

SUBTRACTION 5.NF.2

Solving Problems Involving Subtraction

Purpose: To solve problems involving subtraction of fractions and mixed numbers

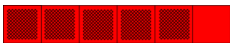
Materials: Fraction Bars and paper and pencils

TEACHER MODELING/STUDENT COMMUNICATION

Activity 1 Fractions and mixed numbers, equal denominators

Fraction Bars Illustrate the following information with visual fraction models and solve the problem.

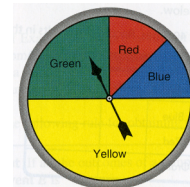
paper and
pencils

- The engineers drilled $\frac{5}{6}$ of a mile of a tunnel in June, but hit granite and drilled only $\frac{1}{6}$ of a mile in July. What fraction of a mile more did they drill in June? ($\frac{4}{6}$ or $\frac{2}{3}$ mile. Illustrate with  and cross off 3 parts.)
- The new tractor can plow $2\frac{1}{4}$ acres of land in one hour and the old tractor can plow $1\frac{3}{4}$ acres per hour. How much more land can the new tractor plow in one hour? ($\frac{2}{4}$ or $\frac{1}{2}$ acre. Illustrate with bars for $2\frac{1}{4}$ and remove $1\frac{3}{4}$ bars.)
- Aquila spent $4\frac{1}{3}$ hours practicing her ballet on Monday, and on Tuesday, her ballet class lasted $1\frac{2}{3}$ hours. How much more time did she spend in her practice session than in her ballet class? ($2\frac{2}{3}$ hours. Illustrate with bars for $4\frac{1}{3}$ and remove $1\frac{2}{3}$ bars.)

Activity 2 Fractions and mixed numbers, different denominators

pencils
and paper

- The new-born female chimp gained $2\frac{3}{4}$ ounces during the first week and the new-born male chimp gained $3\frac{1}{3}$ ounces in the first week. How much more weight did the male chimp gain? ($\frac{7}{12}$ ounce)
- There is a $\frac{1}{8}$ chance of spinning red on a spinner and a $\frac{1}{2}$ chance of spinning yellow. What is the chance of not spinning either color? ($\frac{3}{8}$)
- Bill worked $1\frac{1}{4}$ hours fixing the wheels on his skateboard and $2\frac{1}{3}$ hours patching the end of the board. How much longer did he spend patching his skateboard? ($1\frac{1}{12}$ hours)
- It is $2\frac{1}{2}$ miles on the Ridge Trail from Base Camp to Hidden Lake, and the total distance on this trail from base Camp to the top of the mountain is $5\frac{3}{8}$ miles. What is the distance from the lake to the top of the mountain on the Ridge Trail? ($2\frac{7}{8}$ miles)



Activity 3 Creating problems for fractions and mixed numbers

pencils
and paper

1. Ask students to draw sketches of this figure, label the figure for the following types of information, and create a word problem involving subtraction of fractions.



- Assume this figure represents a sheet of chocolate and make up a problem that involves $\frac{3}{8}$ of the chocolate and $\frac{1}{4}$ of the chocolate.
- Assume this figure represents a cake that has been divided into equal pieces and make up a problem involving $\frac{5}{8}$ of the cake and $\frac{2}{8}$ of the cake.

2. Ask students to create a word problem involving subtraction of mixed numbers and one of the following bits of information. Select a few appropriate problems for the class to solve.

- The recipe for Orange Custard calls for $2\frac{1}{4}$ cups of orange juice and the cook has two containers with $\frac{3}{4}$ cup and $1\frac{2}{3}$ cups of orange juice.
- The Goodwin parents measure and mark the heights of their children Joan, Mary and Roy on the back of the cellar door. Since the last measurements, Joan, Mary and Roy have grown $2\frac{1}{4}$, $2\frac{1}{3}$ and $2\frac{5}{6}$ inches, respectively.
- The rock-climbing practice wall at the Live Better Health Club has the following distances from the ground to the various levels: Top of the Beginners level is $10\frac{1}{2}$ feet; top of the Intermediate level is $15\frac{1}{3}$ feet; and top of the Expert Level is $24\frac{1}{4}$ feet.

Activity 4 Rounding fractions and mixed numbers

Pose the following problems involving rounding.

paper and
pencils

- During the worst storm of the monsoon season, it rained $19\frac{7}{8}$ inches, and in the second worse storm, it rained $14\frac{1}{5}$ inches. Round each amount to the nearest whole number to compute the approximate difference. (6 inches)
- Riley and Cameron loaded their backpacks for a 3-day wilderness trip. Riley's pack weighed $32\frac{3}{4}$ pounds and Cameron's weighed $44\frac{7}{8}$ pounds. Round each weight to the nearest whole number and compute the approximate difference. (12 pounds)
- Comparing a fraction to $\frac{1}{2}$ can often help to determine if an answer makes sense.
 - Is $1 - \frac{3}{5}$ greater than $\frac{1}{2}$? (No, $\frac{3}{5}$ is greater than $\frac{1}{2}$, so $\frac{3}{5} + \frac{1}{2}$ is greater than 1.)
 - Is $1 - \frac{1}{3}$ less than $\frac{1}{2}$? (No, $\frac{1}{3}$ is less than $\frac{1}{2}$, so $\frac{1}{3} + \frac{1}{2}$ is less than 1.)

INDEPENDENT PRACTICE and ASSESSMENT