

Revised Edition

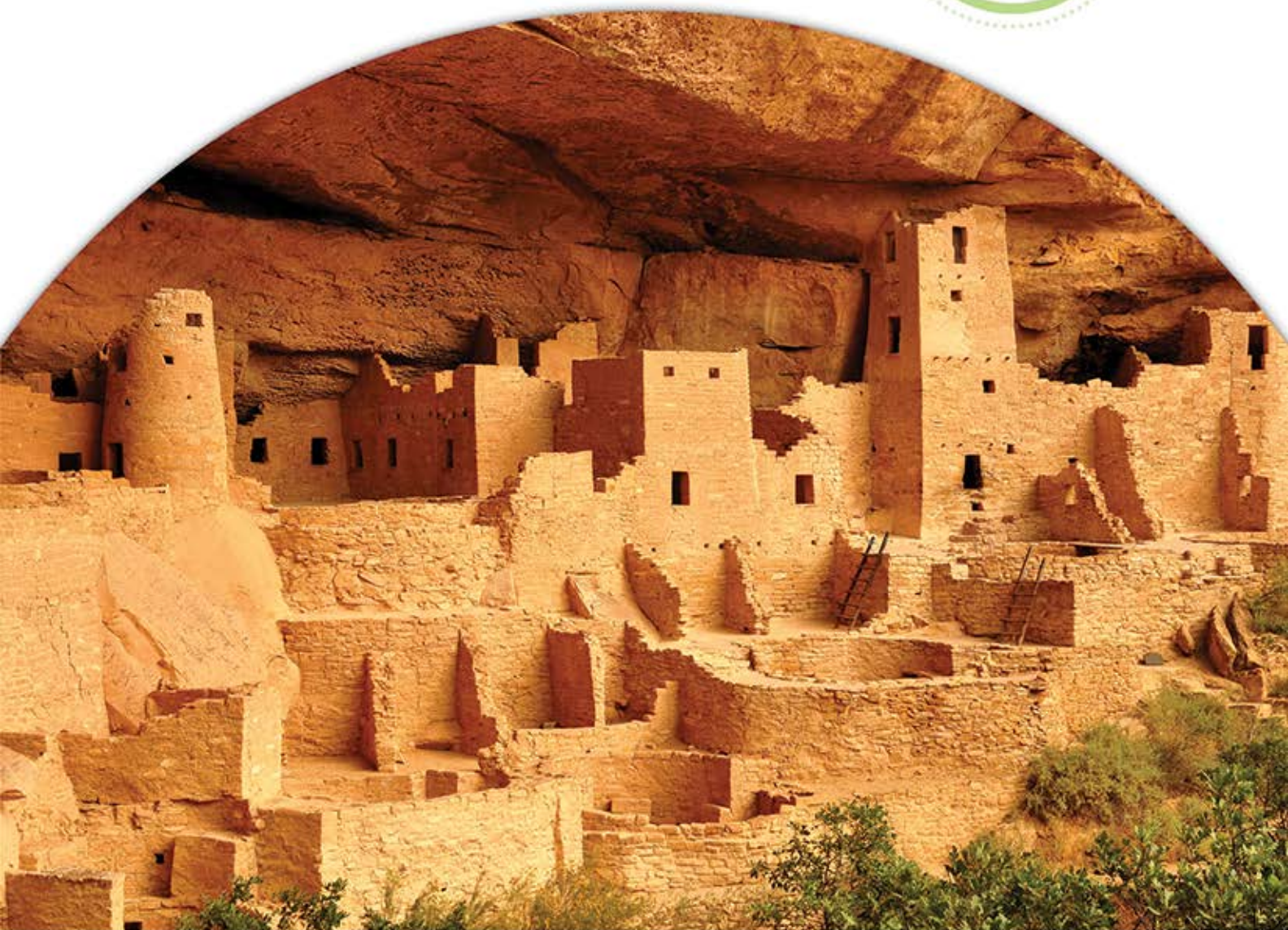
Performance

Coach™



Mathematics

3



triumphlearning™

Coach®

Performance Coach™

CONTENTS

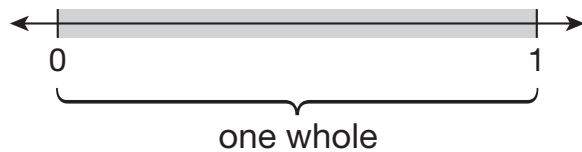
Letter to the Student	iv
DOMAIN 1: OPERATIONS AND ALGEBRAIC THINKING	5
Lesson 1 Introducing Multiplication	6
Lesson 2 Introducing Division	15
Lesson 3 Solving Multiplication Problems	24
Lesson 4 Solving Division Problems	33
Lesson 5 Finding Unknown Values	41
Lesson 6 Multiplication Properties	51
Lesson 7 Multiplication and Division Facts	59
Lesson 8 Solving Two-Step Word Problems	67
Lesson 9 Patterns	76
Domain 1 Review	87
DOMAIN 2: NUMBER AND OPERATIONS IN BASE TEN	93
Lesson 10 Whole Numbers	94
Lesson 11 Rounding Whole Numbers	102
Lesson 12 Addition Properties	110
Lesson 13 Adding 2- and 3-Digit Numbers to 1,000	119
Lesson 14 Subtracting 2- and 3-Digit Numbers Within 1,000	129
Lesson 15 Multiplying by Multiples of 10	141
Domain 2 Review	150
DOMAIN 3: NUMBER AND OPERATIONS – FRACTIONS	157
Lesson 16 Understanding Fractions	158
Lesson 17 Fractions on a Number Line	167
Lesson 18 Equivalent Fractions	177
Lesson 19 Whole Numbers as Fractions	187
Lesson 20 Comparing Fractions	196
Domain 3 Review	205

DOMAIN 4: MEASUREMENT AND DATA	211
Lesson 21 Time	212
Lesson 22 Mass	223
Lesson 23 Liquid Volume	232
Lesson 24 Picture Graphs	241
Lesson 25 Bar Graphs	250
Lesson 26 Line Plots	261
Lesson 27 Perimeter	273
Lesson 28 Understanding Area	283
Lesson 29 Area of Figures	292
