

Pizza



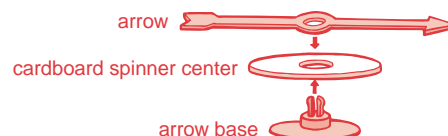
7 Games • 2-4 Players
Ages 6+

Contents:

13 pizzas - 64 fraction slices
3 double-sided spinners
1 cardboard spinner center
2 piece plastic spinner arrow

Fraction Fun™

Assemble the spinner arrow as shown in the picture below. This piece fits into the center of each spinner.



Serves 2-4 players / Grades 3+ (Includes a variation for Grades 1+)

Pizza with Everything

Identifying & Estimating Fractions up to 1

Appetizing Warm-Up activity: Take two $\frac{1}{2}$ slices, and build a whole pizza. Now place other size slices fractions faceup over the whole pizza to create another whole pizza with any variety of toppings. Read the fraction that describes each slice. When you are finished with the warm-up activity, return all pieces to the center pile.

Set-Up: Fit the assembled spinner center into spinner #1. Sort all the pizza slices into draw piles by size with the fraction numeral facedown. Place the draw piles in rows according to size.

Object of the Game: Be the first player to make a whole pizza using any combination of toppings.

Entrée-How to Play:

- Choose a player to go first. On your turn, spin and follow the directions.
- When you spin a fraction numeral, identify the matching slice of pizza. Turn the slice over, and check to see if you are correct.
- If you are correct, place your slice of pizza (fraction numeral faceup) in front of you and begin building your pizza.
- If you are wrong, put the slice of pizza back (fraction numeral facedown) in the appropriate draw pile.
- If you spin anything other than fraction numerals, follow the rules below:
 - Choose:** Choose a slice from any of the draw piles.
 - Lose:** Put any one of your slices of pizza back in the appropriate draw pile.
 - Swap:** Try to trade a slice with another player. If no one will trade, swap the slice with a new, different-sized slice from the center draw piles.
- When you spin a fraction that will make more than a whole pizza, start building a second pizza.
- On any turn instead of spinning, you may choose to move a slice from one of your pizzas to the other pizza.
- If you spin a fraction that will not fit in either of your pizzas, put the piece back and wait until your next turn. You cannot start more than 2 pizzas.
- Move clockwise to take turns spinning and identifying slices of pizza.
- The first player to complete one pizza wins.

For Younger Appetites

- **Variation for beginning players:** Sort the pizza slices into draw piles with all fraction numerals faceup.
- **Variations for grades 1+:** Use either spinner # 3 and play with only the $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$ size slices or use spinner #4 and play with only the $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{6}$ size slices. Sort the pizza slices into piles with all fraction numerals faceup.

Serves 2-6 players / Grades 3+

Pizza Sandwiches

Matching Equivalent Fractions Less Than or Equal to 1 (e.g, $\frac{1}{2}$ & $\frac{1}{6}$)

What is a Pizza Sandwich?

A pizza sandwich is made up of two layers of pizza slices. The bottom layer is always one larger slice of pizza. The top layer is made up of at least two slices of pizza that together are equal to the size of the bottom slice. There are two different ways to make the top layer of the sandwich. One way is to have the top layer made up of slices with the same fraction numeral. The other way is to have the top layer made up of slices with a variety of fraction numerals.

Set-Up: Fit the assembled spinner center into spinner #1. Sort all the pizza slices into draw piles by size with the fraction numeral side faceup. Place all draw piles to the side of the play area.

Object of the Game: Be the first player to complete and collect three equivalent matches (pizza sandwiches). Pizza sandwiches must be made up of three or more slices.

Entrée—How to Play:

- Spin the spinner. The player who spins the smallest fraction goes first. On your turn, spin and follow the directions.
- If you spin a fraction numeral, take a matching pizza slice from a draw pile and place it in the center. All players will use all the slices placed in the center to try to build equivalent matches – pizza sandwiches. As you add slices to the center, you may either build partial sandwiches or leave all slices separate until an entire sandwich can be built. Multiple sandwiches may be started in the center at the same time. Be the player to place the slice of pizza that completes an equivalent match, and take that pizza sandwich.
- If you run out of a particular fraction slice, spin again.
- On any turn, instead of spinning, you may choose to take any slice that has been placed in the center, and using slices from the draw piles exchange it for its fractional parts in order to complete a pizza sandwich.

