

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

Common Core 3.OA.D.8, 3.OA.D.9 · maths-pdf.fr/en/

This **two step problems lesson** for 3rd Grade covers two-step word problems and patterns (Common Core 3.OA.D.8, 3.OA.D.9), with a free PDF to print.

A two-step word problem needs two calculations to answer. First solve the hidden question, then use that answer in a second step. A letter stands for the unknown number, and estimation by rounding checks that the answer is reasonable. Grade 3 students also find rules in arithmetic patterns.

Grade 3 · Common Core State Standards: **3.OA.D.8, 3.OA.D.9**

Key facts in this two step problems lesson

Key facts

- A two-step problem has a hidden question that is solved first.
- A letter such as m stands for the unknown number in an equation.
- Rounding to the nearest 10 gives a quick estimate to check an answer.
- An arithmetic pattern follows a rule such as add 7 each time.
- $\text{Odd} + \text{odd} = \text{even}$, $\text{even} + \text{even} = \text{even}$, $\text{even} + \text{odd} = \text{odd}$.

What is a two-step word problem?

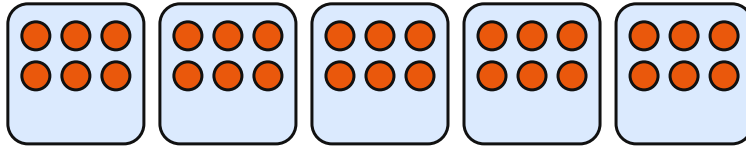
Some story problems hide a question inside the question. You must answer the hidden question first. Then you use that answer to solve the question the story asks.

Two-step problem

A **two-step problem** needs two calculations, such as multiply then subtract. A **letter** such as m stands for the unknown number you are looking for.

How do you solve a two-step problem with a letter for the unknown?

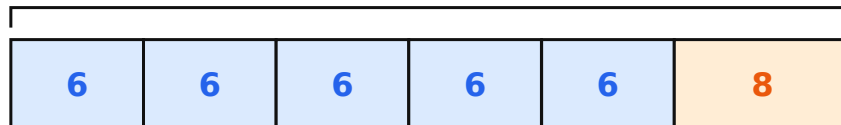
Priya has 5 bags with 6 marbles in each bag. She gives 8 marbles to her cousin. How many marbles m are left?



Five bags with 6 marbles in each bag.

1. Read the story and find the hidden question: How many marbles are in the bags?
2. Solve it: $5 \times 6 = 30$.
3. Use that answer in the second step: $30 - 8 = 22$.
4. Write one equation with the letter: $5 \times 6 - 8 = m$.

Priya starts with 30 marbles, then gives away 8

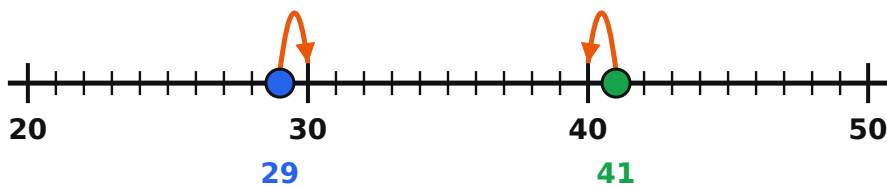


Five bags of 6 make 30. Then 8 marbles go away.

Priya has **22 marbles** left, so $m = 22$.

How can estimation tell you if an answer makes sense?

Round each number to the nearest ten, then add or subtract the rounded numbers. A good answer is close to your estimate. To check $29 + 41$, think $30 + 40 = 70$. The exact answer, 70, matches.



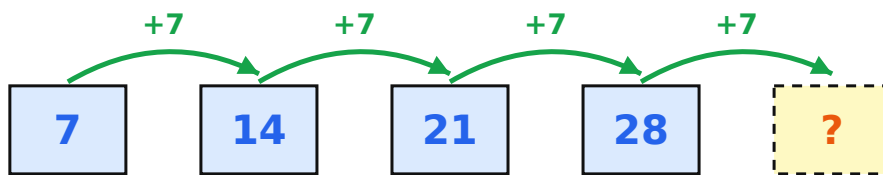
29 is close to 30 and 41 is close to 40.

If a classmate says $29 + 41 = 90$, the estimate shows the answer is not reasonable.

What is an arithmetic pattern?

Arithmetic pattern

An **arithmetic pattern** is a list of numbers that follows a rule, such as add 7 each time. Look at the numbers to find the rule, then use the rule to find the next ones.



The rule is add 7 each time.

Patterns also hide in the multiplication chart. Every multiple of 4 is a number you reach by counting by 4s. Look at the ones digits of the shaded numbers: 4, 8, 2, 6, 0, and then they repeat.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

The shaded numbers are the multiples of 4.

Here are three facts about even and odd numbers that you can test with real numbers.

Sum	Result	Example
even + even	even	$6+8=14$
odd + odd	even	$7+5=12$
even + odd	odd	$4+9=13$

Two step problems lesson: questions and answers

How do you know which operation to do first in a two-step problem?

Ask what the story needs before it can answer its question. That hidden question is the first step. Its answer is the number you use in the second step.

Why do we use a letter for the unknown number?

A letter holds the place of the number you do not know yet. It lets you write the whole story as one equation, such as $5 \times 6 - 8 = m$.

What does it mean for an answer to be reasonable?

A reasonable answer is close to your estimate. Round the numbers to the nearest ten or hundred, compute quickly, and see if the exact answer is near that result.

How do you find the rule of a number pattern?

Subtract each number from the one after it. If the difference is always the same, such as 7, the rule is add 7. Then keep adding 7 to find the next numbers.

Is the sum of two odd numbers even or odd?

It is always even. Two odd numbers each have one extra, and the two extras make a pair. For example, $7 + 9 = 16$, and 16 is even.

How to use this two step problems lesson

Read the definitions first, then follow the worked method line by line and redo the example on paper without looking. When every step makes sense, move on to the worksheet, then check yourself with the quiz.

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