Multiplication Rules! Tips to help your child learn their times tables

1. Have fun! We want relaxed kids and plenty of giggles.
2. Go slowly and relax.
3. Do the preliminary review, all the preliminary review, and nothing but the preliminary review -- for now. I know. I know. Your children can add. That’s why they are now learning to multiply. Trust me. How they add and think about it is EVERYTHING.

Addition Review for our youngest children

Sit your little darling down and warn him, this is "baby work," but we’re going to go through it just to have fun getting it absolutely right. We’re going back to doubles (1+1, 2+2, etc.) Orally, ask him each of the adding doubles, 1 through 12, e.g. You say, "one plus one?" He answers "2". Watch closely and be sure he REALLY knows the answer. If he has to think about it, count or count up from the previous double, he needs to practice until he knows them inside out, upside down, and backward. Give him the equations in and out of order. You should spend no more than ten minutes on this at one time.

Later in the day: Has he/she got them all down? If there was any hesitation or figuring at all during the first review, ask each orally again, in order. Write the equations properly as you speak, writing in the answers as they are given. Have the child read what you wrote. Have the child then copy exactly what you wrote. No shortcuts by writing in columns!) She should then read what she wrote. Again, 10 - 15 minutes and the review is done for the day.

What is Multiplication?

Use lots of hands-on things if you like. I use favourite toys. Large collections of similar items with different colours work great for grouping. Flat objects are hard to move around. Trucks work great and so do Lego’s because they stick together in groups of 10.

Okay, multiplication is sequential adding. Show your child four piles of three objects each, (e.g. pennies or Lego’s) or some such combination. Explain that "You have three pennies, four times. So 3+3+3+3 is 3, 4 times. And in arithmetic, we say that 4 x 3. We can add these up and get 12. Do as many of these as you need, using small quantities. Now put out a single pile of objects and ask how many are in the pile? After your child gives you the answer, ask how many piles there are? You may find your child hesitating -- it is too easy and too obvious. If he/she protests, "This is dumb." -- agree! I usually say, "You’re right. It does seem daft. I told you it was really going to be easy."
Dont Move On Until Your Child Understands What Multiplication Really Is!

Take a day or two to repeat the above reviews if necessary. The goal is complete comfort with the doubles.

Now for the rules themselves. Here are sure fire ways of helping your child learn their times tables!

**Times One: 1 x anything = itself**

Next introduce the concept of 1 x anything. I call it a serious no-brainer. Look, if the equation is going to give you the answer, use it. Make sure that your child can explain these concepts BACK to you. Any number times one equals itself. Try a few, first with small numbers. What does 7 x 1 equal? Stay with small numbers until your child is comfortable with the concept of just repeating the number you are supposed to multiply.

Now get creative, especially with older kids.

How about 283 x 1? What is "bedingle" x 1? They should simply repeat whatever you said. Make it seem obvious and a little silly. Remember, we said we wanted plenty of giggles. Once they get the idea and say, that’s easy, you can say, "No kidding! Math is always fun." (A little brain washing here!)

Remember we can always swap multiplications round, e.g. 1 x 7 is the same as 7 x 1. This 'communicative law' helps a lot later.

**Times Two: 2 x a number = doubles. So use doubles**

So 2 times a number means add it twice. Since those are the doubles in addition, and we know them so well, why would you want to memorize them again as something different? A waste of brain power.

The 2’s tables are simply your doubles, so let’s review the doubles - if you learn your doubles you’ve got it!

Positive Reinforcement - The fun of this system is that it is ridiculously easy. Review the idea of 1 x anything, with mixed up numbers and don’t forget to go off the tables. Make the observation to your child that not only did they learn a whole set of multiplication tables in a matter of minutes, they can now use it for bunches of numbers, even big ones and weird ones.
**Times Three**

For the next lesson, continue to review the basic doubles and then add the number for the third time. E.g. 4+4 = 8 +4 = 12. This is the last time, I promise. Three’s are also done by adding. If your child is having trouble with addition like 14 + 7, let me know. They should be able to pop through their three’s after a couple of practice runs. Each section of these lessons should last no more than a few minutes, certainly no longer than 15 - 20 minutes. Done again!

For a quiz: Write out the one’s table multiplication tables for your child. They should be able to answer them very quickly. Now you can praise them for getting twelve out of twelve correct. Even better, add a few extra problems from off the tables, e.g. 15 x 1, 20 x 1, etc. for a total of 20 problems.

Note: Do not do any other math during the time you are working on multiplication. It might confuse them and get in the way of the brain processing time necessary for long term memory to kick in, as well as the time necessary for the information to be mulled over subconsciously. Have fun! Do it once and play during the rest of what used to be spent on math.