Example: You need a $\frac{1}{6}$ slice to complete a pizza sandwich. Take a $\frac{1}{3}$ slice that already has been placed in the center and put it back in the draw pile exchanging it for two $\frac{1}{6}$ slices. Then use the $\frac{1}{6}$ slice to finish the equivalent match and collect that pizza sandwich. Put the remaining $\frac{1}{6}$ slice into the center for all players to use to build more pizza sandwiches. When exchanging slices you must say the equation expressing their equivalence (for example, " $\frac{1}{3} + \frac{1}{6} = \frac{1}{2}$ ").

- When you spin anything other than a fraction numeral, use the spinner rules below:

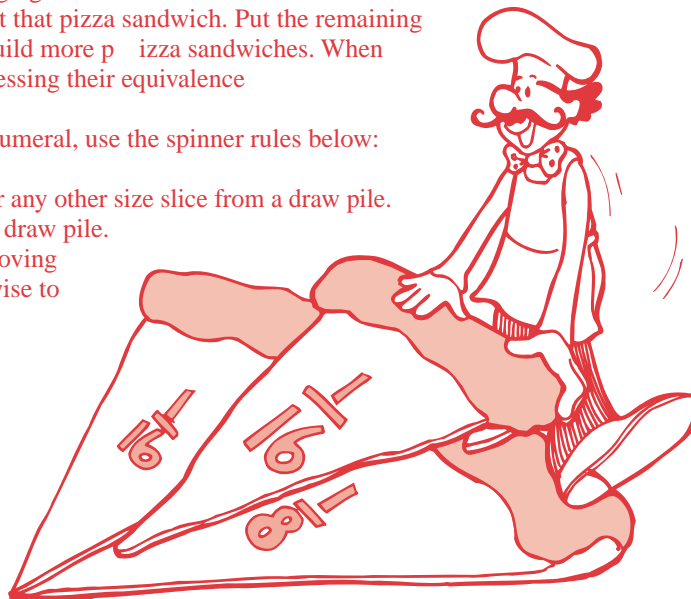
Choose: Choose any slice from a draw pile.

Swap: Trade one size slice from the center for any other size slice from a draw pile.

Lose: Put any slice from the center back in a draw pile.

- On any turn you may remake sandwiches by moving around multiple slices in the center. Move clockwise to take turns.
- Collect three pizza sandwiches and win.

An Equivalency Key can be found on the last page of the game directions.



Serves 2-6 players / Grades 3+

Who Gets the Pizza?

Problem Solving with Multiples of Fractions

Set-Up: Fit the assembled spinner center into spinner #1. Place one $\frac{1}{16}$, $\frac{1}{12}$, $\frac{1}{9}$, $\frac{1}{8}$, and $\frac{1}{6}$ slice fraction numeral faceup in the center. Each of these slices will serve as the beginning slice of one of five possible pizzas. Mix up the remaining pizza slices with the fraction numeral facedown in a convenient draw pile next to the playing area. (Mix the pieces with the fractional numeral faceup into piles by size for an easier game.)

Object of the Game: Be the first player to collect one whole pizza.

Entrée—How to Play:

- Spin the spinner. The player who spins the largest fraction goes first. On your turn, spin and follow the directions.
- If you spin a fraction numeral, choose a slice of pizza that matches that fraction numeral. Turn it over and see if you are correct.
- If you are correct, find a center slice or slices that this fraction numeral is an even part of, or a multiple of, and add it fraction numeral faceup to the center slice of pizza. **Example:** If you spin $\frac{1}{4}$, slice you may place it either with the $\frac{1}{8}$ slice, the $\frac{1}{12}$ slice, or the $\frac{1}{16}$ slice because $\frac{1}{4}$ is a multiple of any of these fractions. But you may not place the $\frac{1}{4}$ slice with either the $\frac{1}{6}$ or the $\frac{1}{9}$ slice because $\frac{1}{4}$ is not a multiple of $\frac{1}{6}$ or $\frac{1}{9}$. Remember that any slice added to build a pizza must be an even part of, or a multiple of, **all of the slices in that pizza.**
- If you spin anything other than a fraction numeral, follow the rules below:

Choose: Choose any slice from the draw pile. Name the fraction numeral it represents. Turn it over. If you are correct, add it to a center pizza. The slice that you are adding must be an even part of, or a multiple of, the slices in the center pizza.

Swap: Move a slice of pizza in the center from one pizza to another. Any slice moved to a new pizza must be an even part of, or a multiple of, all the slices already in that pizza.

Lose: Lose your turn.

- Move clockwise to take turns.
- Be the first player to complete one pizza and win the game.

Serves 3-6 players / Grades 4+

Pizza Tossing Contest

Practicing with Equivalents

Set-Up: Fit the assembled spinner center into spinner #5. Sort the pizza slices by size into draw piles with the fraction numeral faceup. Place the draw piles to the side of the play area. Each player takes one pizza slice of each size. Place the slices of pizza fraction numeral faceup in a row in front of you.