Lesson 30 Perimeter and Area of Rectangles	304
Domain 4 Review	314
DOMAIN 5: GEOMETRY	321
Lesson 31 Two-Dimensional Shapes	322
Lesson 32 Equal Areas	332
Domain 5 Review	342
Glossary	349

Fractions on a Number Line

1 GETTING THE IDEA

You can use a number line to model fractions. This number line shows one whole as the length between 0 and 1.



One whole can be divided into equal parts, or fractions.

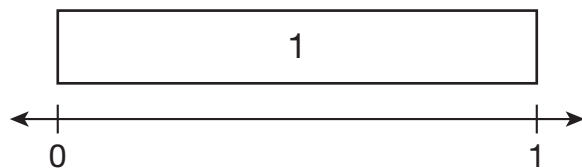
Example 1

Luis cut a plank of wood into three equal pieces. Each piece is $\frac{1}{3}$ of the whole plank. Show $\frac{1}{3}$ on a number line.

Strategy Use fraction strips to mark equal parts on a number line.

Step 1 Draw a number line.

Match the length from 0 to 1 to a fraction strip.

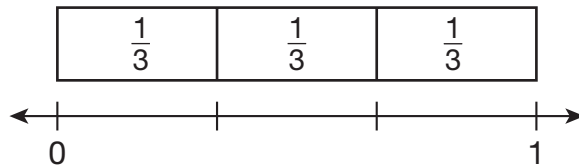


Step 2

Divide the number line into equal parts.

Use fraction strips that show thirds.

Each strip is the same length, so each section on the number line will have the same value.



Draw marks on the number line to show 3 equal parts.

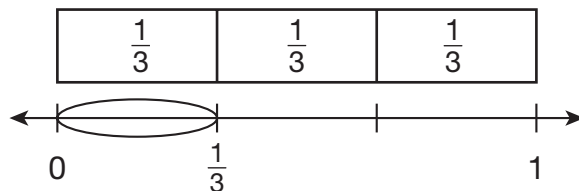
Use the end of each section of the fraction strip to place the marks.

Step 3

Show $\frac{1}{3}$ on the number line.

Ring the length from 0 to $\frac{1}{3}$.

Write the fraction name for that length at the mark.



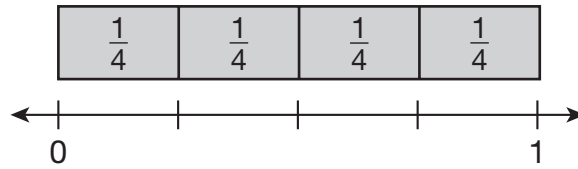
$\frac{1}{3}$ numerator ← the number of equal parts ringed

$\frac{1}{3}$ denominator ← the total number of equal parts in a whole

Solution The number line in Step 3 shows $\frac{1}{3}$.

