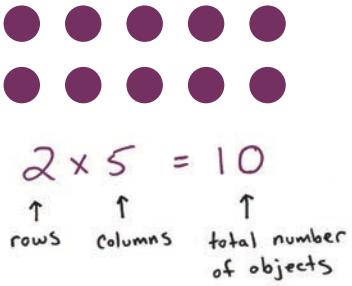
ARRAYS—ROWS & COLUMNS

But before we learn our multiplication facts, we'll spend a few chapters learning how to *think* about multiplication. A great way to see what multiplication looks like is to arrange objects in rows and columns, like the ants were. These are called **arrays.**

An **array** is an arrangement of objects in rows and columns. For example:

This array has 4 rows and 3 columns. It could be called a "4 by 3 array."

In any array, if we count the rows and columns, we can write down the number sentence the array is showing us. Below, we see 2 rows and 5 columns, so the multiplication problem is 2 × 5—there are 2 groups of 5 each, after all!



There are 10 dots total, and the number sentence that describes this picture is 2 × 5 = 10. And our "stars" array above describes the multiplication sentence 4 × 3 = 12. Not so bad, right?

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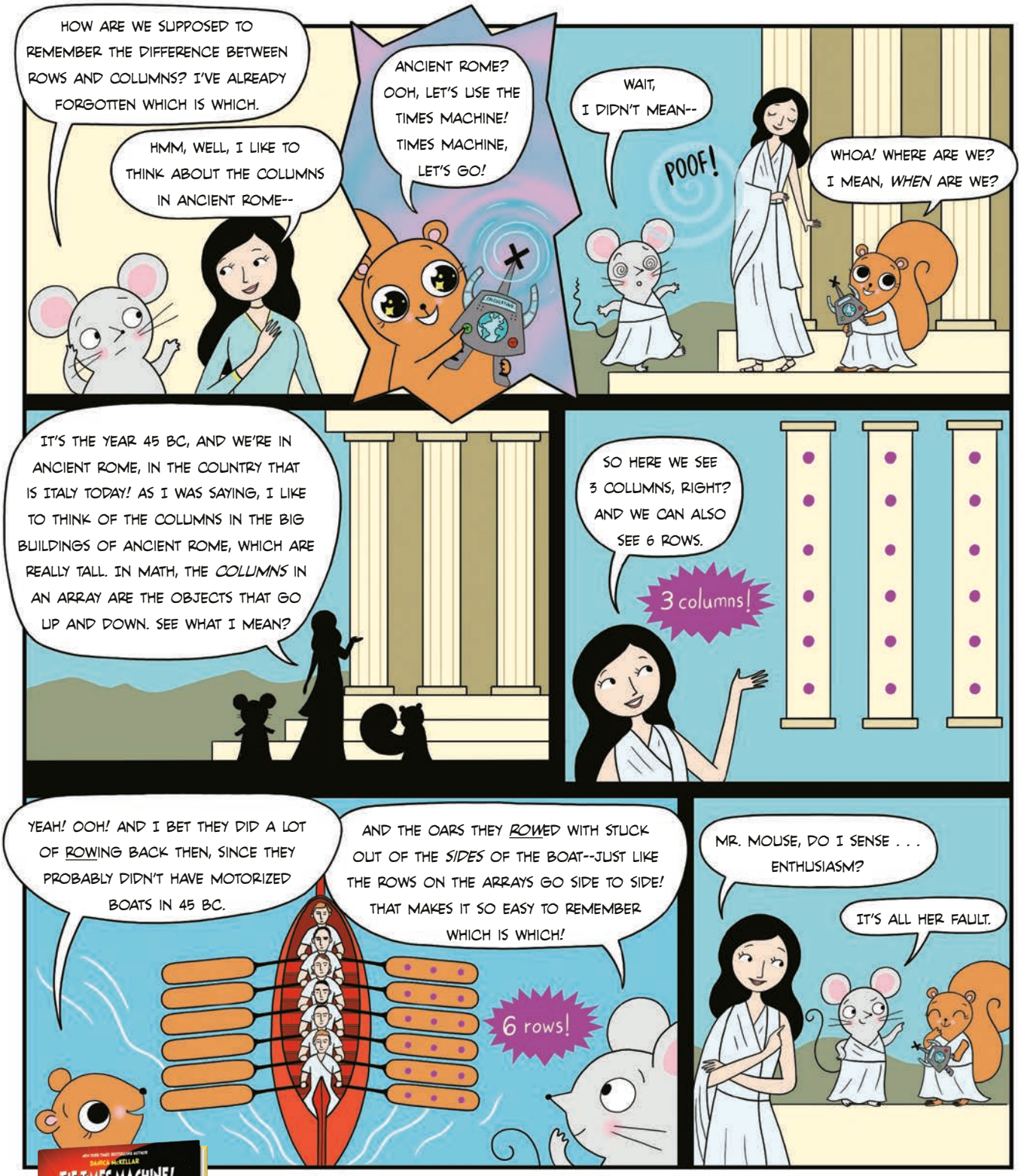
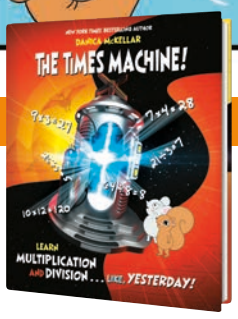
Ancient Rome: Rows vs. Columns





