What is Inductive Reasoning

It is the process of reaching a **general conclusion** by examining **specific examples**.	**Conjecture** is the conclusion brought upon this reasoning. This conclusion may be right or wrong

Uses of Inductive Reasoning

Use Inductive Reasoning to Predict a Number	Using inductive reasoning to predict the next number
Use Inductive Reasoning to Make a Conjecture	Using inductive reasoning to make a conjecture about the relationship between the size of the resulting number and the size of the original number
Use Inductive Reasoning to Solve an Application	Scientists often use inductive reasoning.

What is Deductive Reasoning?

It is the process of reaching a conclusion by applying general assumptions, procedures, or principles.

Uses of Deductive Reasoning

Using Deductive Reasoning to Establish a Conjecture

Logic Puzzles	These can be solved by using deductive reasoning and a chart that enables us to display the given information in a visual manner.

Problem Solving with Patterns

Term of a Sequence	An ordered list of numbers such as 5,14,27,44,65 … is called a **sequence**.

Problem Solving with Patterns (cont)

	The numbers in a sequence that are separated by commas are the **terms of the sequence**.
	. It is customary to use the subscript notation to designate the nth term of a sequence.
The "nth" term is a formula with "n" in it which enables you to find any term of a sequence without having to go up from one term to the next.	a_1 represents the 1st term of a sequence.
"n" stands for the term number, so to find the 50th term, we would just substitute 50 in the formula in place of "n".	a_2 represents the 2nd term of a sequence.
	a_3 represents the 3rd term of a sequence..
	a_N represents the nth term of a sequence.
Difference Table	The difference table shows the differences between successive terms of the sequence

Polya's Four-Step Problem Solving Strategy

Understand the Problem	Can you restate the problem in your own words?
This part of Polya's four-step strategy is often overlooked. You must have a clear understanding of the problem.	Can you determine what is known about these types of problems?
	Is there a missing information that, if known, would allow you to solve the problem?
	Is there an extraneous information that is not needed to solve the problem?
	What is the goal?
Devise A Plan	Make a list of the known information. • Make a list of information that is needed.
. Successful problem solvers use a variety of techniques when they attempt to solve a problem.	Draw a diagram. • Make an organized list that shows all the possibilities.
	Make a table or a chart. • Work backwards.
	Try to solve a similar but simpler problem. • Look for a pattern.
	Write an equation. If necessary, define what each variable represents. • Perform an experiment.

Polya's Four-Step Problem Solving Strategy (cont)

	Guess at a solution, then check your result.

Carry out the Plan	
Once you have devised a plan, you must carry it out.	Work carefully. • Keep an accurate and neat record of all your attempts.
	Realize that some of your initial plans will not work and that you may have to devise another plan or modify your existing plan.

Review the Solution	Ensure that the solution is consistent with the facts of the problem. • Interpret the solution in the context of the problem.
	Ask yourself if there are generalizations of the solution that could apply to other problems.

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