

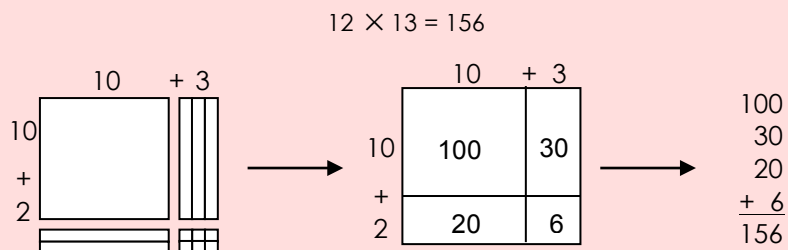
Packet 1: Whole Number Multiplication and Division

Dear Parents/Guardians,

Numbers in Base Ten: Packet 1 addresses whole number multiplication and division. In Lesson 1, students explore multiplication, including using an area model. In Lesson 2, students connect whole number division to repeated subtraction and the 'chunking' method. Lesson 3 relates the strategies and representations from the first two lessons to the traditional algorithms for multiplying and dividing whole numbers.

Area Model for Multiplication

An area model is a visual way of representing multiplication using rectangles. The length and width of a rectangle represent factors and the area of the rectangle represents their product.



The Distributive Property

The distributive property is a way to break apart factors into smaller values so that the multiplication is easier.

$$12(13) = 156$$

Method 1	Method 2
Break the 12 into 10 and 2. Multiply each by 13 and find the total.	Break the 13 into 10 and 3. Multiply each by 12 and find the total.
$12(13) = (10 + 2)13$ $= 10(13) + 2(13)$ $= 130 + 26$ $= 156$	$12(13) = 12(10 + 3)$ $= 12(10) + 12(3)$ $= 120 + 36$ $= 156$

The 'Chunking' Method for Division

This is an alternative to the standard algorithm.

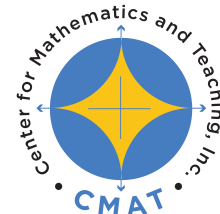
Step 1: Make a multiplication bank that may be useful for the problem.

Step 2: Select a fact from the bank that is less than or equal to the dividend and record.

Step 3: Subtract and repeat Steps 2 and 3 until the remainder is less than the divisor.

$$405 \div 15 = 27$$

Multiplication Bank	Standard Algorithm
$15 \times 1 = 15$ $15 \times 10 = 150$ $15 \times 2 = 30$ $15 \times 20 = 300$ $15 \times 3 = 45$ $15 \times 30 = 450$ $15 \times 4 = 60$ $15 \times 40 = 600$	$\begin{array}{r} 15 \overline{) 405} \\ \underline{- 300} \quad 20 \\ 105 \\ \underline{- 60} \quad 4 \\ 45 \\ \underline{- 45} \quad 3 \\ 0 \end{array}$ <p>27 groups of 15.</p>



NUMBERS in BASE TEN PACKET 1

By the end of the packet,
your student should know...

- How to use an area model and the distributive property to multiply whole numbers **Lesson 1.1**
- How to use repeated subtraction and the 'chunking method' to divide whole numbers **Lesson 1.2**
- How to use the standard algorithms to multiply and divide whole numbers **Lesson 1.3**

Additional Resources

- For definitions and additional notes, please refer to section 1.5.
- For a video tutorial on using the traditional algorithm for multiplication:
<https://www.mathtv.com/watch/9200001>
<https://youtu.be/kzhwix-QcF8>
- For a video tutorial on using the traditional algorithm for division:
<https://www.mathtv.com/watch/9420001>
<https://youtu.be/eIUoIhfupuA>