The spinner is divided into two rings. The caller calls out the fraction numerals in the outer ring. The inner ring shows the equivalent (the answer).

Object of the Game: Be the first player to toss all of your pizza slices into the center.

Entrée—How to Play:

- One person will be the “caller”. The caller spins and calls out fraction numerals.
- All the other players compete to be the first to find a slice equivalent to the called-out fraction. Players call out the equivalent fraction when they find it and raise their hand with the equivalent fraction slice. The caller then checks the inner ring of the spinner for the correct answer. If you are first player to raise your hand and you have the correct equivalent fraction slice raised, toss it in the center.
- If you are the first player and are wrong, take a slice from the draw piles that matches the correct equivalent and add it to your slices. The caller then spins a new fraction.
- When the caller spins a fraction and all the equivalents to that fraction have already been tossed into the center, the caller calls out the next fraction moving clockwise on the spinner. The caller continues calling fractions by moving clockwise on the spinner until one player can toss an equivalent slice into the center.
 - The caller spins and calls out fraction numerals again and again.
- Be the first player to toss all of your slices of pizza into the center and win the game.
- Take turns being the caller and play again.

Serves 2-4 players / Grades 4+

One Topping Pizza

Mix and Match Fraction Numerals to Create a One-Topping Pizza Problem Solving with Equivalencies to Make a Whole

Set-Up: Fit the assembled spinner center into spinner #2. Sort all the pizza slices into draw piles by size, with the fraction numeral facedown. Make sure that the toppings in each draw pile are mixed up and that at least one slice of each topping is represented on the top of each of the draw piles.

Object of the Game: Be the first player to build a complete pizza of just one topping (for example, all green pepper slices or all olive slices).

Entrée–How to Play:

- The youngest player goes first. On your turn, spin and follow the directions.
- When you spin a variety of pizza, check the tops of each draw pile to find a slice with that topping. If there is more than one slice with that topping, choose the size slice that you prefer. Say the fraction numeral that slice represents. Turn the slice over, and check to see if you are correct.
- If you are correct, place your slice of pizza (fraction numeral faceup) in front of you and begin building your pizza.
- If you are wrong, put the slice of pizza back on the bottom of the appropriate draw pile.
- If you spin and cannot find that variety of pizza on the top of any of the draw piles, take a slice with that topping from another player. If no other player has a slice of that variety, spin again.
- If you spin anything other than a variety of pizza, follow the rules below:

Take: Take a slice from another player.

Choose: Choose any variety that you would like to add to your pizza from the top of any draw pile.

Lose: Put any one of your slices of pizza back on the bottom of the same size draw pile. If you don't have any slices, spin again.

- You may take a larger slice of pizza than you need if you trade it with another slice (or slices) already in your pizza. Remove enough pieces so that the larger slice fits into your pizza. Return any extra slices to the bottom of the appropriate draw piles. You may never keep more than one whole pizza.
- After following the spinner directions, it is the next player's turn to spin.
- Move clockwise to take turns spinning and identifying slices of pizza.

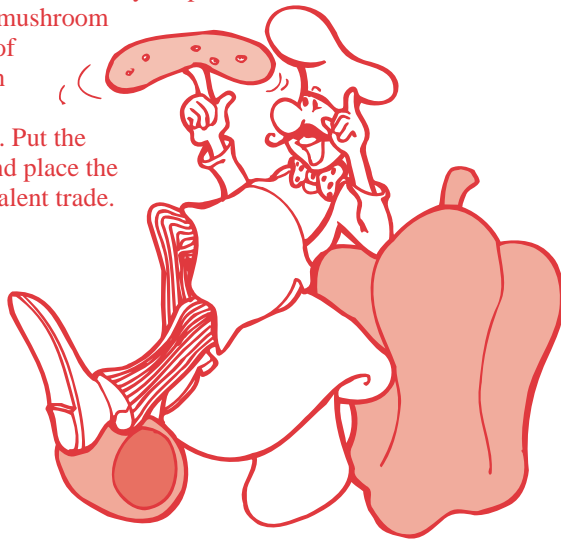
How to make your pizza into a one-topping pizza: On any turn, instead of spinning, you may trade in one or more slices of your pizza for equivalent slices. You must say the equation that shows that the slices are equivalent. Only one equivalent trade is allowed per turn.

