Result

Proposition 1. *Suppose A and B are finite sets. Then $|A \times B| = |A| \times |B|$.*

Proof. The proof involves induction on the size of one of the sets, and will, I believe, use the result of the number of a disjoint union; thus the dependence on the sheet Number of Disjoint Unions. $\square$

This is often called the *multiplication principle*, *rule of product*, or the *fundamental principle of counting*.

Number of Set Products

Natural Products   Number of Disjoint Unions

Natural Sums   Set Numbers

Finite Sets

Recursion Theorem   Equivalent Sets

Natural Order   Function Inverses

Peano Axioms   Function Composites   Function Images

Equivalence Relations   Functions

Natural Induction   Relations

Ordered Pair Projections

Set Products

Natural Numbers   Set Powers

Intersection of Empty Set   Successor Sets   Unordered Triples

Pair Unions   Partitions   Ordered Pairs

Set Differences   Set Intersections   Set Unions

Pair Intersections   Empty Set   Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Identities   Sets

Names

Letters   Objects