

Use place value understanding and properties of operations to perform multi-digit addition, subtraction, multiplication, and division using a one-digit divisor (Standards 4.NBT.4–6).

Standard 4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Please Note: Expectations in this strand are limited to whole numbers less than or equal to 1,000,000.

Key Elements: Multiplying one-digit whole number by either two-digit, three-digit, or four digit and two two-digit whole numbers using models.

Model a Product of Tens – The model show a representation of 30×20 as 3 groups of 10 times by 2 groups of 10. Multiply the factors moving to the left, placing the answer inside each box. When all the boxes have a product, add the products up to find the sum.

$$10 + 10 + 10 = 30$$

	$10 \times 10 = 100$	$10 \times 10 = 100$	$10 \times 10 = 100$	
10				100
+				100
<u>10</u>				100
20				100
				<u>+100</u>
				600

Place Value Model for Multiplying – Place Value Model uses the concept of place value and breaking numbers into parts. Each place value is divided into rectangles to represent the sum of the two factors. Expand the numbers being multiplied and create an area model that represents that those expanded numbers. After multiplying the factors, add the sums together to get the product.

$$8 \times 549 =$$

	500	+	40	+	9
8	$8 \times 500 = 4000$		$8 \times 40 = 320$		$8 \times 9 = 72$

$$\begin{aligned} 8 \times 549 &= 8 \times (500 + 40 + 9) \\ &= 4000 + 320 + 72 = 4392 \end{aligned}$$

$$36 \times 44 =$$

	40		4
30	$30 \times 40 = 1200$		$30 \times 4 = 120$
6	$6 \times 40 = 240$		$6 \times 4 = 24$

$$36 \times 44 = 1200 + 240 + 120 + 24 = 1584$$