

Name _____

Simplest Form

Essential Question How can you write a fraction as an equivalent fraction in simplest form?



Number and Operations—
Fractions—4.NF.A.1

MATHEMATICAL PRACTICES
MP2, MP4, MP6

Unlock the Problem

Vicki made a fruit tart and cut it into 6 equal pieces. Vicki, Silvia, and Elena each took 2 pieces of the tart home. Vicki says she and each of her friends took $\frac{1}{3}$ of the tart home. Is Vicki correct?

Activity

Materials ■ color pencils

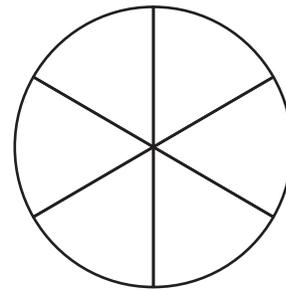
STEP 1 Use a blue pencil to shade the pieces Vicki took home.

STEP 2 Use a red pencil to shade the pieces Silvia took home.

STEP 3 Use a yellow pencil to shade the pieces Elena took home.

- Into how many pieces was the tart cut?

- How many pieces did each girl take?



The tart is divided into _____ equal-size pieces. The 3 colors on the model show how to combine sixth-size pieces to make _____ equal third-size pieces.

So, Vicki is correct. Vicki, Silvia, and Elena each took  of the tart home.



MATHEMATICAL PRACTICES 4

Interpret a Result

Compare the models for $\frac{2}{6}$ and $\frac{1}{3}$. Explain how the sizes of the parts are related.

- What if Vicki took 3 pieces of the tart home and Elena took 3 pieces of the tart home. How could you combine the pieces to write a fraction that represents the part each friend took home? Explain.

Simplest Form A fraction is in **simplest form** when you can represent it using as few equal parts of a whole as possible. You need to describe the part you have in equal-size parts. If you can't describe the part you have using fewer parts, then you cannot simplify the fraction.

One Way Use models to write an equivalent fraction in simplest form.

MODEL	WRITE EQUIVALENT FRACTIONS	RELATE EQUIVALENT FRACTIONS
	$\frac{2}{8} = \frac{1}{4}$	$\frac{2 \div 2}{8 \div 2} = \frac{1}{4}$
	$\frac{6}{10} = \frac{\square}{5}$	$\frac{6 \div \square}{10 \div \square} = \frac{\square}{5}$
	$\frac{6}{12} = \frac{\square}{\square}$	$\frac{6 \div \square}{12 \div \square} = \frac{\square}{\square}$

To simplify $\frac{6}{10}$, you can combine tenth-size parts into equal groups with 2 parts each.

So, $\frac{6}{10} = \frac{6 \div \square}{10 \div \square} = \frac{\square}{\square}$.

Another Way Use common factors to write $\frac{6}{10}$ in simplest form.

A fraction is in simplest form when 1 is the only factor that the numerator and denominator have in common. The parts of the whole cannot be combined into fewer equal-size parts to show the same fraction.

STEP 1 List the factors of the numerator and denominator. Circle common factors.

Factors of 6: _____, _____, _____, _____

Factors of 10: _____, _____, _____, _____

STEP 2 Divide the numerator and denominator by a common factor greater than 1.

$\frac{6}{10} = \frac{6 \div \square}{10 \div \square} = \frac{\square}{\square}$

Since 1 is the only factor that 3 and 5 have in common, _____ is written in simplest form.

Name _____

Share and Show



1. Write $\frac{8}{10}$ in simplest form.

$$\frac{8}{10} = \frac{8 \div \square}{10 \div \square} = \frac{\square}{\square}$$

Write the fraction in simplest form.

2. $\frac{6}{12}$

3. $\frac{2}{10}$

4. $\frac{6}{8}$

5. $\frac{4}{6}$

On Your Own

Math
Talk

MATHEMATICAL PRACTICES 6

Explain how you know a fraction is in simplest form.

