Multiplying by Multiples of Ten

Parent Letter

by Leanne Luttrell

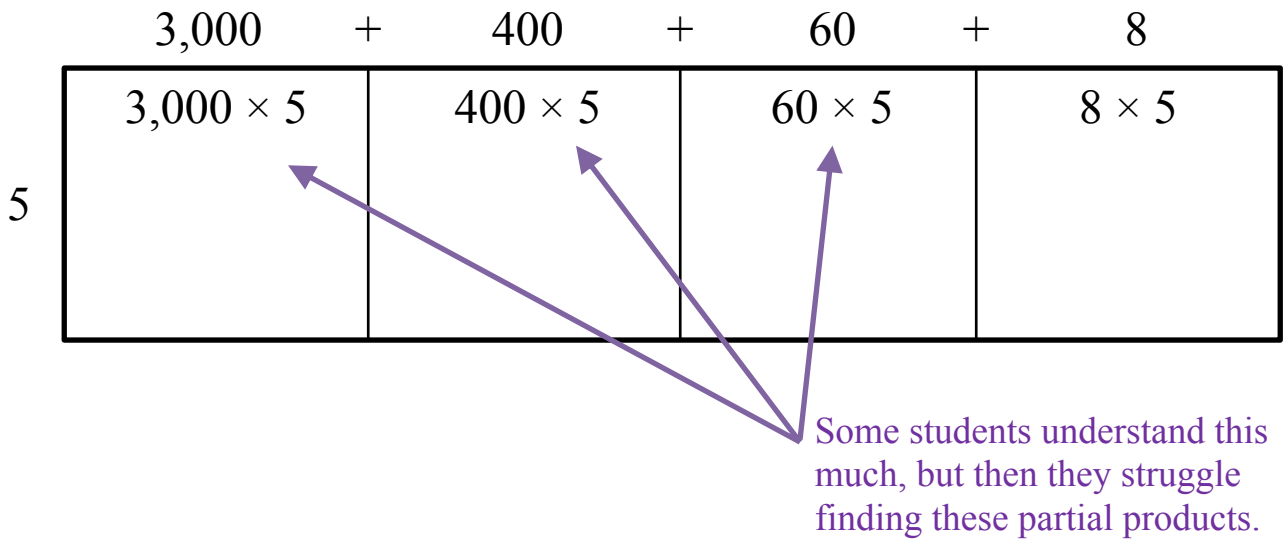
Multiplying By Powers and Multiples of Ten

As we are multiplying larger numbers, some students are struggling with multiplying by tens, hundreds, and thousands. Parents, instead of just 'putting zeros at the end', we want your child to understand this concept. Here are some pictures from a group this week so you can see how we explain it to students. There are virtual manipulatives in the online textbook that you can use at home. Thank you!

The issue:
Most students are able to use the distributive property to multiply larger numbers. Here is an example:

5 × 3,468 =

3,468

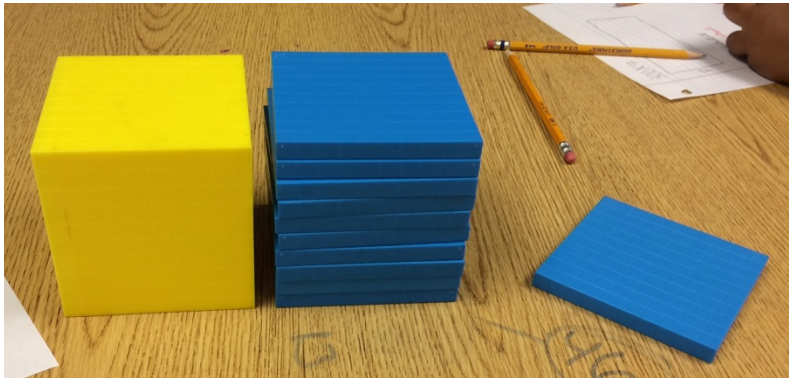


Base ten blocks help students move from concrete to visual to abstract thinking. Here are some examples:

$$300 \times 7 =$$

First, we modeled the problem. Students were able to tell me there were 21 hundreds.

