

Addition and Subtraction Word Problems: math lesson, Grade 2 – download the PDF

A word problem is a little story with numbers inside. Your job is to be a math detective: read the story, find what is known, find what is missing, and choose the right plan. In this chapter you will solve add to, take from, put together, take apart and compare problems, and you will learn to draw bar models and write equations with a box for the unknown number.

1. Reading a word problem like a detective

Every word problem has three parts: a **story**, some **known numbers**, and a **question** that asks for one **unknown** number. Before you add or subtract, follow these steps.

M

Method: the four-step plan

1. Read the story twice. Picture it in your mind.
2. Underline the question and circle the numbers.
3. Draw a bar model or a quick sketch, and write an equation with a symbol such as $\square$ for the unknown number.
4. Solve it, then check: does your answer make sense, and did you write a complete sentence with the unit?

The symbol $\square$ (or a letter such as n) stands for the number we do not know yet. For example, $23 + \square = 40$ means “23 plus some number makes 40.”

2. Add to and take from problems

In an **add to** problem, something joins a group, so the group gets bigger. In a **take from** problem, something leaves, so the group gets smaller. Clue words such as *more, joined, got, arrived* often mean add to. Clue words such as *ate, gave away, left, flew away* often mean take from. Be careful: clue words can fool you, so always picture the story.

D Add to and take from

Start + Change = Result (add to)

Start – Change = Result (take from)

E Example 1: add to, result unknown

Maya has 38 stickers. Her aunt gives her 27 more. How many stickers does Maya have now?

The group gets bigger, so we add: $38 + 27 = \square$. Add the tens: $30 + 20 = 50$. Add the ones: $8 + 7 = 15$. Then $50 + 15 = 65$.

Maya has 65 stickers.



3. Put together and take apart problems

Sometimes nothing joins or leaves. Instead, a whole is made of two parts. In a **put together** problem you know both parts and look for the whole. In a **take apart** problem you know the whole and one part, and you look for the other part.

P Part-part-whole

Part + Part = Whole. So Whole – Part = the other Part.

Example: a pond has 36 ducks and 28 geese. All the birds together: $36 + 28 = 64$. Now flip it around: 64 birds in all and 36 are ducks. The geese are $64 - 36 = 28$.

Notice that addition and subtraction are partners. A missing part can be found with a subtraction, or with “think addition”: what do I add to 36 to reach 64?

4. Compare problems

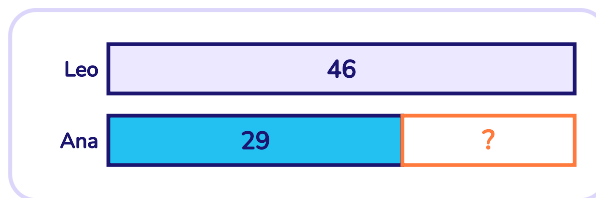
In a compare problem, two amounts are set side by side. The question asks *how many more*, *how many fewer*, or gives you the difference. To find the difference, subtract the smaller number from the larger number.

E Example 2: how many more?

Leo has 46 trading cards. Ana has 29 cards. How many more cards does Leo have?

Draw two bars. The extra part of the long bar is the difference. We compute $46 - 29 = \square$. Count up from 29: $29 + 1 = 30$, $30 + 16 = 46$, and $1 + 16 = 17$.

Leo has 17 more cards than Ana.



Watch out for “fewer” and “more”

If Dan read 19 fewer pages than Eve, then Eve read *more* than Dan. To find Eve’s pages you add 19 to Dan’s pages. Do not subtract just because you see the word “fewer.” Draw the bars first!

5. The unknown can be anywhere

In every problem above the answer came last. But the unknown can hide in three places: the result, the change, or the start.

What is unknown?	Story	Equation	Answer
Result	35 pens, 12 are added	$35 + 12 = \square$	47
Change	35 pens, some are added, now 47	$35 + \square = 47$	12
Start	Some pens, 12 are added, now 47	$\square + 12 = 47$	35

E**Example 3: the start is unknown**

Some birds sat on a wire. Then 15 birds flew away, and 28 birds stayed. How many birds were on the wire at first?

