Activities for Learning, Inc.

RightStart™ Mathematics

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Transition Lessons

Special thanks to Dustin Sailer who restructured and updated this manual.

Printed in the United States of America

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ISBN 978-1-931980-50-0

October 2010

Lesson T22

Quantities on Side 2 of the AL Abacus

OBJECTIVES
1. To write and represent 4-place numbers
2. To construct numbers on side 2 of the abacus

MATERIALS
Place-value cards
Abacus
Math journal, located in the back of the child's worksheets

WARM-UP
Ask the child, How many ones are in 1-ten? [ten] How many tens are in 1 hundred? [ten] How many hundreds are in 1 thousand? [ten]

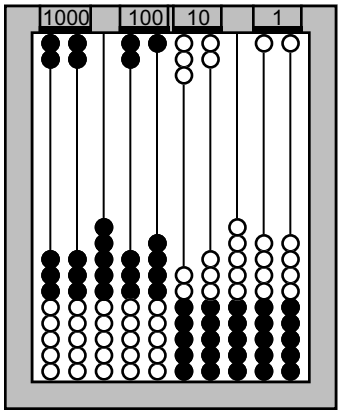
Construct various numbers with the place-value cards to 99 and ask the child to read them and enter them on the abacus.

ACTIVITIES

Side two of the Al Abacus. Construct the number 4352 with the place-value cards. Turn the abacus to side 2 with the column labels (1000, 100, 10, 1) on top. Tell the child that today he is going to use the abacus in a new way.

Note: Side 2 of the abacus emphasizes trading and prepares the child for adding 4-digit numbers on paper.

Tell him that you are going to enter the number just constructed. Point out the thousand columns on the abacus and ask, How many thousands does the number have? [4] Raise 4 beads in the thousands columns, with 2 beads in each column. See the figure at left.



Side 2 of the abacus displaying 4352.

Ask how he could tell where the thousands columns are on the abacus. [The thousands columns are shown by the 1000 above them.]

Then ask how many hundreds the number has. [3] Raise 3 beads in the hundreds columns. Continue with the tens columns [5], and the ones columns [2]. Ask the child to compare the quantities with the layout of the base-10 cards. [The number of beads is the same as the number of cards. Each type of card looks different, but the beads look the same.]

Stress that on this side of the abacus we enter not tens, but the *number* of tens. We also enter only the number of hundreds and number of thousands.

Clear the abacus and ask the child to enter the following quantities: 6000, 9, 7-ten, 200, and 1-ten 2. Continue to give him various quantities to enter, such as 4-ten, 900, 7, 1000, 5-ten, and 800.

Practice. Place all the place-value cards in a box. Ask the child to take out two cards of different lengths. He then constructs the number and enters it on the abacus. (Assess how he reads the number.)

Reading quantities. Enter quantities on side 2 and ask the child to read them. Also enter quantities on side 2 and ask him to construct the number with the place-value cards and to write the numbers in his math journal.

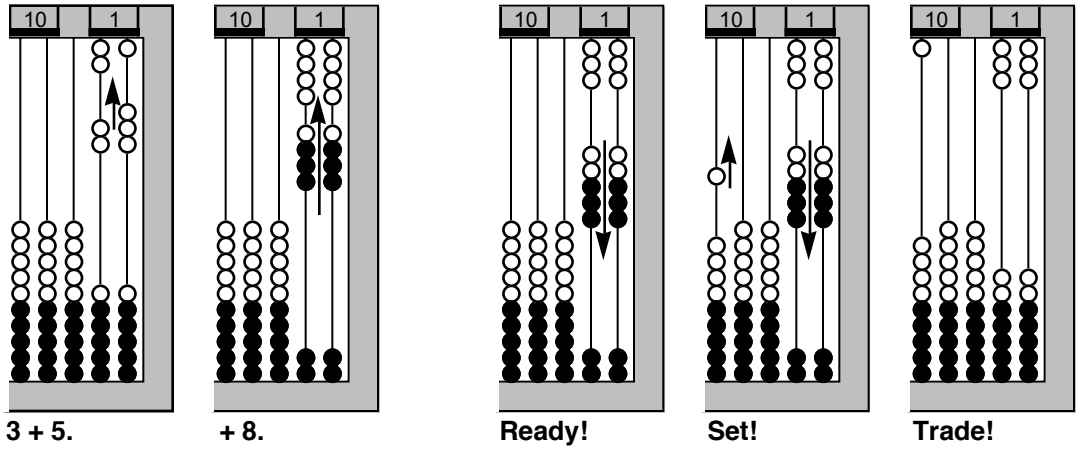
Let's Compare game. Play the Let's Compare game (*Math Card Game*, N41) to practice entering quantities on the abacus.

