

3) Chaos and Order - Place Value: The central mathematics focus in the second grade is on place value. This will be the topic of the middle math block of the year – typically the Winter block - when the child is most focused. Then, after a sleep block, it will be reawakened and practiced in the last math block – usually in the Spring.

Like so many mathematical concepts that come to be second nature for us as adults, place value is far more complex and arbitrary than one might realize. Place value is an arbitrary system to give order to chaos. While it may seem to us that counting groups of tens is a given, it is not. Yes, we have ten fingers so it seems automatic to us. We also have ten toes – how about a base twenty system? We have five digits on each limb, how about a base five? Over the centuries, and even today, we find different systems of place value in different cultures - base ten, base five, and base sixty among them - the computer uses a base two or binary system.

At its root, place value is a way to group items so that we can make order out of chaos; it is a very timely topic for the boisterous second grader.¹¹⁰

Working with the three-fold rhythm, as always, we begin with a story that captures the heart or essential energy¹¹¹ of this work. In this case, we give the children a picture of random chaos. For example, a central mischievous character must count the jewels in the kingdom in order to avoid being taken over by a neighboring king. There are far more jewels than she could possibly count and keep track of one at a time. As she tries to do this she gets caught in the playful energy and delight of watching the different colors sparkle as the jewels fly about her. The ruler of this kingdom shows the mischief maker the secret boxes (place value columns) that allow her to sort the jewels into a countable form. In the end she is able to count them easily and wins freedom for the kingdom. In this story the energetic chaos is delighted in, but also brought to a useful order. The lively second grader identifies with both aspects, and place value becomes a meaningful part of her experience, rather than an overlay of “one more thing to learn.”

The primary process of place value is that of bringing order out of chaos. Within that is the universal process for creating that order: nesting (ten ones in a ten, ten tens in a hundred, ten hundreds in a thousand, etc.) To bring this energy into the story we can tell it so that it is full of “nesting.” For example, “There sat the King: the tallest man, on the highest seat, in the highest kingdom, on top of the tallest cliffs.”¹¹² And so on. As we tell a story filled with these nestings the children *experience* the process of nesting on a visceral level. As the children recall it, they are affirming the very process used for place value.

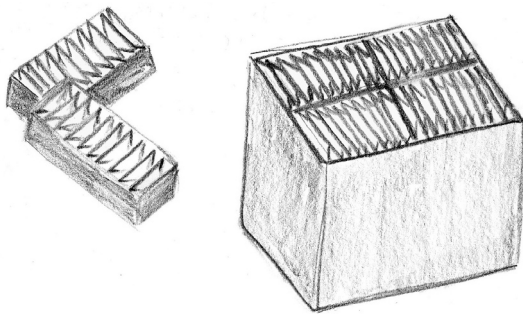
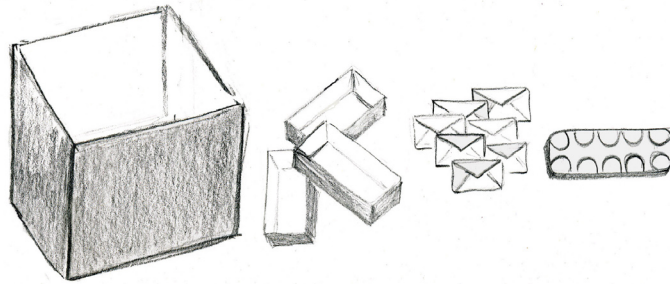
It is important to remember that at the story level we are looking to bring the child an experience of the principles at hand, and not to give literal math instruction. These principles will form the ground on which she can work with the literal computation in a meaningful manner, but if we get caught in trying to teach the specifics of the math within the story, we lose the living connectedness. This is a fine line to walk, but one worthy of our attention.

110 See HTG/Grade Two/the second grader

111 See HTG/Overview/Essential Energy/subject matter

112 Stories are found in our Resource Libraries. Specific lesson plans are found in our Instruction Manuals included with any Grade Level Package.

After a night's sleep, this story is followed by a full round of recall, drawing, simple writing, and work with manipulatives. In this first introductory block¹¹³ it is important to make a very concrete connection between the manipulatives and the written numbers - the manipulatives bridge.¹¹⁴ This begins with the counting out of "jewels" (buttons, stones, acorns, and the like) into boxes of base ten values. It is important that we relate to the blocks as "real," not symbolic. The whole point of manipulatives is to give real world experience, an experience of what is *really* happening in this process.



In this case, to bring the experience of nesting in groups of ten, we must actually, physically do just that.

It is only at the end of this first introductory block that we bring this experience with place value to the theoretical, paper and pencil level. At this point the children begin to "see" why the digits "1-0-4-3" mean one thousand and forty three items. Using grid sheets we can make the first steps into written place value. For example, we can give the children the grid sheet shown. We have them color in or use glitter to put the correct "box" at the top of each column (as shown on book cover). Then we name numbers out loud and the children write them down. Each time, we say the number in stages as they write. So when we say 4 thousand, they write 4 in the thousands box, and write three very light, large zeros in the next three boxes. And so on.

1000's	100's	10's	1's
	○	○	○
	○	○	○
	○	○	○
	○	○	○

113 See HTG/Grade One/Monthly and Yearly Rhythms

114 See HTG/Overview/Activity of Learning/manipulatives bridge