G5-M2-Lesson 7

1. Draw an area model. Then, solve using the standard algorithm. Use arrows to match the partial products from the area model to the partial products in the algorithm.

$431 \times 246 = \underline{106,026}$

I can decompose both factors:
$431 = 400 + 30 + 1$
$246 = 200 + 40 + 6.$
Now I can multiply to find the partial products.

I can add to find 6×431.
$2,400 + 180 + 6 = 2,586$

I'll line up the two factors vertically and multiply using the standard algorithm.

	400	+ 30	+ 1	
6	2,400	180	6	2,586
+				
40	16,000	1,200	40	17,240
+				
200	80,000	6,000	200	86,200

$$\begin{array}{r} 431 \\ \times\ 246 \\ \hline 2586 \\ 17240 \\ +\ 86200 \\ \hline 106,026 \end{array}$$

The partial products I found using the area model are the same as using the standard algorithm.

The total product is 106,026.

2. Solve by drawing the area model and using the standard algorithm.

$2{,}451 \times 107 = \underline{262{,}257}$

I can decompose 2,451 and use it as the length.
$2{,}451 = 2{,}000 + 400 + 50 + 1$

I multiply to find the partial products.

	2,000	+ 400	+ 50	+ 1	
7	14,000	2,800	350	7	17,157
+					
100	200,000	40,000	5,000	100	245,100

$$\begin{array}{r} 2,451 \\ \times \quad 107 \\ \hline 17157 \\ +\,245100 \\ \hline 262,257 \end{array}$$

I decompose the width, 107.
$107 = 100 + 7$
Since there's a 0 in the tens place, there are 0 tens in the width of the area model.

3. Solve using the standard algorithm.

$7{,}302 \times 408 = \underline{2{,}979{,}216}$

8 ones × 3 hundreds = 24 hundreds = 2 thousands 4 hundreds. I'll record 2 in the thousands place and write 4 in the hundreds place.

8 ones × 2 ones = 16 ones = 1 ten 6 ones. I'll record 1 in the tens place and write 6 in the ones place.

4 hundreds × 3 hundreds = 12 ten thousands. I'll record 1 in the hundred thousands place and write 2 in the ten thousands place.

$$\begin{array}{r} 7,302 \\ \times \quad 408 \\ \hline 58416 \\ +\,2920800 \\ \hline 2,979,216 \end{array}$$

4 hundreds + 8 hundreds = 12 hundreds = 1 thousand 2 hundreds. I'll record 1 in the thousands place and write 2 in the hundreds place.