

## GRADE 4: Multiply 2-digit x 2 digit – Divide 4-digit by 1-digit

The goal is for students to develop computational fluency, learning a variety of strategies to use to solve problems. Students will look at the numbers involved in the problem and will then decide on a method that best fits the situation. The following are some of the strategies for solving multiplication/division problems in fourth grade. The majority of these strategies help students develop a strong sense of number and number relationships which are very important life skills. Students still need to memorize their basic multiplication facts to increase accuracy.

### MULTIPLICATION

#### LANDMARK MULTIPLES LIKE 10, 100:

- $45 \times 10 = 450$
- $357 \times 20 = 357 \times 2 \times 10 = 714 \times 10 = 7,140$
- $231 \times 400 = 231 \times 4 \times 100 = 924 \times 100 = 92,400$

### DIVISION

#### LANDMARK MULTIPLES LIKE 10, 100:

- $50 \div 10 = 5$
- $740 \div 10 = 74$
- $2,400 \div 100 = 24$

**OPEN ARRAYS:** Students decompose (break apart) the numbers into easier numbers (landmark numbers) and then compose (put together) the partial products. They will decompose numbers in a variety of ways. Below are two variations for decomposing. Using place value to decompose leads directly to the “traditional” algorithm. The difference between multiplication and division is which “piece” is missing. For multiplication, the answer is the area (inside) the array. For division, the answer is the missing factor (top dimension) of the array.

Solve  $46 \times 58$ :

	50	8	
40	2000	320	= 2320
6	300	48	= 348
	Ans. 2,668		

	10	10	10	10	10	8	
40	400	400	400	400	400	320	= 2320
6	60	60	60	60	60	48	= 348
	Ans. 2,668						

Solve  $280 \div 5$ :

	50	6	= 56 ANS.
5	250	30	

	10	10	10	10	10	6	= 56 ANS.
5	50	50	50	50	50	30	

## MULTIPLICATION

**CLUSTERS:** Decomposing numbers to make simpler problems. Very similar to open arrays without the box. Students will decompose the numbers in a variety of ways.

Solve  $48 \times 56$ :

$$\begin{array}{r} 40 \times 50 = 2,000 \\ 40 \times 6 = 240 \\ 50 \times 8 = 400 \\ 6 \times 8 = \underline{48} \\ 2,688 \end{array}$$

\*Mirrors the steps of the traditional algorithm.

$$\begin{array}{r} 48 \times 50 = 2,400 \\ 48 \times 6 = \underline{288} \\ 2,688 \end{array}$$

\*Easier problems

$$\begin{array}{r} 50 \times 56 = 2,800 \\ 2 \times 56 = \underline{-112} \\ 2,688 \end{array}$$

\*Find 50 56's and then subtract 2 56's = 48 56's.

## DIVISION

**CLUSTERS:** Decomposing numbers to make simpler problems. Very similar to open arrays without the box. Students will decompose the numbers in a variety of ways but will use multiplication to solve. Students will gain an understanding of the relationship between multiplication and division.

Solve  $2,136 \div 6 =$

$$\begin{array}{r} 6 \times 300 = 1,800 \\ 6 \times 50 = 300 \\ 6 \times \underline{6} = 36 \\ 356 \end{array}$$

These strategies are developed in the following unit(s) in our curriculum:

- Mathematical Thinking, Landmarks in the Thousands, Arrays & Shares, Packages & Groups.