



# The ProbLemma's Channel Season 1 Guide

## Season 1 Episode 1: What Is Mathematics?

- The art of telling a story of how and why, wrapped into the language of logical connectives (NOT, OR, AND), quantifiers (universal, existential) and implications (IF P THEN Q)
- The study of structure divorced from any specific context

## Season 1 Episode 2: What Makes It Perfect?

- Exercise  $\neq$  Problem
- A Correct Practice Makes Perfect:
  - Understand the problem statement
  - Generate a solution (or multiple solutions)
  - Reflect (analyze failures)
  - Generalize and Abstract
- Problem **S1M1** formulated:
  - **S1M1**: radius of wholesome and broken rigid spheres



The above two episodes form [“The Fundamentals” play list](#).

## Season 1 Episode 3: Sphere, Sphere On The Wall, What's Your Radius After All? (Transform And Conquer)

- Problem **S1M1** solved
- Problem **S1M2** formulated:
  - **S1M2**: shortest paths between diametrically opposite vertices of a cube

## Season 1 Episode 4: A Story Of A Cubic Ant or Transform And Conquer

- Algorithms, Methods, Problem-Solving Approaches
- The mechanics of the “Transform And Conquer” problem-solving approach explained
- Problem **S1M2** solved
- Problem **S1M3** formulated:
  - **S1M3**: shortest circumnavigating orbit over a cube

## Season 1 Episode 5: A Cubic Magellansim (Transform And Conquer)

- Problem **S1M3** solved
- Problems **S1M4** and **S1M5** formulated
  - **S1M4**: shortest circumnavigating orbit over a regular tetrahedron
  - **S1M5**: cutting a regular tetrahedron in two halves by a shortest circumnavigating orbit

Season 1 Episode 6: A Tetrahedral Magellanism (Transform And Conquer)

- Problems **S1M4** and **S1M5** solved
- Problems **S1M6**, **S1M7** and **S1M8** formulated:
  - **S1M6**: shortest paths between diametrically opposite vertices of a regular octahedron
  - **S1M7**: shortest paths between two points on a regular tetrahedron with constraints
  - **S1M8**: swap positions of 4 chess knights on a 3x3 chessboard

Season 1 Episode 7: Knights On Horses Or Frogs On Mushrooms (Transform And Conquer)

- Problems **S1M6**, **S1M7** and **S1M8** solved
- Problem **S1M9** formulated:
  - **S1M9**: 100 light bulbs turned on and off



The above five episodes form the [“Transform And Conquer”](#) play list.

Season 1 Episode 8: The Flipping Fury Of The Dwarf Or Reinterpret And Conquer

- The mechanics of the “Reinterpret And Conquer” problem-solving approach explained
- Problem **S1M9** solved
- Problem **S1M10** formulated:
  - **S1M10**: a finite sum of squares of cotangents of a patterned argument

Season 1 Episode 9: One Cotangent, Two Cotangents (Reinterpret And Conquer)

- Problem **S1M10** solved
- Problem **S2M1** formulated:
  - **S2M1**: 5- and 7-gallon buckets to measure 1 gallon of water



The above two episodes are in the [“Reinterpret And Conquer”](#) play list.

## The ProbLemma's Channel Season 1 Index

Problem Number	Formulated In	Solved In
S1M1	<a href="#">Season 1 Episode 2</a>	<a href="#">Season 1 Episode 3</a>
S1M2	<a href="#">Season 1 Episode 3</a>	<a href="#">Season 1 Episode 4</a>
S1M3	<a href="#">Season 1 Episode 4</a>	<a href="#">Season 1 Episode 5</a>
S1M4	<a href="#">Season 1 Episode 5</a>	<a href="#">Season 1 Episode 6</a>
S1M5	<a href="#">Season 1 Episode 5</a>	<a href="#">Season 1 Episode 6</a>
S1M6	<a href="#">Season 1 Episode 6</a>	<a href="#">Season 1 Episode 7</a>
S1M7	<a href="#">Season 1 Episode 6</a>	<a href="#">Season 1 Episode 7</a>
S1M8	<a href="#">Season 1 Episode 6</a>	<a href="#">Season 1 Episode 7</a>
S1M9	<a href="#">Season 1 Episode 7</a>	<a href="#">Season 1 Episode 8</a>
S1M10	<a href="#">Season 1 Episode 8</a>	<a href="#">Season 1 Episode 9</a>