Unlock the Problem

The Diaz family is cross-country skiing the Big Tree trails, which have a total length of 4 miles. Yesterday, they skied the $\frac{7}{10}$ mile Oak Trail. Today, they skied the $\frac{3}{5}$ mile Pine Trail. If they plan to ski all of the Big Tree trails, how many more miles do they have left to ski?

Use the graphic organizer to help you solve the problem.

Read the Problem

What do I need to find?
I need to find the distance ____________________.

What information do I need to use?
I need to use the distance ____________________ and the total distance ____________________.

How will I use the information?
I can work backward by starting with the ____________________ and ______________ each distance they have already skied to find amount they have left.

Solve the Problem

Addition and subtraction are inverse operations. By working backward and using the same numbers, one operation undoes the other.

- Write an equation.

\[
\text{miles skied yesterday} + \text{miles skied today} + \text{miles they need to ski} = \text{total distance}
\]

\[
\downarrow \quad \downarrow \quad \downarrow \quad \downarrow
\]

\[
\frac{7}{10} \quad \frac{3}{5} \quad m \quad 4
\]

- Then work backward to find \( m \).

\[
\frac{7}{10} \quad - \quad \frac{3}{5} \quad - \quad m = m
\]

\[
\frac{7}{10} \quad - \quad \frac{3}{5} \quad = m
\]

So, the family has ______________ miles left to ski.

- Evaluate Reasonableness

Explain how you know your answer is reasonable. ____________________
As part of their study of Native American basket weaving, Lia’s class is making wicker baskets. Lia starts with a strip of wicker 36 inches long. From the strip, she first cuts one piece but does not know its length, and then cuts a piece that is 6 1/2 inches long. The piece left is 7 3/4 inches long. What is the length of the first piece she cut from the strip?

### Read the Problem

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### Solve the Problem

So, the length of the first piece cut was ______ inches.
Name __________________________________________

Share and Show MATH BOARD

1. Caitlin has $4\frac{3}{4}$ pounds of clay. She uses $1\frac{1}{16}$ pounds to make a cup, and another 2 pounds to make a jar. How many pounds are left?

First, write an equation to model the problem.

Next, work backwards and rewrite the equation to find $x$.

Solve.

So, _______ pounds of clay remain.

2. **THINK SMARTER** What if Caitlin had used more than 2 pounds of clay to make a jar? Would the amount remaining have been more or less than your answer to Exercise 1?

3. A pet store donated 50 pounds of food for adult dogs, puppies, and cats to an animal shelter. $19\frac{3}{4}$ pounds was adult dog food and $18\frac{7}{8}$ pounds was puppy food. How many pounds of cat food did the pet store donate?

4. Thelma spent $\frac{1}{6}$ of her weekly allowance on dog toys, $\frac{1}{4}$ on a dog collar, and $\frac{1}{3}$ on dog food. What fraction of her weekly allowance is left?
5. **Go Deeper**  
Martin is making a model of a Native American canoe. He has 5\(\frac{1}{2}\) feet of wood. He uses 2\(\frac{3}{4}\) feet for the hull and 1\(\frac{1}{4}\) feet for a paddle. How much wood does he have left?

6. **Think Smarter**  
Beth’s summer vacation lasted 87 days. At the beginning of her vacation, she spent some time at soccer camp, 5 days at her grandmother’s house, and 13 days visiting Glacier National Park with her parents. She then had 48 vacation days remaining. How many weeks did Beth spend at soccer camp?

7. **Mathematical Practice** 2  
**Reason Quantitatively**  
You can buy 2 DVDs for the same price you would pay for 3 CDs selling for $13.20 apiece. Explain how you could find the price of 1 DVD.

8. **Think Smarter**  
Julio caught 3 fish weighing a total of 23\(\frac{1}{2}\) pounds. One fish weighed 9\(\frac{5}{8}\) pounds and another weighed 6\(\frac{1}{4}\) pounds. How much did the third fish weigh? Use the numbers and symbols to write an equation that represents the problem. Then solve the equation. Symbols may be used more than once or not at all.

\[
23\frac{1}{2} + 9\frac{5}{8} + 6\frac{1}{4} = x
\]

weight of third fish: \(\underline{\phantom{0}}\) pounds
Read each problem and solve.

1. From a board 8 feet in length, Emmet cut two 2\(\frac{1}{3}\)-foot bookshelves. How much of the board remained?

   Write an equation: \(8 = 2\frac{1}{3} + 2\frac{1}{3} + x\)

   Rewrite the equation to work backward:
   \[8 - 2\frac{1}{3} - 2\frac{1}{3} = x\]

   Subtract twice to find the length remaining: 3\(\frac{1}{3}\) feet

2. Lynne bought a bag of grapefruit, 1\(\frac{5}{8}\) pounds of apples, and 2\(\frac{3}{16}\) pounds of bananas. The total weight of her purchases was 7\(\frac{1}{2}\) pounds. How much did the bag of grapefruit weigh?

3. Mattie’s house consists of two stories and an attic. The first floor is 8\(\frac{5}{6}\) feet tall, the second floor is 8\(\frac{1}{2}\) feet tall, and the entire house is 24\(\frac{1}{3}\) feet tall. How tall is the attic?

4. It is 10\(\frac{3}{5}\) miles from Alston to Barton and 12\(\frac{1}{2}\) miles from Barton to Chester. The distance from Alston to Durbin, via Barton and Chester, is 35 miles. How far is it from Chester to Durbin?

5. Marcie bought a 50-foot roll of packing tape. She used two 8\(\frac{5}{6}\)-foot lengths. How much tape is left on the roll?

6. **WRITE Math** Write a word problem involving fractions for which you would use the work backward strategy and addition to solve. Include your solution.
Lesson Check (5.NF.A.2)

1. Paula spent $\frac{3}{8}$ of her allowance on clothes and $\frac{1}{6}$ on entertainment. What fraction of her allowance did she spend on other items?

2. Della bought a tree seedling that was $2\frac{1}{4}$ feet tall. During the first year, it grew $1\frac{1}{6}$ feet. After two years, it was 5 feet tall. How much did the seedling grow during the second year?

Spiral Review (5.OA.A.1, 5.NBT.A.2, 5.NBT.B.6, 5.NF.B.7)

3. What is a way to write 100,000 using exponents?

4. What expression can be used for estimating $868 \div 28$?

5. Justin gave the clerk $20 to pay a bill of $6.57. How much change should Justin get?

6. What is the value of the following expression?

\[ 7 + 18 \div (6 - 3) \]