Mental Math
How to Learn Your Times Tables in a Week

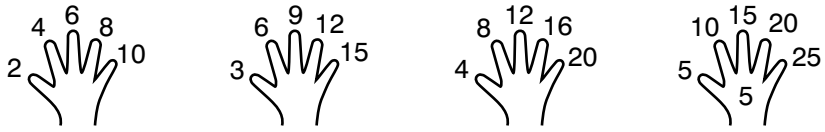
Teacher

Trying to do math without knowing your times tables is like trying to play the piano without knowing the location of the notes on the keyboard. Your students will have difficulty seeing patterns in sequences and charts, solving proportions, finding equivalent fractions, decimals and percents, solving problems etc. if they don't know their tables.

Using the method below, you can teach your students their tables in a week or so. (If you set aside five or ten minutes a day to work with students who need extra help, the pay-off will be enormous.) There is really no reason for your students not to know their tables!

DAY 1: Counting by 2s, 3s, 4s and 5s

If you have completed the Fractions Unit you should already know how to count and multiply by 2s, 3s, 4s and 5s. If you don't know how to count by these numbers you should memorize the hands below:



If you know how to count by 2s, 3s, 4s and 5s, then you can multiply by any combination of these numbers. For instance, to find the product 3×2, count by 2s until you have raised 3 fingers.

$3 \times 2 = 6$

DAY 2: The Nine Times Table

The numbers you say when you count by 9s are called the **MULTIPLES** of 9 (zero is also a multiple of 9). The first ten multiples of 9 (after zero) are: 9, 18, 27, 36, 45, 54, 63, 72, 81, 90. What happens when you add the digits of any of these multiples of 9 (**EXAMPLE:** 1 + 8 or 6 + 3)? The sum is always 9!

Here is another useful fact about the nine times table: Multiply 9 by any number between 1 and 10 and look at the tens digit of the product. The tens digit is always one less than the number you multiplied by:

$9 \times 4 = 36$ — *3 is one less than 4*

$9 \times 8 = 72$ — *7 is one less than 8*

$9 \times 2 = 18$ — *1 is one less than 2*

You can find the product of 9 and any number by using the two facts given above. For instance, to find 9×7, follow these steps:

STEP 1: $9 \times 7 =$ ____ ____

Subtract 1 from the number you are multiplying by 9: **7 – 1 = 6**

$9 \times 7 =$ 6 ____

Now you know the tens digit of the product.

Teacher

1. Make sure your students know how to subtract (by counting on their fingers if necessary) before you teach them the trick for the nine times table.

2. Give a test on **STEP 1** (above) before you move on.

STEP 2: $9 \times 7 = \underset{\uparrow}{6}\ \underset{\uparrow}{?}$

These two digits add to 9.

$9 \times 7 = \underset{}{6}\ \underset{\uparrow}{3}$

So the missing digit is 9 – 6 = **3**

(You can do the subtraction on your fingers if necessary).

Practise these two steps for all of the products of 9: 9×2, 9×3, 9×4, etc.

DAY 3: The Eight Times Table

There are two patterns in the digits of the 8 times table. Knowing these patterns will help you remember how to count by 8s.

STEP 1: You can find the ones digit of the first five multiples of 8, by starting at 8 and counting backwards by 2s.

8
6
4
2
0

STEP 2: You can find the tens digit of the first five multiples of 8, by starting at 0 and count up by 1s.

08
16
24
32
40

(Of course you don't need to write the 0 in front of the 8 for the product 1×8.)

STEP 3: You can find the ones digit of the next five multiples of 8 by repeating step 1:

8
6
4
2
0

STEP 4: You can find the remaining tens digits by starting at 4 and count up by 1s.

48
56
64
72
80

Practise writing the multiples of 8 (up to 80) until you have memorized the complete list. Knowing the patterns in the digits of the multiples of 8 will help you memorize the list very quickly. Then you will know how to multiply by 8:

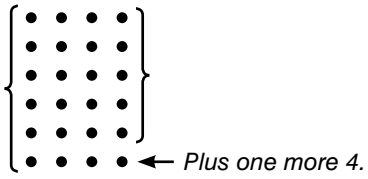
$8 \times \underset{\uparrow}{6} = 48$

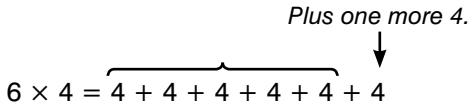
Count by eight until you have 6 fingers up: 8, 16, 24, 32, 40, 48.

DAY 4: The Six Times Table

If you have learned the eight and nine times tables, then you already know 6×9 and 6×8.

And if you know how to multiply by 5 up to 5×5, then you also know how to multiply by 6 up to 6×5! That's because you can always calculate 6 times a number by calculating 5 times the number and then adding the number itself to the result. The pictures below show why this works for 6×4:





6 $\times$ 4 = 5 $\times$ 4 + 4 = 20 + 4 = 24

Similarly:

6 $\times$ 2 = **5** $\times$ 2 + 2; **6** $\times$ 3 = **5** $\times$ 3 + 3; **6** $\times$ 5 = **5** $\times$ 5 + 5.

Knowing this, you only need to memorize 2 facts:

ONE: $6 \times 6 = 36$ **TWO:** $6 \times 7 = 42$

Or, if you know 6×5, you can find 6×6 by calculating $6 \times 5 + 6$.

DAY 5: The Seven Times Table

If you have learned the six, eight and nine times tables, then you already know:

6×7, 8×7 and 9×7.

And since you also already know $1 \times 7 = 7$, you only need to memorize 5 facts:

1. $2 \times 7 = 14$ **2**. $3 \times 7 = 21$ **3**. $4 \times 7 = 28$ **4**. $5 \times 7 = 35$ **5**. $7 \times 7 = 49$

If you are able to memorize your own phone number, then you can easily memorize these 5 facts!

NOTE: You can use doubling to help you learn the facts above. 4 is double 2, so 4×7 (= 28) is double 2×7 (= 14). 6 is double 3, so 6×7 (= 42) is double 3×7 (= 21).

Try this test every day until you have learned your times tables:

1. $3 \times 5 =$ _____	2. $8 \times 4 =$ _____	3. $9 \times 3 =$ _____	4. $4 \times 5 =$ _____
5. $2 \times 3 =$ _____	6. $4 \times 2 =$ _____	7. $8 \times 1 =$ _____	8. $6 \times 6 =$ _____
9. $9 \times 7 =$ _____	10. $7 \times 7 =$ _____	11. $5 \times 8 =$ _____	12. $2 \times 6 =$ _____
13. $6 \times 4 =$ _____	14. $7 \times 3 =$ _____	15. $4 \times 9 =$ _____	16. $2 \times 9 =$ _____
17. $9 \times 9 =$ _____	18. $3 \times 4 =$ _____	19. $6 \times 8 =$ _____	20. $7 \times 5 =$ _____
21. $9 \times 5 =$ _____	22. $5 \times 6 =$ _____	23. $6 \times 3 =$ _____	24. $7 \times 1 =$ _____
25. $8 \times 3 =$ _____	26. $9 \times 6 =$ _____	27. $4 \times 7 =$ _____	28. $3 \times 3 =$ _____
29. $8 \times 7 =$ _____	30. $1 \times 5 =$ _____	31. $7 \times 6 =$ _____	32. $2 \times 8 =$ _____