Example of an Equivalent Trade: Since you have two mushroom slices in your pizza, you would like to build a mushroom pizza. There is a $\frac{1}{4}$ slice of mushroom pizza on the top of the $\frac{1}{4}$ slice pile. You already have a $\frac{1}{8}$ slice of green pepper, a $\frac{1}{16}$ slice of olive, and a $\frac{1}{16}$ slice of pepperoni in your pizza that you would like to trade in for the $\frac{1}{4}$ slice of mushroom. Say the equation showing that $\frac{1}{8} + \frac{1}{16} + \frac{1}{16} = \frac{1}{4}$. Put the three smaller slices back on the bottom of the appropriate piles, and place the $\frac{1}{4}$ slice of mushroom in your pizza. This is considered one equivalent trade.

Note: "Everything" pizza slices can be used as a substitute for any topping. You may use as many everything slices as you like in your pizza.

- The first player to complete a one-topping pizza wins.

Variation for simpler appetites: Place the pizza slices fraction numeral faceup for an easier game.



Serves 2-4 players / Grades 4+
Every Way You Slice It

Manipulating Equivalent Fractions

Set-Up: Fit the assembled spinner center into spinner #6. Sort all the pizza slices into piles by size with the fraction numeral faceup. (These piles will be called the center piles.)

Object of the Game: Be the first player to collect one of each **size** slice of pizza.

Entrée—How to Play:

- The spinner is divided into two rings. The inner ring shows the amount of pizza that you must take. The outer ring shows how many slices you must use to make up that amount.
- Spin the spinner. The player who spins the largest slice of pizza goes first. On your turn, spin and follow the directions.
- When you spin a fraction numeral and a number of slices, take that number of slices. Choose slices that add up to equal that fraction numeral you spun.
- Start two piles. One pile will be your collection pile where you will collect one of each size slice, and the other pile will be for your extra slices.

Example: If you spin $1/2$ on the inner ring and 4 on the outer ring you must take 4 slices equal to $1/2$. There are two ways to do this:

1) The **easiest** way is to take 4 equal slices adding up to $1/2$ ($1/8 + 1/8 + 1/8 + 1/8 = 1/2$). Take one $1/8$ slice for your collection and 3 $1/8$ slices as extras.

2) The **fastest** way to play is to take as many different sizes as you can to equal $1/2$ (because the object of the game is to collect one slice of each size). Remember, there are 8 different sizes ($1/8 + 1/4 + 1/16 + 1/16 = 1/2$). Place $1/4$, $1/8$ and $1/16$ in your collection and the remaining $1/16$ with your extra slices. Your extra slices can be used to replace slices taken from your collection or for you to exchange for equivalent slices. When you exchange slices, always say the equation expressing their equivalence.

- If you take a size slice that you already have, place it with your extra slices.
- On another turn, instead of spinning, you may exchange extra slices for slices of equivalent value. These slices may vary in size as long as when added together, they are equal to the size of the slice being traded. **Example:** You need a $1/2$ slice for your collection. In your extra slices you have two $1/8$ slices and one $1/4$ slice.

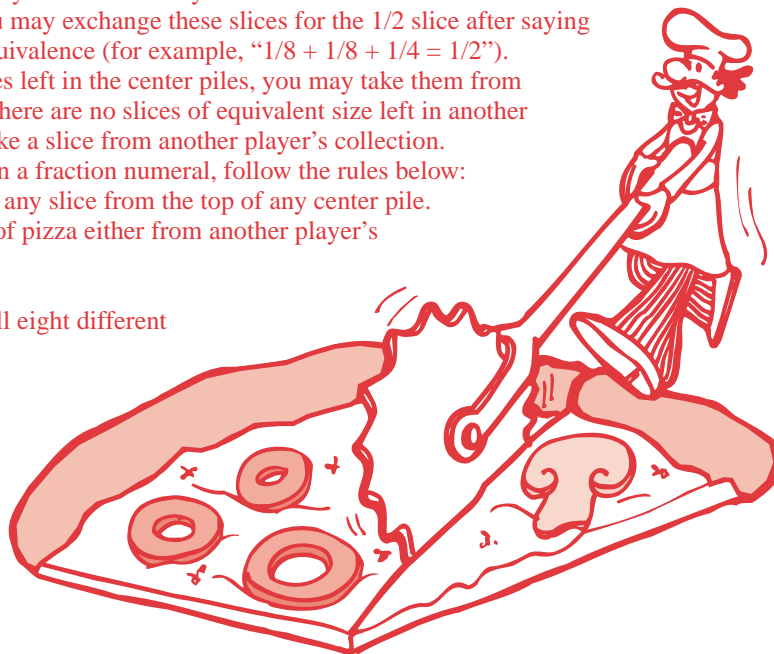
Together they add up to $1/2$. You may exchange these slices for the $1/2$ slice after saying the equation expressing their equivalence (for example, " $1/8 + 1/8 + 1/4 = 1/2$ ").

