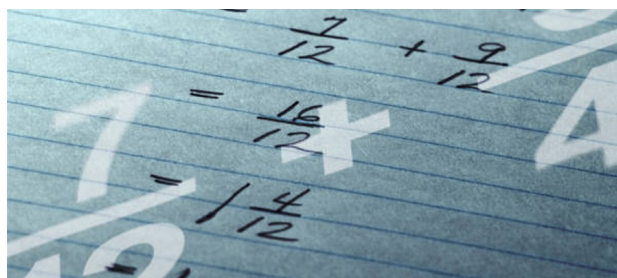# Lesson Plan:
# Action Fractions

**ACTION FRACTIONS**
The parts of the whole

# Introduction

Fractions can be intimidating when taught with numbers and lines alone, but when combined with familiar ideas, even very young children can grasp the concept of pieces of things. This lesson will guide children through the basics of fractions.

**Learning Objectives**
After completing the lessons in this unit, students will be able to:
- Define a fraction.
- Determine equivalent fractions.
- Add simple fractions using manipulatives.

**Preparation**
- Print the booklet at the end of this lesson plan. Cut the pages in half, along the dotted line, and staple on the side to make a "book."
- Gather supplies for making cookies as referenced in the booklet.
- Create a fraction kit using the templates on the following pages.
  - ▶ Cut one blue circle.
  - ▶ Cut two ½ circle pieces of red.
  - ▶ Cut three ⅓ circle pieces of yellow.
  - ▶ Cut four ¼ circle pieces of green.
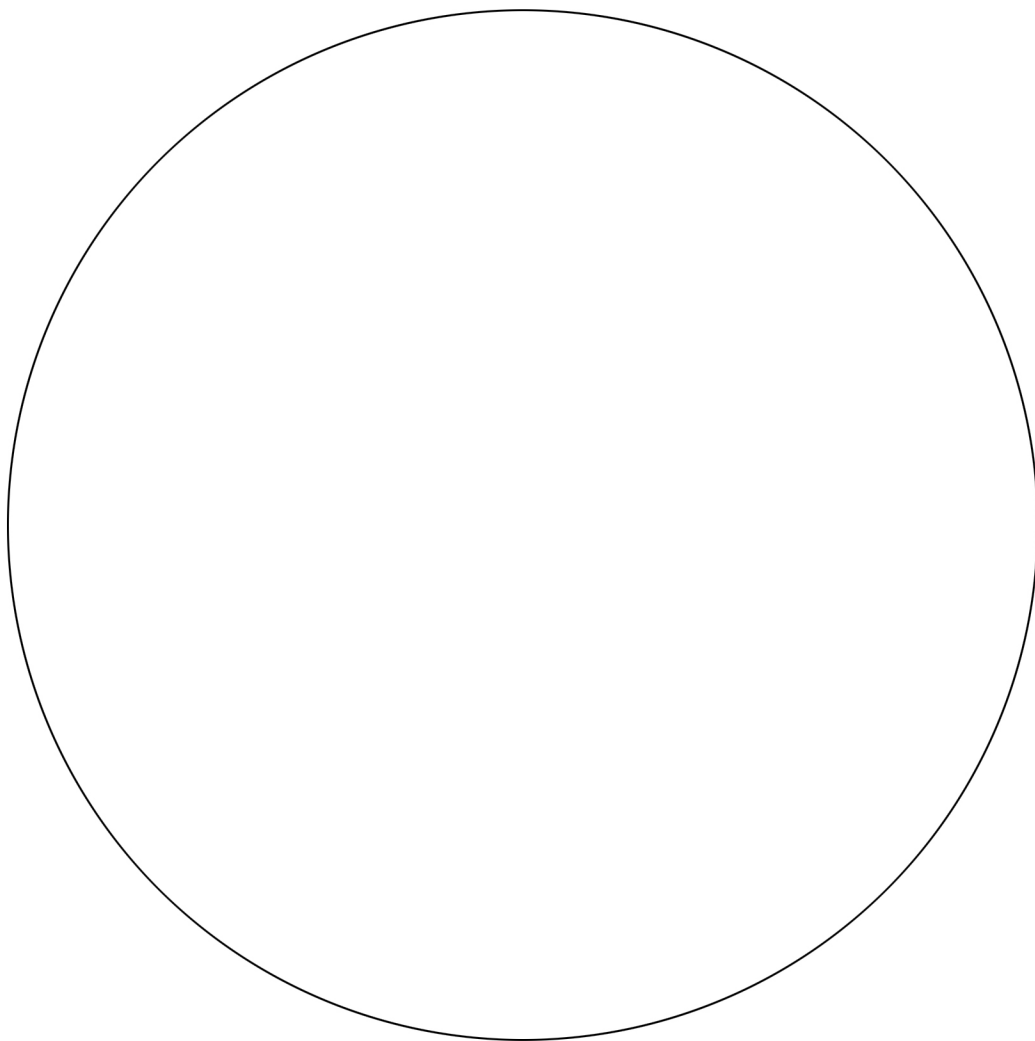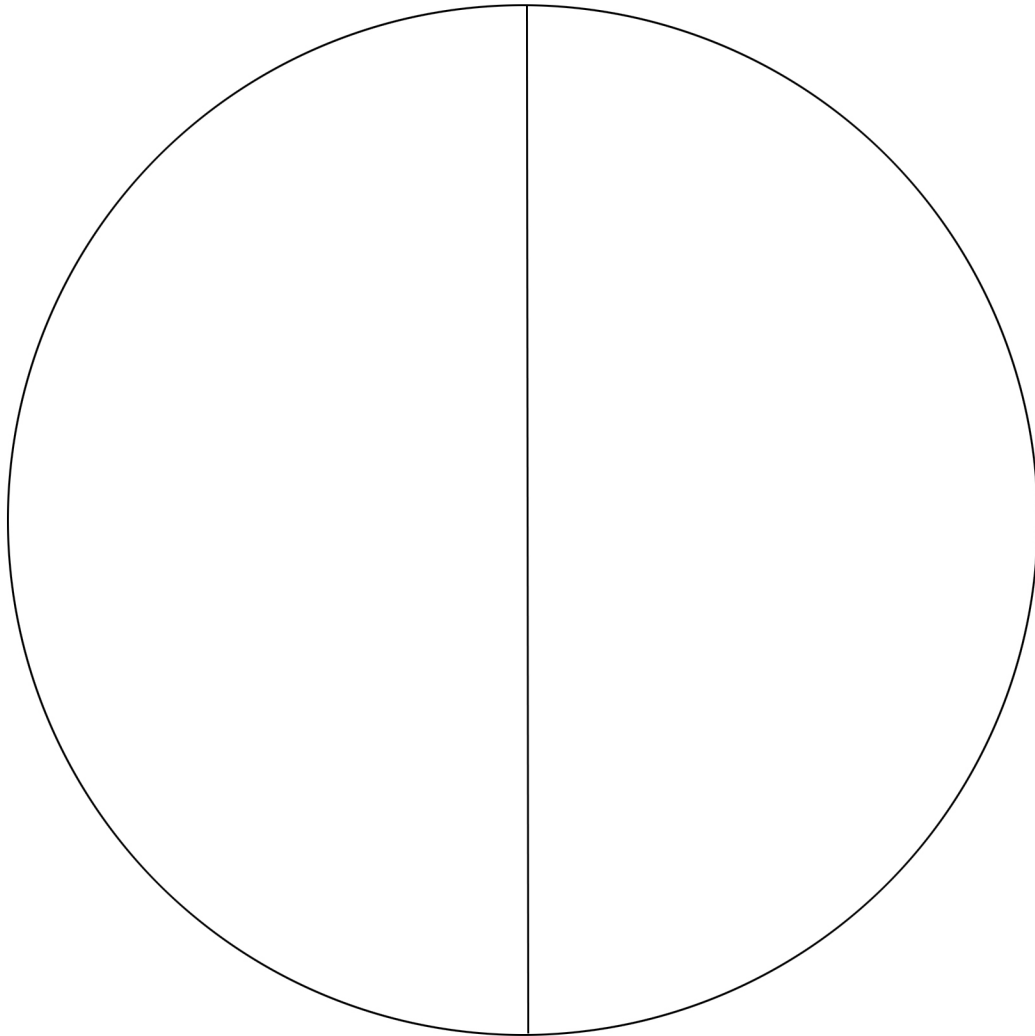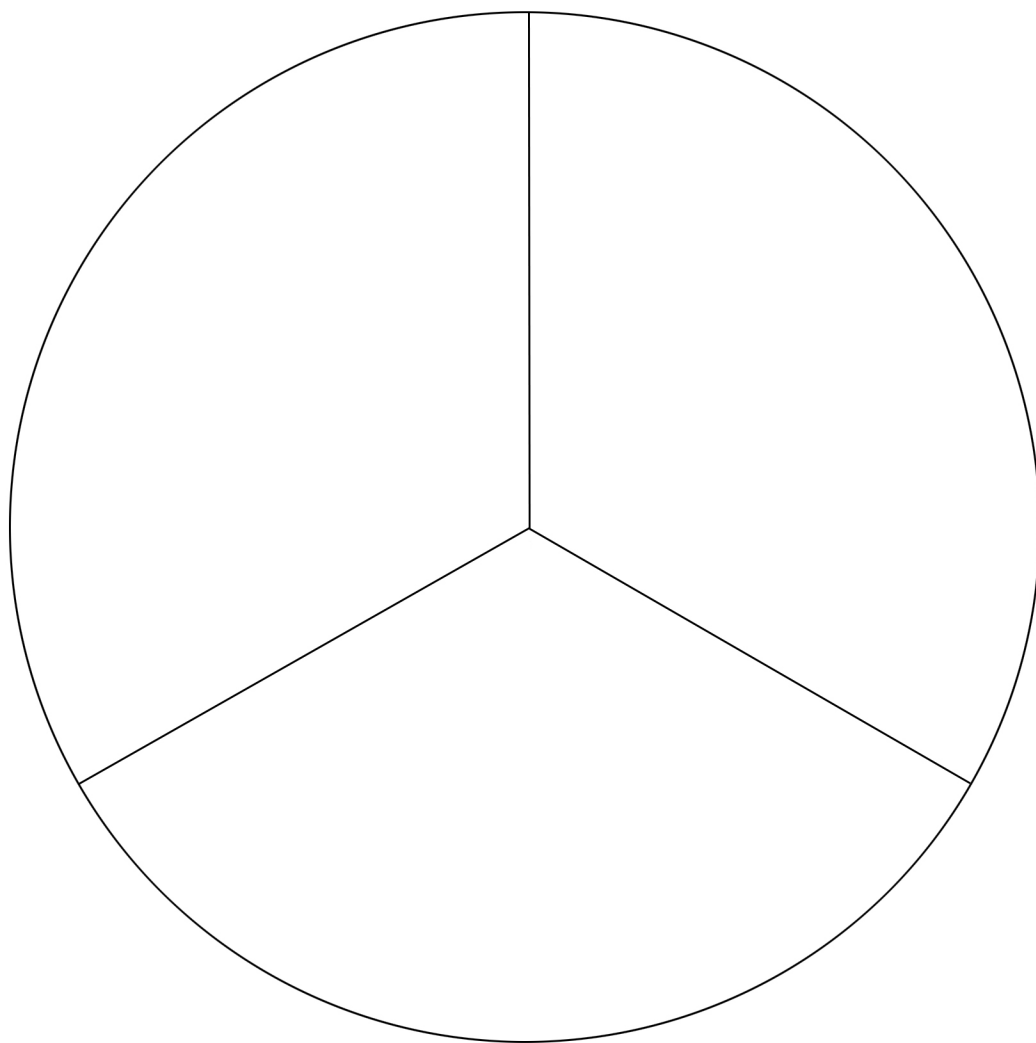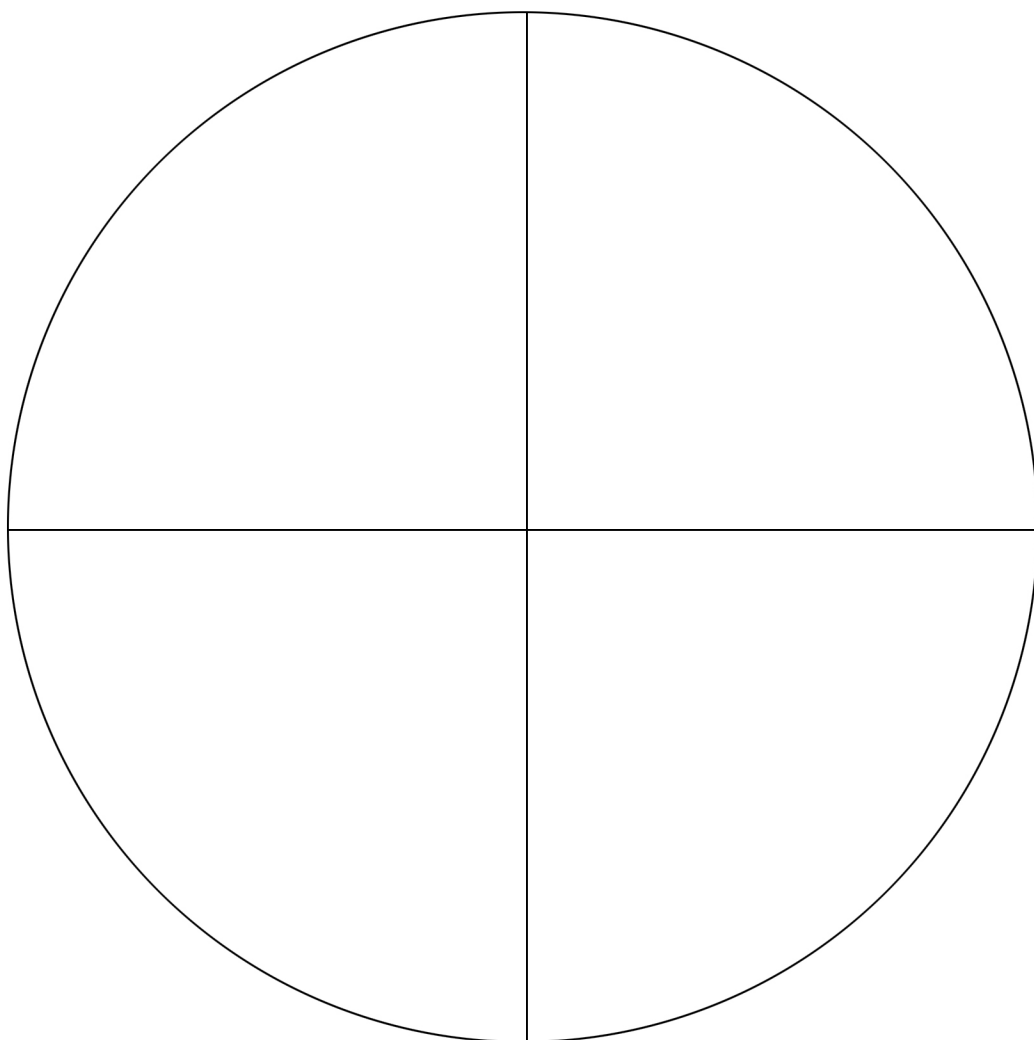
# Extension

