

DISCRETE MATHEMATICS
Knowledge has Organizing Power

Theme 3
RECURRENCE RELATIONS AND COUNTING
Self-Referral Dynamics

LESSON 12
PERMUTATIONS AND COMBINATIONS
Capturing the Field of All Possibilities

Wholeness of the Lesson

Counting permutations (orderings) and combinations (choices) gives us all possibilities for certain types of situation.

Science and Technology of Consciousness: Our practice of the Transcendental Meditation technique establishes our awareness in the field of all possibilities, our own pure consciousness.

Main Points

1. There are $P(n, r) = n!/(n - r)!$ possible permutations of n objects taken r at a time and $C(n, r) = n!/(n - r)!r!$ combinations of n objects taken r at a time. These formulas are based on the multiplication principle.
Science and Technology of Consciousness: More expressed levels of creation have their source in the simplest level of life, our own consciousness.
2. The binomial theorem, which gives the coefficients of the expansion of $(x + y)^n$, is key to many counting problems. It can be derived from the formula for combinations.
Science and Technology of Consciousness: More expressed levels of creation have their source in the simplest level of life, our own consciousness.
3. Pascal's triangle organizes all the binomial coefficients into an orderly array, making it easier to compute binomial coefficients and understand their properties.
Science and Technology of Consciousness: Knowledge has organizing power. By transcending to the source of all knowledge located in our own consciousness, we have more organizing power.

UNITY CHART

Connecting the Parts of Knowledge
with the Wholeness of Knowledge

Permutations and Combinations

1. Formulas for permutations and combinations are derived from the multiplication principle.
2. The formula for combinations of n objects taken r at a time makes it easy to compute the coefficients in the expansion of $(x + y)^n$ and similar expressions.

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3. **Transcendental Consciousness** is a field of where there are no differences and no differentiation of parts.
 4. **Impulses within the transcendental field:** create differences, numbers, and counting.
 5. **Wholeness moving within itself:** In Unity Consciousness, we experience all differences in terms of the undifferentiated wholeness of our own unbounded Self.

