

TEACHING MULTIPLICATION FACTS

MULTIPLICATION FACTS CAN BE EASY TO LEARN

Students often struggle while learning their multiplication facts. This is mainly because they try to rely completely on the memorization process. Learning multiplication facts is a challenge, but it doesn't have to be a stressful one. Follow the tips below to help your children conquer their multiplication facts.

1. Most children are able to count by two's and five's, and so they can multiply by two's and five's. Do these facts first.
2. Further reduce the number of facts your children need to learn by showing them the associative property of numbers. This means explaining the concept that 3×4 is the same as 4×3 . Then, get a deck of multiplication flash cards, and using the associative property of multiplication, show them how many cards they already know. This will greatly reduce their fear of learning a large number of multiplication facts and will help to build their confidence.

Use a fact chart and color in the associative facts. They will be surprised at how few they really have to learn.

3. On another day, cover the concept of zero times any number. Give a page of multiplication problems with 0's, 2's, and 5's for practice and to build confidence, then move on.

For more advanced student's you can point out that five times any even number is equal to half the other number plus a zero, For example: $5 \times 8 = 40$ (Half of 8 is 4, plus a zero to give you 40). Also, five times any odd number always ends with a five.

4. Show your students that any number multiplied by one results in the number itself, and that multiplication by 10 is the same as multiplication by 1, only with a zero added to their answer.
5. Teach your children squares (3×3 , 4×4 , 6×6 , 7×7 , 8×8) faster and more easily by teaching them in a rhythmic fashion. For example, your children could do these five problems while jumping a rope, bouncing a ball, singing, or doing any activity that has a rhythmic pattern. Another way to remember these facts is to make up little stories about them. For example, in order to drive a 4×4 , you have to be 16 years old ($4 \times 4 = 16$).
6. Nine's are easy if you know the following trick. Have your children put both hands down flat on the desk and number their fingers from 1 to 10, starting with left pinky. Whenever a number is multiplied by 9 (emphasize only 9), they can use their fingers as a calculator. Here is a sample problem to show how the finger calculator works for 9×3 . Tuck finger 3 (middle finger on left hand) under and count the number of fingers to the left of that finger. Write down the number (2). Then, count the number of fingers to the

right of finger 3. Write this number (7) behind the 2. The answer is 27. This works for all 9's except when multiplied by 0 and 10. Remind students to check their answers. Whenever a number is multiplied by 9, the sum of the digits in the answer should equal 9. For example, $3 \times 9 = 27$ and $2 + 7 = 9$.

7. There are now only 10 facts left to learn. At this point, the children will feel so successful about what they already know that ten more facts will seem simple. The last ten facts are 3×4 , 3×6 , 3×8 , 4×6 , 4×7 , 4×8 , 6×7 , 6×8 , and 7×8 . Two memory sentences that will help children remember 3×4 and 7×8 are: "Before you go to 3rd and 4th grade, you have to go to 1st and 2nd ($12 = 3 \times 4$)." "Before you go to 7th and 8th grades, you go to 5th and 6th ($56 = 7 \times 8$)." Another sentence is: "7 firemen ran 4 miles to the fire, but got there too (2) late (8). ($7 \times 4 = 28$)."
8. Remember that multiplication facts will be easier for your children to learn if they are broken down into parts. The success your children feel after mastering these simple techniques will give them the desire to learn more. Before they even realize it, they will know all their facts.

Another Idea for Teaching Multiplication

Sequence of Teaching Multiplication Facts

The sequence I use in teaching multiplication facts is a bit different than most textbook curricula. I like to integrate the concepts of arithmetic facts with other areas of math, so when teaching multiplication facts, I usually step away from the curriculum I am using and spend time helping students learn, master, and become automatic with the facts.

The sequence I use is as follows, along with notes on other concepts that I try to integrate into the instruction and practice times:

* $x0$ --immediate success and introducing that we will be making groups and haven't made any yet.

* $x1$ --I introduce the identity property and talk about people's names. We can go by our first name, last name, and nickname, but they all mean the same person. When we multiply by 1, we always end up with the same number. I integrate this into fractions with the numerator and denominator being alike and meaning 1 whole group. Count pennies.

* $x10$ --This is an extension of $x1$ and $x0$. Think of the number with a 0 behind it. Practice counting by 10's. Practice counting dimes. Review place value.