**Books**
- *Give me Half!* by Stuart J. Murphy (goodreads.com/book/show/217138)
- *Apple Fractions* by Jerry Palotta (goodreads.com/book/show/1797547)
- *The Hershey's Milk Chocolate Bar Fractions Book* by Jerry Palotta (goodreads.com/book/show/1797547)
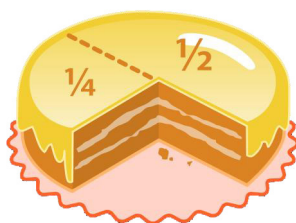
**Websites**
- Fraction bingo: go.hrw.com/resources/go_msm/course1/mathables/c1ch5.pdf
- Pizza fraction game: learningresources.com/pizza-fraction-funtm-game

# Assessment

| SKILL | MASTERY | BASIC UNDERSTANDING | EMERGING |
|---|---|---|---|
| Defines fractions | | | |
| Determines equivalent fractions using manipulatives | | | |
| Uses fractions to prepare cookie recipe | | | |
| Can add simple fractions using manipulatives | | | |

# ACTION FRACTION:
# *Exploring Fractions*

*With*
**Frances Fraction,
The Fraction Spy**

---

Hi! I'm Frances Fraction.
I love fractions and they love me.
You will love fractions, too!

Think about your last birthday cake. Yum!

Did you eat the whole cake? I hope not! Probably you just ate a piece of the cake.

That piece is called a "fraction." The word fraction comes from a Latin word that means "to break." So "fraction" just means something that has been broken into pieces.

