

MATH NEWS

Grade 5, Module 2, Topic B

5th Grade Math

Module 2: Multi-Digit Whole Number and Decimal Fraction Operations

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the [Engage New York](#) material which is taught in the classroom. Grade 5 Module 2 of Eureka Math ([Engage New York](#)) covers Multi-Digit Whole Number and Decimal Fraction Operations. This newsletter will discuss Module 2, Topic B.

Topic B. The Standard Algorithm for Multi-Digit Whole Number Multiplication

Words to Know

- Area Model
- Standard Algorithm
- Numerical Expression
- Estimate
- Product
- Factor
- Decompose

Things to Remember!!!

- **Standard Algorithm**
Step-by-step procedure to solve a problem
- **Numerical Expression**
A mathematical phrase involving only numbers and one or more operational symbol **Example: 11 x (6+13)**
- Symbol for 'about' \approx
- **Product**

The answer when two or more numbers are multiplied together.

$$\begin{array}{ccc} 7 & \times & 3 = 21 \\ \text{Factor} & & \text{Factor Product} \end{array}$$

OBJECTIVES OF TOPIC B

- Connect visual models and the distributive property to partial products of the standard algorithm without renaming.
- Fluently multiply multi-digit whole numbers using the standard algorithm to solve multi-step word problems.
- Connect area diagrams and the distributive property to partial products of the standard algorithm with and without renaming.
- Fluently multiply multi-digit whole numbers using the standard algorithm to solve multi-step word problems and using estimation to check for reasonableness of the product.

Focus Area– Topic B

Module 2: Multi-Digit Whole Number and Decimal Fraction Operations

Problem 1: 432×24

Draw using **area model** and then solve using the **standard algorithm**. Use arrows to match the partial products from the **area model** to the partial products of the **algorithm**.

To find the answer to this problem, first we represent units of 432. **Decompose** 432 to make finding the partial product easier.
 $400 + 30 + 2$

How many four hundred thirty-twos are we counting? (24)
Decompose 24 ($20 + 4$)

Multiply:

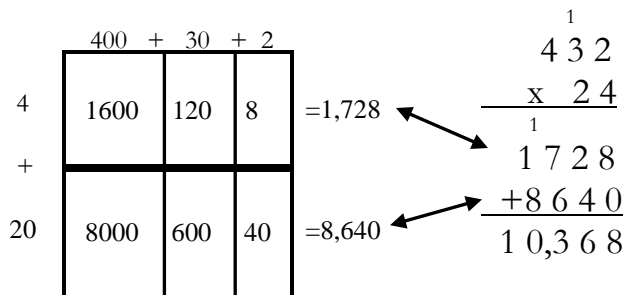
What is the **product** of 4 and 2? 8

What is the **product** of 4 and 30? 120

Continue recording the **product** in the **area model**.

Now add each row of partial products.

Solve using the **standard algorithm**. Compare the partial products in the **area model** to the partial products in the algorithm.



What are 24 groups of 432? 10,368



Problem 2: 532×283

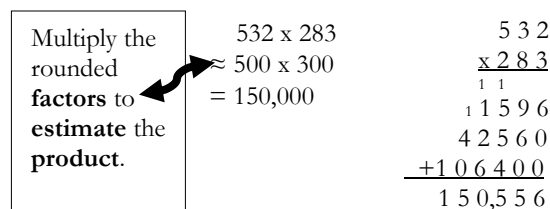
Estimate the **product**. Solve using **standard algorithm**. Use your **estimate** to check the reasonableness of the **product**.

To **estimate** the product round each **factor**.

$532 \rightarrow$ closer to 5 hundreds than 6 hundreds on the number line

$283 \rightarrow$ closer to 3 hundreds than 2 hundreds on the number line

Multiply the rounded **factors** to **estimate** the **product**.



The Grand Theatre purchased 257 new theatre seats for their auditorium at \$129 each. What's the total cost of the new theatre seats?

To find the answer to this problem, first we draw an **area model**. We represent the number of seats in the **area model** by **decomposing** 257 to make finding the partial product easier. Next, **decompose** 129 which is the cost of each seat. Record the **products**.

	200	+	50	+	7	
9	1,800	450	63	=	2,313	$\begin{array}{r} 257 \\ \times 129 \\ \hline 2313 \\ 5140 \\ +25700 \\ \hline 33153 \end{array}$
+	4,000	1,000	140	=	5,140	
+	20,000	5,000	700	=	25,700	

The total cost of the theatre seats is \$33,153.



Peter has collected 15 boxes of football cards. Each box has 312 cards in it. Peter estimates he has about 6,000 cards, so he buys 10 albums that hold 600 cards each.

A. Did Peter purchase too many, not enough, or just the right amount of albums to hold his football cards? Explain your answer?

Step 1: To solve this problem, first **estimate** the number of cards in each box. 312 closer to 300 than 400
 Multiply the number of boxes times **estimated** number of cards in each box. 312×15

Note: You may round 15 to 20 and then multiply 300×20 which equals 6,000. Therefore you could say that Peter has about 6,000 cards. Since both factors were rounded up, the actual number of cards is less than 6,000.

$$\begin{aligned} &312 \times 15 \\ &\approx 300 \times 15 \\ &= (3 \times 100) \times 15 \\ &= (3 \times 15) \times 100 \\ &= 45 \times 100 \\ &= 4500 \quad \text{Peter has about 4,500 cards.} \end{aligned}$$

Step 2: Find the total number of cards the 10 albums hold altogether.
 $600 \times 10 = 6,000$ The 10 albums can hold 6,000 cards.

Step 3: Peter purchased too many albums to hold his football cards. He has about 4,500 cards and ten albums would hold 6,000 cards. (Explanation could be justified by statement written in the note above.)

B. How many cards does Peter have? Use the standard algorithm to solve the problem.

$$\begin{array}{r} 3 \uparrow 2 \\ \times 15 \\ \hline 1560 \\ + 3120 \\ \hline 4680 \end{array} \quad \text{Peter has a total of 4,680 cards.}$$

C. How many albums will he need for all his cards?

1 album 600 cards	2 albums 1,200 cards	3 albums 1,800 cards	4 albums 2,400 cards	5 albums 3,000 cards	6 albums 3,600 cards	7 albums 4,200 cards	8 albums 4,800 cards
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Peter will need 8 albums for all his cards.