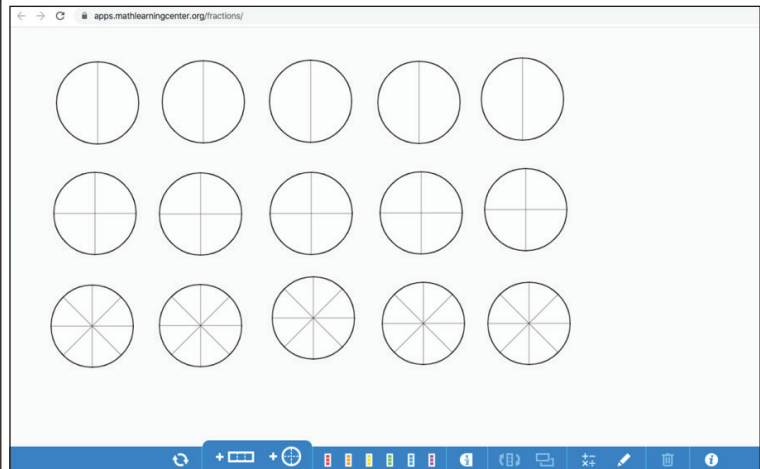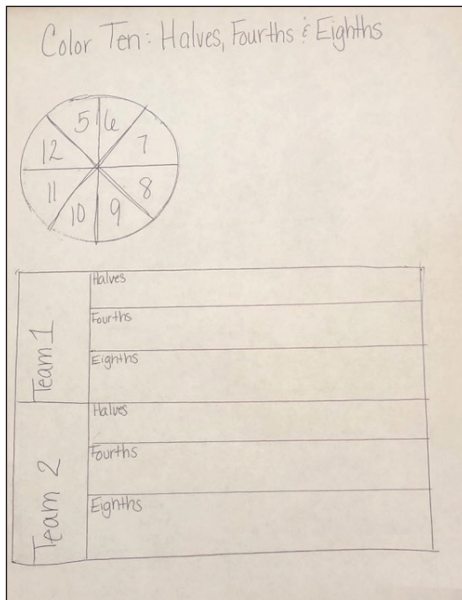# Color 10 Fraction Game

Object of the Game

Players take turns spinning a spinner and deciding which fractions to color for each turn. The player who comes the closest to coloring in 10 wholes after 5 turns, either over or under, wins!

Materials

- Color 10 Record Sheet (There are two versions of this game.)
  Print a record sheet or use a pencil and paper to draw your own. You could record your moves using the free Fractions app at www.mathlearningcenter.org/resources/apps/fractions. *The spinner for each game variation is printed on the record sheet. If you don't have a copy or can't print one, use a digital spinner or make your own.*

- Crayons, markers, or colored pencils for each player

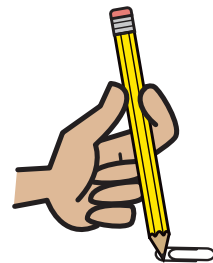- Pencil or pen and a paper clip or safety pin for the spinner

Color 10: Halves, Fourths & Eighths shown in the Fractions app

Skills

This game helps us practice:

- Recognizing equivalent fractions

- Comparing fractions with different numerators and denominators

- Adding fractions and mixed numbers

How to Play

1. Get ready to play:

   » Choose a version of the game to play.

   » Players share a record sheet. Print or make a record sheet. If you're playing on the Fractions app, print a record sheet so you have a spinner, or make one.

   » Decide who will go first.

2. Player 1 spins the spinner. The numbers on the spinner tell how many halves, fourths, or eighths (Version 1) to color. Then the player colors in the circles and records the fraction.

   » If the player spins 12, for example, the player could choose to color in 12 halves, 12 fourths, or 12 eighths.

   » Players may not color more than one type of fraction on a turn. For example, a player cannot color some fourths and some eighths on the same turn.
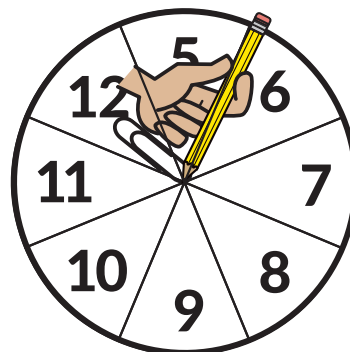
Nana: The spinner landed on 12. Are you going to color in 12 halves, 12 fourths, or 12 eighths?