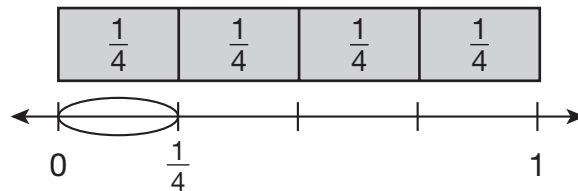
Example 2

Show $\frac{3}{4}$ on the number line.



Strategy Ring equal parts on a number line until you get to $\frac{3}{4}$.

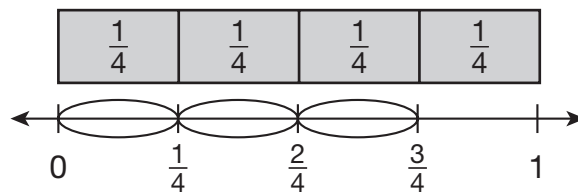
Step 1 Start at 0. Ring the first equal part.



$\frac{1}{4}$ numerator ← the number of equal parts ringed
 $\frac{1}{4}$ denominator ← the total number of equal parts in a whole

There is one part of $\frac{1}{4}$.

Step 2 Ring the second and third equal parts.



$\frac{3}{4}$ numerator ← the number of equal parts ringed
 $\frac{4}{4}$ denominator ← the total number of equal parts in a whole

There are three parts of $\frac{1}{4}$.

Solution The number line in Step 2 shows $\frac{3}{4}$.

Example 3

Meg cut a straw into fourths. She used the entire straw in an art project. Write a fraction to represent the total amount of the straw she used. Show your answer on a number line.

Strategy Model a whole number on a number line.

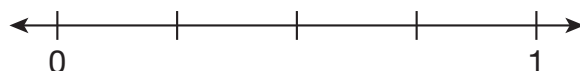
Step 1 Find the denominator.

Meg cut the straw into fourths.

There are 4 equal parts in the whole straw.

The denominator is 4.

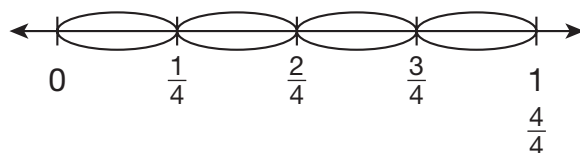
Step 2 Mark a number line dividing the whole into 4 equal parts.



Step 3 Ring fraction parts.

Meg used 4 pieces. Ring 4 parts.

Label the lengths with fractions.



Step 4 Write the fraction for the amount of straw Meg used.

$\frac{4}{4}$ numerator ← the number of equal parts used

$\frac{4}{4}$ denominator ← the total number of equal parts in a whole

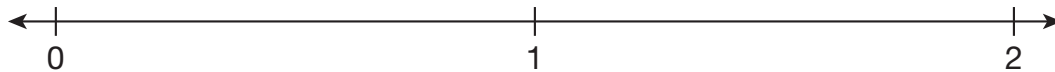
$\frac{4}{4}$ has the same value as 1 whole.

$$\frac{4}{4} = 1$$

Solution Meg used $\frac{4}{4}$ of a whole straw. The number line in Step 3 shows $\frac{4}{4}$.

Example 4

Show $\frac{3}{2}$ on the number line.



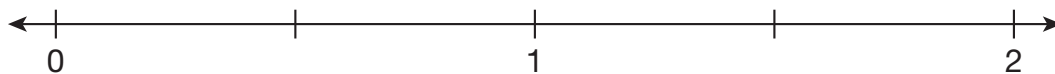
Strategy Show wholes divided into equal parts.

Step 1 Determine how many equal parts you need.

The fraction $\frac{3}{2}$ has 2 as the denominator.

You need to show halves on the number line.

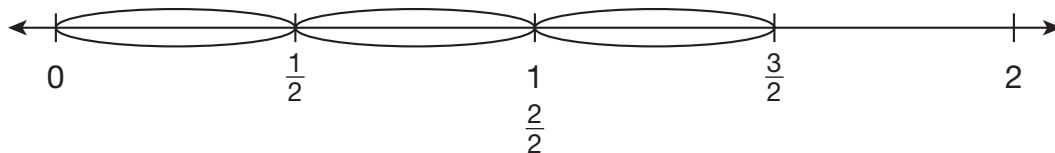
Step 2 Divide each whole into 2 equal parts.



Step 3 Ring fraction parts.

You want to show $\frac{3}{2}$, or three halves, so ring 3 parts.

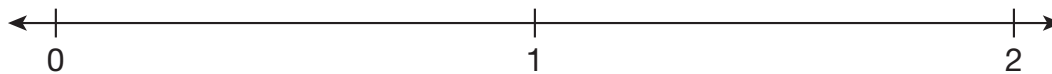
Label the lengths with fractions.