Write the fraction in simplest form.

6. $\frac{9}{12}$

7. $\frac{4}{8}$

8. $\frac{10}{12}$

9. $\frac{20}{100}$

Tell whether the fraction is in simplest form.

Write *yes* or *no*.

10. $\frac{2}{8}$

11. $\frac{9}{12}$

12. $\frac{5}{6}$

13. $\frac{4}{10}$

14. **GO DEEPER** There are 18 students in Jacob's homeroom. Six students bring their lunch to school. The rest eat lunch in the cafeteria. In simplest form, what fraction of students eat lunch in the cafeteria?

Problem Solving • Applications



Use the map for 15–16.

15. **MATHEMATICAL PRACTICE 7 Identify Relationships** What fraction of the states in the southwest region share a border with Mexico? Is this fraction in simplest form?

16. **THINK SMARTER What's the Question?** $\frac{1}{3}$ of the states in this region are on the Gulf of Mexico.

17. **GO DEEPER** Pete says that to write $\frac{4}{6}$ as $\frac{2}{3}$, you combine pieces, but to write $\frac{4}{6}$ as $\frac{8}{12}$, you break apart pieces. Does this make sense? Explain.



WRITE *Math*
Show Your Work



18. **THINK SMARTER +** In Michelle's homeroom, $\frac{9}{15}$ of the students ride the bus to school, $\frac{4}{12}$ get a car ride, and $\frac{2}{30}$ walk to school. For numbers 18a–18c, select True or False for each statement.

- 18a. In simplest form, $\frac{3}{5}$ of the students ride the bus to school. True False
- 18b. In simplest form, $\frac{1}{4}$ of the students get a car ride to school. True False
- 18c. In simplest form, $\frac{1}{15}$ of the students walk to school. True False

Personal Math Trainer



Name _____

Simplest Form



COMMON CORE STANDARD—4.NF.A.1
Extend understanding of fraction equivalence and ordering.

Write the fraction in simplest form.

1. $\frac{6}{10}$

2. $\frac{6}{8}$

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

4. $\frac{8}{12}$

$\frac{6}{10} = \frac{6 \div 2}{10 \div 2} = \frac{3}{5}$

5. $\frac{100}{100}$

6. $\frac{2}{6}$

7. $\frac{2}{8}$

8. $\frac{4}{10}$

Tell whether the fractions are equivalent.

Write = or \neq .

9. $\frac{6}{12} \bigcirc \frac{1}{12}$

10. $\frac{3}{4} \bigcirc \frac{5}{6}$

11. $\frac{6}{10} \bigcirc \frac{3}{5}$

12. $\frac{3}{12} \bigcirc \frac{1}{3}$

Problem Solving



13. At Memorial Hospital, 9 of the 12 babies born on Tuesday were boys. In simplest form, what fraction of the babies born on Tuesday were boys?

14. Cristina uses a ruler to measure the length of her math textbook. She says that the book is $\frac{4}{10}$ meter long. Is her measurement in simplest form? If not, what is the length of the book in simplest form?

15. **WRITE** *Math* Explain using words or drawings how to write $\frac{6}{9}$ in simplest form.

Lesson Check (4.NF.A.1)

1. Six out of the 12 members of the school choir are boys. In simplest form, what fraction of the choir is boys?
2. Write $\frac{10}{12}$ in simplest form.

Spiral Review (4.OA.A.3, 4.OA.B.4, 4.NBT.B.5, 4.NF.A.1)

3. Each of the 23 students in Ms. Evans' class raised \$45 for the school by selling coupon books. How much money did the class raise?
4. List two common factors of 36 and 48.
5. Bart uses $\frac{3}{12}$ cup milk to make muffins. Write a fraction that is equivalent to $\frac{3}{12}$.
6. Ashley bought 4 packages of juice boxes. There are 6 juice boxes in each package. She gave 2 juice boxes to each of 3 friends. How many juice boxes does Ashley have left?