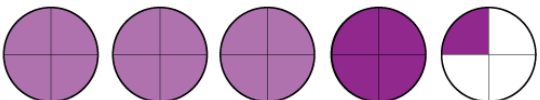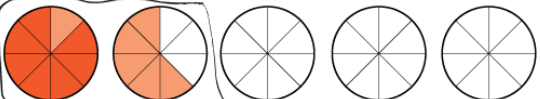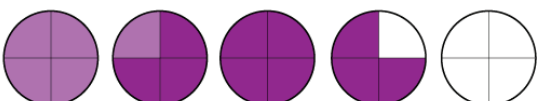*Mia: I can't color in 12 halves because there are only 10 of them. I think I'll color 12 fourths. If I color in 12 eighths, it'll only fill 1 circle and 4 more eighths. That won't be a very good start since we're trying to fill 5 circles.*

3. Player 2 takes a turn spinning and coloring fractions in their row of circles on the record sheet.

$$\frac{7}{2} = 3\frac{1}{2}$$
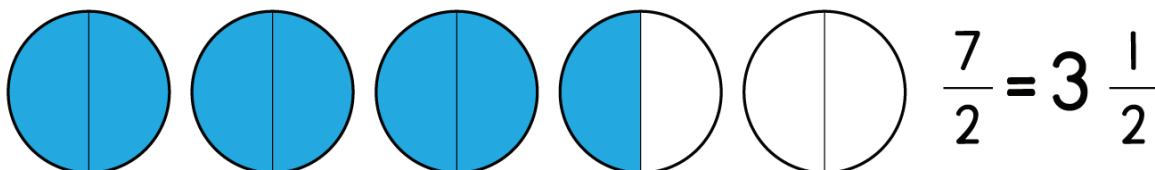
Nana: I got 7. I think I'll take it in halves, and $\frac{7}{2}$ is $3\frac{1}{2}$ circles! If I took it in eighths, I wouldn't have filled even 1 circle.

4. Players continue spinning the spinner and coloring in fractions on their rows of circles until each player has taken 5 turns.

   » Players might want to use a different color for each turn. For example, coloring their first spin in red, their second in blue, their third in green, and so on. This makes it easy to see when each player has taken five turns.

   » Another option is to use tally marks to keep track of turns.

5. After five turns each, players calculate their totals and compare the results.

   » Add the fractions in each box.

   » Convert the totals to mixed numbers.

   » Record the total from each row below the circles.

6. The player who gets closest to 10 whole circles after five spins, either under or over, wins.

Player 1

$$\frac{8}{2} = 4$$

$$\frac{12}{4} + \frac{5}{4} = \frac{17}{4} \qquad \frac{17}{4} = 4\frac{1}{4}$$

$$\frac{7}{8} + \frac{6}{8} = \frac{13}{8} \qquad \frac{13}{8} = 1\frac{5}{8}$$

Score: $4 + 4\frac{1}{4} + 1\frac{5}{8} = 9\frac{7}{8}$

Player 2

$$\frac{7}{2} = 3\frac{1}{2}$$

$$\frac{5}{4} + \frac{10}{4} = \frac{15}{4} \qquad \frac{15}{4} = 3\frac{3}{4}$$

$$\frac{11}{8} + \frac{7}{8} = \frac{18}{8} \qquad \frac{18}{8} = 2\frac{2}{8}$$

Score: $3\frac{1}{2} + 3\frac{3}{4} + 2\frac{2}{8} = 9\frac{1}{2}$

Mia: I got $9\frac{7}{8}$ for my score, Nana. I added the whole numbers: 4 + 4 + 1 is 9. Then I looked at the fractions. At first, I wasn't sure what to do, but then I remembered that $\frac{1}{4}$ is the same as $\frac{2}{8}$, and then it was easy because $\frac{5}{8} + \frac{2}{8}$ is $\frac{7}{8}$.

$$\frac{7}{8} + \frac{6}{8} = \frac{13}{8} \qquad \frac{13}{8} = 1\frac{5}{8}$$

Score: $4 + 4\frac{1}{4} + 1\frac{5}{8} = 9\frac{7}{8}$

$$4 + 4\frac{2}{8} + 1\frac{5}{8} = 9\frac{7}{8}$$

Nana: I got the same answer, but I used the pictures. In my head, I moved one of the fourths down into that circle with $\frac{5}{8}$, and I could see there were $9\frac{7}{8}$ circles colored in.

And that makes you the winner! You filled all but $\frac{1}{8}$ of the tenth circle.
I still have $\frac{1}{2}$ of the tenth circle to color in.

Tips for Families

Before the game:

- Talk about the fractions. *What do you notice? How are they alike? How are they different? How many parts make a whole? How could you make some equivalent fractions? How many fourths are in 1 whole? How many fourths are in $\frac{5}{4}$? What's another name for $\frac{5}{4}$?*
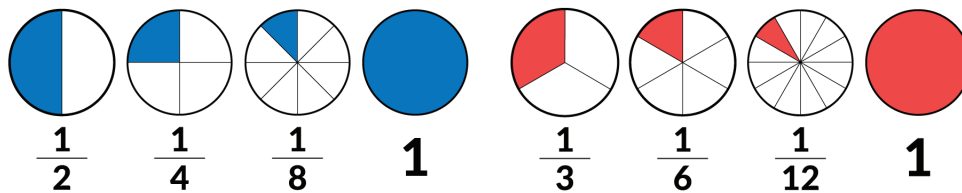
During the game:

- Share your thinking out loud as you decide how to color in your fractions. Remember, the decisions children make are influenced by their current understanding of fractions. For example, if you spin a 9, you can shade 9 halves, 9 fourths, or 9 eighths. You need to know which is bigger and which is smaller and whether you need more or less.

