

**DISCRETE MATHEMATICS**  
**Knowledge has Organizing Power**

**Theme 3**  
**RECURRENCE RELATIONS AND COUNTING**  
**Self-Referral Dynamics**

**LESSON 8**  
**MATHEMATICAL INDUCTION**  
**Knowledge Unfolds Sequentially by Self-Referral**

**Wholeness of the Lesson**

Mathematical induction is a self-referral process that makes it possible to prove, in just two steps, that a property is true for an infinite number of integers.

*Science and Technology of Consciousness:* The self-referral process whereby pure consciousness knows itself gives rise sequentially to the whole manifest universe.

**Main Points**

1. The first step of mathematical induction is to prove the basis statement  $P(n_0)$  for some integer  $n_0$ .  
*Science and Technology of Consciousness:* The basis of all knowledge is pure consciousness, the Self, undivided unity.
2. The second step is to show how to get from one number to the next. This is the induction step: If  $P(k)$  is true, then  $P(k + 1)$  is true.  
*Science and Technology of Consciousness:* The Veda unfolds sequentially from pure consciousness in a self-referral process in which each stage is a commentary on the previous stage.
3. These two steps together imply that statement  $P(n)$  is true for all integers greater than or equal to  $n$ .  
*Science and Technology of Consciousness:* The Vedic sounds unfold into the entire manifest creation on the basis of two values: pure knowledge and its organizing power.
4. Strong induction is similar, but takes into account all previous steps, not just the previous step, in order to step from one number to the next.  
*Science and Technology of Consciousness:* Our evolution to higher states of consciousness is progressive— each step of progress depends on all the previous steps. That is why regular practice of the Transcendental Meditation technique is so important.

# UNITY CHART

Connecting the Parts of Knowledge  
with the Wholeness of Knowledge  
Proof by Induction

1. Some properties are true for each of the infinitely many integers.
  2. With mathematical induction, we can prove such a property using only a finite number of steps, each of which refers back to previous steps.
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3. **Transcendental Consciousness** is experience of our own self-referral state of consciousness. Consciousness is aware of only itself.
  4. **Impulses within the transcendental field:** When consciousness becomes aware of itself in Transcendental Consciousness, it starts the step-by-step self-referral process of creating all finite expressions in the universe.
  5. **Wholeness moving within itself:** In Unity Consciousness, we see every finite expression in creation in terms of the self-referral dynamics of our own infinite unbounded Self.

