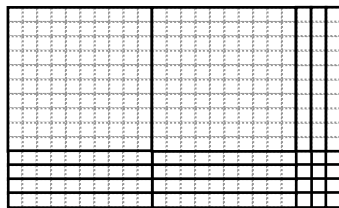


Lesson 17 Homework
Multiplication

Name: _____

To illustrate 23×14 with base-ten pieces, we could make fourteen collections of two longs and three units each. A much more efficient method is to construct a rectangle with dimensions 23 units by 14 units and then fill it in with base-ten pieces as shown below. Then the product is the number of total units in the rectangle, expressed as a base-ten number. In this case, we see 2 flats, 11 longs, and 12 units, which can be regrouped into 3 flats, 2 longs and 2 units. So $23 \times 14 = 322$



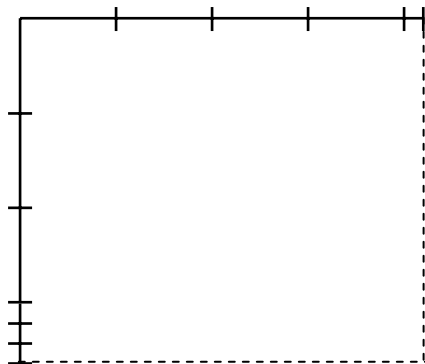
1. Use this method of sketching rectangular arrays to illustrate the following products.

a. 13×13

b. 21×32

c. 23×24

2. With a small amount of practice, and by keeping in mind the way base-number pieces relate, this method can be used in bases other than base ten. Consider $33_{\text{five}} \times 41_{\text{five}}$. The beginning of the sketch for this product is shown below. Fill the rectangle outline with base-five pieces to illustrate the product. Then regroup the resulting pieces to form a minimal collection. (The base-five numeral for the product turns out to be 3003_{five} .)



Use this method of sketching rectangular arrays to illustrate the following products. Be sure to include the correct base numeral for your product.

a. $13_{\text{five}} \times 13_{\text{five}}$

b. $22_{\text{four}} \times 31_{\text{four}}$

c. $24_{\text{six}} \times 34_{\text{six}}$