

Fraction Split Studio

Break fractions apart in more than one way.

GRADE 4 • MA.4.FR.2.1

MA.4.FR.2.1 "Decompose a fraction, including mixed numbers and fractions greater than one, into a sum of fractions with the same denominator in multiple ways. Demonstrate each decomposition with objects, drawings and equations."

NAME _____

DATE _____

SPLIT INTO EQUAL PARTS

To decompose a fraction, write it as a sum of smaller fractions with the same denominator. A fraction greater than one can include a whole, such as a group with the same number of shaded parts as total parts. Use fraction bars to show that all the parts still make the original amount.

WORKED EXAMPLE

Decompose $\frac{11}{6}$ in two ways. Show a fraction-bar drawing and equations.

1. Draw 2 fraction bars, each split into 6 equal parts. Shade 1 whole bar and 5 parts of the next bar.
2. Write the whole bar as $\frac{6}{6}$ and the extra shaded parts as $\frac{5}{6}$.
3. Split $\frac{5}{6}$ into $\frac{2}{6}$ and $\frac{3}{6}$ for another decomposition.

Answer: $\frac{11}{6} = \frac{6}{6} + \frac{5}{6}$; $\frac{11}{6} = \frac{6}{6} + \frac{2}{6} + \frac{3}{6}$

PRACTICE 6 problems

- 1** Draw fraction-bar models and decompose $\frac{7}{8}$ in two different ways.

ANSWER _____

- 2** Draw fraction-bar models and decompose $\frac{9}{5}$ in two different ways.

ANSWER _____

- 3** Draw fraction-bar models and decompose $1\frac{3}{4}$ in two different ways.

ANSWER _____

- 4** Draw a fraction-bar model. Decompose $\frac{13}{10}$ using exactly 3 fractions.

ANSWER _____

- 5** Draw fraction-bar models. Decompose $2\frac{2}{3}$ using exactly 4 fractions.

ANSWER _____

- 6** Draw a fraction-bar model. Decompose $\frac{5}{12}$ using exactly 3 fractions.

ANSWER _____

APPLY IT Show your work

- 1** Jalen has $1\frac{4}{7}$ meters of ribbon for three robot decorations. Draw a fraction-bar model and write the ribbon length as a sum of exactly 3 fractions with denominator 7.

WORK SPACE

ANSWER _____

- 2** A streamer spent $1\frac{7}{9}$ hours making a game video. Draw a fraction-bar model and write the time as a sum of exactly 4 fractions with denominator 9.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Write 3 different decompositions of $2\frac{3}{8}$. Each decomposition must use exactly 4 fractions with denominator 8, and no addend may be $0/8$. Draw a fraction-bar model for one decomposition.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Draw fraction-bar models and decompose $\frac{7}{8}$ in two different ways.	$\frac{7}{8} = \frac{1}{8} + \frac{6}{8}$; $\frac{7}{8} = \frac{3}{8} + \frac{4}{8}$
2	Draw fraction-bar models and decompose $\frac{9}{5}$ in two different ways.	$\frac{9}{5} = \frac{5}{5} + \frac{4}{5}$; $\frac{9}{5} = \frac{2}{5} + \frac{7}{5}$
3	Draw fraction-bar models and decompose $1\frac{3}{4}$ in two different ways.	$1\frac{3}{4} = \frac{4}{4} + \frac{3}{4}$; $1\frac{3}{4} = \frac{1}{4} + \frac{3}{4} + \frac{3}{4}$
4	Draw a fraction-bar model. Decompose $\frac{13}{10}$ using exactly 3 fractions.	$\frac{13}{10} = \frac{10}{10} + \frac{2}{10} + \frac{1}{10}$
5	Draw fraction-bar models. Decompose $2\frac{2}{3}$ using exactly 4 fractions.	$2\frac{2}{3} = \frac{3}{3} + \frac{3}{3} + \frac{1}{3} + \frac{1}{3}$
6	Draw a fraction-bar model. Decompose $\frac{5}{12}$ using exactly 3 fractions.	$\frac{5}{12} = \frac{1}{12} + \frac{2}{12} + \frac{2}{12}$

PART 2 • APPLY IT

- $1\frac{4}{7} = \frac{7}{7} + \frac{2}{7} + \frac{2}{7}$ Rewrite $1\frac{4}{7}$ as $\frac{11}{7}$. Split 11 seventh-parts into 7 seventh-parts, 2 seventh-parts, and 2 seventh-parts.
- $1\frac{7}{9} = \frac{9}{9} + \frac{3}{9} + \frac{3}{9} + \frac{1}{9}$ Rewrite $1\frac{7}{9}$ as $\frac{16}{9}$. The four numerators, 9, 3, 3, and 1, add to 16.

CHALLENGE

$$2\frac{3}{8} = \frac{8}{8} + \frac{8}{8} + \frac{2}{8} + \frac{1}{8}; 2\frac{3}{8} = \frac{8}{8} + \frac{5}{8} + \frac{4}{8} + \frac{2}{8}; 2\frac{3}{8} = \frac{7}{8} + \frac{6}{8} + \frac{3}{8} + \frac{3}{8}$$

Accept any correct decomposition that follows the stated number of addends and keeps the required denominator. Accept fraction-bar drawings when each whole is split into equal parts and the shaded parts match the equation.