# Decimal 4 Sums to Win

Object of the Game

Players take turns drawing fraction cards (one tenths and one hundredths) and adding them together. After 4 rounds, the player with the total closer to 3.00, either under or over, wins!

Materials

- Decimal 4 Sums to Win Fraction Cards
  Print the cards or write the numbers on small pieces of paper.

- 2 Decimal 4 Sums to Win Record Sheets
  Print the record sheet or try one of the options below:

  » *Use graph paper or make your own (instructions included).*

  » *Use the preset screen in the free Number Pieces app (*apps.mathlearningcenter.org/number-pieces/?43g63dsl*) to record your sums.*

- Crayons or colored pencils in several colors.
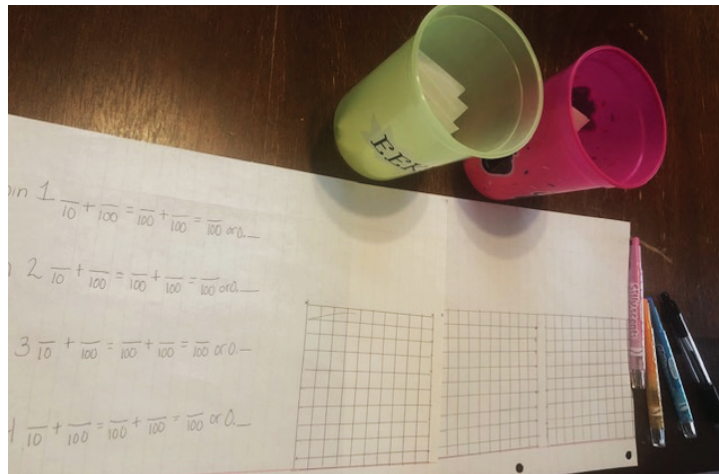
Skills

This game helps us practice

- Writing a fraction with a denominator (bottom number) of 10 as an equivalent fraction with a denominator of 100.

- Writing fractions with denominators of 100 (100th fractions) as decimals.

- Comparing two decimal numbers

- Modeling decimal values on the hundredths grid.

How to Play

1. Get ready to play:

   » Place the 10ths fraction cards in a cup or container and the hundredths fraction cards in a second cup or container.

   » Each players pulls one fraction card from the hundredths fraction cup. The player with the greater fraction goes first.

2. Player 1 pulls one fraction card from each cup and records the results in the first two blanks of the first equation on their Decimal 4 Sums to Win Record Sheet. Then they:

   » Rewrite the first fraction as an equivalent fraction with denominator 100

   » Add the two fractions

   » Show the answer as a decimal

   » Color in the first grid to show the sum
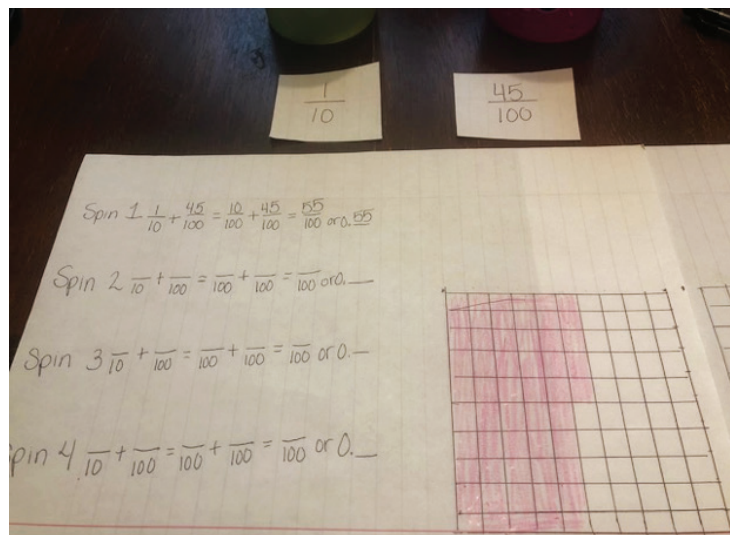
Player 1 pulled 1/10 and 45/100. They changed 1/10 to 10/100 to make an equivalent fraction. Then Player 1 added 10/100 and 45/100 to get a sum of 55/100, or .55. They shaded in 55 of the 100 squares on the first grid to show 55/100.

3. Player 2 takes a turn, pulling and recording fraction cards, writing an equivalent fraction, adding the fractions and writing the decimal, then coloring the grid.

4. Players continue taking turns until they have each had 4 turns.

   » Players should use a different color to shade in their grids each time they take a turn.

   » It's OK to go over 3.00. (That's what the 3 extra tenths at the end of the row of grids are for.)

