

OGAP Fraction Framework (June 2009)

Part to Whole Relationships

Equivalence and Magnitude

Operations

Structures of Fraction Problems

FRACTIONS: unit fractions, non-unit fraction, proper fractions, improper fractions, mixed numbers, negative fractions, algebraic fractions

Models

Area
Set
Linear

To solve problems
To understand concepts
To generalize concepts

Wholes

- Same sized wholes
- Different sized wholes
- Given part, find whole

Number of Parts in Whole

relative to the magnitude of the denominator

Equal
Multiples
Factors

In a model or problem situation

Partitioning Strategies

Algorithmic halving (e.g., $1/2$, $1/4$, $1/8$)
Oddness (e.g., $1/3$, $1/5$, $1/7$)
Evenness (e.g., $1/6$, $1/10$, $1/12$)
Composition (e.g., for 12ths partitions into a 3x4 instead of a 1 x 12)

Number Lines

0 - 1
Negative to positive
More than 2 units
Unpartitioned
Partitioned

Classes of Fractions

Same numerators, different denominators
Different numerators, same denominators
Different numerators and denominators

Reasoning Strategies

Number sense
Unit fraction
Extended unit fraction
Modeling
Benchmarks/reference points
Equivalence
Common denominators
Density of Fractions

Operations

All Operations	Multiplication and Division
Estimation	Impact of multiplying or dividing by a fraction
Number sense	Partitive division
Modeling	Quotative division
Equivalence	

Fractional Strategy

Efficient or generalizable strategy:

Number sense
Estimation
Benchmarks
Unit fraction reasoning
Extended unit fraction reasoning
Out of equal parts
Equivalence
Efficient algorithm

Transitional Fractional Strategy

Student generated model
Strategy not efficient or generalizable (e.g., out of parts, building up)

Fractional Strategy with an Error or Misconception

Student generated model that is appropriate given situation, but contains an error

Appropriate operation or strategy given the situation, but solution contains an error (e.g., calculation, equivalence)

Non-Fractional Reasoning

Whole number reasoning
Inappropriate model, operation, or strategy given the problem situation
Misinterpreted a given model
Rule based reasoning, not linked to understanding