Solution The number line in Step 3 shows $\frac{3}{2}$.

2 COACHED EXAMPLE

Show $\frac{5}{3}$ on the number line.



The fraction $\frac{5}{3}$ has _____ as the denominator.

Divide each whole into _____ equal parts.

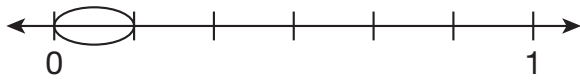
Label the number line with fractions.

Ring _____ parts on the number line to show $\frac{5}{3}$.

The length marked on the number line shows _____.

3 LESSON PRACTICE

1 Which fraction does the number line show?



- A. $\frac{1}{6}$
- B. $\frac{1}{5}$
- C. $\frac{1}{7}$
- D. $\frac{6}{7}$

2 Which fraction does the number line show?



- A. $\frac{0}{3}$
- B. $\frac{1}{3}$
- C. $\frac{3}{3}$
- D. $\frac{3}{7}$

3 Which diagram shows the fraction $\frac{2}{3}$?

- A.
- B.
- C.
- D.

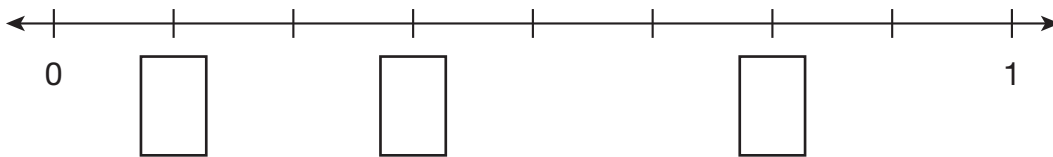
4 Which diagram shows the fraction $\frac{5}{4}$?

- A.
- B.
- C.
- D.

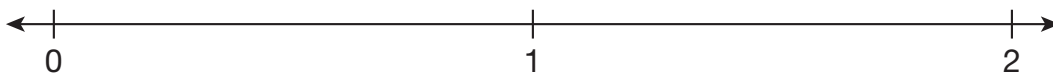
- 5 Jorge wants to show $\frac{1}{2}$ on the number line. Mark the number line to show halves. Write the fraction $\frac{1}{2}$ in the correct place.



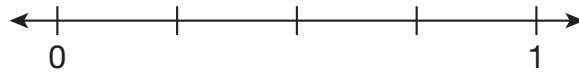
- 6 The number line is divided into equal parts. Write the fraction in each box provided for that length.



- 7 Pam had 2 equal strings. She cut each string into eighths. She used 9 of the parts. Use the number line below. Divide each whole into 8 equal parts. Mark the number line to show eighths. Label $\frac{9}{8}$.

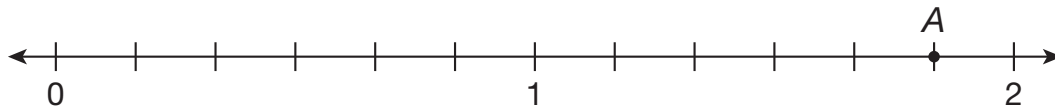


- 8 Reg divided a rope into fourths. He showed his work on the number line below. Reg used three of the rope parts to make a basket.



Which statement is true? Mark all that apply.

- A. The number line shows $\frac{4}{4}$.
 - B. Reg divided his rope into seven equal parts.
 - C. Each section of the rope is $\frac{4}{1}$ of the whole rope.
 - D. Each section of the rope is a quarter of the whole rope.
 - E. Reg used $\frac{1}{4}$ of the whole rope.
 - F. Reg used $\frac{3}{4}$ of the whole rope.
- 9 The number line below shows two wholes, each divided into the same number of equal parts.



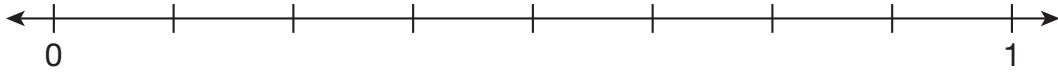
Part A

How many equal parts are in each whole?

Part B

What fraction does the letter A show?

- 10 Label and ring the number line below to show $\frac{5}{8}$. Explain how you found the fraction. Use words or numbers to explain your answer.



- 11 Ana cut a board into sixths. She used all of the pieces to make a border around her plant.

Part A

Divide the number line into six equal parts. Write the fraction of the board Ana used in the box provided.



Part B

Explain how you found the fraction of the board Anna used.