- Consider counting the fractions as you color them in: *one-fourth, two-fourths, three-fourths, four-fourths, five-fourths,* and so on.

- Use a different color for each turn or make tally marks to keep track of the number of turns. A game ends after each player has taken five turns.

- To determine the score, you need to add mixed numbers or improper fractions. Listen to strategies and ask questions when needed. Some children will rely on the pictures, while others may use a number line or add the whole numbers first, and then think about the fractions that are left.

After the game:

- Ask questions:

    » *Which is closer to ten, 9 7/8 or 10 1/4? How do you know?*

    » *If we played Color 10 again, and you are very close to 10, would you want to fill in $\frac{7}{8}$ or $\frac{7}{2}$?*

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.
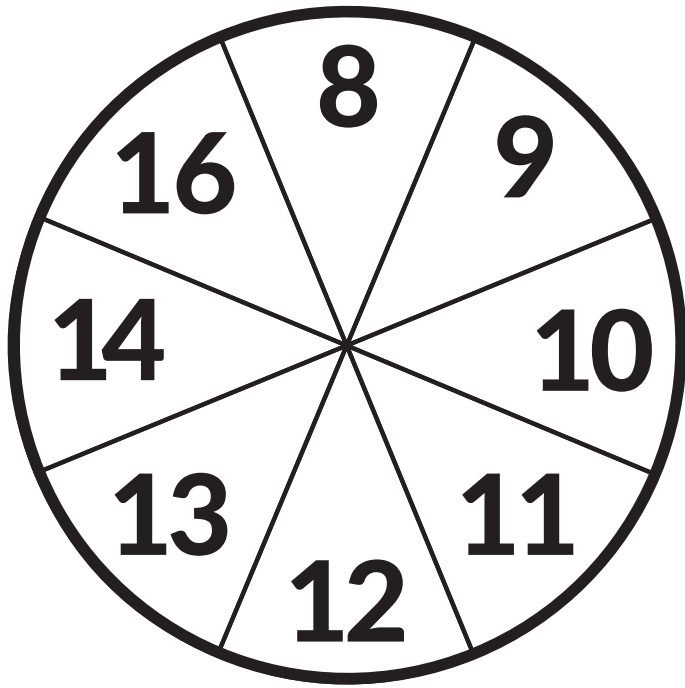
- Try playing with more circles. For example, can you get 15 circles in 7 turns?

- Use the second record sheet — Color 10: Thirds, Sixths & Twelfths.

- Try creating a new game board with fifths, tenths, and twentieths. Would you need more spins or a different spinner for this version?
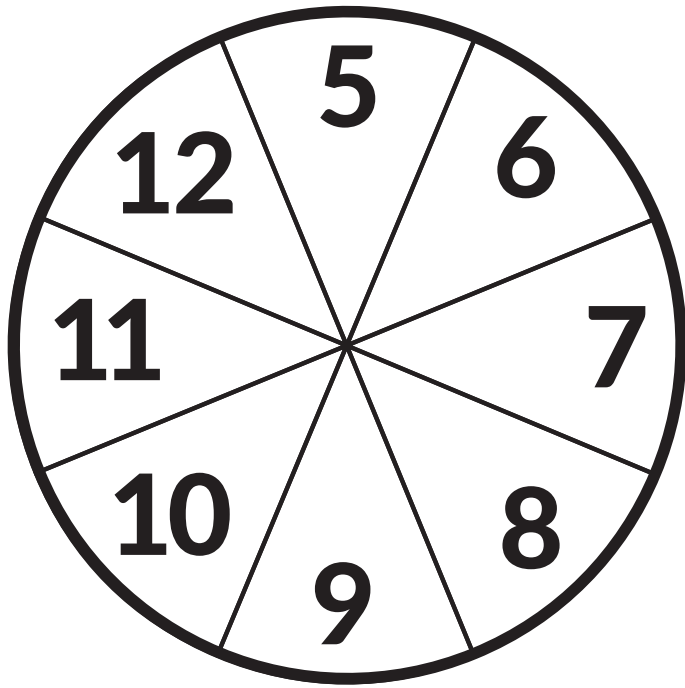
Color 10: Halves, Fourths & Eighths

Player 1

Score:

Player 2

Score:

Color 10: Thirds, Sixths & Twelfths

Player 1

Score:

Player 2

Score: