



GRADE 3 SUPPLEMENT

Set A5 Number & Operations: Fractions

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Skills & Concepts

- ★ represent fractions as distances on a number line
- ★ solve problems that involve comparing and ordering fractions by using models
- ★ identify equivalent fractions using models, including the number line
- ★ add common fractions with like denominators
- ★ identify fractions of an inch on a ruler

Bridges in Mathematics Grade 3 Supplement

Set A5 Numbers & Operations: Fractions

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Bridges in Mathematics is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

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Set A5 ★ Activity 1



ACTIVITY

Fractions on a Double Number Line

Overview

Students create a double number line marked with 0 and 1 on one side, and fractions on the other. Then they name and locate points along the line, including $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{3}{4}$.

Skills & Concepts

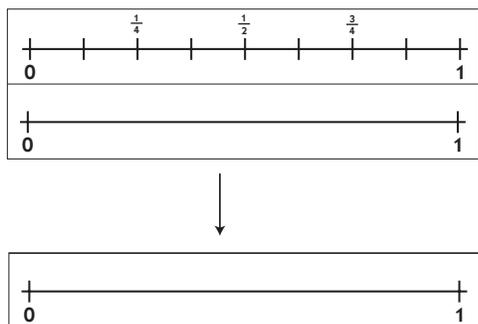
- ★ represent fractions as distances on a number line
- ★ solve problems that involve comparing and ordering fractions by using models
- ★ identify equivalent fractions using models, including the number line
- ★ add common fractions with like denominators

You'll need

- ★ Double Number Line (page A5.4, run a half-class set on cardstock, cut in half)
- ★ scissors
- ★ a paperclip for each student

Instructions for Fractions on a Double Number Line

1. Give each student a copy of the Double Number Line. Ask them to cut it out along the heavy lines and fold it in half lengthwise.



2. Ask students to pair-share any mathematical observations they can make about their Double Number Lines, and then ask volunteers to share their thinking with the class.

Students *It looks kind of like a ruler.*

It's like a giant inch or something, with 0 at one end and 1 at the other.

There are fractions on the other side: $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$.

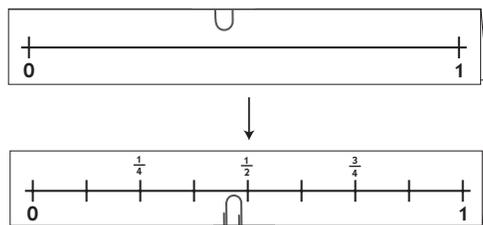
Some of the marks don't have any numbers.

The mark in the middle says $\frac{1}{2}$. That's because it's halfway between the 0 and the 1.

When you turn it over, the numbers are still right-side up, but there's only a 0 and a 1.

Activity 1 Fractions on a Double Number Line (cont.)

3. Give students each a paperclip, and ask them to slide the clip down over the fold. Working with the side marked only with 0 and 1, have them slide the paperclip along the fold until they think they've gone exactly halfway. Then have them flip the line over to check. Did the clip land on the mark labeled with the fraction $\frac{1}{2}$?



Lateva Almost! I almost got it exactly. I'm going to turn it over and try again to see if I can get the paperclip to land right on the $\frac{1}{2}$ mark.

Give students a minute to experiment. Can they develop strategies for getting the paperclip to land exactly on the $\frac{1}{2}$ mark without peeking? Then ask them to slide their paperclip one-fourth of the way along the unmarked line. Can they come up with some strategies for getting the clip to land on or very near the mark labeled with $\frac{1}{4}$?

Thayne I just moved my clip what I thought was halfway down the line and then cut that in half. I got pretty close.

4. Now talk with students about the marks that haven't yet been labeled with fractions. How would they label some of those marks? Give them a few moments to pair-share ideas and then call on volunteers to share their thinking with the class. Encourage them to explain their thinking.

Olivia It should say $\frac{1}{8}$ on that first mark.

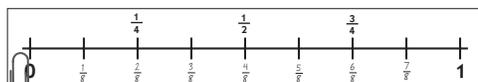
Teacher How are you thinking about that, Olivia?

Olivia Well, the line is divided into 8 parts, right? So each one is one-eighth.

Hector We said the next one would be $\frac{2}{8}$ because that's the same as $\frac{1}{4}$, plus what Olivia said. It goes $\frac{1}{8}$, $\frac{2}{8}$, $\frac{3}{8}$, $\frac{4}{8}$, and you just keep going that way.