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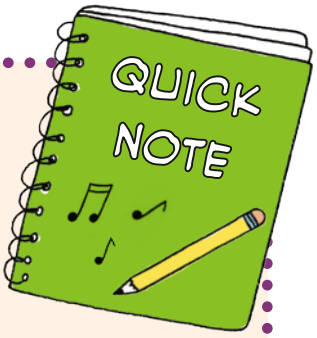
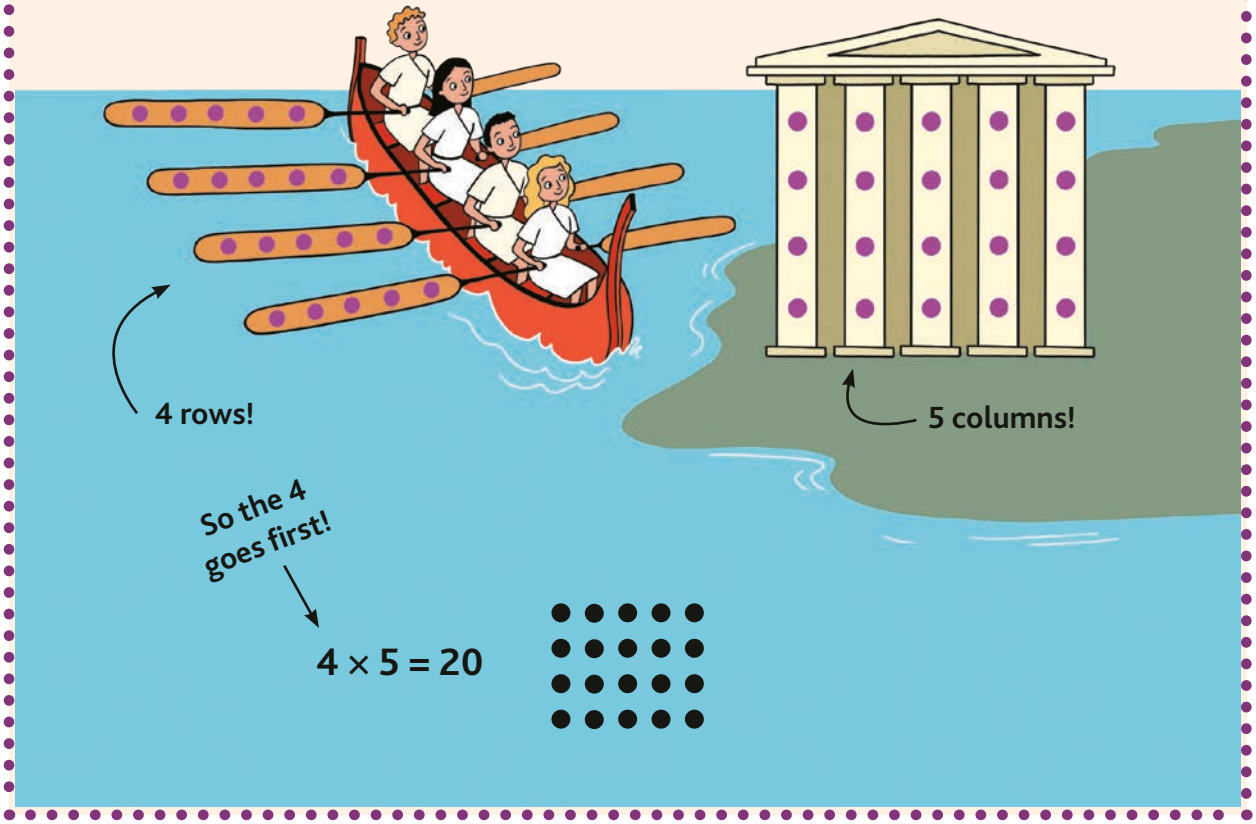


Rows and Columns

Usually in a multiplication problem, the number of rows comes first. So for 4 × 5, the array would have 4 rows and 5 columns. To remember that rows come first, I like to imagine ancient Romans *rowing* across the sea to go see some really tall *columns*.



Let's practice what we know about multiplication arrays!

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GAME TIME!

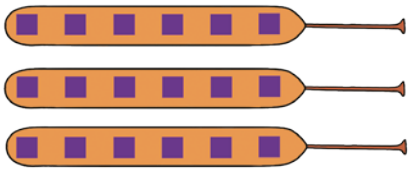
Answer the questions, and then figure out what multiplication problem the array is showing us. I'll do the first one for you!

1. 

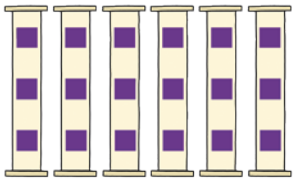
How many rows does this array have? How many columns?

__?__ × 6 = 18

Let's Play: Hmm, which are the rows, and which are the columns? Let's imagine those Romans rowing out to sea, and imagine drawing the oars on top of the array. We see that there are 3 rows!



Next, we can imagine drawing some tall Roman columns over the array instead, and we see 6 columns. So the multiplication problem must be 3 × 6, which means the missing number is 3!



Answer: 3 rows, 6 columns; 3 × 6 = 18

2. 

How many rows?

How many columns?

2 × __?__ = 16

3. 

How many rows?

How many columns?

3 × __?__ = 9

4. 

How many rows?

How many columns?

__?__ × 4 = 12

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