\* \* \*

We have a special way that we write fractions down, almost like a secret code.
That's why I dress like a spy!

The number on top of the line is called the **numerator**. That word looks like "number." This is the number of pieces you have.

$$\frac{2}{4}$$

The number under the line is called the **denominator**. That word tells you how many it takes to make the whole thing!

\* \* \*

Let me explain more. Let's say I have five sheep and three of them are girl sheep. Since I love fractions, I want to tell you about my sheep with a fraction instead of words or pictures. It looks like this:

This tells me I'm talking about 3 of my sheep. Remember, this the **numerator** – the number of things I have.

$$\frac{3}{5}$$

This tells me I have five sheep. Remember, this is the **denominator** – the number of things it takes to make the whole thing.

It would be hard to say "three with a line over five," so we say fractions a special way. Say the numerator just like you see it: "3." Next, say the bottom number in what we call "ordinals." That's a big word! I just love big words!

**2**

Ordinals are counting words. Imagine that you are standing in line to buy an ice cream cone. If there are three people in front of you, then you are fourth in line. That number "fourth" is an ordinal. Can you count in ordinals? The number two is different. We say "half" instead of "second."

Will you practice with me? Great!

Let's count in fractions! Cover up the side of the paper so you can't see the answer. See if you can do it!

$\dfrac{1}{2}$   Say "one half"

$\dfrac{1}{3}$   Say "one third"

$\dfrac{1}{6}$   Say "one sixth"

Did you do it? Great! Are you ready to do more?

Take your blue circle. If I wanted to write it as a fraction, I would write

$\dfrac{1}{1}$

because I have one piece and it takes one piece to make the whole thing.

When the number on the top (the numerator) and the number on the bottom (the denominator) are the same, you do not have a piece. It is the whole thing.

If I have five sheep, and all of them are gray, then $\dfrac{5}{5}$ of my sheep are gray. That's all of my sheep!

The whole group of sheep is gray.

Now look at your red pieces. Lay both pieces on top of the blue circle so they cover the circle. How many pieces do you have?

Write that number here $\longrightarrow$ ___

Now write how many pieces it took to cover the circle here

You should have written a "2" on the top and a "2" on the bottom. Did you? Great!

Now look at your yellow pieces. Do you have three of them? Lay them on the blue circle so that you cover the whole circle. Now take one off. Write how many yellow pieces it takes to make a whole circle under this line ___

Now, write how many pieces you still have on your circle above the line. Did you write a "3" under the line and a "2" above the line? If so, good work! You have $\dfrac{2}{3}$ of a circle.

Let's do one more! Take your green pieces. Do you have four of them? Can you put them together to make a circle? Good job!
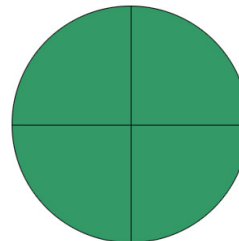
Let's look at them more closely for a minute. What if you wanted to have $\dfrac{2}{4}$ of a circle?

How many pieces would you pick up? Did you say 2? If you did, you're paying attention!

What would happen if you wanted to have $\dfrac{3}{4}$ of a circle? How many pieces would you need to lay back down? Did you say 1? You're working hard

Here's a tricky one: How many green pieces do you need to make one red piece? Can you figure that out? It's 2! Wow! I'm proud of you.

Are you ready to do something else with fractions? How about making cookies? Did you know that cooking is all about fractions? It is! Let's try it and find out! Get a grown-up for this, OK? Here's our recipe:

### Fraction-ful Oatmeal Cookies



1/2 cup butter
1/2 cup white sugar
1/2 cup brown sugar
1 egg
1/2 teaspoon vanilla
1 cup flour
1/2 teaspoon baking powder
1/2 teaspoon baking soda
1/2 teaspoon salt
3/4 cup rolled oats

*Look at all those beautiful fractions!*

- Preheat oven to 350 degrees.
- Cream together the butter and sugars.
- Blend in the egg and vanilla.
- Stir in dry ingredients until well blended.
- Roll into balls and place on greased cookie sheets. Bake for 12 minutes or until lightly golden brown.

