

Grade 4 - Multiplicative Comparison - Lesson

Common Core 4.OA.A.1, 4.OA.A.2 · maths-pdf.fr/en/

A multiplicative comparison tells how many times as many or times as much one amount is than another. It uses multiplication, such as $28 = 4 \times 7$, which means 28 is 4 times as many as 7. An additive comparison tells how many more or fewer. Draw a bar model, then multiply or divide.

Grade 4 · Common Core State Standards: **4.OA.A.1, 4.OA.A.2**

Key facts

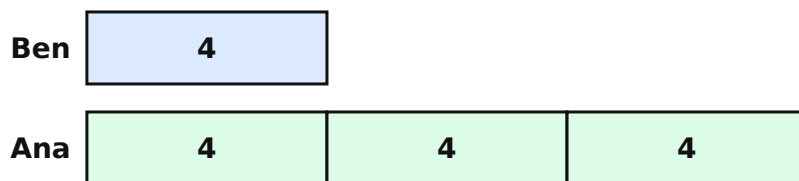
- "A is n times as many as B" means $A = n \times B$.
- "More than" and "fewer than" are additive comparisons; "times as many" is multiplicative.
- To find the bigger amount, multiply. To find the smaller amount or the number of times, divide.
- Use a letter for the unknown, such as $28 = 4 \times b$.
- A bar model with equal units shows the comparison clearly.

What is a multiplicative comparison?

A comparison can tell how many more or how many times as many. When you say "3 times as many," you are using multiplication.

Multiplicative comparison

A **multiplicative comparison** says one amount is a number of *times as many* (or *times as much*) as another amount. The equation looks like $a = n \times b$.

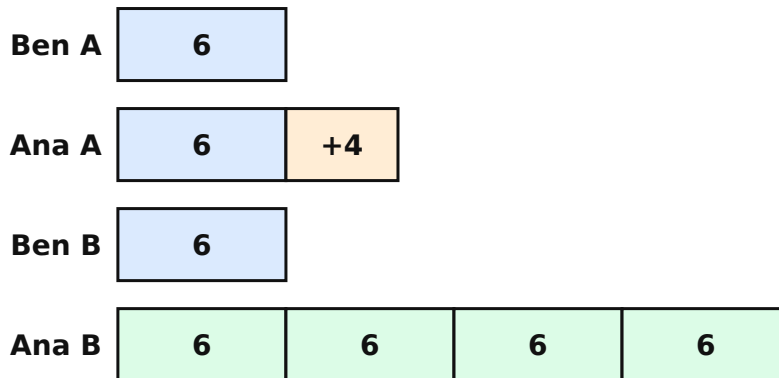


Ben has 4 stickers. Ana has 3 times as many: three groups of 4 make 12.

Ben has 4 stickers. Ana has 3 times as many, so Ana has $3 \times 4 = 12$ stickers.

How is it different from an additive comparison?

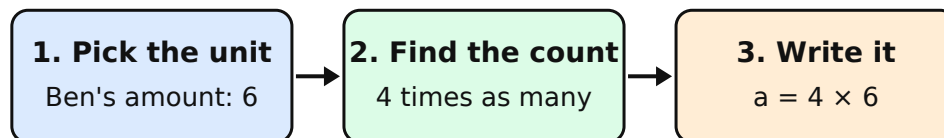
An additive comparison tells how many *more* or *fewer*. A multiplicative comparison tells how many *times* as many. Look at the key words.



Set A: Ana has 4 more than Ben (add). Set B: Ana has 4 times as many as Ben (multiply).

Sentence	Type	Equation
Ana has 4 more than Ben (6)	additive	$6+4=10$
Ana has 4 times as many as Ben (6)	multiplicative	$4\times 6=24$

How do you write an equation for a comparison?



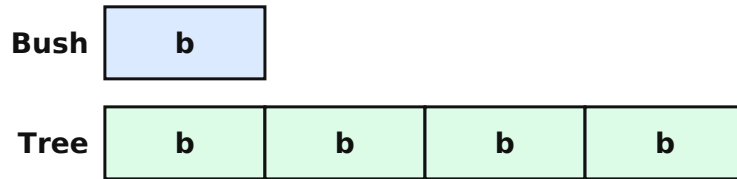
Turn a comparison sentence into an equation in three steps.

The amount being compared to is the **unit**. The number of times tells how many units to take. Use a letter, like a , for the unknown.

How do you find the unknown?

There are three cases. Each one uses the equation $big = n \times small$.

- Unknown big amount: multiply. $big = 4 \times 7 = 28$.
- Unknown small amount: divide. If $28 = 4 \times b$, then $b = 28 \div 4 = 7$.
- Unknown number of times: divide. If $28 = n \times 7$, then $n = 28 \div 7 = 4$.



The tree is 28 feet tall. It is 4 times as tall as the bush, so 4 equal bars make 28 feet.

Example: A tree is 28 feet tall. It is 4 times as tall as a bush. Write $28 = 4 \times b$. Then $b = 28 \div 4 = 7$. The bush is 7 feet tall.

Questions about multiplicative comparison

What does "times as many" mean?

It means you take the smaller amount that number of times. If Maya has 3 times as many stickers as Jamal, who has 5, then Maya has $3 \times 5 = 15$ stickers.

How can I tell an additive comparison from a multiplicative one?

Look for the key words. "More than" and "fewer than" tell you to add or subtract. "Times as many" or "times as much" tells you to multiply or divide.

How do I find how many times as many one number is than another?

Divide the bigger number by the smaller number. A \$72 bike costs how many times as much as a \$9 helmet? Since $72 \div 9 = 8$, it costs 8 times as much.

Why use a letter for the unknown?

A letter holds the place of the number you want to find. In $28 = 4 \times b$, the letter b stands for the unknown amount, and you solve it with division.

Is $24 = 8 \times 3$ only one comparison?

No. It says 24 is 8 times as many as 3 and also that 24 is 3 times as many as 8. The two factors can swap roles because multiplication can be done in either order.