NUMERACY
BUILDING FRACTION FLUENCY

Contents: Game Board
107 Tiles
Instructions

Grades: 2-9

Players: 2-4

Numeracy: Building Fraction Fluency provides a range of games that make it indispensable for use in grades 2-9. Skills and concepts addressed include fraction recognition, equivalent fractions, the key role of 1, and operations with fractions that ultimately include the four basic operations.

The 107 playing tiles consist of 21 with pictures of fractions and 86 with fractional numbers. All fractions with a common denominator of 12 are included. These represent ninety percent of those in common use. As their skills sharpen, players move from paper and pencil to mental computation. Easy-to-understand rules make it possible for play to start quickly.

Fraction Pairs games introduce students to basic fraction concepts and processes. *Fraction Triplets* emphasize computational fluency. Game options focus on key individual skills, permitting the teacher to address specific objectives.

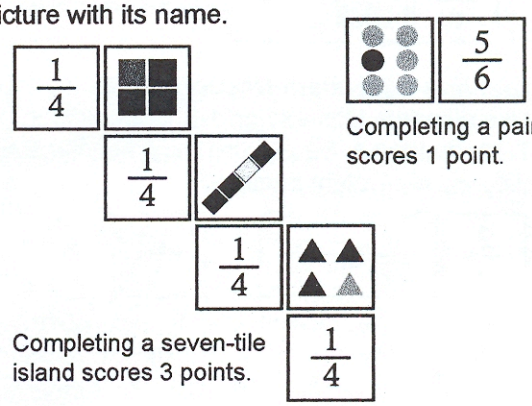
Mathematics Standards
Numeracy: Building Fraction Fluency supports state and national mathematics standards. You are encouraged to correlate the game's content with the number standards of your state. For comparison with national standards, consult *Principles and Standards for School Mathematics* published by The National Council of Teachers of Mathematics (NCTM). Reston, Virginia. 2000.

Key objectives:
- Recognize fractions as parts of the whole or parts of a group
- Name fractions pictured in a variety of models
- Understand the relative size of fractions
- Recognize and use equivalent fractions
- Determine and use common denominators
- Add, subtract, multiply, and divide fractions
- Perform two-step operations with fractions
- Select appropriate methods for computing fractions: paper and pencil, calculators, mental math, etc.

FRACTION PAIRS

Fraction Pairs offers three options. Choose the game that focuses on the desired learning goal.

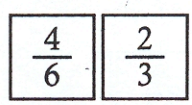
A. Recognizing fractions (49 tiles) 2-3 players
Choose all the picture tiles and these name tiles: 1/2, 1/3, 2/3, 1/4, 3/4, 1/6, and 5/6. Match a fraction picture with its name.



Completing a pair scores 1 point.

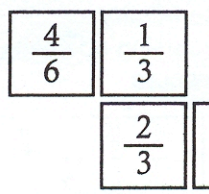
Completing a seven-tile island scores 3 points.

B. Recognizing equivalent fractions (56 tiles)
Choose all but the 1/8, 3/8, 5/8, 7/8, 1/12, 5/12, 7/12, and 11/12 tiles. Match equivalent fractions.



Each match scores 1 point. Completing a seven-tile island scores 3 points.

C. Pairing two fractions whose sum is *one* (84 tiles)
Use all name tiles except one 1/6 and one 5/6. Build islands of four and cap with a 1-inch square of construction paper, a different color for each player. After the dark squares are used, play the corners. The game ends when 15 islands have been formed.



Completing a four-tile island scores 3 points.

How to Play
1. Place the specified tiles face down and mix well.
2. Randomly draw four tiles and cover four of the dark board squares. Deal four tiles to each player.
3. In turn, players place one tile and draw a replacement tile.
4. Each row or column may have no more than two tiles. No tile may be placed against an identical tile.
5. Tiles form *islands* on the board. Players may add to an existing tile or start a new island on a dark square. Islands may touch at vertices, but never along the sides.
6. The player with the highest total score wins.

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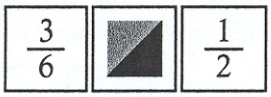
FRACTION TRIPLETS

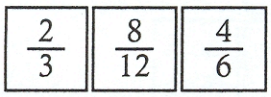
Fraction Triplets offers five options. Choose the game that focuses on the desired learning goal.

A. Building picture/equivalent fractions (81 tiles)
Use all picture tiles plus all name tiles except 1/8, 3/8, 5/8, 7/8, 1/12, 5/12, 7/12, and 11/12. Each triplet must have a picture tile and two different equivalent fractions. Play ends when no tile can be placed.

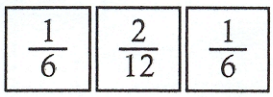


Completing a row of three tiles scores 1 point.

B. Building equivalent fraction families (60 tiles)
Use all name tiles except 1/8, 3/8, 5/8, 1/12, 5/12, 7/12, and11/12. Each triplet must have at least two different equivalent fractions.

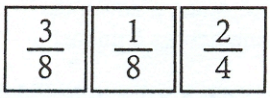


Three different equivalent fractions score 3 points.