5. After each player has taken 4 turns, each player adds their decimals and records the total on their record sheet.

6. Players record their partner's total and compare the 2 totals using the <, >, or = signs.

> Greater than   < Less than   = Equal to

7. Players circle the total that's closest to 3.00. The player with the total closest to 3.00, either under or over, wins!
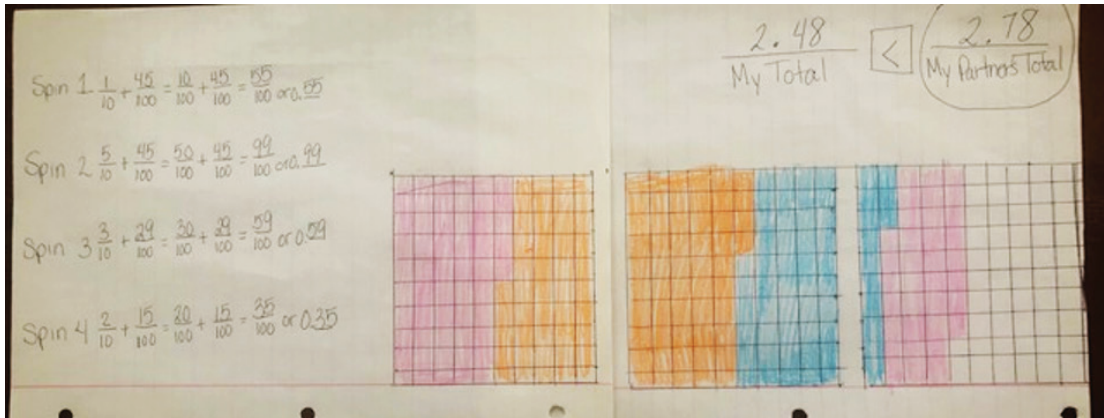

*My partner won the game because her total was 2.78, and she's only 22/100 from 3.00.
My total was 2.48, so I was 52/100 from 3.00.*

Tips for Families

Before you play:

- Think about what you know about decimals and fractions. How can this help you in this game?

- Think about the hundredths grid.

  » *Where do you see tenths?*

  » *Where do you see hundredths?*

  » *How many hundredths make up 1 tenth.*

  » *How can this help you write tenths as hundredths?*

  » *How can the hundredths grids help you find the sum of all 4 rounds?*
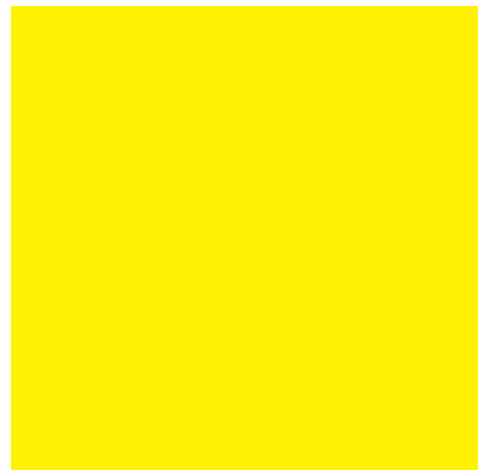
Hundredths Grid

During the game:

- Talk about the sums. *In what different ways can you write the answer? Can certain decimals or fractions be written in more ways than others?*

- Think about the easiest way to shade each fraction in. *Is there a better way than shading one square at a time?*

Change It Up

Making even small changes to a game can invite new ways of thinking about the math. Try making one of the changes below. How did it change your strategy for winning the game?

- Make up your own tenths and hundredths fraction cards to use.

- Make a new target total (2 35/100 for example) and the player closest to that total wins.

- Add Wild Cards to the decks. If a player pulls a wild card, they can choose the fraction they will add.

- Make the rule that you can't go over 3.00. If you play using this variation, you can choose to stop before taking all 4 turns if you are getting close to 3.00.

$\dfrac{1}{10}$	$\dfrac{2}{10}$	$\dfrac{3}{10}$
$\dfrac{4}{10}$	$\dfrac{5}{10}$	$\dfrac{1}{10}$
$\dfrac{2}{10}$	$\dfrac{3}{10}$	$\dfrac{4}{10}$

$\dfrac{60}{100}$	$\dfrac{15}{100}$	$\dfrac{24}{100}$
$\dfrac{29}{100}$	$\dfrac{35}{100}$	$\dfrac{38}{100}$
$\dfrac{45}{100}$	$\dfrac{49}{100}$	$\dfrac{55}{100}$

Decimal 4 Sums to Win Record Sheet

		Work Space
Round 1	$\overline{10} + \overline{100} = \overline{100} + \overline{100} = \overline{100}$ or 0. _____	
Round 2	$\overline{10} + \overline{100} = \overline{100} + \overline{100} = \overline{100}$ or 0. _____	
Round 3	$\overline{10} + \overline{100} = \overline{100} + \overline{100} = \overline{100}$ or 0. _____	
Round 4	$\overline{10} + \overline{100} = \overline{100} + \overline{100} = \overline{100}$ or 0. _____	

Use >, =, or < to compare your total to your partner's total. Circle the score closer to 3.00, under or over.

