

ADDITION AND SUBTRACTION 4.NF.3

Joining and Separating Parts Involving Same Size

Purpose: To illustrate addition of fractions by joining parts and subtraction by separating parts
Materials: *Fraction Bars*, pencils and paper

TEACHER MODELING/STUDENT COMMUNICATION

Activity 1 Joining (combining) fractional amounts

Fraction Bars

pencils and paper

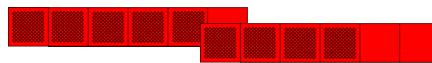
1. A cook has $\frac{3}{12}$ pound of chicken and buys $\frac{5}{12}$ pound more to make a chicken pie. Find *Fraction Bars* to represent each of these fractions.



a. If both amounts of chicken are used for making the pie, what is the total amount of chicken? ($\frac{8}{12}$ pound)

b. Joining or putting together parts of things involves addition of fractions. Write an addition equation for the sum of $\frac{3}{12}$ and $\frac{5}{12}$. ($\frac{3}{12} + \frac{5}{12} = \frac{8}{12}$)

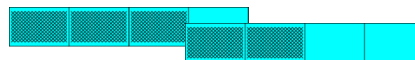
2. A bicycle repair shop has a chain of length $\frac{5}{6}$ yard and a chain of length $\frac{4}{6}$ yard and they plan to join them together. Find bars to represent each of these fractions.



a. If these two pieces of chain are joined together end to end, what is the total length? (Placing the shaded amounts of the bars end to end shows that the total shaded amount is one whole bar and $\frac{3}{6}$ of a bar. So the combined length of the chains is $1 \frac{3}{6}$ yards.)

b. Write an addition equation for the sum of $\frac{5}{6}$ and $\frac{3}{6}$. ($\frac{5}{6} + \frac{3}{6} = 1 \frac{3}{6}$)

3. A lawn care worker has a large two-gallon container with $\frac{3}{4}$ gallon of gasoline and a smaller container with $\frac{2}{4}$ gallon of gasoline. Find bars to represent each of these fractions.



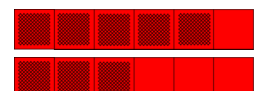
a. If the $\frac{2}{4}$ gallon of gasoline is poured into the larger container, what is the total amount of gasoline? ($1 \frac{1}{4}$ gallons)

b. Write an addition equation for the sum of $\frac{3}{4}$ and $\frac{2}{4}$. (Placing the shaded amounts of the bars end to end shows that the total shaded amount is one whole bar and $\frac{1}{4}$ of a bar. So the combined amount of gasoline is $1 \frac{1}{4}$ gallons.)

Fraction Bars and pencils and paper

Activity 2 Separating (removing) fractional amounts

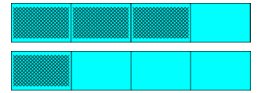
1. A science kit has $\frac{5}{6}$ ounce of sulfate and $\frac{3}{6}$ ounce is needed for an experiment. Find *Fraction Bars* to represent these fractions.



a. How much sulfate is left in the science kit after the experiment? (Lining up the bars shows the difference in the shaded amounts is 2 parts out of 6. So the difference in the fractions is $2/6$.)

b. Separating or removing fractional amounts involves subtraction. Write a subtraction equation for the difference of $5/6$ and $3/6$. ($5/6 - 3/6 = 2/6$)

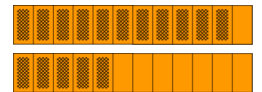
2. Maple Street School had $3/4$ ton of sand delivered and $1/4$ ton was used at the school playground. Find bars to represent each of these fractions.



a. After using $1/4$ ton of sand for the playground, how much sand was left? (Comparing the shaded amounts of the bars shows $2/4$ tons of sand was left.)

b. Write a subtraction equation for the difference of $3/4$ and $1/4$. ($3/4 - 1/4 = 2/4$)

3. The town purchased $11/12$ acre of land and constructed a building for equipment on $5/12$ acre. Find bars to represent each of these fractions.



a. How much of the $11/12$ acre of land was not used for the building? ($6/12$ acre)

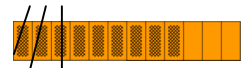
b. Write a subtraction equation for the difference of $5/6$ and $3/6$. ($5/6 - 3/6 = 2/6$)

Fraction Bars

Activity 1 Adding and subtracting fractions

pencils and paper

1. A construction company needs to pave a road that is $9/12$ of a mile long. Sketch a bar to represent this fraction. This can be done by tracing a $9/12$ Fraction Bar on a sheet of paper.



a. If they pave $3/12$ of a mile on the first day, what distance will be left to pave? ($6/12$ mile. This can be illustrated by marking off 3 shaded parts of the $9/12$ bar.)

b. If they can pave $3/12$ of a mile each day, how many days will it take them to pave $9/12$ of a mile? (3 days. This can be indicated by marking off groups of 3 parts.)



c. Write an addition equation showing the sum of the three fractions for paving the road in three days.

$$\frac{3}{12} + \frac{3}{12} + \frac{3}{12} = \frac{9}{12} \text{ mile}$$

d. Suppose paving of $9/12$ mile was done in two days. Sketch another copy of the $9/12$ bar, mark off two groups of shaded parts, and write an addition equation for the sum of the two fractions. (Answers will vary. As examples: $4/12 + 5/12 = 9/12$; or $3/12 + 6/12 = 9/12$; etc.)

INDEPENDENT PRACTICE and ASSESSMENT

Worksheets 4.NF.3 #1 and #2



fractionbars.com Set 2 Concentration

(16 Fraction Bars are shown face down. If a player turns over two bars whose total shaded amount is 1 whole bar, the player wins the two bars and receives a bonus turn. Bars of the same color will have parts of the same size.)

