FRACTIONS

uses fractions, decimals, and percents interchangibly

fractions, decimals, and percents as rational numbers

fractions, decimals, and percents as operators

interchanging numerators to simplify first when multiplying

standard algorithms

ratio table for division

doubling and halving and the more generalized use of the associative property to eliminate a fraction

open array model for multiplication

the properties that hold for whole number operations also hold for rational numbers

using landmark fractions to make partial products

accumulated increase of a constant rate is the rate times the time

constant rate can be determined if the accumulated rate and time are known

multiplication and division of rational numbers are relations on relations

fractions may represent a rate

simplifies to make a common whole

using place value understanding to multiply and divide by powers of ten

use of double number line for addition and subtraction

using a common whole to add and subtract fractions

generalized use of a repertoire of strategies for whole number operations

skip counting or using repeated add to find a fraction of a whole

fractions can be thought of as operators

clock model

if the whole is shifted one can work with decimals using whole-number arithmetic

money model

uses money as landmark numbers

uses multiplication and division to make equivalent fractions

multiplication and division by ten make the whole shift to the right and to the left in a decimal representation

to add or subtract fractions a common whole is needed

equivalence is preserved when equivalent parts are combined

using a ratio table as a tool to make equivalent fractions

with decimal equivalences the numbers in different place-value positions are related by powers of ten

note: other 4 decimal computation strategies go here

ratio table

using proportional reasoning

doubles a denominator to halve a fraction

doubles numerator and denominator to make equivalent fractions

if numerators are common only denominators matter when comparing

analog electric meter

equivalence on a double number line

doubles numerator to multiply by two

uses a common whole to compare fractions

for equivalence the ratio must be kept constant

pieces don't have to be congruent to be equivalent

to compare fractions the whole must be the same

multiplication is connected to fractions (e.g. 3/4 = 3 x 1/4)

fair sharing

fractions may represent division with a quotient less than one

with unit fractions, the greater the denominator, the smaller the piece is

fraction bars

measurement

fractions express relationships the size or amount of the whole matters

using landmark fractions (e.g. 1/2, 1/4)

using landmark percentages (e.g. 50%)

using landmark decimal equivalents