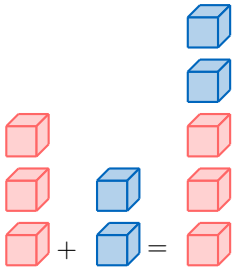
LINK BETWEEN ADDITION AND SUBTRACTION

A UNDERSTANDING INVERSE OPERATIONS

Discover: Addition and subtraction are partners that undo each other. Think of them as a team!
Let's see how they work together.

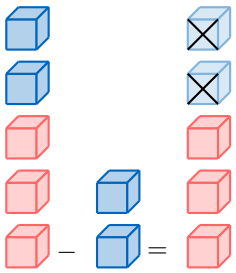
- **First, we add.** If you have 3 red blocks and you get 2 blue blocks, you have 5 blocks in total.

$$3 + 2 = 5$$



- **Now, we subtract.** If you start with those 5 blocks and take away the 2 blue ones, you are left with the 3 red blocks you started with.

$$5 - 2 = 3$$

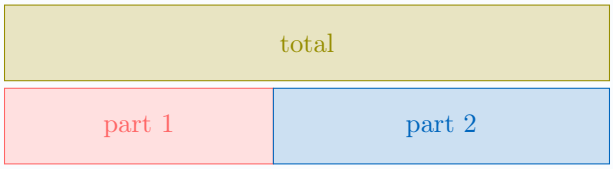


See? Adding 2 and then subtracting 2 brings you right back to where you started. They are inverse operations!

Proposition Link Between Addition and Subtraction

$$\text{part 1} + \text{part 2} = \text{total}$$

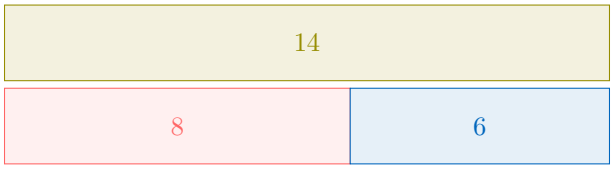
$$\text{total} - \text{part 1} = \text{part 2} \qquad \text{total} - \text{part 2} = \text{part 1}$$



Ex:

$$8 + 6 = 14$$

$$14 - 6 = 8 \qquad 14 - 8 = 6$$



Method Using Addition to Solve Subtraction (Counting Up)

Because addition and subtraction are linked, you can solve a subtraction problem by thinking of it as a "missing part" addition problem.
To solve $13 - 9$, ask yourself: "What do I add to 9 to make 13?"

1. Start at 9.
2. Count up until you reach 13: "10, 11, 12, 13."
3. How many numbers did you count? You counted 4 numbers.

Therefore, $13 - 9 = 4$, because $9 + 4 = 13$.

B PROBLEM-SOLVING WITH PART-WHOLE MODELS

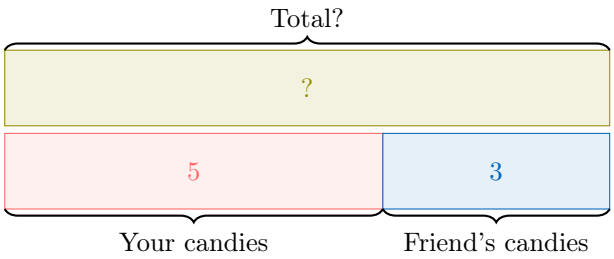
Method **Steps to Solve Word Problems**

1. **Understand the Story:** Read the problem to identify the **parts** and the **whole**.
2. **Draw a Model:** Use a part-whole bar model to organize the information.
3. **Choose the Operation:** If the **whole** is unknown, you **add** the parts. If a **part** is unknown, you **subtract** the known part from the whole.
4. **Solve and Check:** Calculate the answer and make sure it makes sense in the context of the story.

Ex: You have 5 candies, and your friend gives you 3 more. How many candies do you have in total?

Answer:

- **Analysis:** We know the two parts (5 and 3) and need to find the whole (total). We must add.
- **Model:**



- **Solve:** $5 + 3 = 8$. You have 8 candies in total.