What is the standard form for 21 hundreds? Students regrouped to form 2 thousands and 1 hundred. We discussed how to find this without blocks using place value:

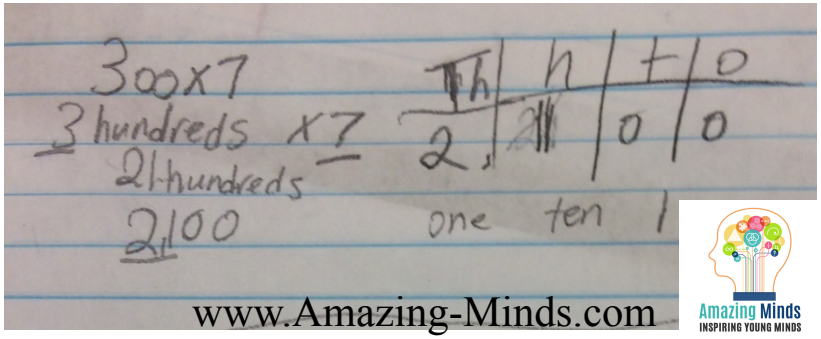


There are no ones or tens, but there are 21 hundreds.

	hundreds	tens	ones
2	1	0	0

Each place only has one digit, which shows why 20 hundreds is 2 thousand.

thousands	hundreds	tens	ones
2	1	0	0

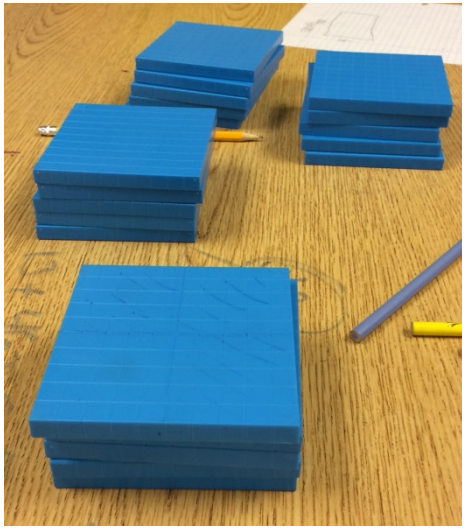


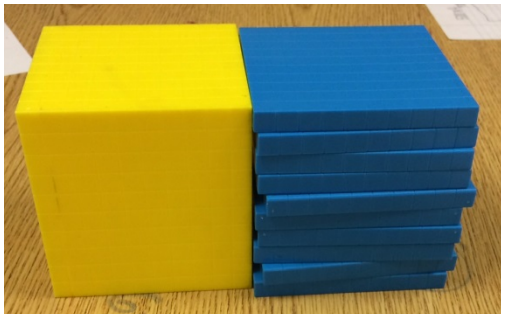
Another example: $500 \times 4 =$

First, we modeled the problem. Students were able to tell me there were 20 hundreds.

What is the standard form for 20 hundreds?

Students regrouped to form 2 thousands. We discussed how to find this without blocks using place value.





Important Note: Students who just learned to 'put 2 zeros on the end' often write 200 as the answer. They know $5 \times 4 = 20$, but they write 200 instead of 2,000 because it has 'two zeros'. According to professional articles, this is a common misconception. **This also does NOT work with decimals, so it does not help students!**

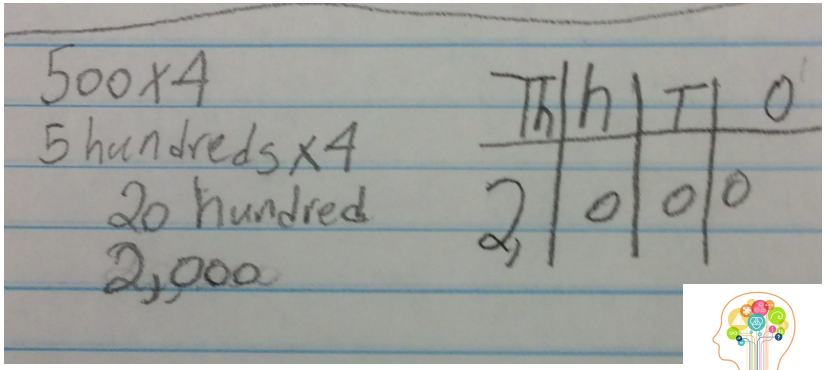
This is why we use models, words, and place value to help students understand the concept.

