

***Understanding Tens and Ones: A Conceptual Approach
to Numbers and Operations in Base Ten
Webinar FAQs – October 22, 2015***

1. Is it important, as you are going through this process, to make reference to the written representation of these numbers so that connection can be made?

This would be very appropriate if you're doing intervention with 3rd grade students because they've already seen a lot of tasks that were presented as written tasks. For example, the expression $38 + 24$. They've seen that written out as numbers. I would caution first grade teachers to hold off for a while before introducing written representations of the problems that they're working with. The conceptual foundations that we're trying to get students to develop can be harder for students to think about when they're asked to make connections to abstract symbolic notation of the quantities that they're working with before they've really gotten to the point where they understand how the actual materials work.

2. Would the Arrow Card game be an appropriate intervention for an emergent 3rd grade student?

These activities can absolutely be appropriate for third grade students. One of the items that's included in the handouts is a page that describes how to do an assessment on a student using the bundles and sticks materials to see what the understanding is that a student has. Are they able to take a pile of bundles and sticks and use bundles to give you 40 sticks? If they are able to do that, are they able to keep track of the quantity of sticks as you present and screen bundles and individual sticks? Do they use counting by tens strategies to solve that task or do they switch to counting by ones?

3. What is the purpose of hiding the sticks and bundles under the felt?

The idea of starting to screen the materials so that the students can't see them is to get them to reflect on the quantities without having the quantities right out there where they're looking at them. This is one way to start to have the actions of going up by tens and going up by ones start to become more abstract for the students in preparation for transitioning to working with quantities that are represented in the abstract form of numbers. So the idea of screening the bundles and sticks is to progress understanding that involves seeing and manipulating concrete materials to understanding that involves representations that still use concrete materials but sending the message that "I want you to think about materials without actually continuing to look at them.

4. Would we want students to know the terms: increment and decrement?

This is definitely not something that we need students to understand. We introduced it in the webinar primarily because it is language that is used in the text that we are referencing, "Developing Number Knowledge", and it's good for teachers to just think about this idea of going up in specific units and going back in specific units. Those are the ideas that those terms are referring to.

5. How would you respond to teachers who might say they don't have enough time to do these types of activities?

(Refer to slide on comparing conceptual and conventional place value) These are a few of the ideas about comparing these that are referred to in "Developing Number Knowledge". The idea is that in conventional place value instruction, we really do end up with a lot of students who do not develop a strong understanding of what it means to work with units of ten and to work in a system where sometimes we can have units of tens and singles. Although students learn how to do column addition and subtraction, that really emphasizes things like 5 and 4 rather than 50 and 40.

The ideas that are being developed in the instruction that we're looking at today, really support the first grade standards which when we look at the standards, we see that they really are thinking about ideas:

- A bundle of ten ones, a ten and some more singles, a group of tens to make 90, a group of tens to make 50
- Adding and subtracting two-digit and single-digit and two-digit numbers in multiples of ten using concrete materials.



So because the understandings that we're looking at here in the first grade standards are so important as building blocks for what students need to do by the time they leave second grade, it's really important that first grade teachers carefully consider how they're going to make sure that students have the knowledge that's described in these standards. It's important for primary teachers to keep in mind that as students walk out the door of second grade, they're expected to have strategies for adding and subtracting two-digit numbers based on their own understandings of how place value works. If they come into second grade with this basic conceptual understanding of how units of ten and units of one work together in our number system, they're nicely positioned to be able to start developing a more sophisticated place value understanding that's indicated in the second grade standards.