Equation: $\square - 15 = 28$. Birds left plus birds that flew away gives the start:
 $28 + 15 = 43$.

There were 43 birds on the wire at first. Check: $43 - 15 = 28$.

When the unknown is the change, use “think addition” or count up. When the unknown is the start of a take from story, you *add* the leftover and the amount taken. Always check by putting your answer back in the story.

!**Zyro's tip**

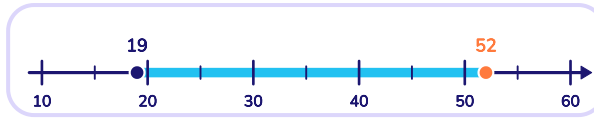
On my planet we say: “If the story is hiding a number, write a box for it first.” Once the box is in your equation, the story is no longer confusing!

6. Drawing bar models and number lines

A **bar model** is a drawing made of boxes. Each box is a number. A bracket shows the whole. Bar models help you see which number is the whole and which numbers are parts.

- Put together: two part boxes side by side, and a bracket with the whole.
- Take apart: one bracket with the whole, one known part box, and one part box marked with a question mark.
- Compare: two bars, one above the other. The extra piece of the longer bar is the difference.

A number line can show a missing part too. For $52 - 19$, start at 19 and hop up to 52. The total length of the hops is the answer: $1 + 30 + 2 = 33$.



7. Two-step word problems

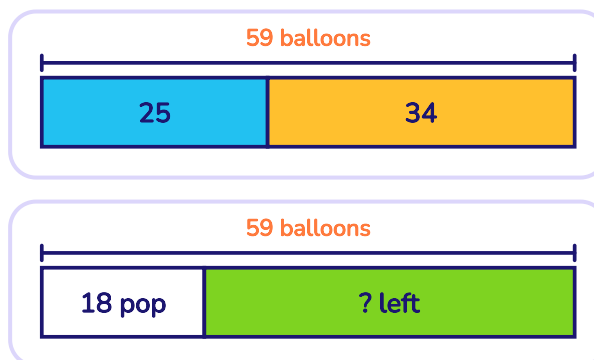
A two-step problem needs two calculations. The first answer is a stepping stone that you use in the second step. Underline the question, and ask yourself: “What do I need to know first?”

E Example 4: a two-step problem

A party shop has 25 red balloons and 34 blue balloons. Then 18 balloons pop. How many balloons are left?

Step 1: how many balloons at first? $25 + 34 = 59$. Step 2: take away the popped balloons: $59 - 18 = 41$.

We can write the plan with a symbol: $25 + 34 = \square$, then $59 - 18 = \triangle$. There are 41 balloons left.



You can also write one long equation with a letter for the unknown, such as $25 + 34 - 18 = n$. Solve it from left to right.

8. Choosing the operation

How do you know whether to add or subtract? Ask what is happening in the story, not just which words you see.

The story is about...	Operation	Example question
Joining groups or finding the whole	Add	How many in all?
Taking away or finding what is left	Subtract	How many are left?
Finding a missing part of a whole	Subtract (or think addition)	How many are not red?
Comparing two amounts	Subtract	How many more? How many fewer?

After you choose, estimate. For $58 + 39$, round 39 up to 40 and think $58 + 40 = 98$, so the answer is a little less than 98 (it is 97). An estimate protects you from silly mistakes.

Key takeaways

- Read, picture, draw, write an equation, solve, and check. Answer in a complete sentence.
- Add to: $\text{Start} + \text{Change} = \text{Result}$. Take from: $\text{Start} - \text{Change} = \text{Result}$.
- $\text{Part} + \text{Part} = \text{Whole}$. A missing part is found by subtracting from the whole, or by thinking addition.
- In compare problems, subtract the smaller number from the larger one to get the difference.
- The unknown can be the start, the change, or the result. Use a box $\square$ for it.
- Two-step problems need two calculations: find the stepping stone first.
- Do not trust clue words alone. “Fewer” can mean you must add. Draw a bar model to be sure.



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