Learning Basic. Multiplication Facts

Introduction

The lessons on addition provide a foundation for teaching one how to learn and to study. The same process for recognizing patterns and practicing them will be used to learn multiplication quickly.

I. The twos

First practice the following:

9	**2**	**8**	**3**	**1**	**7**	**4**	**6**	**5**
+9	**+2**	**+8**	**+3**	**+1**	**+7**	**+4**	**+6**	**+5**

Then we do:

9	**2**	**8**	**3**	**1**	**7**	**4**	**6**	**5**
x2	**x2**	**x2**	**x2**	**x2**	**x2**	**x2**	**x2**	**x2**

II. The even fives and sixes

We know that half of 6 is 3 because 3+3=6 or 2x3=6.
The rule for even fives is half the number concatenated to zero. We remember this with the statement: **"Half a loaf is better than nothing."**

We practice:

2	**4**	**6**	**8**	with the surprise	**12**	**14**	**16**	**18**
x5	**x5**	**x5**	**x5**		**x5**	**x5**	**x5**	**x5**

This works because two nickels make one dime or we have half as many dimes as nickels.

For the sixes we remember, **"Half a loaf followed by the loaf."** This 8x6 is 48 where 4 is half of 8 and 8 is the loaf.

We practice:

2	**4**	**6**	**8**
x6	**x6**	**x6**	**x6**

III. The distributive rule.

The distributive rule is the foundation for all computational mathematics**.** The rule is as follows:

(3 +3) +(3+ 3 +3+3+3) = 7x3

2x3 + 5x3 =(2+5)x3

Let us validate: 6 + 15 = 7x3

21 = 21

Look at the pattern: 2x**3** + 5x**3** =(2+5)x**3** Notice that the 3 is in each multiplication. We sum the counts to get the other number. Look at another example:

2x4 + 5x4 + 3x4 =(2+5+3)x4

8 + 20 + 12 = 10x4

40 =40

Try these examples;

2x3+ 4x2 + 2x3 = (+ +) x

4 x (2 + 5 + 3) = x + x + x

IV. The odd fives

For the five drop down to the even number and apply the even rule. Now add the five to that number. 7x5 = (6+1)x5 = 6x5 +1x5 =30 + 5=35 We could also take half the even number and concatenate a five. Try these examples:

3	**5**	**7**	**9**
x5	**x5**	**x5**	**x5**

V. The nines

When multiplying by 10, we just concatenate a zero to the number. Using the distributive rule, we have: 9x4=(10-1)x4 = 10x4 –1x4 = 10x4 –4 = 10x(3+1) -4 = 10x3 x 10-4 =30 +6=36 .
The tens digit is one less than the number and the units digit is obtained by subtracting the number from ten. Try the examples:

or the two

9	**2**	**8**	**3**	**7**	**4**	**6**	**5**
x9	**x9**	**x9**	**x9**	**x9**	**x9**	**x9**	**x9**

VI. The fours

I call the fours double trouble because you double the number and then double the answer:
4x7=(2+2)x7 = 2x7 +2x7 = 2x(2x7) = 2 x14 =28

Let us try some examples:

	nine rule	two rule					six rule	five rule
	9	**2**	**8**	**3**	**7**	**4**	**6**	**5**
	x4	**x4**	**x4**	**x4**	**x4**	**x4**	**x4**	**x4**

We only have to learn four new facts.

VII. The threes

The three rule is just the application of multiplication as successive addition of the same number. The examples are:

	nine rule	two rule				four rule		odd five rule
	9	**2**	**8**	**3**	**7**	**4**	**6**	**5**
	x3	**x3**	**x3**	**x3**	**x3**	**x3**	**x3**	**x3**

Again we only have to learn four new facts.

VIII. Memorization

We use mnemonic memorization for the following:

6 & 7 rode	Dr. Miller's	Counting	**Ate** &
to **heaven** on	favorite	56	**Ate** til
A bicycle made	football	7 8	I got
for two.	team		**sick** on the **floor.**
6	**7**	**8**	**8**
x7	**x7**	**x7**	**x8**

The odd sixes are now covered by the other rules.

Teaching is an art based upon knowledge and experience. Occasionally one will need help to understand the subtleties of the lessons or the personality of a particular child to make the lessons more effective. This techniques have been successfully be used with first grade children.

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