

Computational Thinking in Science Curriculum

Disha Kuzhively

International Centre for Theoretical Sciences - TIFR, Bangalore

Pre-Orientation Workshop on Curriculum Framing and Syllabus
Preparation for Science and Mathematics

November 14, 2025

Outline

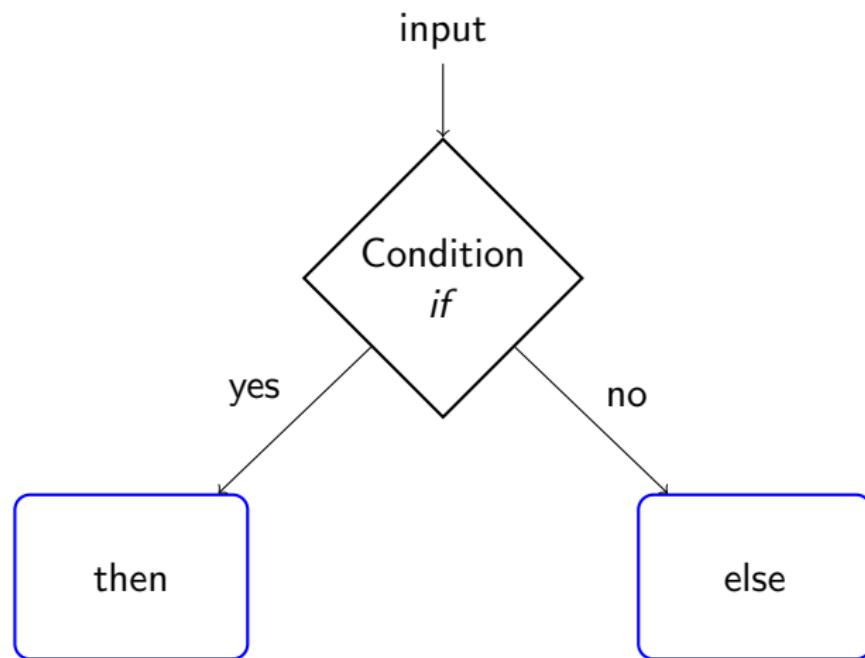
Example: Conditional Statement - If Then Else

Example: Loop Iteration

How to Identify Computational Thinking Moments in the Science Textbooks?

Computational thinking is a set of problem-solving methods that involve expressing problems and their solutions in ways that a computer could also execute.

If-Then-Else Flow Diagram



4 S2 III Transparent, Translucent and Opaque objects

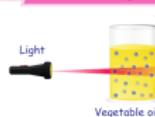
Some objects allow light to pass through them. This helps us to see through them as the window of a bus. Let us see how different objects behave with light.

1. Transparent Objects

Transparent objects allow the light to pass through them. So, we can see other objects clearly through transparent objects.
Examples: Air, glass and pure water.



2. Translucent Objects

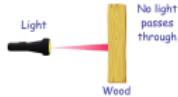


Translucent objects allow some light to pass through them. So, we cannot see objects clearly, but we see them as blurred images through them.
Examples: Paper soaked in oil, snow and vegetable oil.



3. Opaque objects

Opaque objects do not allow light to pass through them. So, we cannot see through these objects.
Examples : Wood, stone and metals.

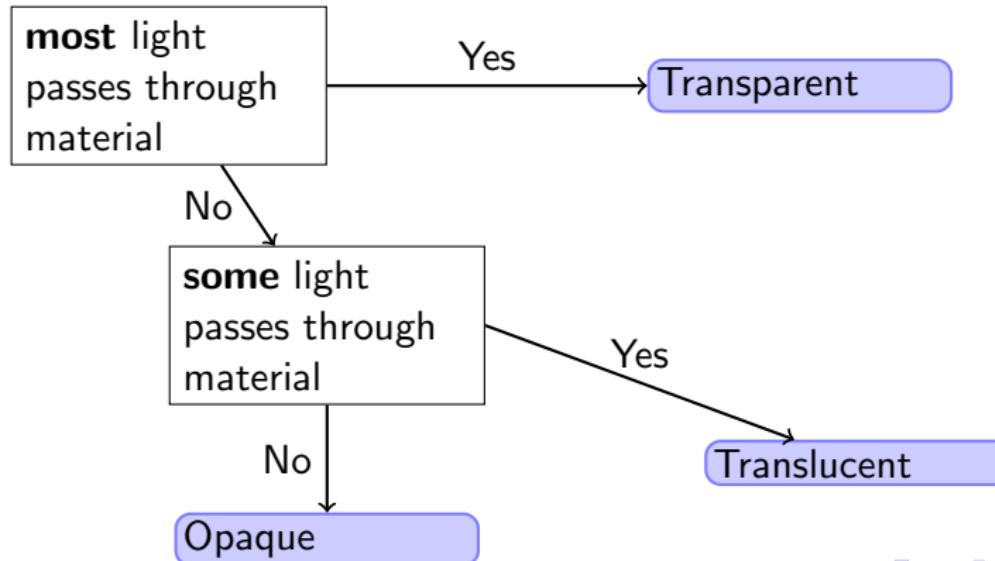


4 S2 III Transparent, Translucent and Opaque objects

Exercise

Classify the objects given below as transparent, translucent or opaque materials.