* $x100$ --This is another extension of $x1$ and $x0$. Think of the number and place two zeros behind it. Practice counting by 100. Practice counting dollars. Review place value.

* $x11$ --Another extension of $x1$! For 1-digit numbers, just write or think the number in 2-digits. For 2-digit numbers, split the digits apart. Then add the digits and insert the answer in the middle (be careful to carry if necessary). Example: $24 \times 11 = 264$ Split the 2 and 4. Add to 6 and insert.

* x5--Practice counting by 5. Practice counting nickels. Practice telling time to 5 minutes. Practice counting nickels in groups of 2 to show the relationship of 5 to 10.

* x2--Practice counting by 2. Practice counting 2 pennies or counters at a time. Use the term double. Find pairs around the house. Introduce the concept of half of various numbers. Teach even numbers.

* x4--Practice counting by 4. I often teach the 4 facts with mnemonic memory tricks, but for some students who become proficient at doubling, we play around with "doubling the double."

* x3--Practice counting by 3. I usually teach the 3 facts with mnemonic memory tricks. Introduce thirds.

* x6--Practice counting by 6. I usually teach the 6 facts with mnemonic cues. Sometimes I introduce the idea that multiples of 6 will always be multiples of both 2 AND 3. Making a list of x2 and x3 facts and circling the common multiples helps students to see the relationship to 6.

* x9--Practice counting by 9. This fact list is easy because of the patterns of the multiples. I either teach the finger trick or the strategy to "back it up and make it add" to 9.

* x7--Practice counting by 7. I use mnemonic tricks for 7 facts. I often introduce prime numbers and fractions that cannot be reduced.

* x8--Practice counting by 8. I use a mnemonic cue for the remaining fact to learn: "8x8 fell on the floor; pick it up, it's 64." Or, "8x8 went to the store; bought Nintendo 64."

- x12--Count by 12. Introduce the concept of dozen. Make up games with plastic eggs and used egg cartons or with pretend doughnuts.

Some Additional Ideas for Teaching Multiplication

2 times table - all products (answers) are even numbers.

3 times table - all products, or their sums repeat the sequence 3,6,9:

$1 \times 3 = 3$ $4 \times 3 = 12$, so $1 + 2 = 3$

$2 \times 3 = 6$ $5 \times 3 = 15$, so $1 + 5 = 6$

$3 \times 3 = 9$ $6 \times 3 = 18$, so $1 + 8 = 9$, and so on.

5 times table - all products end with a 0 or a 5.

9 times table - if you add up the digits that make up each product, they always equal 9:

$1 \times 9 = 9$

$2 \times 9 = 18$, so $1 + 8 = 9$

$3 \times 9 = 27$, so $2 + 7 = 9$

$4 \times 9 = 36$, so $3 + 6 = 9$, and so on.

6 and 7 times table - while not a trick, if your student likes football, score keeping can make use of these times tables, especially the 7 times table.

Look for other tricks or patterns that your child may use to remember certain facts. Here's an example: use 5,6,7,8 to remember $56=7\times 8$. Your child may come up with her own special ways to remember certain facts.

Encourage your students to use these tricks to check work. If a student is working with the 9 times tables and gets an answer such as 38, help her to see that $3+8$ doesn't equal 9, so that answer needs to be checked. Using these patterns can be a valuable aid to accuracy in computation.

2. Counting By . . . :

Have students practice counting by 2's, 3's, 5's and other numbers as they become skilled. This is a good way to reinforce the sequence of products of a particular number, and to get a sense of what products "belong to" that number.

For example, saying "3, 6, 9, 12, 15, 18, 21, 24, 27" will give children a feeling for the products of three. Later, if a student comes upon 3×7 , and she has been saying 22, she will now know that 22 is not one of the numbers she says when "counting by three". She will begin to develop a number sense and an appreciation of the patterns within the multiplication tables. Start with the easier ones, and add on additional numbers as mastery is reached.

3. Make It Easier:

The higher up in the times tables you go, the harder it may seem to learn the facts. Yet, there are really very few new facts to learn as you go up. In fact, there is only one fact that has an answer in the 80's ($9\times 9=81$). There is also only one in the 70's ($8\times 9=72$). There are two in the 60's ($8\times 8=64$ and $9\times 7=63$) and only two in the 50's ($7\times 8=56$ and $9\times 6=54$). Focusing on these few facts makes learning them easier.

<http://naturalmath.com/mult/mult8.html>

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