_____   _____
My Total   My Partner's Total

How to Make Grid Paper

Materials

- 2 sheets of lined notebook paper

- Straight edge
  ruler, book, cardboard, or something that is straight and sturdy

- Pencil or pen

- Tape, *optional*

How to Make

1. Turn one sheet of notebook paper so that the lines go up and down.

2. Place the other sheet of notebook paper over the top of the first, so that the lines go across. *If you look carefully, you will see the lines of the bottom sheet very faintly. If you can't see the lines, try in a room with a bright light. If it is a sunny day, you can tape the two sheets of paper to a window.*
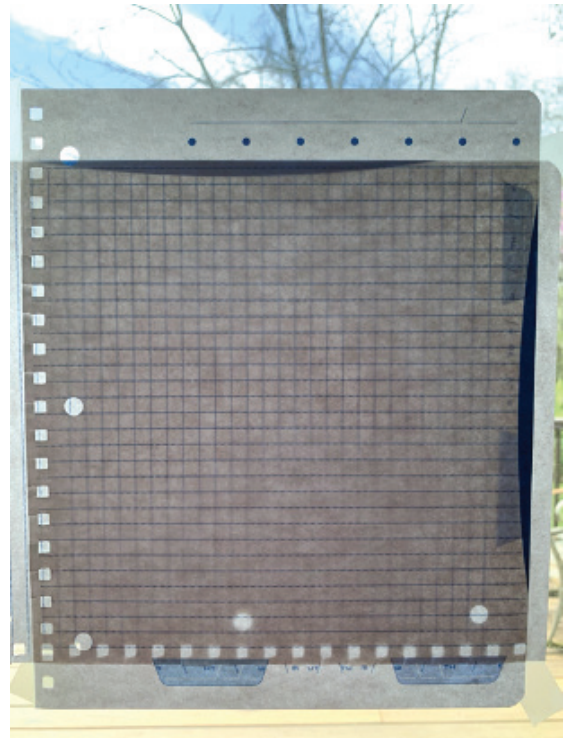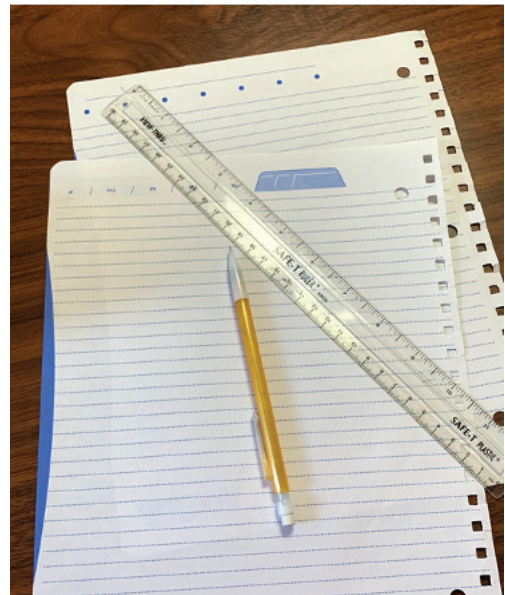
3. Using a ruler or other straight edge, trace the lines from the bottom sheet onto the top sheet.
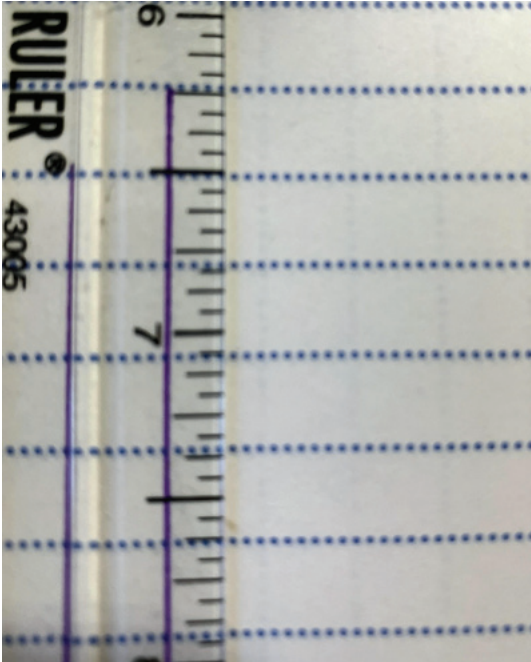
4. Continue tracing lines until you have created a grid the size you need. For example, if you need a 10 by 10 grid, trace 11 lines onto the top paper.