

Grade 3 · Two-Step Word Problems and Patterns · Lesson

Common Core 3.OA.D.8, 3.OA.D.9 · mathovore.fr

A two-step word problem needs two operations to solve. Draw a tape diagram, write an equation with a letter for the unknown, and solve one step at a time. Check your answer with an estimate. Arithmetic patterns follow a rule, like add 4, and you can see them in the multiplication table.

Grade 3 Common Core: 3.OA.D.8 · 3.OA.D.9

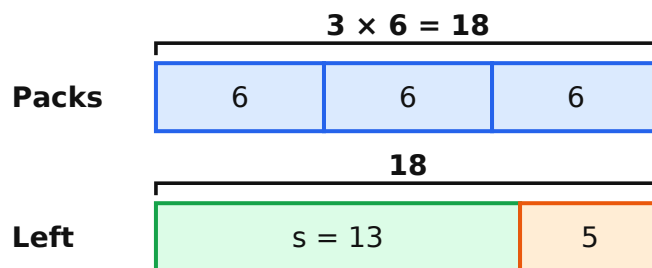
Key facts:

- A two-step problem needs two operations, such as multiply then subtract.
- Use a letter such as s or c for the unknown number.
- With no parentheses, multiply and divide before you add and subtract.
- Round numbers to estimate and check that an answer is reasonable.
- An arithmetic pattern follows a rule such as add 6 or subtract 9.

What is a two-step word problem?

A two-step word problem needs two operations before you reach the answer. Maya buys 3 packs of stickers with 6 stickers in each pack. She gives 5 stickers to a friend. How many stickers does she have left?

Step 1: find how many stickers she had. $3 \times 6 = 18$. Step 2: take away the 5 she gave away. $18 - 5 = 13$.



Step 1 finds 18 stickers in all. Step 2 takes away 5 to leave 13.

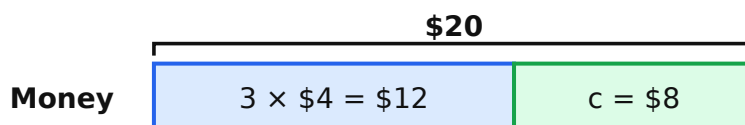
How do you write an equation with a letter for the unknown?

Unknown number

An **unknown** is a number you do not know yet. We stand for it with a letter such as s , c , or n . An **equation** has an equal sign, like $s = 3 \times 6 - 5$.

1. Read the problem and find the question.
2. Draw a tape diagram.
3. Choose a letter for the unknown and write an equation.
4. Solve one step at a time.
5. Check that the answer makes sense.

Example. Jamal has \$20 and buys 3 notebooks that cost \$4 each. How much change c does he get? The equation is $c = 20 - 3 \times 4$. Multiply first: $3 \times 4 = 12$. Then subtract: $20 - 12 = 8$. Jamal gets \$8.

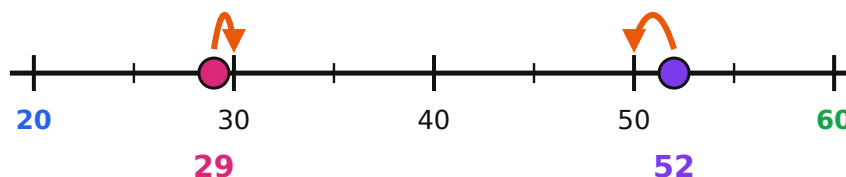


Jamal pays \$20. The notebooks cost \$12, so the change is \$8.

When an expression has no parentheses, do multiplication and division first, then addition and subtraction. Parentheses go first. So $4 + 3 \times 5 = 19$, but $(4 + 3) \times 5 = 35$.

How can estimation show that an answer is reasonable?

Round the numbers to the nearest 10 or 100, then compute. To check $52 + 29$, round to $50 + 30 = 80$. If you get 81, the answer is reasonable. If you get 810, something went wrong.

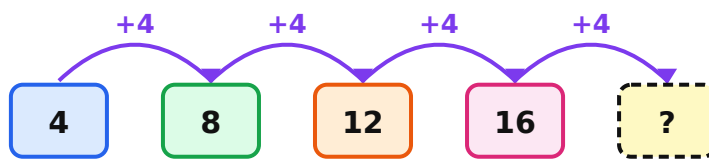


29 rounds to 30 and 52 rounds to 50, so the estimate is $30 + 50 = 80$.

What is an arithmetic pattern?

An arithmetic pattern is a list of numbers that follows a rule, such as add 4 each time. The

pattern 4, 8, 12, 16 keeps adding 4, so the next number is 20. To find a rule, subtract neighbors: $8 - 4 = 4$ and $12 - 8 = 4$.



The rule is add 4. The missing number is $16 + 4 = 20$.

What patterns are in the multiplication table?

- Any number times 2 is a double, so the products 2, 4, 6, 8, and so on are even.
- The 4s row doubles the 2s row. $4 \times 6 = 2 \times 6 + 2 \times 6 = 12 + 12 = 24$.
- Multiples of 5 end in 0 or 5.
- An even number times any whole number is even, because groups of an even number split into pairs with none left over.

$\times$	1	2	3	4	5	6
2	2	4	6	8	10	12
4	4	8	12	16	20	24
6	6	12	18	24	30	36

Every number in the 4s row is double the number above it in the 2s row.

Two-Step Word Problems and Patterns: frequently asked questions

What is a two-step word problem?

It is a story problem that needs two operations. For example, find 3 packs of 6 stickers first, then subtract 5 given away. Each step gives a number you use in the next step.

How do you write an equation with a letter?

Choose a letter for the number you do not know, such as c for change. Then write an equation that matches the story, like $c = 20 - 3 \times 4$. Solve it in order, one operation at a time.

What is the order of operations in third grade?

Do the parentheses first. If there are none, do multiplication and division before addition and subtraction. So $4 + 3 \times 5$ equals 19, not 35.

How does rounding help check an answer?

Round each number to the nearest 10 or 100 and compute quickly. If your exact answer is close to the estimate, it is reasonable. If it is far away, look for a mistake.

What patterns are in the multiplication table?

The 2s row is all even numbers, and the 4s row is double the 2s row. The 5s row ends in 0 or 5. An even number times any whole number is even.