**Review**

Okay, so let’s review. We have established that anything times one is itself, a serious no-brainer and hence no work. We also know that two times a number means to add the number to itself, and since that is our doubles, we can do that, too. We have practiced even higher doubles, e.g. 24 +24 =48. And we have practiced our triples, too -- adding the third like number to the double, e.g. 4+4 = 8 +4 = 12.

**Times Four** - double it and double again!

Isn't it true that 4 is really 2 x 2? And since 2’s are doubles, why not just double the number then double that answer? For instance, in the problem 4 x 6: 6 + 6 = 12 and 12 + 12 = 24. Bingo!

Now is the time to slow down and do some exploring with the child. Math is theory, philosophy and computing. However, computing itself has a specific purpose. Get the answer efficiently, quickly, and correctly the first time. Which is the correct way to compute? Should your child practice 4 x 1 by thinking 2 + 2 when they already know that 1 times 4 is itself? The kids love it when I tell them that the correct way to compute an answer is the easiest way they like -- any one that gets them the right answer. After all, it is their math problem; it’s their job to solve it -- and their brain. So they should use the rule they like best. Rote memorization as taught in our local schools can be so redundant!
It is amazing how many children don’t realize that 2 x 4 and 4 x 2 are the same thing. Use manipulatives to explore this concept -- four piles of two is the same as two piles of four = 8, etc.

Make sure you approach this idea as "really neat and fun" and "that it makes it really easy and a lot less work to do."

**Times Five** - remember all lots of 5 end in a 5 or an 0

Can your child count to 60 by 5? So why bother memorizing them? That’s the 5 times table. With lots of practice and game playing, they’ll have accidentally memorized most of these problems. The important thing is that if they get stressed and "forget," they can always go back into their own brain for the answers and just figure them out.

Why is figuring out important? Consider the job of a nurse. When the doctor asks for the information on a particular patient, does he expect her to have memorized everything about every patient or does he expect her to be able to go and look up the information quickly? Teaching math this way also teaches children how to approach basic fact finding skills. It’s amazing what the human brain can put together.

Play with the manipulatives. Do lots of oral practice -- anytime and anywhere. Don’t force your student and always approach this stuff as number "games."

**More Review**

Let’s do a review and then get through the "ugly" part (6’s, 7’s and 8’s) in the next couple of lessons.

Make sure the student is proficient and comfortable with the doubles, higher doubles and triples.

- One’s -- since any number times one equals itself, just write it down.
- Two's -- Since two times a number means add it twice, just add -- that’s the doubles!
- Three’s -- Since you are such an intelligent child and adding is easy, add the number again to the doubles.
- Four's -- Since four is really 2 x 2, and since times two means double the number, then you can double the number and then double the answer
- Five’s -- Just count by 5’s. You can all count by 5’s to 60. Right? Serious no-brainer, kids!
Okay -- the bad news: There are no "tricks" or neat ways to figure out the 6's, 7's and 8's -- but, it isn't that bad.

Let's consider the fact that 6 x 4 is the same as 4 x 6. Since you can read the problem either way, you already can figure out half of them! 6 x 1 is 1 x 6 so just write down 6; 6 x 2 is 2 x 6 so just double the 6; etc. through 6 x 5, which is 5 x 6, so just count by 5's. Well, if you already have a cool way to get the answer, you get it right and you get it quickly. WHY would you want to waste your time and brain power memorizing the whole thing backwards?!!!

Okay, that only leaves three of the 6's to figure out: 6 x 6 = 36 (that rhymes!); 6 x 7 = 42; 6 x 8 = 48 (that rhymes too!)

We’ll work on the rest later with the other rules. The above three problems need to be practiced and, unfortunately, memorized, but hey...memorizing six multiplication facts is a whole lot better than 144!

Before learning the seven's, a review, as always:

- Any number times one is itself, so just write it down. No reason to even think about it.
- Any number times 2 is double, so just use the addition doubles.
- Any number times three, just add it a third time (triples). Smart kids are really good at this!
- Since 4 is really 2 x 2 and "times two" means doubles, just double the number twice to get the answer.
- We can all count by 5's quickly and accurately, so why bother memorizing something you can "count" to in a split second.
- There are no "rules or tricks" for 6's BUT: since you already know 1 x 6, why bother with 6 x 1 since it is the same thing? And since 2 x 6 is 6 x 2, we can skip that...and the 3's, 4's and 5's. There is absolutely NO reason to memorize something if you can already arrive at the answer another way.

