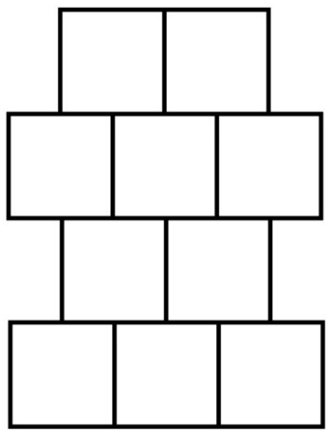
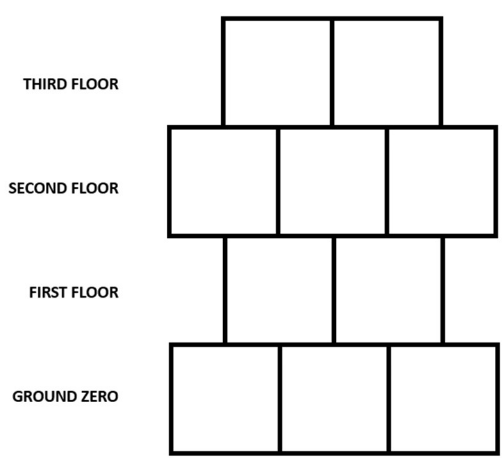
THE FOUR TIMES TABLE

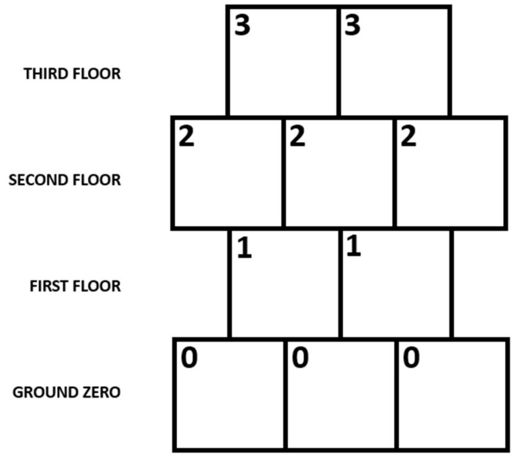
Like the three times table, the fours also rely on a bit of rudimentary architecture to facilitate their mastery. Except instead of using a nine-celled three-by-three matrix, they call on a jagged, ragged ten-celled array: three cells in the bottom row for greater stability, two cells above them, and then a repetition of this same arrangement for the top half of the structure (see below).



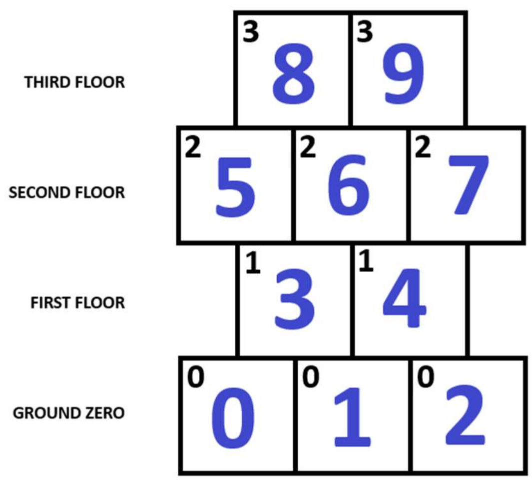
Again, imagine a little building with four floors constructed using square cells. The three cells making up the bottom floor we refer to as “ground zero.” So the two cells in the next row up constitute the first floor. The next row as we move higher is the second floor and the top row’s two final cells comprise the third floor.



This edifice suggests that we label every cell at ground zero with the digit 0, every cell in the first floor with the digit 1, every cell in the second floor with the digit 2, and every cell on the top floor with the digit 3.



