Module 2   **Whole Number Operations**
Lesson 3   **Large Numbers: Multiplication**

Lesson Notes 2.3

Lesson Objective

- Develop and use a variety of algorithms with computational fluency to perform whole number operations using multiplication (up to three-digit × two-digit), including **real-world problems**.

Subtopic 1   **Estimation and Multiplying with Zeros**

A **product** is the result of multiplication.

Estimate the following.

1 405 × 6

Th	H	T	O
	4	0	0
	×		6
2,	4	0	0

405 × 6 ≈ 2,400

2 208 × 8

Th	H	T	O
	2	0	0
	×		8
1	6	0	0

208 × 8 ≈ 1,600

Subtopic 2   **Partial Products Method of Multiplication**

Partial Products Method for Multiplication

Multiply each **digit** in one factor by each digit in the other **factor**.

Add the **partial products** to find the total product.

Use the Partial Products Method to solve the following problems.

3 In Major League Baseball's National League, there are 16 teams with 25 players on each team. How many players are there altogether?

$$
\begin{array}{r}
25 \\
\times\ 16 \\
\hline
200 \\
50 \\
120 \\
+\ 30 \\
\hline
\textbf{400 baseball players}
\end{array}
$$

4 Keisha saves $125 every month. How much does she save in 36 months?

$$
\begin{array}{r}
125 \\
\times\ \ 36 \\
\hline
3{,}000 \\
600 \\
150 \\
600 \\
120 \\
+\ \ 30 \\
\hline
\textbf{\$4,500 saved by Keisha}
\end{array}
$$

Subtopic 3 **Standard Multiplication Using Base Ten Blocks**

Solve.

5 56 × 45

Th	H	T	O
2̸	2̸		
	2̸	3̸	
		5	6
	×	4	5
		1	
	2	8	0
+ 2,	2	4	0
2,	5	2	0

6 283 × 37

TTh	Th	H	T	O
		2̸		
		5̸	2̸	
		2	8	3
		×	3	7
1	1	1		
	1,	9	8	1
+	8,	4	9	0
1	0,	4	7	1