Trading on the abacus. Start by reviewing a basic rule of our number system. Ten ones equals what? [1 ten] Ten tens equals what? [1 hundred] Ten hundreds equals what? [1 thousand]

Write the following numbers,

$$3 + 5 + 8 + 9$$

and ask the child to add the first 2 numbers on the abacus. After he has added the 5, discuss that the extra bead of the 5 should be entered on the wire that does not have the extra bead of the 3 in order to keep the two wires even. See the figure below on the left.



Note: The word "trade" is preferable to "regroup" or "rename" because a child understands a fair trade. Rarely does she regroup or rename in everyday life.

Next ask him to add the 8, shown above in the second figure. We're soon going to be out of space; what can we do? Let him think for a while. If necessary ask, Ten ones is the same as what? [ten, So trade 10 ones for 1 ten.]

Demonstrate trading as follows. See the figures above on the right.

Get **Ready**. Prepare to move down 10 beads with the right hand.

Get **Set.** Prepare to move up 1 bead of the next higher denomination with the left hand.

Trade. Move beads in opposite directions simultaneously.

Then ask him to add the 9. Can you trade? [yes] Trade. Continue with more numbers until he understands. Ask what he will do when he has 10 *tens*. [Trade for 1 hundred.]

Bead Trading game. The object of this game (*Math Card Games,* A7.1) is to score as high as possible by adding the numbers on the cards. The child needs a stack of basic number cards; the cards are placed face down. He turns over the top card and adds that many beads. Cards are reused as needed. Tell the child that when he reaches 100, he is a *champion*. When he reaches 1000, he is a *grand champion.*

Note: The child may enjoy continuing the game for several days. He records his final numbers and continues from there the next time.

Watch the child's work; when he has more than 10 tens ask, What can you trade 10 tens for? [1 hundred] Besides practicing trading, the child will realize trading 10 ones for 1 ten is common, trading 10 tens for 1 hundred is much less common, and trading 10 hundreds for 1 thousand is rare.

Lesson T23

4-Digit Addition on the Abacus and Paper

OBJECTIVE 1. To add 4-digit numbers on the abacus and on paper

MATERIALS Worksheet T6, Adding 4-Digit Numbers
Math journal
Abacus

WARM-UP Ask the child to write only the answers for the following: 27 + 30 [57], 43 + 7 [50], 66 + 42 [108], 22 + 8 [30], and 35 + 54 [89]

ACTIVITIES ***Problem 1.*** Write the following numbers

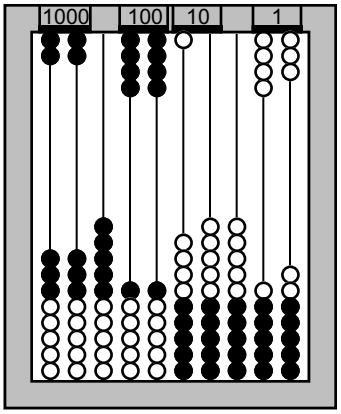
$$\begin{array}{r} 4817 \\ +\ 2639 \\ \hline \end{array}$$

Note: If the child does not understand place value, a review of Lessons T8-T10 may be helpful.

Ask the child to make up a word problem using the numbers.

Ask her to write the numbers in her math journal and to add them on side 2 of the abacus. Ask her to write down what happens after each step. The procedure is shown below.

