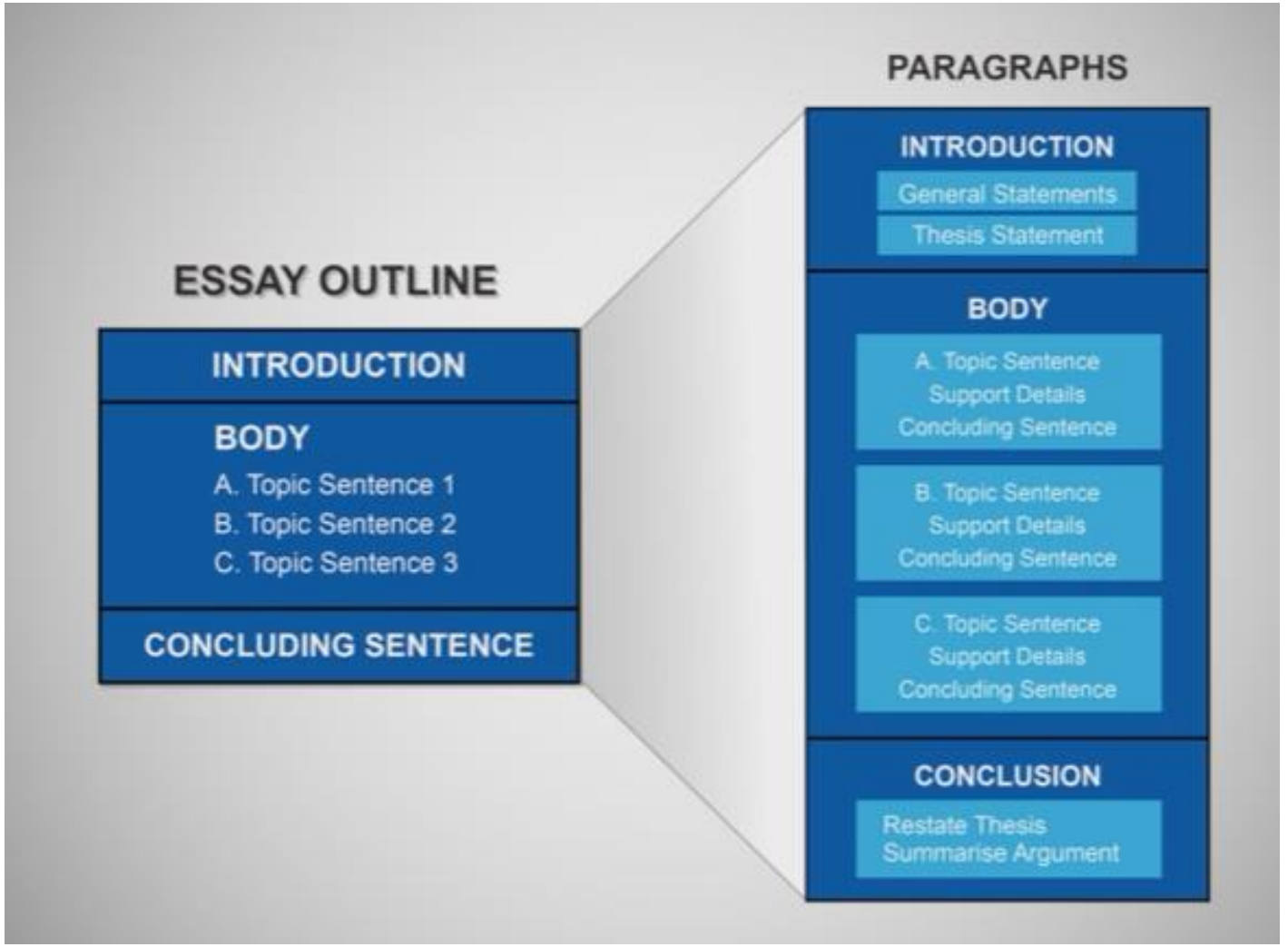
- Abstraction involves the induction of ideas or the synthesis of particular facts into one general theory.
- To provide a book synopsis: sieve out the main plotline of the book; omit small details describing the appearance of characters

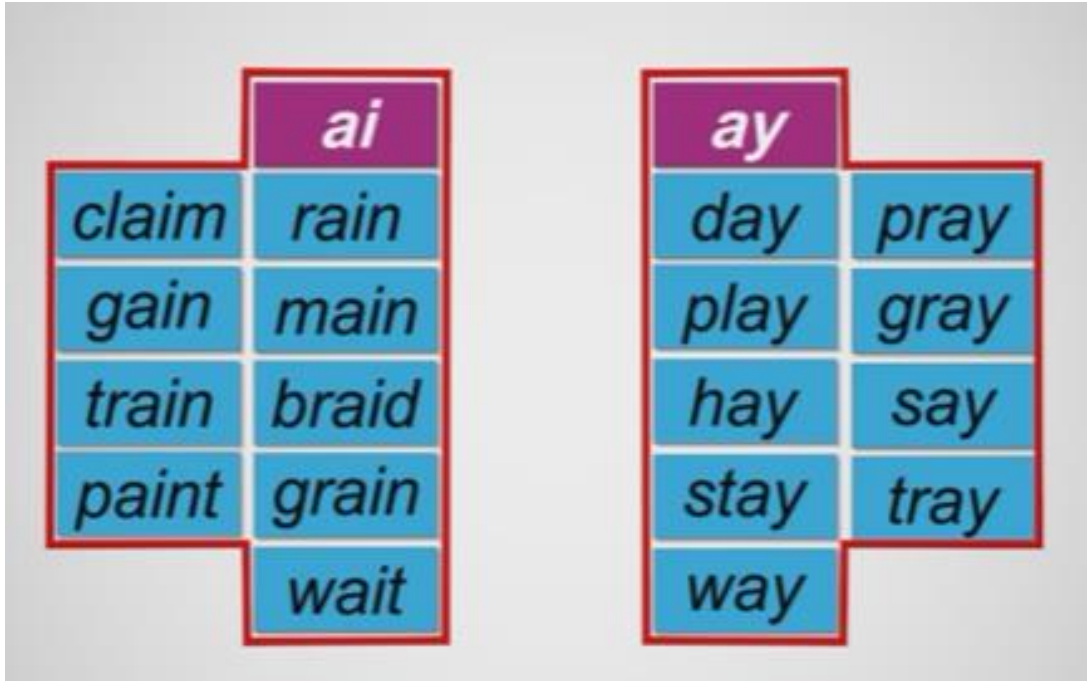
Algorithms in ELA

Traditional Poetry defined due to its regular rhythm, verse structure and rhyme scheme.

https://sites.research.google/versebyverse/

Decomposition in ELA



Pattern Recognition in ELA

- Phonics is used to learn to pronounce new words by children
- Patterns and rules can be derived from spellings