Twilight You could also put $\frac{2}{4}$ right under where it says $\frac{1}{2}$, because $\frac{2}{4}$ comes between $\frac{1}{4}$ and $\frac{3}{4}$.

5. After some discussion, make a sketch of the line on the board and work with input from the class to label each of the marks. Then have students label each of the marks on their own number lines.



6. Now ask them to turn their number line back over to the unmarked side. Challenge them to slide their paperclip three-fourths of the way along the line, and then ask them to check the other side. How close did they come to hitting the mark labeled $\frac{3}{4}$? Ask them to share some of their strategies.

Activity 1 Fractions on a Double Number Line (cont.)

7. Repeat step 6 with some of the following fractions. (Vary these as needed to meet the needs of your students.)

- $\frac{1}{8}$
- $\frac{6}{8}$
- $\frac{3}{8}$
- $\frac{1}{4} + \frac{1}{4}$
- $\frac{1}{8} + \frac{1}{8}$

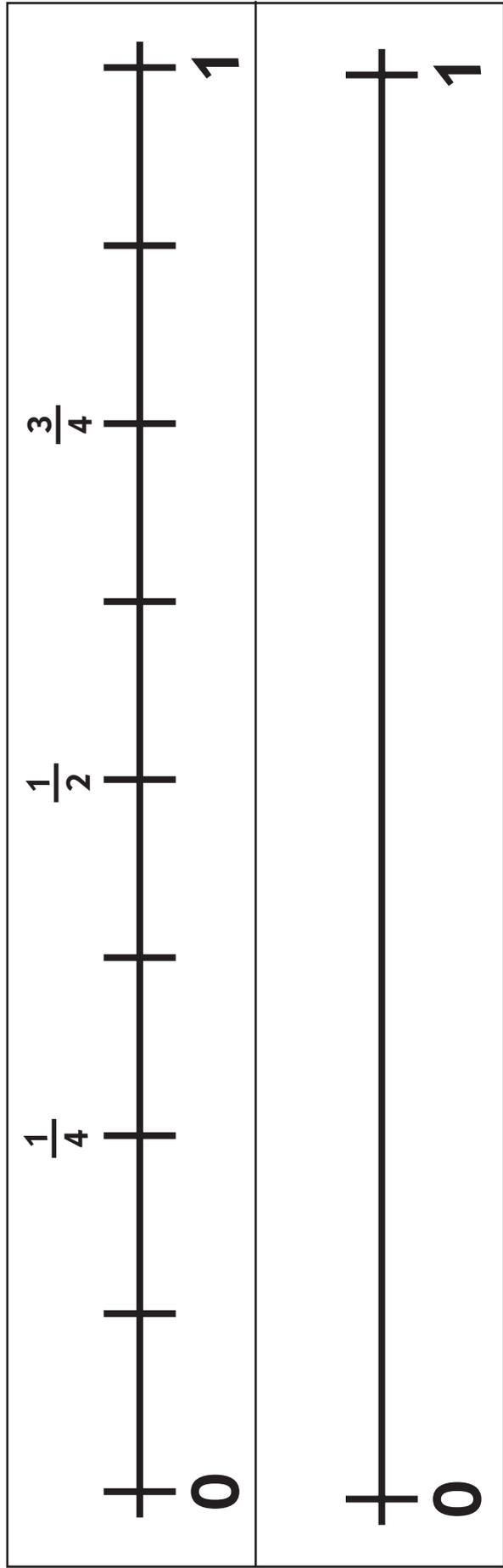
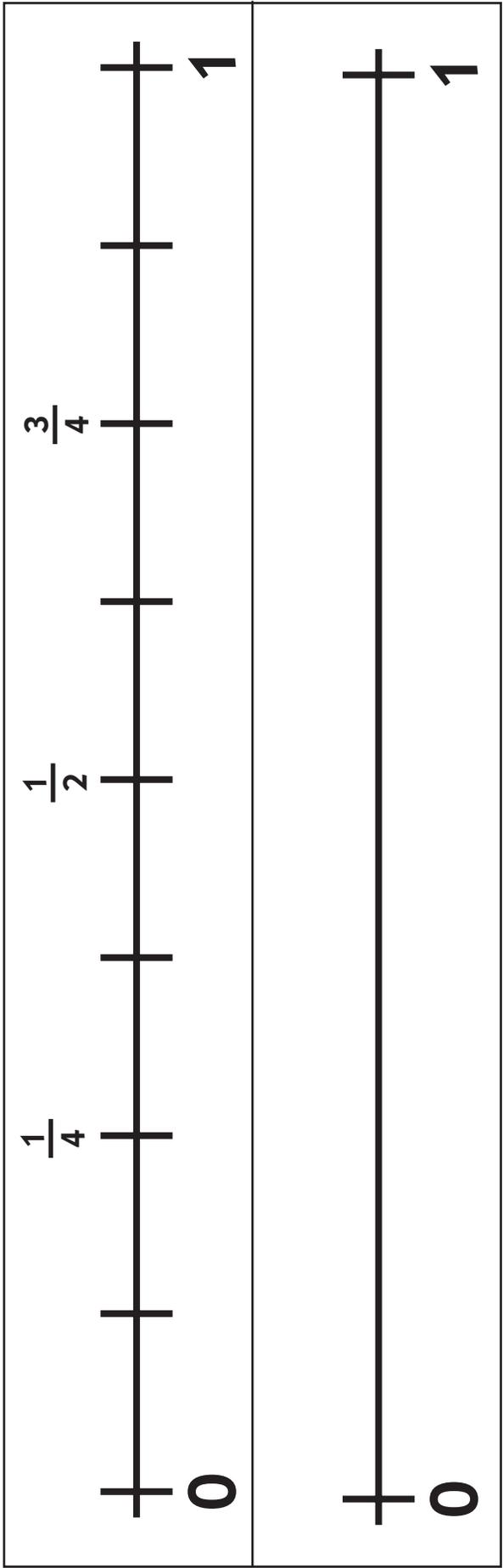
Extensions

- Pose story problems such as the ones below and ask students to enact them by moving their paperclip along the unmarked side of their number line. After each, have them turn their number line over to see how close they came to hitting the mark.
- I ran $\frac{1}{4}$ of a mile. Then I took a rest and ran another $\frac{1}{4}$ of a mile. How far did I go in all?
- I had 1 whole fruit strip. I ate half of it. How much did I have left?
- Sam's brother gave him 1 whole piece of licorice. He ate $\frac{1}{4}$ of it and saved the rest for later. How much did he have left?
- We walked $\frac{2}{8}$ of a mile and then another $\frac{1}{8}$ of a mile. How far did we go in all?

**INDEPENDENT WORKSHEET**

See Set A5 Independent Worksheets 1 and 2 for more practice locating and naming fractions on a number line, including halves and fourths.

Double Number Line



NAME _____

DATE _____

Set A5 ★ Independent Worksheet 1

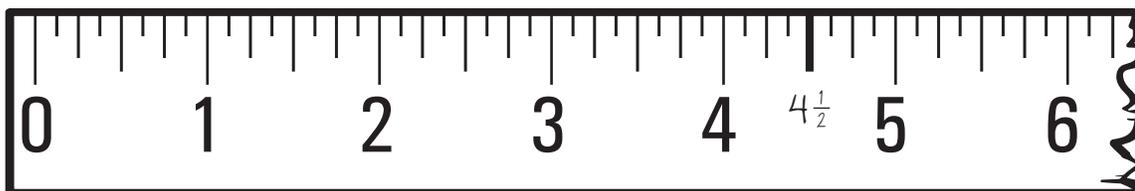


INDEPENDENT WORKSHEET

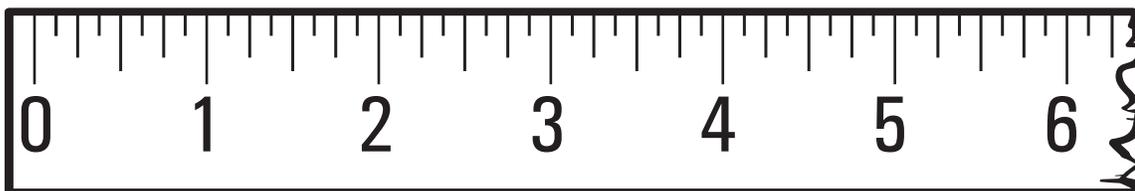
The Broken Ruler, Part 1

1 Find, mark, and label the measurements on the rulers below. The first one has been done for you.

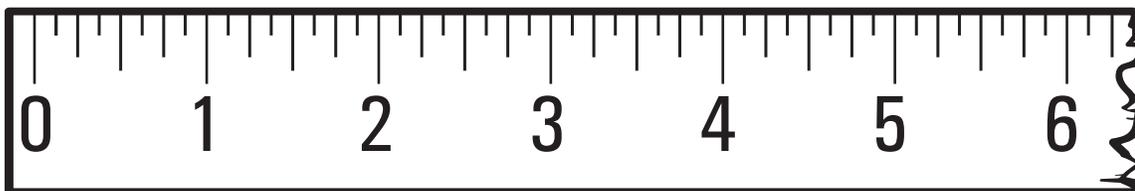
example $4\frac{1}{2}$ inches



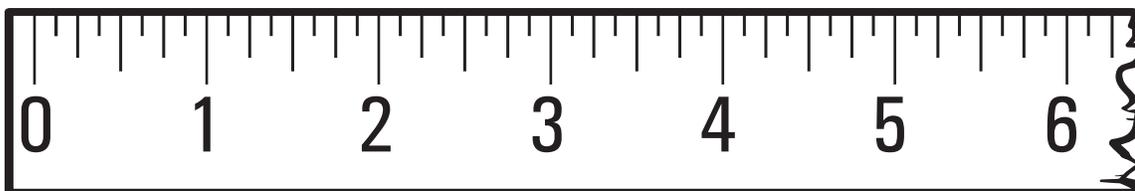
a $3\frac{1}{2}$ inches



b $1\frac{1}{2}$ inches



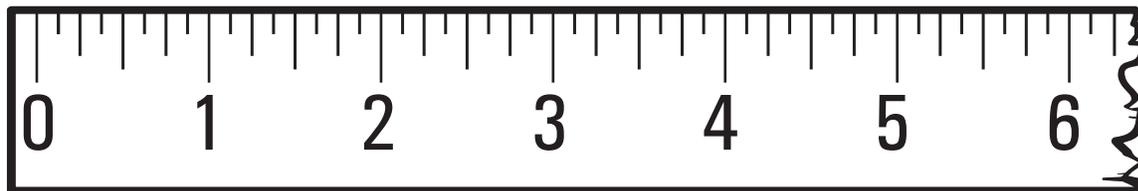
c $5\frac{3}{4}$ inches



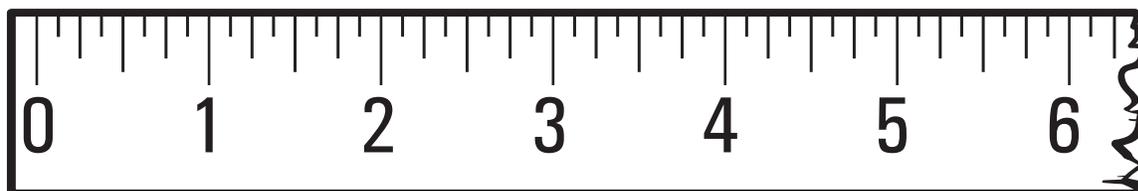
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Independent Worksheet 1 The Broken Ruler, Part 1 (cont.)

d $2\frac{1}{4}$ inches



e $4\frac{1}{4}$ inches

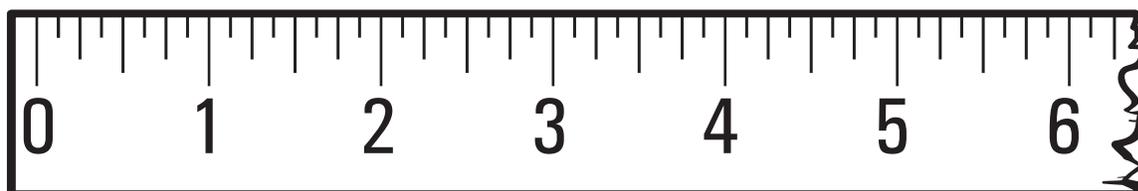


2 Share your work with a partner. Does he or she agree with each of the marks you made on the rulers? If not, decide who's correct and fix your work.



CHALLENGE

3 What other fractions do you know? Mark and label them on this ruler.



NAME _____

DATE _____

Set A5 ★ Independent Worksheet 2

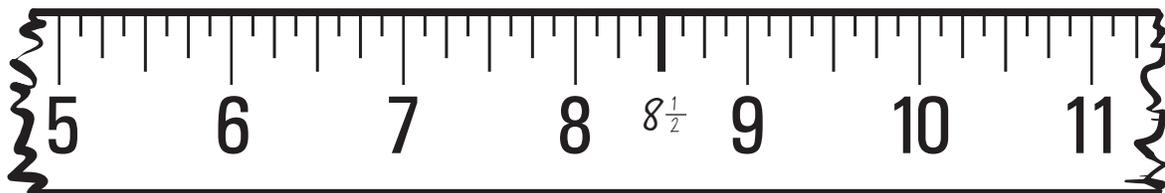


INDEPENDENT WORKSHEET

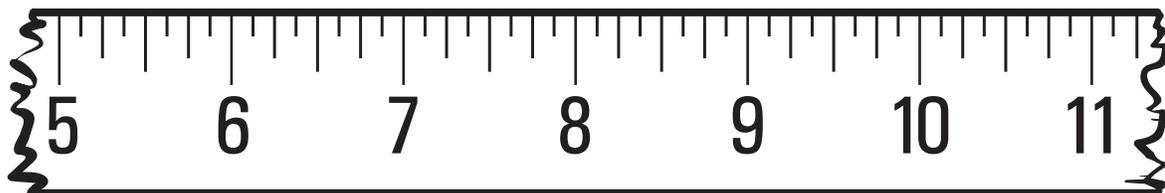
The Broken Ruler, Part 2

1 These rulers have been broken at both ends so they fit on the page. Find, mark, and label the measurements on each. The first one has been done for you.

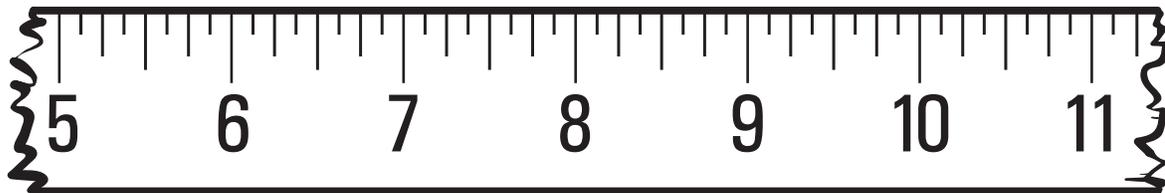
example $8\frac{1}{2}$ inches



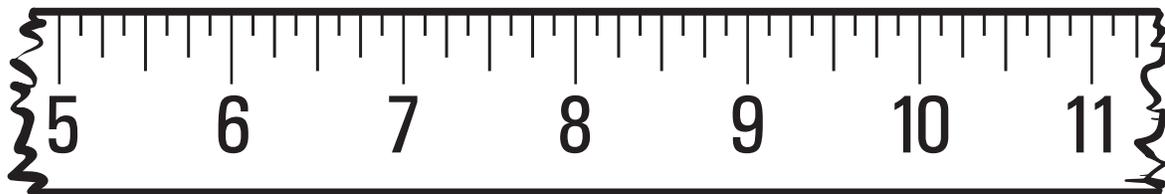
a $6\frac{1}{2}$ inches



b $9\frac{3}{4}$ inches



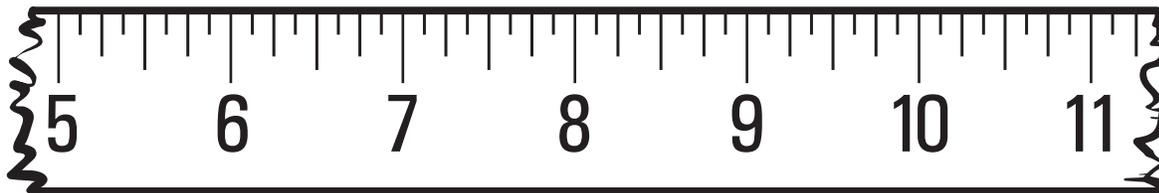
c $8\frac{1}{4}$ inches



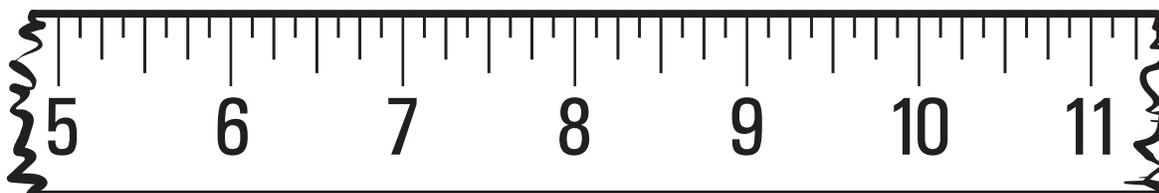
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Independent Worksheet 2 The Broken Ruler, Part 2 (cont.)

d $10\frac{1}{4}$ inches



e $7\frac{3}{4}$ inches



2 Share your work with a partner. Does he or she agree with each of the marks you made on the rulers? If not, decide who's correct and fix your work.



CHALLENGE

3 What other fractions do you know? Mark and label them on this ruler.