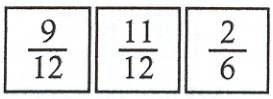


Triplets with only two different equivalents score 2 points.

C. Building triplets with sums of *one* or *two* (86 tiles)
Use all tiles except the picture tiles. Each triplet consists of three fractions whose sum is one or two. The sum is the score.

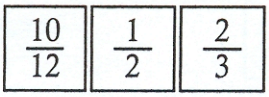


$\left(\frac{3}{8}+\frac{1}{8}\right)+\frac{2}{4}=1$

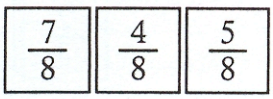


$\left(\frac{9}{12}+\frac{11}{12}\right)+\frac{2}{6}=2$

D. Building triplets with sums of *one* or *two* using any combination of addition and subtraction (86 tiles) Use all tiles except the picture tiles. Each triplet consists of three fractions that combine to make one or two using addition and subtraction. The sum is the score.



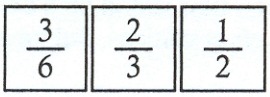
$\left(\frac{10}{12}-\frac{1}{2}\right)+\frac{2}{3}=1$



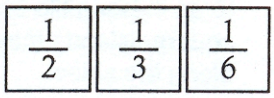
$\left(\frac{7}{8}+\frac{4}{8}\right)+\frac{5}{8}=2$

FOR EXPERTS

E. Building triplets with whole number sums of 1-10 using any combination of addition, subtraction, multiplication, and division (86 tiles)
Use all tiles except the picture tiles. Each triplet has a whole number result ranging from 1 to 10. The result is the score. The role of division is key since division results in greater numbers.



$\left(\frac{3}{6}\times\frac{2}{3}\right)\div\frac{1}{2}=4$



$\left(\frac{1}{2}\div\frac{1}{3}\right)\div\frac{1}{6}=9$

How to Play

1. Place the specified tiles face down and mix well.
2. Randomly draw four tiles and cover four of the dark board squares. Deal four tiles to each player.
3. In turn, players place one tile and draw a replacement tile. They may add to an existing tile or start a new row or column on a dark square.
4. For options D and E, players must explain the order of operations. Since operations are binary in nature, players first combine two numbers, and then combine the result with the third number.
5. Each row or column may have no more than three tiles. No tile may be placed against an identical tile.
6. The player with the highest total score wins.

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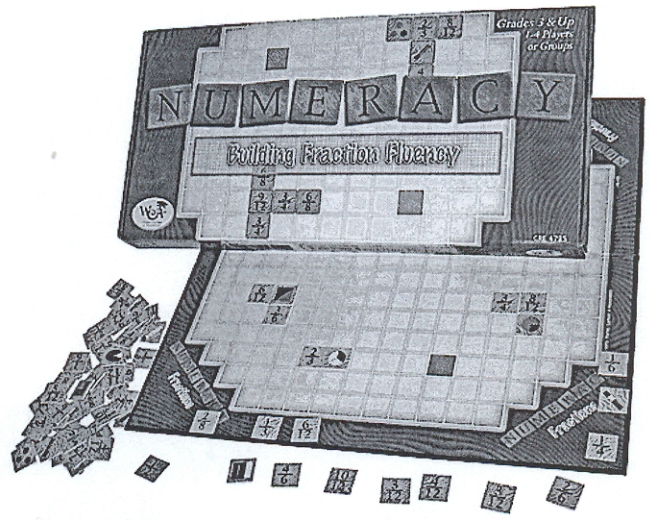
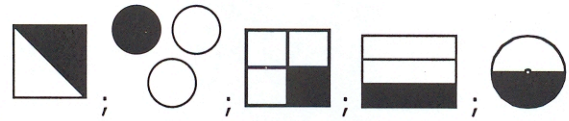


✔ 21 breuken met afbeeldingen:

$3\times\frac{1}{2}$ $3\times\frac{1}{3}$ $3\times\frac{1}{4}$ $3\times\frac{1}{4}$ $3\times\frac{1}{6}$ $3\times\frac{3}{4}$ $3\times\frac{5}{6}$

afbeeldingen zoals:  ;

✔ 86 klassieke breuken:

$4x\frac{1}{2}$	$4x\frac{1}{4}$	$4x\frac{1}{6}$	$2x\frac{1}{8}$	$2x\frac{1}{12}$	$2x\frac{7}{12}$
$4x\frac{1}{3}$	$3x\frac{2}{4}$	$3x\frac{2}{6}$	$3x\frac{2}{8}$	$3x\frac{2}{12}$	$3x\frac{8}{12}$
$4x\frac{2}{3}$	$4x\frac{3}{4}$	$3x\frac{3}{6}$	$2x\frac{3}{8}$	$3x\frac{3}{12}$	$3x\frac{9}{12}$
		$3x\frac{4}{6}$	$3x\frac{4}{8}$	$3x\frac{4}{12}$	$3x\frac{10}{12}$
		$4x\frac{5}{6}$	$2x\frac{5}{8}$	$2x\frac{5}{12}$	$2x\frac{11}{12}$
			$3x\frac{6}{8}$	$3x\frac{6}{12}$	
			$2x\frac{7}{8}$		