

Reasoning: Induction & Deduction

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Induction is the natural thought process by which the mind considers several examples which differ somewhat but have something in common as well, from which the mind draws (induces) a general conclusion or rule. “Start with examples; end with rule.” “Specific examples to general conclusion.”

Deduction is the natural thought process by which the mind considers an existing rule and one specific example for which the rule applies, and then makes the application. “Start with a rule and one relevant example; apply the rule to the example.” “General conclusion to specific example.”

Try these.

I. The first time he asks her out, she has to study. The next time, she’s tired. The third time, her cousin is coming to town. The next time, she has to wash her hair. The fifth time, she has to finish a paper. (A) What conclusion might he draw? (B) Is this induction or deduction?

A. _____

B. _____

II. It is a fact that some species of fish can’t pump water over their gills, and must swim constantly to stay alive. A living member of one of those species is filmed in its natural state. (A) What conclusion might we draw? (B) Is this induction or deduction?

A. _____

B. _____

III. Conjella identifies several birds flying around Texoma: robin, mockingbird, grackle, scissortail, sparrow, and sparrow hawk. Conjella concludes that all birds fly. Such a conclusion is a *conjecture*, and people make them regularly. Children are especially energetic about making conjectures, as this is how they learn about much of the world. They learn to express these conjectures and test them with adults and older children. “Momma, do all birds fly?” How should a teacher or parent respond to such a conjecture?

IV. In the case of Conjella’s conjecture, a *counterexample* is useful. What are some counterexamples to her conjecture?

V. Having inspected squares, rectangles, rhombuses, trapezoids, and parallelograms, Overton concludes that all quadrilaterals have at least two parallel sides. The cognitive psychologists call this over-generalizing. The 1960 college English professor called this hasty generalization. Why? What kind of logic is being attempted?

VI. What kind of logic is “This is the year that the Cubbies go all the way.” ?