

One-on-One

Using equivalent fractions that total one

2 players

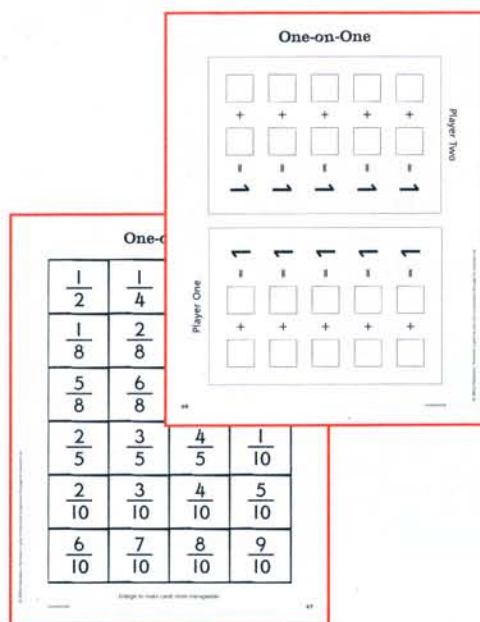
Purpose

In this game, the students practice adding common fractions to make a total of one. In many cases, the students will need to use equivalent fractions to make the mental computation easier.

Materials

Each pair of players will need

- A 'One-on-One' game board (page 46) as shown below.
- One (1) set of fraction cards. Make two copies of page 47 as shown below. Cut out and laminate the cards to make one set.



How to Play

The aim is to complete five number sentences that total 1.

- The cards are shuffled and placed face down in a stack.
- The first player draws five cards.
- The player then uses the fractions on the cards to complete one or more of the number sentences on the game board. Each fraction can only be used once.
- A player who successfully completes one or more number sentences must discard, to one side, all the cards he or she used. The player may choose to discard any unused cards also.

Example: Jacob draws $\frac{2}{10}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{2}{8}$, and $\frac{4}{5}$. He writes $\frac{2}{10} + \frac{4}{5} = 1$ and chooses to discard all five cards.

- If a player is unable to form any number sentences, at least one of his or her five fraction cards must be discarded.
- The used cards can be reshuffled and added to the stack again, if needed.
- The other player has a turn.
- Before each turn, players draw cards to replace those that were discarded during their previous turn.
- The first player to complete the five number sentences is the winner.

Reading the Research

Present fraction concepts in many different ways to facilitate learning and develop understanding. Students who do not really understand what a fraction means will have a hard time finding another fraction equivalent to it (Bezuk & Bieck, 1993).

Before the Game

Draw Figure A (shown at right) on the board. Shade one of the equal parts to show a fraction. Ask the students to describe the part that is shaded ($\frac{1}{4}$.) Invite a student to draw a vertical line by connecting the two points of the diagram as shown in Figure B. Again, invite the class to describe the number of equal parts in the rectangle (Eight equal parts or eighths.), then ask, *How many eighths are shaded?* ($\frac{2}{8}$.) Encourage the students to verbalize that $\frac{1}{4}$ is the same as $\frac{2}{8}$. Repeat this activity with other diagrams to show equivalent relationships between fifths and tenths, halves and fourths, halves and eighths, and so on.

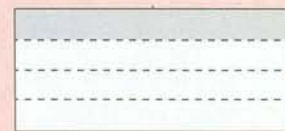


Figure A

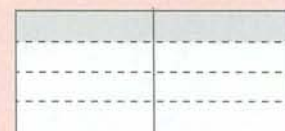


Figure B

During the Game

Watch to see what strategies students are using to decide which cards to discard or keep. Can students see it is a good strategy to keep two cards that add to $\frac{1}{2}$ because there are several cards that could be drawn that are equivalent to $\frac{1}{2}$? ($\frac{1}{2}$, $\frac{2}{4}$, $\frac{4}{8}$, and $\frac{5}{10}$.)

After the Game

Write a number sentence on the board as shown at right. Ask the students to find pairs of fraction cards that can be used to make the sentence true. They should compile their own list from the suggestions made by the class. At first, direct them to use fractions that have like denominators such as $\frac{6}{8} + \frac{2}{8}$, then challenge them to use pairs of fractions that have unlike denominators, such as $\frac{2}{10} + \frac{4}{5}$. Afterwards, invite the students to suggest other fractions that are not in the set of fraction cards, for example $1 = \frac{1}{3} + \frac{2}{3}$ or $1 = \frac{4}{20} + \frac{80}{100}$.

$$1 = \boxed{} + \boxed{}$$

Beyond the Game

- Change the rules of the game. The students could choose two cards and calculate the total. They then figure out the difference between their total and 1 (over or under). The player who is closer to 1 is the winner of the round. Play alternates for six rounds. The player who wins the greater number of rounds is the overall winner.
- Two students can use the fraction cards to play 'Concentration'. In this game, the players look for pairs of cards that total 1.

One-on-One

Player Two

+	+	+	+	+
=	=	=	=	=
↙	↙	↙	↙	↙

Player One

↙	↙	↙	↙	↙
=	=	=	=	=
+	+	+	+	+

One-on-One

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

Enlarge to make cards more manageable.