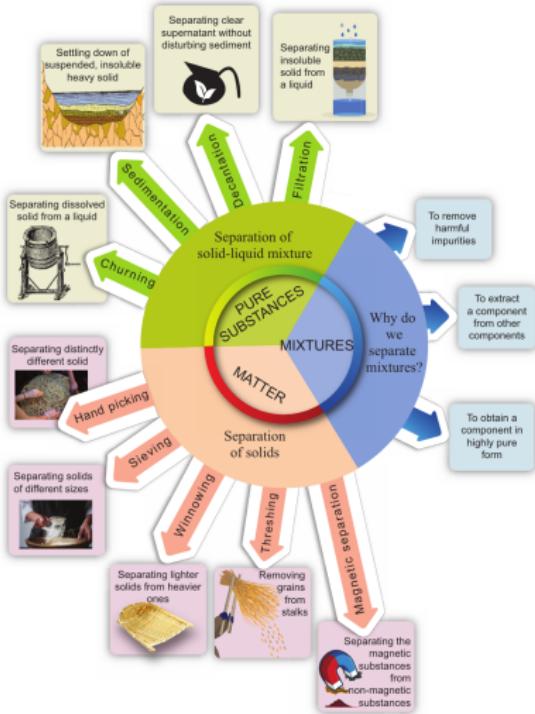
Air, Rock, Water, Aluminium foil, Mirror, Snow, Wooden board, Polythene bag, CD, Oil soaked paper, Glass tumbler and Coloured glass



6.3.6 Separation of Mixtures

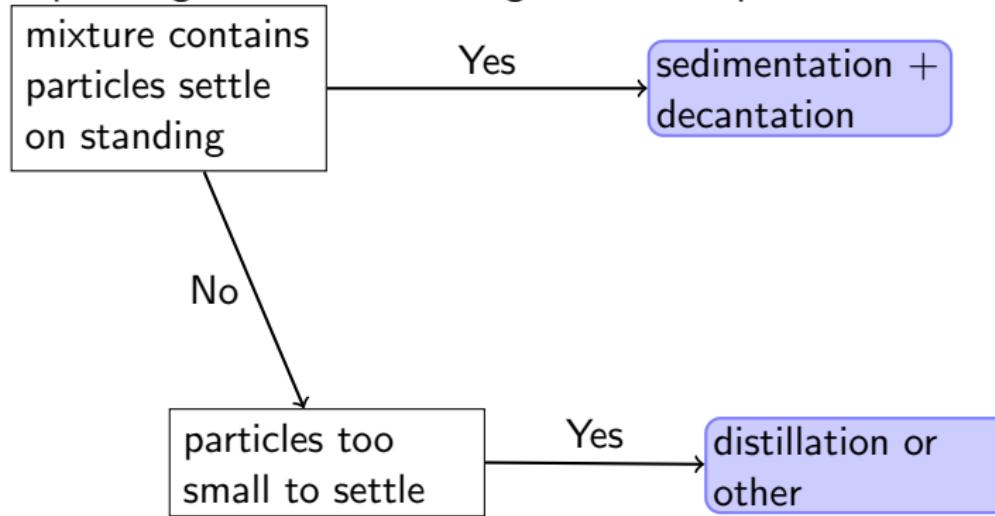


Separation Techniques



6.3.6 Separation of Mixtures

Separating mixture containing solid and liquid



Kerala SCERT Class 7, 8. Wonders of the Sky

Class - VII



The date of Full Moon in the calendar

May
5

The date of New Moon in the calendar

Number of days taken to reach New Moon from Full Moon

Examine the next month's calendar also . Find out how many days are needed for the Moon to reach the next New Moon from the Full Moon?



The date of Full Moon

Date of New Moon in the calendar

The number of days between two consecutive New Moons by checking both the calendars.

Computational Thinking Moments in the Science Textbooks

- ▶ Students **define a problem**

Computational Thinking Moments in the Science Textbooks

- ▶ Students **define a problem**
- ▶ **Decomposition:** break down a complex problem into manageable sub-problems.

Computational Thinking Moments in the Science Textbooks

- ▶ Students **define a problem**
- ▶ **Decomposition:** break down a complex problem into manageable sub-problems.
- ▶ Plan a method, design an experiment/solution, sequence actions: **Algorithm**

Computational Thinking Moments in the Science Textbooks

- ▶ Students **define a problem**
- ▶ **Decomposition:** break down a complex problem into manageable sub-problems.
- ▶ Plan a method, design an experiment/solution, sequence actions: **Algorithm**
- ▶ Abstraction and pattern recognition, focusing on relevant features. Tasks requiring comparison of data, drawing tables/graphs, identifying patterns, generalising from data, ignoring irrelevant detail

Computational Thinking Moments in the Science Textbooks

- ▶ Students **define a problem**
- ▶ **Decomposition:** break down a complex problem into manageable sub-problems.
- ▶ Plan a method, design an experiment/solution, sequence actions: **Algorithm**
- ▶ Abstraction and pattern recognition, focusing on relevant features.
- ▶ Testing, debugging, evaluation test the solution, reflect on limitations, verify fairness of test

Computational Thinking Moments in the Science Textbooks

- ▶ Students **define a problem**
- ▶ **Decomposition:** break down a complex problem into manageable sub-problems.
- ▶ Plan a method, design an experiment/solution, sequence actions: **Algorithm**
- ▶ Abstraction and pattern recognition, focusing on relevant features.
- ▶ Testing, debugging, evaluation
- ▶ Data visualisation Use of charts/tables/graphs to represent results