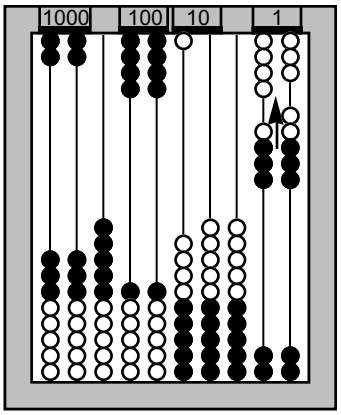
Note: It is important that the child carefully review adding on the abacus because subtraction will also be taught with the abacus.



$$\begin{array}{r} 4817 \\ +2639 \\ \hline \end{array}$$

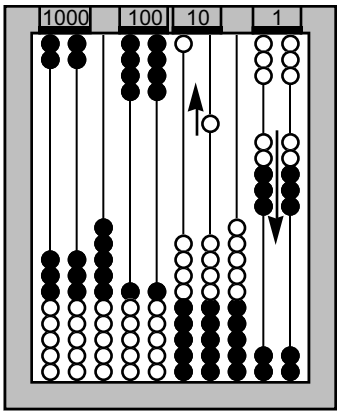
The first number entered.

Note: Trades are done best with two hands. The right hand gets READY with ten 1-beads and the left hand gets SET with one 10-bead. At GO the hands move in opposite directions, completing the trade.



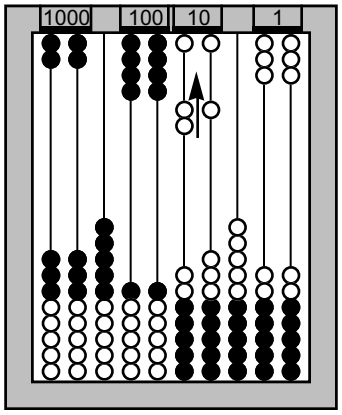
$$\begin{array}{r} 4817 \\ +2639 \\ \hline \end{array}$$

Preparing to add the 9 ones.



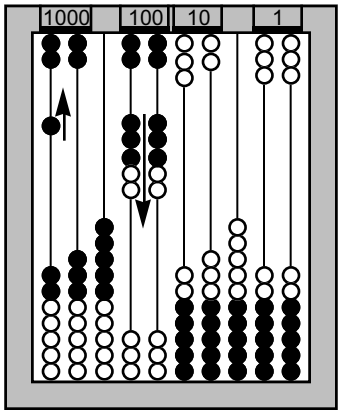
$$\begin{array}{r} \mathbf{1} \\ 4817 \\ +2639 \\ \hline \mathbf{6} \end{array}$$

The results of adding the 9 ones; the trade is shown by writing a 1 above the tens column.



$$\begin{array}{r} {\scriptstyle 1} \\ 4817 \\ +2639 \\ \hline 56 \end{array}$$

Adding the 3 tens; there is no trade.



$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 4817 \\ +2639 \\ \hline 456 \end{array}$$

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 4817 \\ +2639 \\ \hline 7456 \end{array}$$

The results of adding the 6 hundreds; the trade is written above the thousands column.

Then the 2 thousands are added. (no picture of this is shown).

Ask her to explain her procedure to you.

Problem 2. Ask the child to add the following numbers on paper and then to check her answers with a calculator. Tell her that if the answers disagree, she should try it over again until they agree.

$$\begin{array}{r} {\scriptstyle 1\ 1} \\ 3629 \\ +\ 3518 \\ \hline [7147] \end{array}$$

Next ask her to tell you how to do it. Question her on every point. [Start with the ones.] Why? [So you don't have to erase. 9 + 8 is 17; trade 10 ones for 1 ten. Then there is 1 ten and 7 ones.] Why is the 1 written above the 2? [It's another 10. . . .]

Worksheet. For some children Worksheet T6 may be easier if it is cut into thirds. It is also advisable to have the child's work checked by column before she goes on. Have the child use the abacus when completing this worksheet. Try to make the child responsible for being sure her work is correct.

The solutions are given below:

8095	**9307**	**6096**
7424	**5561**	**6432**
8521	**5050**	**12467**
12331	**4825**	**12981**