Inquiry Lab

Solve One-Step Addition and Subtraction Equations

Inquiry **HOW can bar diagrams or algebra tiles help you solve an equation?**

In a recent year, 19 of the 50 states had a law banning the use of handheld cell phones while driving a school bus. Determine how many states did *not* have this law.

Hands-On Activity 1

You can represent this situation with an equation.

Step 1 The bar diagram represents the total number of states and the number of states that have passed a cell phone law. Fill in the missing information.

50 states	
states with a law	states that do not have a law
19 states	? X
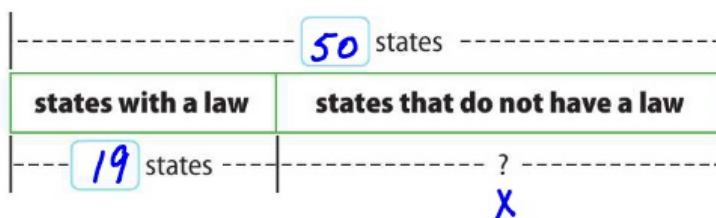
Step 2 Write an equation from the bar diagram. Let *x* represent the states that do not have a cell phone law for school bus drivers.

$$19 + x = 50$$

Step 3 Use the *work backward* strategy to solve the equation. Since $19 + x = 50$, $x = 50 - 19$. So, $x = 31$.

Check $19 + 31 = 50$ ✓

$$\begin{array}{r} 1 \\ 19 \\ +31 \\ \hline 50 \end{array}$$

So, 31 states did *not* have a law banning the use of cell phones by bus drivers.

Investigate

Collaborate
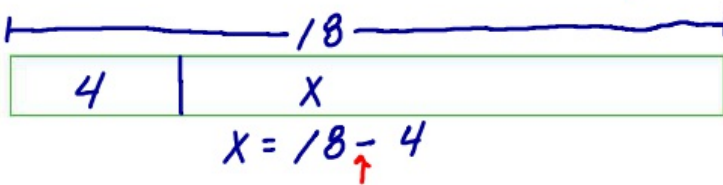
Work with a partner to solve each problem.

1. Draw a bar diagram and write an addition equation to represent the following situation. Then solve the equation.
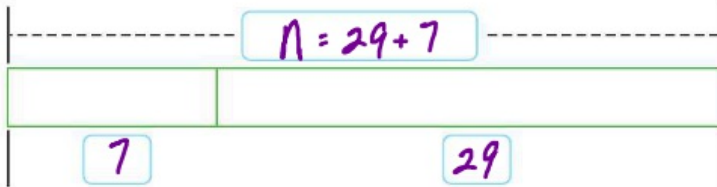
   The sum of a number and four is equal to 18.

   $+$ X $=$

   $X + 4 = 18$

4	X

   18

   $X = 18 - 4$

   Equation: $X = 18 - 4$ Solution: $x =$ 14

2. **GCSS** **Use Math Tools** Jack collects postage stamps. He sold 7 of his stamps and had 29 stamps left. Complete the bar diagram below. Then write and solve a subtraction equation to find the number of stamps Jack had at the beginning.

   $n = 29 + 7$

7	29

   Equation: $29 + 7 = n$ Solution: $n =$ 36

   So, Jack had 36 stamps at the beginning.

Analyze and Reflect

Collaborate

3. Suppose Jack sold 15 stamps and had 21 stamps left. How would the bar diagram change?

   _____

   _____

4. **GCSS** **Reason Abstractly** Suppose Jack had 40 stamps in the beginning and sold 7 of them. How would the bar diagram change? What equation could you write to represent the situation?

   _____

   _____

Handwritten notes:

2 TIME 3 EQUALS 6

$2(3) = 6$

$2 \cdot 3 = 6$

CHECK

$\begin{array}{r} 36 \\ -7 \\ \hline 29 \end{array}$ LEFT