Why

We want to express how many parts (of equal size) of a whole there are.

Definition

A *fraction* (or *natural fraction*, *ratio*) is an ordered pair (a, b) of natural numbers where $b \neq 0$. a is called the *numerator* and b is called the *denominator*.

If $a < b$ then the fraction is called *proper* (a *proper fractiont*). Otherwise, the fraction is called *improper* (an *improper fraction*).

The fraction is a *unit fraction* if $a = 1$.

Notation

We denote the fraction (a, b) by a/b or

$$\frac{a}{b}$$

Etymology

The word fraction comes from the Latin *fractus*, meaning *broken*.

Natural Fractions

Natural Arithmetic

Natural Powers

Operations

Natural Products

Functions

Natural Sums

Recursion Theorem

Relations

Peano Axioms

Ordered Pair Projections

Natural Induction

Set Products

Natural Numbers

Set Powers

Ordered Pairs

Intersection of Empty Set

Successor Sets

Unordered Triples

Set Intersections

Set Symmetric Differences

Pair Unions

Pair Intersections

Set Complements

Set Unions

Set Differences

Empty Set

Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Identities

Sets

Names

Letters

Objects