Word Problems

A GUIDE

Crack any story problem by making a plan first and computing second.

Read Like a Detective

A word problem is a tiny story with clues hiding inside. Your first job is not to compute anything. Your first job is to find the clues.

Here is the move: underline each number, and next to it write what it counts. Not just 4 — write 4 boxes. Not just 6 — write 6 crayons in each box. A number without a label is a clue you have not finished collecting.

Then read the last sentence twice. That sentence tells you what the story is really asking for. Everything else is just the setup.

Worked example Rosa has 4 boxes of crayons. Each box holds 6 crayons. She also finds 5 loose crayons under her desk. How many crayons does Rosa have in all?

1. Underline the numbers and label them: 4 boxes, 6 crayons in each box, 5 loose crayons.
2. Read the question: it asks for the total number of crayons.
3. Notice you are not computing yet — you are just collecting labeled clues.

Answer: **Clues found: 4 boxes, 6 per box, 5 loose. Question: total crayons.**

Spot the Equal Groups

Now look at your clues and hunt for equal groups. Words like each, every, and per are whispering the same secret: the groups are all the same size. Same-size groups mean one thing — multiply.

Rosa's 4 boxes each hold 6 crayons. That is 6 + 6 + 6 + 6, which is exactly what 4 × 6 means. Multiplying is just fast adding when every group matches.

If the story shares a total into equal groups instead — like 24 crayons split among 4 friends — the same idea runs backward. Equal groups going the other way means divide.

$$6 + 6 + 6 + 6 = 24$$

↳ *4 equal boxes of 6 — same-size groups, so 4 × 6 = 24*

Worked example A parking lot has 5 rows of cars. Every row has 8 cars. How many cars are in the lot?

1. The word every signals equal groups: 5 rows, 8 cars in each.
2. Equal groups mean multiply: 5 × 8.
3. Compute: 5 × 8 = 40.

Answer: **40 cars**

Multiply First, Then Combine

Most word problems are a two-part song. Part one: figure out each group with × or ÷. Part two: combine the pieces with + or −. The order matters — multiply or divide first, then add or subtract.

Back to Rosa. The boxes are the equal-groups part: 4 × 6 = 24 crayons. The 5 loose crayons are not in a box, so they wait for the combine step: 24 + 5 = 29.

If you had added first — 6 + 5, then × 4 — you would have invented crayons that do not exist. Doing × and ÷ before + and − keeps the story honest.

$$24 + 5 = 29$$

↳ *multiply first: 4 boxes × 6 = 24, then add the 5 loose crayons*

Worked example A bakery bakes 3 trays of 12 muffins in the morning. By noon, 20 muffins are sold. How many muffins are left?

1. Equal groups first: 3 trays × 12 muffins = 36 muffins baked.
2. Now combine: 20 were sold, so subtract.
3. 36 − 20 = 16.

Answer: 16 muffins

Write the Plan Before You Compute

Here is the habit that makes you unstoppable: write your whole plan as one number sentence before touching a single calculation. For Rosa, the plan is 4 × 6 + 5. For the bakery, it is 3 × 12 − 20. The plan is a map of the story.

A plan protects you from trick numbers, too. Some problems toss in a number you never need — like the baker being 34 years old. If a number does not fit your plan, it was never a real clue.

Last move: check that your answer matches what the question asked. If the story asked for muffins left and you found muffins baked, you solved the wrong mystery. One quick reread catches it every time.

40 + 18 = 58

↳ plan each part: 5 packs of 8 = 40, then 3 packs of 6 = 18, combine last

Worked example Jun buys 5 packs of 8 trading cards and 3 packs of 6 stickers. His sister is 11 years old. How many items does Jun buy in all?

1. Label the clues: 5 packs of 8 cards, 3 packs of 6 stickers, sister's age 11.
2. The age fits nowhere in the plan — it is a trick number, so drop it.
3. Write the plan: 5 × 8 + 3 × 6.
4. Multiply first: 40 and 18. Then combine: 40 + 18 = 58.

Answer: 58 items

Remember

★ Underline every number and write what it counts — a number without a label is not a clue yet.

★ The words each, every, and per are whispering multiply (or divide, if a total is being shared out).

★ Write the whole plan as one number sentence, and always do × and ÷ before + and −.

★ Reread the question at the end — make sure your answer is the thing the story actually asked for.

Now you try

1) Mia has 3 bags with 4 apples in each bag. How many apples does she have?
   Answer: _____

2) A bookshelf holds 5 rows of 6 books. Then 2 books are checked out. How many books are still on the shelf?
   Answer: _____

3) Sam buys 4 packs of 8 stickers and gets 5 more stickers from a friend. How many stickers does Sam have?
   Answer: _____

4) A baker makes 6 trays of 12 muffins and sells 50 of them. How many muffins are left?
   Answer: _____

5) A garden has 3 rows of 9 carrot plants and 4 rows of 6 bean plants. How many plants are in the garden?
   Answer: _____

6) 48 pencils are shared equally among 6 tables, and then each table gets 2 extra pencils. How many pencils does each table have?
   Answer: _____

7) Ride tickets cost 7 coins each. Leo buys 5 tickets and has 9 coins left over. How many coins did Leo start with?

Answer: _____

8) Ava reads 15 pages a day for 6 days, then reads 40 more pages on the weekend. Her book has 200 pages. How many pages are left to read?

Answer: _____

Answers — check yourself

1. 12
2. 28
3. 37
4. 22
5. 51
6. 10
7. 44
8. 70