There are no ones or tens, but there are 21 hundreds.

	hundreds	tens	ones
2	0	0	0

Each place only has one digit, which shows why 20 hundreds is 2 thousand.

thousands	hundreds	tens	ones
2	0	0	0

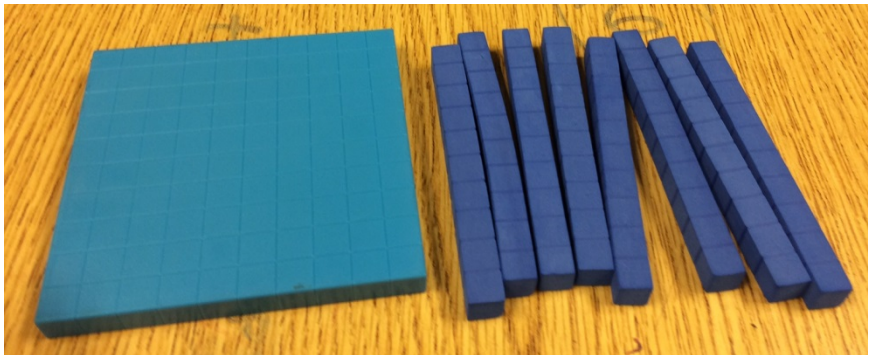


Base ten blocks help students move from concrete to visual to abstract thinking. Here are some examples:

$$60 \times 3 =$$

First, we modeled the problem. Students were able to tell me there were 18 tens.

What is the standard form for 18 tens?
Students regrouped to form 1 hundred and 8 tens.
We discussed how to find this without blocks using place value:



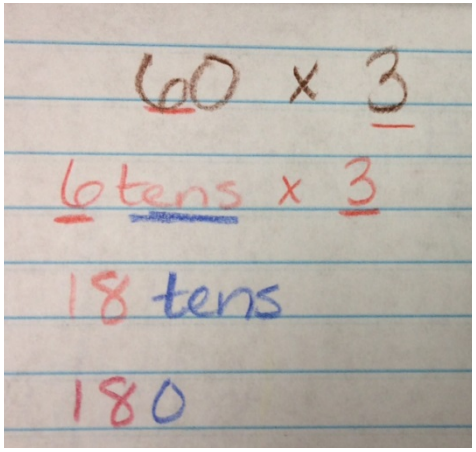
There are no ones or tens, but there are 21 hundreds.

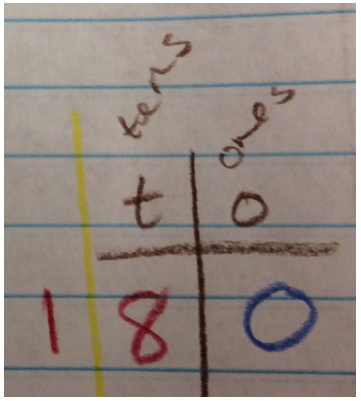
	tens	ones
1	8	0

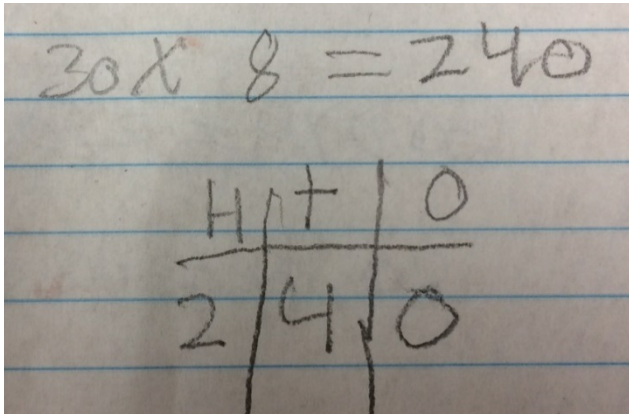
Each place only has one digit, which shows why 20 hundreds is 2 thousand.