Now, with nothing more than a quick glance at this resulting table diagram, learners can clearly see that when multiplying 4 × 0, 1, or 2, you end up with 0 (i.e., nothing) in the product's tens place; when multiplying 4 × 3 or 4, you find a 1 in the tens place; when multiplying 4 × 5, 6, or 7, you get the numeral 2 in the tens place; and when you multiply 4 × 8 or 9, the number in the tens place is 3.



There's no need to guess or to try to memorize the first half of the products one by one. Everything required is neatly organized in a systematic, thoughtful pattern. There is nothing random or arbitrary about it. Once students become thoroughly familiar with this graphic and how it is put together, they have an efficient, orderly means of instantly knowing what belongs in the tens place whenever multiplying any digit by four.

That's fantastic! But, what about the ones place? Is there any way to instantaneously reveal what goes in the ones place when multiplying any digit by four? As a matter of fact, there is!

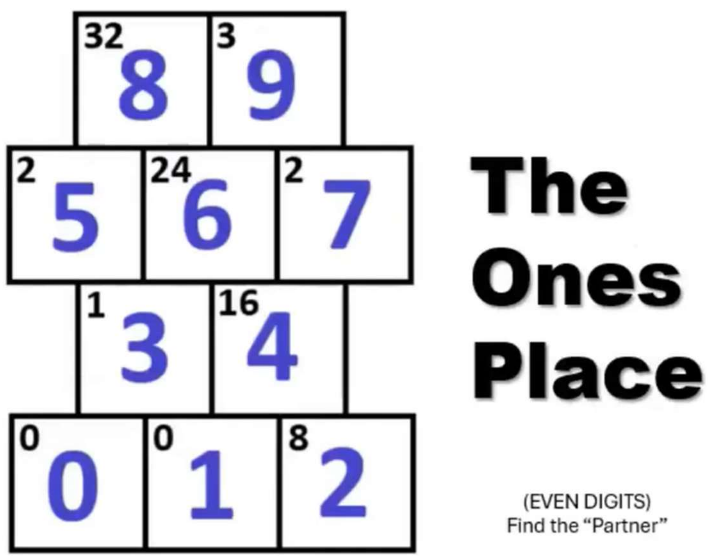
To achieve this reality, learners are taught a concept called “partners,” defined as any two digits that have a sum of ten.

The first step is to recognize that five is partners with five, and that the remaining partners, in no particular order, are one and nine, four and six, eight and two, and seven and three. If any students do not already possess this knowledge upon entering my room at the beginning of the year, requiring them to learn it as members of my class naturally helps them improve their number sense.

Once they have mastered this idea, they can then use the “partners” to decide what belongs in the ones place when multiplying any *even* digit by four.

This is because the ones place is always going to match the digit’s partner. Of course, zero has no partner because there is no digit you can add to zero to get ten, so when multiplying zero × four, zero goes in the ones place.

On the other hand, the partner of two is eight, so when multiplying two × four, eight goes in the ones place. The partner of four is six, so when multiplying four × four, six goes in the ones place. Conversely, the partner of six is four, so when multiplying six × four, four goes in the ones place. And finally, the partner of eight is two, so when multiplying eight × four, two goes in the ones place.



Knowing the partners makes the digit that belongs in the ones place whenever multiplying any even digit times four immediately manifest and unmistakable.

Great! That’s fine, but what happens when multiplying an *odd* digit times four. Can anything be done here to once again discover the missing number, no muss, no fuss?

I'm happy to say that there is. For the odd digits, you use the exact same partners idea, with one extra step I call "modifiving" the outcome—which simply means adding five to it. Let's see how this works in action.

The partner of nine is one, but nine is an odd digit, so we have to "modifive" the one by adding five to it, which gives us six. This means that six goes in the ones place when multiplying 9 × 4.

