MATH NEWS

Grade 4, Module 3, Topic C

4th Grade Math

Module 3: Multi-Digit Multiplication and Division

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in the Engage New York material taught in the classroom. Module 3 of the Engage New York material covers Multi-Digit Multiplication and Division. This newsletter will discuss Module 3, Topic C.

Topic C. Multiplicative of up to Four Digits by Single-Digit Numbers

Words to know

- Partial Products
- Standard Algorithm

Things to Remember!!!

- To regroup or bundle a group of 10 ones means to represent it as 1 ten.
- To regroup or bundle a group of 10 tens means to represent it as 1 hundred
- Commutative Property is when numbers can be swapped but the answer is the same.

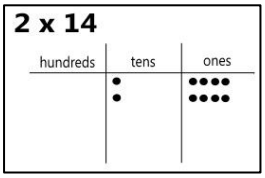
Objective of Topic C

1. Use place value disks to represent two-digit by one-digit multiplication.
2. Extend the use of place value disks to represent three- and four-digit by one-digit multiplication.
3. Multiply three- and four-digit numbers by one-digit numbers applying standard algorithm.
4. Connect area model and partial products method to standard algorithm.

Focus Area– Topic C

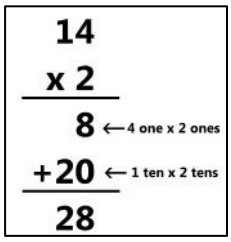
Multiplicative of up to Four Digits by Single-Digit Numbers

Represent 2 x 14 with disks



Begin by drawing disks to represent 14. Look at the number of times 14 is multiplied by, 2. So repeat the pattern twice. The chart should have 14 represented twice on the place value chart. Now add the ones together. 4 ones + 4 ones = 8 ones. Next add the tens together. 1 ten + 1 ten = 2 tens. 2 tens + 8 ones = 20 + 8 = 28.

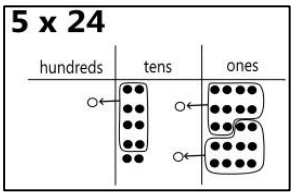
Represent 2 x 14 with partial products



A partial product is written vertically. 14 x 2 = ? First multiply the ones column. 4 ones x 2 ones = 8 ones. Next multiply the tens column. 1 ten x 2 tens = 2 tens.

8 ones + 2 tens = 28

Represent 5 x 24 with disks

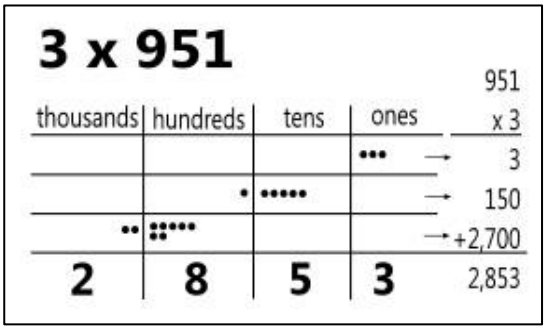


Begin by drawing disks to represent 24. Look at the number of times 24 is multiplied by, 5. So repeat the pattern five times. The chart should have 24 represented five times on the place value chart. Look in the ones place to see if bundling could be used. Yes, there are 2 groups of 10 ones that can be changed to 2 tens. Circle the groups, place an arrow showing that those groups of 10 ones will be moved to the tens place, then draw the circles to represent 2 tens in the tens place. Look in the tens place to see if bundling could be used. Yes, there is 1 group of 10 tens that can be changed to 1 hundred. Circle the group, place an arrow showing that the group of 10 tens will be moved to the hundreds place, then draw the circles to represent 1 hundred in the hundreds place. Now add the ones together. There are 0 ones in the ones place. Add the tens together. There are 4 tens in the tens place. Add the hundreds together, there is 1 hundred in the hundreds place. 1 hundred + 4 tens + 0 ones = 140.

