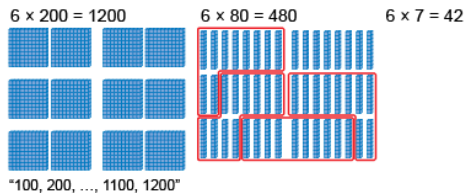# Activity 33 Assessment
Estimating Quotients

Conceptual Meaning of Multiplication and Division with Larger Numbers

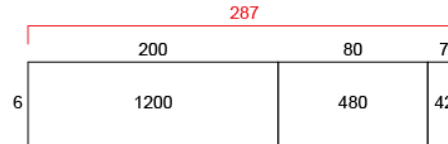| Models multiplication and division situations concretely and pictorially	Models multiplication and division situations using an open array.	Uses place value to multiply whole numbers by 10, 100, and 1000 and to divide by 10.
$6 \times 287 = ?$	$6 \times 287 = ?$	$60 \times 7 \times 100 = 6 \times 10 \times 7 \times 100$

$6 \times 200 = 1200$ $6 \times 80 = 480$ $6 \times 7 = 42$

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

$1200 + 480 + 42 = 1722$

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

287

	200	80	7
6	1200	480	42

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

$= 42 \times 1000$

$= 42\ 000$

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

Observations/Documentation

Activity 33 Assessment
Estimating Quotients

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

Decomposes numbers and use partial products and partial quotients to multiply and divide.	Estimates to determine if answer to multiplication or division problem is reasonable.	Creates and solves multiplication and division problems flexibly using a variety of strategies.
$6 \times 287 = ?$	$6 \times 287 = 1722$	$123 \div 6 = ?$

$6 \times 287 = ?$

```
    2 8 7
  ×     6
   ─────────
     4 2      7 × 6
     4 8 0    80 × 6
  + 1 2 0 0   200 × 6
   ─────────
    1 7 2 2
```

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

$6 \times 287 = 1722$
287 is close to 300.
$6 \times 300 = 1800$
1800 is close to the answer I calculate, 1722.
So, my answer is reasonable.

$123 \div 6 = ?$

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

```
6) 1 2 3
    6 0   10
    ───
    6 3
    6 0   10
    ───
    R 3   20
```

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

Observations/Documentation