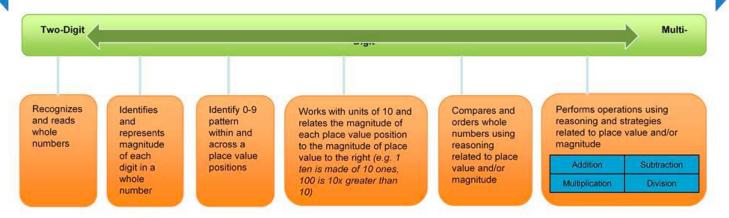
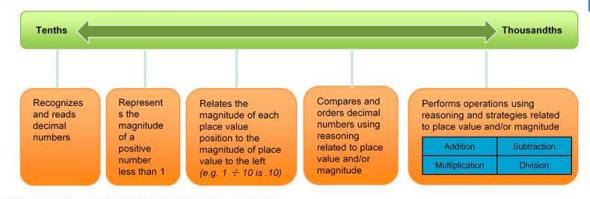
A Trajectory of Learning

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A Trajectory of Learning for Numbers and Operations in Base Ten - Understanding and Reasoning with Whole Numbers -

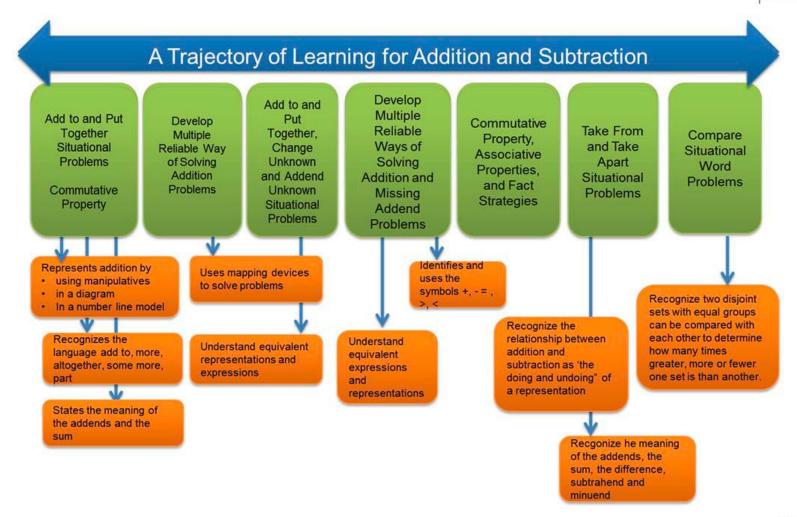


A Trajectory of Learning for Numbers and Operations in Base Ten - Understanding and Reasoning with Decimal Numbers -

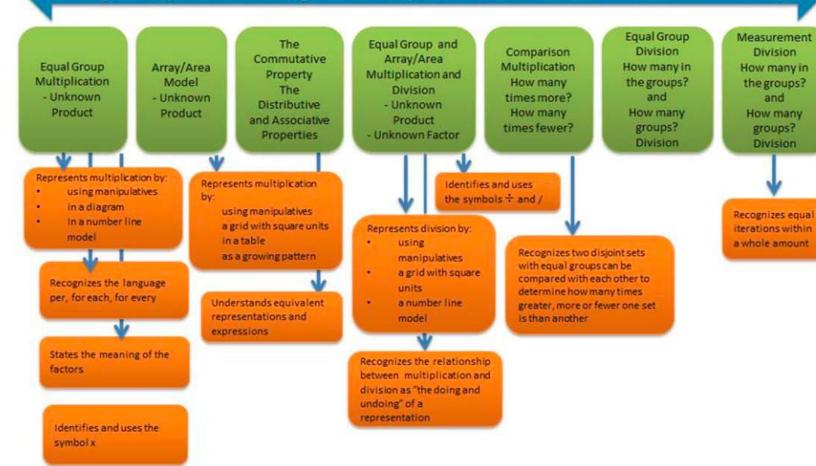


A Trajectory of Learning

ifl



A Trajectory of Learning for Multiplication and Division Relationships



A Trajectory of Learning A Trajectory of Learning for Fractions Add and Add and Multiply a subtract Multiply a subtract Recognize Compare Divide with fraction by fractions with fraction by fractions as fractions fractions with fractions a whole like numbers unlike a fraction number denominators denominators Recognize the Understand meaning of the equivalence numerator and the Use repeated denominator Determine how addition to solve many of a unit multiplication fraction are Understand taking a Understand that likeproblems contained in a portion of an amount Name fractions sized pieces can be whole number added and subtracted Represent fractions Determine how to Recognize that all pieces to need to be of partition a fraction into further fractional equall size before parts adding/subtracting

A Learning Trajectory

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A Trajectory of Learning for Ratios and Proportional Relationships

Given two quantities, identifies and writes the ratio relationship Demonstrates flexibility in manipulating the values to form part:part, part:whole, and whole:part ratios as needed

Models a ratio described in a problem in multiple ways

Forms equivalent ratios

Given two ratios, identifies if a proportional relationship exists Models a proportional relationship in multiple ways Solves simple contextual proportional problems

Recognizes the language per, for each, for every, and to, etc.

Identifies and uses the symbols ":", "/" as implying a ratio relationship

States the meaning of the quantities in a ratio relationship

Represents ratio relationships:

- using manipulatives
- · in a diagram
- in a diagram
 in a ratio table
- using ratio notation
- using a unit ratio or rate
- using percent

Forms equivalent ratios by:

- iterating or partitioning the initial ratio
- scaling (multiplying and/or dividing) both elements in the ratio by the same number, x

Represents proportional relationships using a:

- diagram
- table
- graphequation

Solves simple contextual proportion problems by:

- finding unit rate or constant of proportionality
- · graphing
- · forming ratio tables
- · forming equivalent ratios
- · creating equations