REMEMBER -- the correct way to arrive at a mathematical calculation (basic operations) is the one that is the most efficient, quick and accurate for your brain -- not the one the teacher likes. You don't use her brain!
**Times Seven**

Same as 6's: You already know how to calculate the answers to the 7's through 7 x 5 and since we now know that 6 x 7 = 42, why bother memorizing it the other way? Whenever I see 7 x 6, my brain thinks 6 x 7 and I know that is 42! So let's skip that one, too. You will need to practice and memorize the following:

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\begin{align*}
7 \times 7 & = 49 \\
7 \times 8 & = 56.
\end{align*}
\]

Remember for the 'higher' 7s you can start with what they know…7 x 5 (or 5 x 7) = 35

**Times Eight** sounds hard but it's just double, double and double again!

Okay, now that you have reviewed the tables, 1 - 7, let's do 8: Well, this is real cop out! There really isn't anything. Just like the 6's and 7's, simply review what you have already learned. Does it matter if the problem is written 8 X 1 or 1 X 8? Use the "one's rule". How about 2 X 8 or 8 X 2? Either way, just double the 8. We've learned 6 X 8 = 48 (that rhymes) and 7 X 8 = 56. You've been practicing, right?

The only equation in the 8's group that you need to learn is: 8 X 8 = 64. Again, you'll have to do this by practicing a lot.

**HOW BAD IS IT?** Consider that, in traditional arithmetic, you are expected to memorize all 144 multiplication facts, along with not forgetting all your addition facts, subtraction facts, and not mixing them up. Ugh!

With this system, we ask that you work at memorizing only six multiplication facts:

\[
\begin{align*}
6 \times 6 & = 36 \\
6 \times 7 & = 42 \\
6 \times 8 & = 48 \\
7 \times 7 & = 49 \\
7 \times 8 & = 56 \\
8 \times 8 & = 64
\end{align*}
\]

Review some more, and then we'll get to the 9's - they're my favorites! Have fun, since this time you only have to practice what you already know and learn one new problems. Cool!
**Times Nine**

The nine's are really cool, there are so many patterns. The important one is the one that can be used in reverse, for division, and relies on the calculations. It goes like this:

When you need to multiply a single digit times 9, to figure the answer, start with "one less than" the number being multiplied (10's digit). The one's digit is the difference between this number and 9.

Examples:
9 X 4 = : One less than 4 is 3, plus 6 more make 9: 36. 9x4=36
9 X 5 = : One less than 5 is 4, plus 5 more make 9: 45. 9x5=45
9 x 6 =: One less than 6 is 5 -- 5 + 4 = 9. That's right -- 4! ... so 9 x 6 = 54
9 X 7 = : One less than 7 is 6, plus 3 more make 9: 63. 9x7= 63
9 X 8 =: One less than 8 is 7, plus 2 more make 9: 72. 9 x 7 = 72
I hope this makes sense, it is invaluable in upper level calculations.

Remember all answers for the 9s add up to 9, e.g. 1 x 9 = 9 (9 + 0 = 9),
2 x 9 = 18 (1 + 8 = 9), 3 x 9 = 27 (2 + 7 = 9)

**Times Ten**

Okay, everybody knows how to do this. to multiply any number by 10, just write down the number and stick a 0 on it. This is as easy as the one's!

7 X 10 = 70
12 X 10 = 120
37 X 10 = 370
492 X 10 = 4,920
-8 X 10 = -80

**Times Eleven**

Did you know there are 2 patterns for the 11's? I think everyone knows how to arrive at the answers to the single digit numbers: 11 X 1, 11 X 2, etc. To multiply a single digit times eleven, just write the number down twice:

11 X 2 = 22
11 X 3 = 33
11 X 4 = 44

This only works through 11 X 9 = 99.
What about 11 X 11 and 11 X 12 and even more?
Here is a way to multiply 2 digit numbers times 11. It is really cool:
The Rule: When multiplying a 2 digit number times eleven, add the 2 digits together and put the sum between them - this is your answer.

Examples:
11 X 53: 5 + 3 = 8, so put the 8 between the 5 and 3. Your answer is 583!
11 X 12: 1 + 2 = 3; put the 3 between the 1 and 2. Your answer is 132.
11 X 42: 4 + 2 = 6; put the 6 between the 4 and 2. Your answer is 462.

Yes, this works for every 2 digit number, through 99. BE CAREFUL! You do have to carry when your sum calls for it:

11 X 75: 7 + 5 = 12. Put the 2 between the 7 and 5, but carry the one over to the next column (the 7). Your answer is 825.

11 X 86: 8 + 6 = 14. Put the 4 between the 8 and 6, carry the one over to the 8. Your answer is 946.