

# Activity 31 Assessment

## Estimating Products

### Conceptual Meaning of Multiplication and Division with Larger Numbers

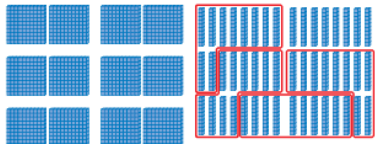
Models multiplication and division situations concretely and pictorially

$$6 \times 287 = ?$$

$$6 \times 200 = 1200$$

$$6 \times 80 = 480$$

$$6 \times 7 = 42$$



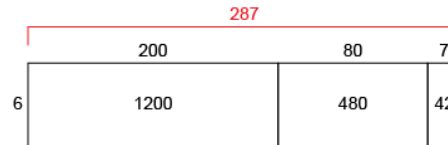
"100, 200, ..., 1100, 1200"

$$1200 + 480 + 42 = 1722$$

"I traded groups of 10 rods for a flat."

Models multiplication and division situations using open arrays.

$$6 \times 287 = ?$$



"I can use an open array to help me multiply."

Uses place value to multiply whole numbers by 10, 100, and 1000 and to divide by 10.

$$\begin{aligned} 60 \times 7 \times 100 &= 6 \times 10 \times 7 \times 100 \\ &= 42 \times 1000 \\ &= 42\,000 \end{aligned}$$

"I used the associative property to make friendly numbers, then used the known fact  $6 \times 7 = 42$ ."

### Observations/Documentation

# Activity 31 Assessment

## Estimating Products

### Conceptual Meaning of Multiplication and Division with Larger Numbers (cont'd)

Decomposes numbers and use partial products and partial quotients to multiply and divide.

$$6 \times 287 = ?$$

$$\begin{array}{r} 287 \\ \times \quad 6 \\ \hline 42 \quad 7 \times 6 \\ 480 \quad 80 \times 6 \\ + 1200 \quad 200 \times 6 \\ \hline 1722 \end{array}$$

"I decomposed 287 into hundreds, tens, and ones, then used partial products to multiply."

Estimates to determine if answer to multiplication or division problem is reasonable.

$$\begin{array}{l} 6 \times 287 = 1722 \\ 287 \text{ is close to } 300. \\ 6 \times 300 = 1800 \\ 1800 \text{ is close to the answer I calculate, } 1722. \\ \text{So, my answer is reasonable.} \end{array}$$

Creates and solves multiplication and division problems flexibly using a variety of strategies.

$$123 \div 6 = ?$$

"I counted 123 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?"

$$\begin{array}{r} 6 \overline{) 123} \\ \underline{60} \quad 10 \\ \quad 63 \\ \underline{60} \quad 10 \\ \quad \quad R 3 \quad \underline{20} \end{array}$$

"I round up to 21 pages to be sure all photos will fit."

### Observations/Documentation