- If there are no equivalent slices left in the center piles, you may take them from another player's extra slices. If there are no slices of equivalent size left in another player's extra slices, you may take a slice from another player's collection.
- If you spin anything other than a fraction numeral, follow the rules below:

Choose any Slice: Choose any slice from the top of any center pile.

Take a Slice: Take a slice of pizza either from another player's collection or extra slices.

- Move clockwise to take turns.
- Be the first player to collect all eight different size fraction slices and win!



Serves 2 players with a variation for up to 4 players / Grades 5+

Pizza Slice-Up

Adding and Subtracting Fractions

Set-Up: Fit the assembled spinner center into spinner #1. Sort all the pizza slices into draw piles by size with the fraction numeral faceup. Place the draw piles off to the side of the play area. These draw piles will only be used for “equivalency exchanges.” Use eight $\frac{1}{2}$ slices to make 4 whole pizzas. Place these 4 pizzas in the center for the players to “slice up.” (When you slice up the pizza, you may use the equivalency key to make sure the slices are equal.)

Object of the Game: Be the first player to build your own whole one-topping pizza by slicing up the center pizzas.

Entrée–How to Play:

- Spin the spinner. The player who spins the smallest fraction goes first. On your turn, spin and follow the directions.
- When you spin a fraction numeral, remove a slice of a center pizza that matches that fraction numeral to build your own pizza. If there is not a slice in the center pizzas that matches that fraction numeral, use the draw piles to make an equivalency exchange for a slice that is in the center pizzas. The exchange must include the fraction numeral that was spun. Keep the slice that matches the fraction numeral to build your own pizza. Put the remaining slices back into the center pizzas.

Example of an “Equivalency Exchange”: You spin $\frac{1}{4}$. There are no $\frac{1}{4}$ slices in the center pizzas, but there are two $\frac{1}{8}$ slices and a $\frac{1}{2}$ slice. There are two things you can do: break apart a slice or add slices together.

To break apart a slice: Take a $\frac{1}{2}$ slice. Return it to a draw pile and exchange it for two $\frac{1}{4}$ slices. Place one $\frac{1}{4}$ slice back in the center pizza and take the other $\frac{1}{4}$ slice to use in building your own pizza.

To add slices together: Exchange the two $\frac{1}{8}$ size slices, placing them back into the $\frac{1}{8}$ draw pile and take a $\frac{1}{4}$ slice from the $\frac{1}{4}$ draw pile to use in building your own pizza.

- When exchanging slices, you must always say the equation to show that the slices are equivalent.
- If you can neither match the fraction numeral spun nor exchange any of the center pizza slices to make that fraction, take that fraction slice from the draw piles and put it in the center with the remaining pizzas.
- If you spin anything other than a fraction numeral, follow the rules below:

Choose: Choose any slice from the center pizza, and use it to build your own pizza.

Swap: Trade a slice with another player. If no other player will trade with you, trade a slice with any different-sized slice from a draw pile.

Lose: Return a slice of your pizza to the pizzas in the center.

- **How to make a one-topping pizza:** On any turn, instead of spinning, use the draw piles to trade in one or more slices of your pizza for equivalent slices. You must say the equation that shows that the slices are equivalent. Only one trade is allowed per turn. “Everything” pizza slices can be used in place of any type of pizza topping.
- Move clockwise to take turns.
- Be the first player to build a whole one-topping pizza and win the game!

For a Larger Appetite

Variation for 3 or 4 players: Build a whole pizza with a variety of toppings.

Equivalency Key:

$$\begin{array}{llll} \frac{8}{16} = \frac{1}{2} & \frac{4}{12} = \frac{1}{3} & \frac{4}{16} = \frac{1}{4} & \frac{2}{12} = \frac{1}{6} \\ \frac{6}{12} = \frac{1}{2} & \frac{3}{9} = \frac{1}{3} & \frac{3}{12} = \frac{1}{4} & \frac{2}{16} = \frac{1}{8} \\ \frac{4}{8} = \frac{1}{2} & \frac{2}{6} = \frac{1}{3} & \frac{2}{8} = \frac{1}{4} & \frac{2}{18} = \frac{1}{9} \\ \frac{3}{6} = \frac{1}{2} & & & \frac{2}{24} = \frac{1}{12} \\ \frac{2}{4} = \frac{1}{2} & & & \frac{2}{32} = \frac{1}{16} \end{array}$$



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