

## ASSIGNMENTS BY SKILL LEVEL

### LEVEL 3:

Define the Terms: **NUMERATOR** / **DENOMINATOR**, Fractions and Equivalence, using the graphic and the  $\frac{2}{6}$   $\frac{1}{3}$  Example.

List 3 Items: Counted with whole numbers and fractions

Tools: 3 Equivalent Fractions; Order Hi to Low; Halves and Quarters; Practice and assess all operating modes.

Simplification: How to Simplify using  $\frac{72}{96}$  Example and Prime Factorization Tutorial.

Improper to Mixed Numbers: generates 5 Improper Fractions to convert to Simplified Mixed Numbers. The Tool has 2 operating modes and shows whole groups and remainders.

### LEVEL 4:

How to: Add and Subtract has a tutorial with  $\frac{1}{2} + \frac{1}{3}$  Example and Lowest Common Denominator Tool.

How to: Multiply and Divide has a single Graphic defining the rules for **Multiplication** and **Division** of two fractions.

Fractional Operations:

A Tool operating in two modes using **denominators up to 5** and **denominators up to 12**, generate two fractions presenting them in **Add**, **Subtract**, **Multiply** and **Divide** operations.

Students may work these operations in any order as they complete each operation in hard mode.

Examples define: Proper Fractions ( $<1$ ), Improper Fractions ( $>1$ ) the Identity Fractions ( $=1$ ) and Reciprocals.

# FRACTIONS

## SECTION OVERVIEW

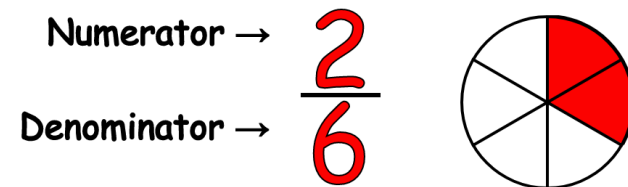
### PARTS and EQUIVALENCE

**DENOMINATOR** : on bottom tells how many total parts there are and names the fraction

**NUMERATOR** on top tells how many parts to count in the fraction

$\frac{2}{6}$  is Not Simplified

$\frac{1}{3}$  is Simplified



Fractions Equivalent to  $\frac{1}{3}$

Counting with Fractions

Fractions Starts with parts and equivalence defining the denominator numerator and structure of a fraction. A  $\frac{2}{6}$  vs  $\frac{1}{3}$  animation illustrates.

Counting Fractions starts with a discussion of wholes and parts and features the Order Hi to Low Tool In Easy mode numerators = 1, and only denominators need be compared. A help chart displays fractions side-by-side, The Halves and Quarters tool generates a number between 1 and 100. and operates in Easy, Medium and Hard modes.

Equivalence animates a circle half shaded hovering the fractions above further divides the circle illustrating the concept of equivalence and leading to a discussion about infinite equivalent fractions. The 3 Equivalent Fractions tool gives students the opportunity to be creative, by using an identity fraction to generate equivalent fractions.

## SIMPLIFICATION

Simplification features a tool generating 5 improper fractions to be converted to simplified mixed numbers. Detailed solutions show whole groups and remainders for each incorrect answer. A how to simplify tutorial starts with a  $72/96$  being simplified to  $3/4$  using prime factorization. A prime factorization tutorial showing factors of 96 and 97, and divisibility rules for 2 3 and 5 teach students

about factoring. In easy mode the tool generates numbers made from 3 primes either 2s 3s or 5s. In Hard mode the number is generated from 5 primes possibly a 7 or an 11.

There are graphics defining 4 types of fractions, Proper Improper Identity and Reciprocals that instructors and students may review. You may also review Prime Numbers to 120 in the Multiples Table in Counting.

## FRACTIONAL OPERATIONS

A tool generates two fractions and presents them in 4 operations add subtract multiply and divide. Detailed solutions showing steps for each operation help students study and learn.

A tutorial for addition includes a common denominator graphic and an animation

adding one half plus one third.

A lowest common multiples tool is great for helping students find lowest common denominators. A single graphic shows the rules for multiplying and dividing fractions.