Learning Basic. Addition Facts

Introduction

The secret to learning your facts quickly and retaining them is to learn the patterns and to practice extensively. When practicing, do not practice for more than 5 minutes at a time because over practicing is counter productive. Manipulatives should not be used until after one has learned the facts because they can encouraged bad learning practices that are a bit difficult to overcome. The following approach for teaching addition to children works well with gifted or learning challenge students. Learning challenged children require more practice time.

I. Counting

The first step in learning to add is to be able to count forward and then backward. Teach the numbers in groups of three: 1,2,3 4,5,6 7,8,9. Then practice them backwards: 9,8,7 6,5,4 and 3,2,1. Continue this until the child has developed mastery.

Now teach the child to count backward from 19, by saying the units digit followed by ten: nine ten,….,five ten,…….,two ten, one ten, 10,9,8,7,6,5,4,3,2,1. Now replace the ten by teen: nineteen, eighteen,….,fiveteen,fourteen, threeteen, twoteen, and oneteen. This allows the child to see the structure of the numbers and how the teens were named. Finally substitute the real name fifteen, thirteen, twelve, and eleven for their pseudonyms. Continuing practicing with the real names until the child has developed mastery. You should be able to achieve this in a few days, When the child has developed mastery, question which numbers cones before the number and after the number. The purpose of this lesson is to teach the child how to add and subtract one from a number as well as preparing him/her for more advance calculations.

II. Adding ten

This lesson is done both verbally and visually, To add six to ten, we say six ten then sixteen. To add five to ten, its five ten, fiveteen, fifteen. It takes less then a minute for children to learn with this technique. It works very well with pre kindergarten children as well. Visually, we copy the number and place a one before the number. To develop the child's reasoning process, have them repeat the following: **"Copy the number and concatenate a one in front of that number."** Here is a practice session:

1	2	3	4	5	7	8	9
+10	+10	+10	+10	+10	+10	+10	+10

Teach them the commutative rule with the following:

10	10	10	10	10	10	10	10	10
+1	+2	+3	+4	+5	+6	+7	+8	+9

III. & IV. Adding 9 and 8

To add nine to a number copy one less than the number and concatenate a one in front of the number. This works because we take one from the number and add one to the nine to make it a ten. The rule can said more precisely as: **"Add ten to the number and count back one."** The practice session is:

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

If during practice the child starts slowing down after several attempts, it is time to stop the practice. If the child has a problem with any pair, have the child state the rule and then count back one with him/her.

Now let the child figure out the eight rule, and then practice as follows:

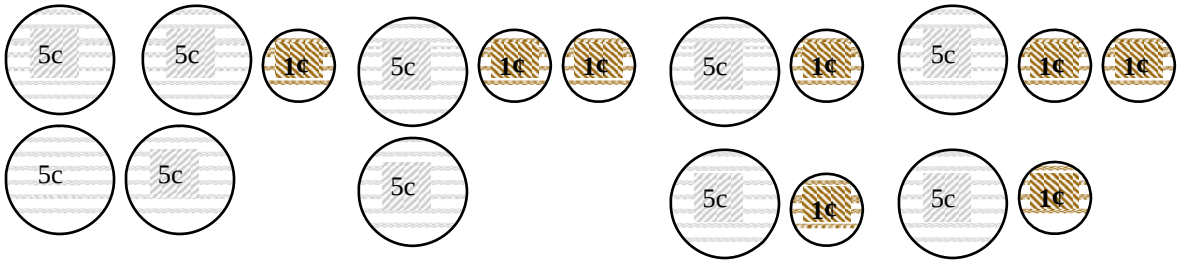
9	**2**	**8**	**3**	**7**	**4**	**6**	**5**
+8	**+8**	**+8**	**+8**	**+8**	**+8**	**+8**	**+8**

When the child can do each of these practice sessions in less than 12 seconds, and can state the eight and nine rules, then you can go onto the next session. Remember, going to fast can be counterproductive. The child needs time to ruminate over the lessons.

V. The nickel rule

This rule is the most difficult to learn, but is a technique adults use when adding large columns of numbers where they construct tens to make the addition easier and more accurate. We think of the following relations: 7=5+2, 6=5+1, 4=5-1, and 3=5-2. Practice the first two with nickels and pennies:

6 = 5 + 1 **7 = 5 + 2**



5 6=5+1 7=5+2 6=5+1 7=5+2

+5 +5=5 +5=5 +6=5+1 +6=5+1

After practicing with money, now do the following:

5	6=5+1	7=5+2	6=5+1	7=5+2	7=5+2	4=5-1	4=5-1	4=4-1	3=5-2	3=5-2
+5	+5=5	+5=5	+6=5+1	+6=5+1	+7=5+2	+5=5	+4=5-1	+6=5+1	+5=5	+7=5+2

This leaves the following to memorize:

3	**4**	**3**	**4**
+3	**+3**	**+6**	**+7**

VI. The twos

Adding two is adding one twice to the number. After the child has learned all the other facts, the two's become the hardest to learn. The lesson is:

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

VII. Preparation for multiplication

Practice this group of numbers:

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

If you spend two days (15 minute) on each lesson, you can teach a child the addition facts in three weeks. When the child can do each line on the practice sheet in less than 12 seconds, have them do the whole sheet in less than 60 seconds. The child is trying to achieve a person best by improving his/her performance after each test. Some children will get so caught up in this that they will be asked to do the test again. Only do this up to three times per day.

Then have them identify the 8 and 9 rules on the random test sheet. When they can do this sheet in less than 60 seconds (54 seconds), they have mastered their addition facts.

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 preK children.

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