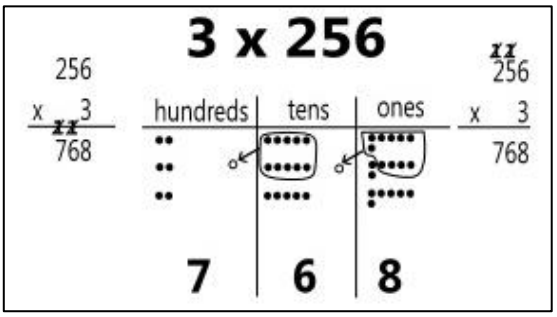
Solve and represent 3 x 951 using a partial products drawing on the place value chart.

Record the partial product when multiplying each unit.

- 1 one x 3 ones = 3 ones, draw 3 disks in the ones place.
- 5 tens x 3 tens = 15 tens = 1 hundred + 5 tens, draw one disk in the hundreds place and 5 disks in the tens place.
- 9 hundreds x 3 hundreds is 27 hundreds = 2 thousands + 7 hundreds, draw 2 disks in the thousands place and 7 disks in the hundreds place.
- Add up the disks in each column of the place value chart then write the total number of each column under the chart in the appropriate column.



Solve and represent 3 x 256 in a place value chart and relate the process to solving using the standard algorithm.

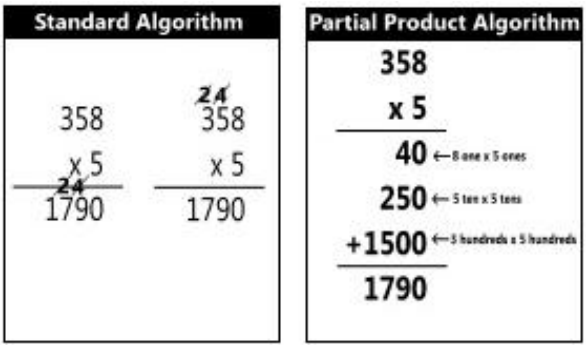


First draw the number disks to represent 256. It is multiplied by 3 so draw two more sets of 256 to show that the number is multiplied by 3. Go though the sets to bundle 10's as needed. Write the number at the bottom of the place value chart in the appropriate place.

Let's look at the place value chart and compare it to the standard algorithm. In the ones column there were 18 ones. We regrouped (bundled) 10 ones for 1 ten that left 8 ones. That is similar to what was done in the standard algorithm. 6 x 3 = 18, put an 8 in the ones place and put the 1 ten on top of the 5 in the tens place. This same concept occurred in the tens place. 5 x 3 + 1 = 16. Write 6 tens in the tens column and 1 hundred was carried to the hundreds column. This process continues until there are no more numbers to multiply.

NOTE: Both ways to solve the standard algorithm is correct.

Solve 5 x 358 using a partial product algorithm and the standard algorithm and relate the two methods.



In partial product algorithm, when multiplying the ones, the ones are written on the first line, when multiplying the tens, the tens are written on the second line, and so on. When using the standard algorithm, in the ones column only the ones are written, the tens are written on top or beneath the tens column. For example, in the standard algorithm, when multiplying 8 x 5, there are 4 tens and 0 ones. Write the 0 under the ones column and write the 4 tens on top of the tens column. Now multiply 5 x 5. 5 x 5 = 25, but there are still 4 tens to add to the 25 tens. So 2 hundreds + 5 tens + 4 tens = 29 tens = 2 hundreds and 9 tens. Write the 9 in the tens column and write the 2 in the hundreds column. And continue the process until there are no more numbers to multiply and add. Writing the numbers on top or on the bottom of the problem is correct as long as it is in the correct column.

Word problems using a tape diagram and standard algorithms

Jonas and Cindy are making candied apples. Jonas purchased 534 grams of apples. Cindy purchased 3 times as many grams of apples. How many grams of apples did they purchase together?