Multi-Digit Whole Numbers

Topic: CCSS 5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.

Instructions: Learn how to fluently multiply multi-digit whole numbers using the standard algorithm.

Summary:

- **Multi-Digit Multiplication**
  - Products can be estimated by rounding multi-digit numbers to the nearest factor of 10.
  - The area multiplication model represents the standard algorithm visually.
    - The sides of a rectangle represent the factors, and the area of the rectangle represents the product. See the example for 11 x 14 below.

	10	1		
10	10 x 10 = 100	10 x 1 = 10	100 + 10 = 110	110 + 44 154
4	10 x 4 = 40	4 x 1 = 4	40 + 4 = 44	

  - The standard algorithm uses partial products.
    - Multiply each digit in the top row by each digit in the bottom row, one digit at a time, from right to left. Add up the resulting rows. See the example for 11 x 14 below.

```
  11
 x 14
  44
+ 110
 154
```

Practice:

- **Use estimation to determine multi-digit multiplication products.**
  - Round each number to the nearest whole number factor of 10 and estimate the product.
    - 321 x 401 = _____
    - 804 x 53 = _____
    - 35 x 123 = _____
    - 1,221 x 7,999 = _____

- **Multiply using the area multiplication model.**
  - Find the product using the area multiplication model.
    - 49 x 3 = _____
    - 129 x 31 = _____
    - 8,072 x 5 = _____
    - 82 x 101 = _____

- **Multiply using the standard algorithm.**
  - Find the product using the area multiplication model.

49	8,072	129	101
x 3	x 5	x 31	x 82