LESSON 9

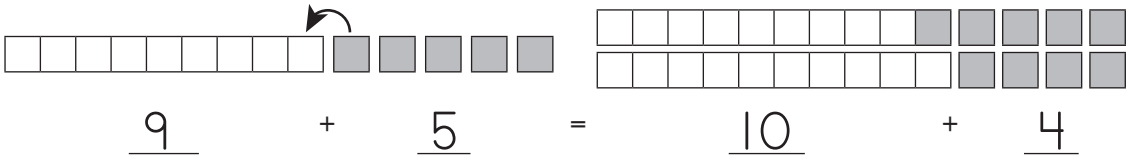
Addition: +9, Mental Math

In this lesson we will be adding by nines. The idea of making or wanting to be ten will be your "fun-dation" for regrouping. First practice counting backwards by one, using the game at the end of this lesson. Taking one away, or counting down by one, is essential to our approach to learning to add by nine.

I like to introduce this with a short narrative about how nine isn't content because he wants to be ten. Ask most nine-year-olds how old they want to be, and they say, "Ten!" Children understand Mr. Nine. Next ask, "What does nine need to have added to him to be ten?" "One unit!" Nine is therefore always on the prowl, looking for one more so he can be ten. Using a nine bar and several green unit bars, create the equation 9 + 5. Be as dramatic as you like, perhaps having the student look away or close his eyes. In that instant, nine takes one to become ten (or "onety").

Example 1

Solve: 9 + 5



Nine plus five is equal to ten plus four, or fourteen.

Note: This will be the first time a student has added ten to a number. Simply apply what the student knows about place value. Start with ten and ask what you would have if you added two more. For example: 10 + 2 = 12. Put together a ten bar and a two bar to illustrate this.

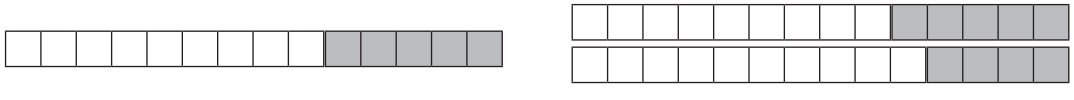
In Example 1, we still have one nine and five units, which are the same length as one ten and four units. Nine is finally happy, and 10 + 4 is 14 ("onety-four"). We can also see that 9 + 5 = 14. The original five has been decreased by one from five to four, and nine has been increased by one to be ten. This is what regrouping is all about!

To provide a visual reminder of this, you can make the circle on the top of the numeral 9 the end of a vacuum nozzle. Nine is always "sucking up" one. Making the vacuum noise is fun and multi-sensory. When a child sees 9, she thinks "one less" and makes the appropriate sound. Practice the nines now until the student understands and feels confident adding by nine. Be sure to practice "taking one away" first with the game on the next page.

Another way to solve adding by nine is to use the colored unit bars. For 9 + 5, pick out the lime green nine bar and the light blue five bar. Place them end to end and say, "Nine plus five is the same as ten plus what?" Have the student find the yellow four bar and place it at the end of the blue ten bar. Then say, "Nine plus five is the same as ten plus four, or fourteen." See Example 2. Choose the way that helps the student understand the concept most effectively. Don't forget to use the same strategies as in previous lessons. Present the problems by building, writing, and saying to assist in memorizing and understanding these facts. You may also find the addition fact songs on the *Skip Counting CD* useful.

Example 2

Solve: 9 + 5



9 + 5 = 10 + 4

Nine plus five is equal to ten plus four, or fourteen.

With this lesson, we have learned 64 out of 100 facts. That is over half!

0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9
1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9
2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9
3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9
4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9
5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9
6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9
7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9
8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9
9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9

Game to Precede Adding by 9

Smaller – Get out the one through nine blocks and stack them in ascending order with the green unit on the right. Ask the question, "Which block is one unit smaller than the ( ) block?" or "What number is a one less than ( )?" Do this until the student knows each answer; only then move to learning the nine facts.

Mental Math

Mental math problems may be used to keep the facts alive in the memory and to develop mental math skills. The teacher should say the problem slowly enough so that the student comprehends it and then walk him through increasingly-difficult exercises. The purpose is to stretch but not discourage. See the example below, along with some suggested problems to try.

Example 3

2 + 3 + 1 = ? "Two plus three plus one equals what number?"

The student thinks, "2 + 3 = 5, and 5 + 1 = 6." At first you will need to go slowly enough for him or her to verbalize the intermediate step. As skills increase, the student should be able to give just the answer.

Starting with this lesson, every third lesson in the *Alpha* instruction manual will have some suggested mental math problems for you to read aloud to your student. Try a few at a time and remember to go quite slowly at first.

1. Four plus one plus one equals what number? (6)
2. Two plus two plus zero equals what number? (4)
3. Five plus one plus two equals what number? (8)
4. Three plus two plus two equals what number? (7)
5. Eight plus one plus five equals what number? (14)
6. One plus three plus zero equals what number? (4)
7. Six plus two plus one equals what number? (9)
8. Five plus two plus two equals what number? (9)
9. Seven plus two plus eight equals what number? (17)
10. Nine plus zero plus one equals what number? (10)