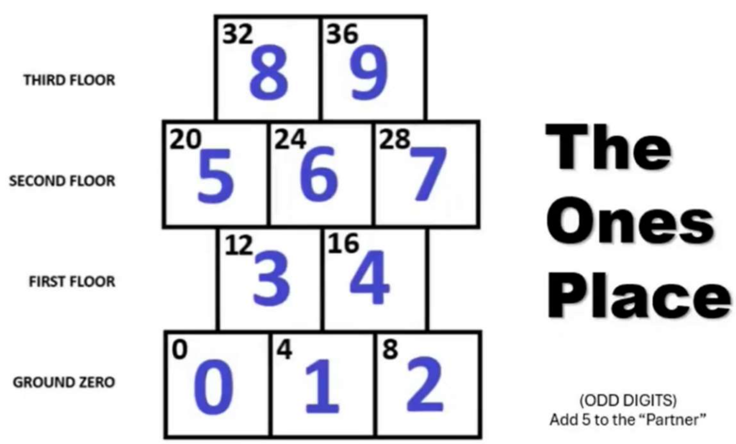
The partner of seven is three, but seven is an odd digit, so we have to "modifive" the three by adding five to it, which gives us eight. This means that eight goes in the ones place when multiplying 7 × 4.

The remining digits get a little tricky...

The partner of five is five, but five is an odd digit, so we have to "modifive" the five by adding five to it, which gives us ten. However, we can't write a two-digit number in the ones place, so we have to drop the numeral in the tens place and keep the numeral already in the ones place. This means we drop the one and keep the zero, so zero goes in the ones place when multiplying 5 × 4.

The partner of three is seven, but three is an odd digit, so we have to "modifive" the seven by adding five to it, which gives us 12. However, we can't write a two-digit number in the ones place, so we have to drop the numeral in the tens place and keep the numeral in the ones place. This means we drop the one and keep the two, so two goes in the ones place when multiplying 3 × 4.

Finally, the partner of one is nine, but one is an odd digit, so we have to "modifive" the nine by adding five to it, which gives us 14. However, we can't write a two-digit number in the ones place, so we have to drop the numeral in the tens place and keep the numeral in the ones place. This means we drop the one and keep the four, so four goes in the ones place when multiplying 1 × 4.



I don't actually use modifiving when teaching my own learners, opting instead to have them learn 4 × 1, 3, 5, 7, and 9 while mastering other multiplication tables. Nonetheless, I include it here to demonstrate that the pattern holds consistently and is available to use if desired.

This approach empowers learners to master the four times table through discovery and an organized, systematic logic that seems to generate answers almost out of thin air. By combining visual structure with the partners strategy, students uncover coherent patterns rather than isolated facts, which strengthens number sense and supports long-term fluency.

Bear in mind, however, that this approach is **not** the goal in and of itself.

Once students are able to derive products within a particular multiplication table, they should **immediately** begin committing those facts to long-term memory by setting aside a few minutes each and every day to review all previously learned facts using flashcards, songs, games, or other activities to help them both assimilate and accommodate this body of knowledge.

Included in my book are some of the songs, rhymes, and illustrations I've personally used as optional activities to facilitate this process. Indeed, the power of using music in instruction lies in its natural ability to get students to rehearse and internalize the material without any deliberate prompting.

When learning is set to rhythm and melody, repetition happens organically; students sing, hum, and replay the information simply because they enjoy it. In fact, at the end of each lesson, it's wise to allow an extra five minutes or so for students to wind down—because once the music stops, their enthusiasm rarely does, and it's almost impossible to halt the energy immediately.

When this approach is managed correctly, students will soon begin associating the answers directly with the problems themselves and, in time, completely forget the "hooks" they first relied on to "reel in" (i.e., retrieve) any material that slipped beneath the surface of short-term recall.

Not to mention, an added benefit of having students work with such devices as "partners" is that it not only helps them master the multiplication tables, but also strengthens and reinforces their *number sense*—their ability to understand, relate, and connect numbers, especially with respect to addition and subtraction facts—enabling them to think more flexibly and fluently about numerical relationships.