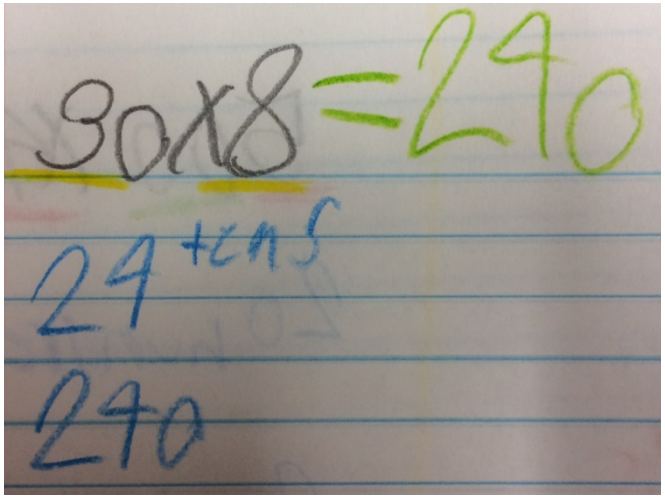
hundreds	tens	ones
1	8	0

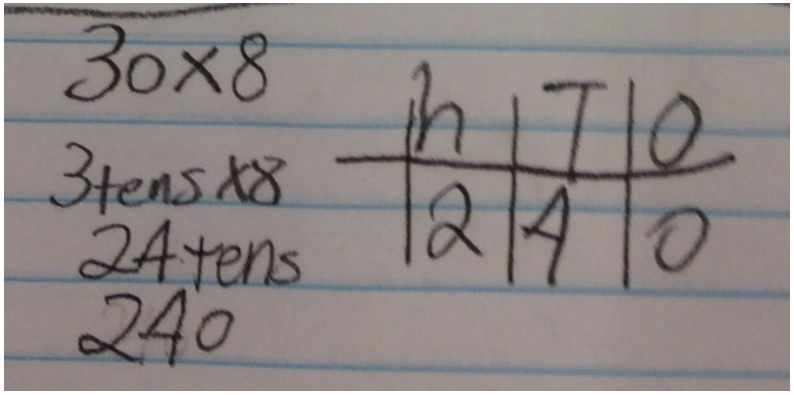
These are my notes to model:





