

Peaches

Task

Alfredo picked $2\frac{3}{4}$ pounds of peaches from the tree in his backyard. He gave $1\frac{1}{4}$ pounds to his neighbor Madeleine. How many pounds of peaches does Alfredo have left?

Commentary

This task provides a context where it is appropriate for students to subtract fractions with a common denominator; it could be used for either assessment or instructional purposes. For this particular task, teachers should anticipate two types of solution approaches: one where students subtract the whole numbers and the fractions separately and one where students convert the mixed numbers to improper fractions and then proceed to subtract.

The first approach mentioned above works well for this particular task, but this will not always be the case; it just so happens that the whole number and fraction to be subtracted are both smaller than the whole number and fraction to be subtracted from. Students should develop a sense for when this method is a good approach and when it is not.

The second approach becomes more involved but works well with any given numbers. Students who choose this method illustrate a good understanding of the process of subtracting fractions, but may ultimately be taking the long route when it is unnecessary.

Both methods are legitimate approaches to solving this problem and the comparison of the two opens the opportunity for a great classroom discussion on being strategic about choosing an approach to solving a problem. Such a conversation would be more likely to occur if students are also asked to subtract, for example, $4\frac{2}{5} - 3\frac{4}{5}$. In that case, there are other strategies worth highlighting as well, such as "borrowing" one whole from the 4 and converting it to fifths. Also, if students write the answers in different but equivalent ways, this will present an excellent opportunity for classroom discussion about finding equivalent fractions.



Solutions

Solution: Method 1

Alfredo picked $2\frac{3}{4}$ pounds of peaches and gave $1\frac{1}{4}$ pounds to his neighbor Madeleine. To determine how many pounds of peaches Alfredo has left, we subtract the amount of peaches he gave away from the amount of peaches he picked.

$$2\frac{3}{4} - 1\frac{1}{4}$$

Let's break this into two smaller subtraction problems, beginning with the whole numbers. Alfredo had 2 full pounds of peaches and gave 1 full pound away.

$$2 - 1 = 1$$

He now has 1 full pound of peaches.

In addition to the 2 full pounds, Alfredo had $\frac{3}{4}$ of a pound of peaches and gave $\frac{1}{4}$ of a pound away.

$$\frac{3}{4} - \frac{1}{4} = \frac{2}{4}$$

He now has $\frac{2}{4}$ of a pound of peaches in addition to the 1 full pound of peaches. All together Alfredo has $1\frac{2}{4}$ pounds of peaches left. If students see that $\frac{2}{4}$ is equivalent to $\frac{1}{2}$ that is fine, but it is not required.

Solution: Method 2

Alfredo picked $2\frac{3}{4}$ pounds of peaches and gave $1\frac{1}{4}$ pounds to his neighbor Madeleine. To determine how many pounds of peaches Alfredo has left, we subtract the amount of peaches he gave away from the amount of peaches he picked.

$$2\frac{3}{4} - 1\frac{1}{4}$$

Let's begin by converting the mixed numbers to improper fractions.

$$2\frac{3}{4} = 2 + \frac{3}{4} = \frac{2}{1} + \frac{3}{4} = \frac{8}{4} + \frac{3}{4} = 1\frac{1}{4}$$

$$1\frac{1}{4} = 1 + \frac{1}{4} = \frac{1}{1} + \frac{1}{4} = \frac{4}{4} + \frac{1}{4} = \frac{5}{4}$$

Now we have

$$2\frac{3}{4} - 1\frac{1}{4} = 1\frac{1}{4} - \frac{5}{4} = \frac{6}{4}$$

Alfredo has $\frac{6}{4}$ pounds of peaches left.

If students rewrite this fraction as $\frac{3}{2}$ or $1\frac{2}{4}$ or $1\frac{1}{2}$, that is fine but not required. However, if different students write the solution in different ways and this task is being used in an instructional setting, it is important to be sure that they do, in fact, understand that all of these ways are equivalent.