\* \* \*

Weren't those good? Now let's talk more about those delicious fractions. Think about the butter. There was 1/2 cup butter in the recipe. That's one cube of butter, so how many cubes does it take to make a whole cup of butter? Think about it. Which number in the fraction tells you how many it takes to make a whole?
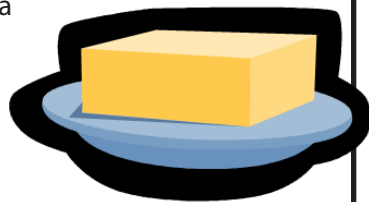
Did you say the bottom number? I hope you did!

I've saved the trickiest one of all for last.

You will have to think very, very hard about this one. If you can think hard and figure this out, you will be a fraction spy like me!

Are you ready? Here we go!

Now imagine that the cookies were soooo good that you wanted to make a double batch of them next time. That means you need to use twice as much of everything than you did the first time.



That's easy with the egg, because you would just use two eggs instead of one egg, right?

But what about the oats?

Look at how many oats we used: ¾ cup. Follow me closely now. We need to add ¾ cup to ¾ cup. You can do this if you think hard.



We'll do this one in steps

**STEP 1:** We need to add 3 + 3 because the top number tells us how many we have, right? If we have 3 and we need to add 3 more, we write that 3 + 3. What does that make? That makes 6!

**STEP 2:** So, how much is that? Now we have 6/4 cups. Can you read 6/4? Did you say "6 fourths"? You're becoming a fraction spy for sure!

But we don't have a measuring cup for 6/4, so we have to break it down. We call that **reducing**. It's a big word, and you know how I feel about big words!

**STEP 3:** Remember, the bottom number tells us how many makes a whole. So, if we have a 4 on the bottom, how many does it take to make a whole cup? Four! Good job!

So, if we take 4 away from the top number, we will have 1 whole cup, plus what is left. Can you take 4 away from 6?

$$6 - 4 = 2$$

Good job! So, now we have 1 cup of oats plus 2/4 cups of oats.

**STEP 4:** This is the last one. Are you still with me? Great! Now that we have 2/4, we need to reduce that even more, so we have a measuring cup that matches what we need to measure.

Get your red and green fraction pieces. I'll wait.
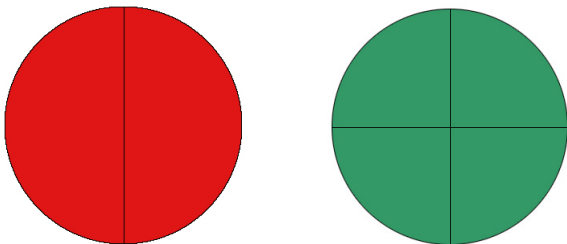


Your green fraction pieces are the ones that have a 4 on the bottom when we write it down as a fraction, remember? Why? Because it takes four pieces to make a whole! Good job!

Now, think about the oats you have left: 2/4. Take two green pieces and lay them on a red piece. Can you cover the red piece exactly with two green pieces? Yes? Good job! Do you remember how much a red piece is in fractions? It was 1/2 because it takes two to make a whole, right? Right!

So, if it takes two green to make a red, and red equals 1/2, then 2/4 equals 1/2 , too.

This is hard, so let's look at it again in a different way. Lay two green pieces down, and then lay a red piece next to them to make one whole circle, half red, half green.
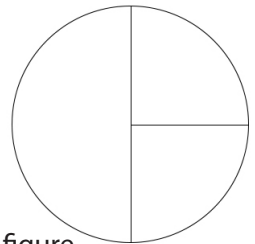
Do you see that the two green pieces together cover the same amount of the circle as one red piece? That's because 2/4 is the same as 1/2. You can figure that out in a little bit harder way by dividing, but for now, we can figure it out by using our pieces!



So how many oats is 6/4 cups? It is 1 and ½ cups. Wow! You are a fraction maniac! Even if it takes you a few times to figure it out, you are still a fraction maniac!

Now you can cook anything!

Let's practice. Use your fraction pieces to figure these things out. Pretend we are making cookies and we need to make twice as many as the recipe calls for. Using the steps you used before, how much of each thing do we need?

1/2 cup white sugar
2/3 cup brown sugar
1 1/2 teaspoons salt
3/4 teaspoon baking powder

Wow! You have learned what fractions are, what they look like, how to say them, and how to add them together and break them down again!

You are an amazingly hard worker!

Good job!