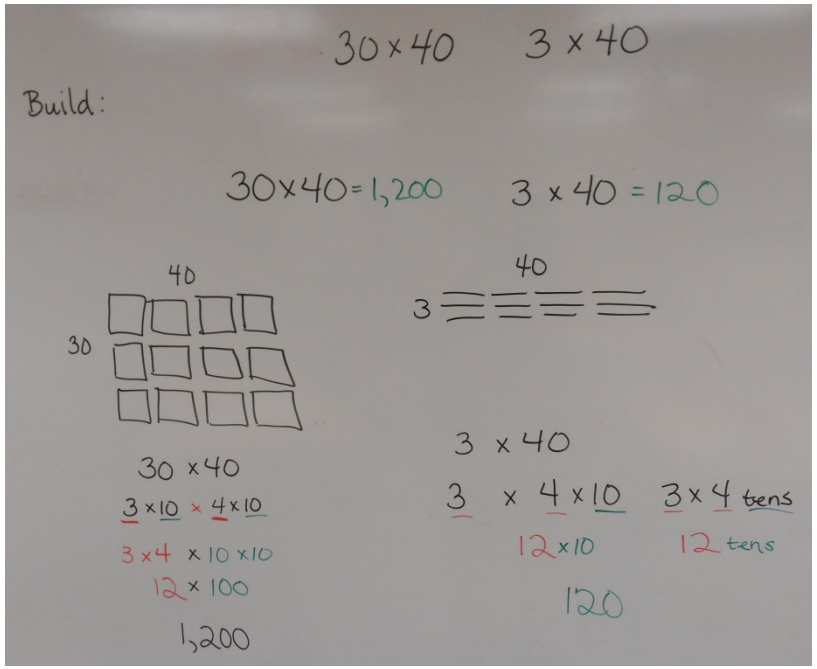


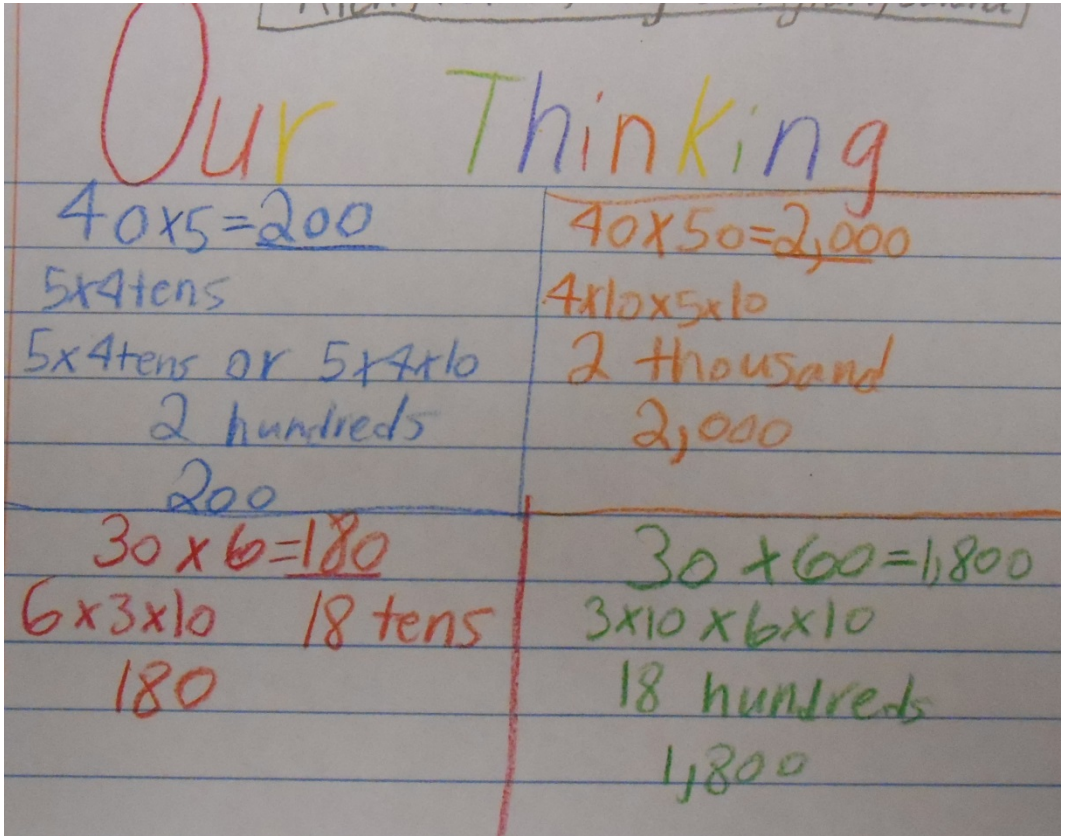




Here are some student notes from an additional problem. (I do not have pictures of the model, but they did build it.

Some additional practice:





What Can I Do?

We appreciate your support at home! If your child is struggling with this concept, have him/her use virtual base 10 blocks to build some simple models. I'm listing some sample problems to try, and interactive base 10 blocks are part of the online textbook.

If you do not have computer access at home, the parent center may have base 10 blocks available.

$60 \times 3 =$ $600 \times 3 =$

$40 \times 7 =$ $400 \times 7 =$

$80 \times 5 =$ $800 \times 5 =$

$30 \times 6 =$ $300 \times 6 =$

$90 \times 2 =$ $900 \times 2 =$

When your child understands this on a conceptual level, he/she can multiply larger numbers without blocks:

$6{,}000 \times 3 =$

$4{,}000 \times 7 =$

$8{,}000 \times 5 =$

$3{,}000 \times 6 =$

$9{,}000 \times 2 =$

I appreciate your help and support this year! Please do not hesitate to ask if you have any questions. I'm glad we are working together!